CHAMPAIGN COUNTY ZONING BOARD OF APPEALS
NOTICE OF REGULAR MEETING

Date: **March 26, 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.

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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 (March 12, 2009)
5. Continued Public Hearings

Case 634-AT-08 Petitioner: **Zoning Administrator**
Request: **Amend the Champaign County Zoning Ordinance as follows:**

A. Authorize the County Board to approve Special Use Permits (SUP) and to change the requirements for development of wind turbine developments (wind farms) to a County Board Special Use Permit (CBSUP) and a rezoning to the new Wind Farm Overlay Zoning District (WFO);

B. Change the requirements for private wind turbines; and

C. Add a requirement for a CBSUP for subdivisions in a Rural Residential Overlay District.

6. New Public Hearings
7. Staff Report
8. Other Business
9. Audience Participation with respect to matters other than cases pending before the Board
10. Adjournment

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

SUBJECT TO APPROVAL

MINUTES OF REGULAR MEETING
CHAMPAIGN COUNTY ZONING BOARD OF APPEALS
1776 E. Washington Street
Urbana, IL 61801

DATE:	**March 12, 2009**	**PLACE:**	**Lyle Shields Meeting Room**
			1776 East Washington Street
TIME:	**7:00 p.m.**		**Urbana, IL 61802**

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

MEMBERS ABSENT : None

STAFF PRESENT : John Hall, Jamie Hitt, Leroy Holliday, Christina Papavasiliou (Assistant State's Attorney)

OTHERS PRESENT : Tim Polz, Chris Hanson, Mike Babb, Kyle Krapf, Gerald Henry, Richard Aden, Rob Parker, William Davidson, Tim Smith, Bradley Uken, Jamie Stevens, Judy Campbell, Michael Jarboe, Daniel Cain, Jed Gerdes, John Melchi, Marvin Johnson, Jeff Suits, Mark Youmans, John Chandler, Herb Schildt, Sherry Schildt, Bruce Stikkers, Hal Barnhart, Steve Burdin, Kim Schertz, Eric McKeever, Al Kurtz, Steve Moser, Alan Nudo

1. Call to Order

The meeting was called to order at 7:02 p.m.

DRAFT

2. Roll Call and Declaration of Quorum

The roll was called and a quorum declared present.

3. Correspondence

None

4. Approval of Minutes (February 26, 2009)

Mr. Thorsland moved, seconded by Mr. Schroeder to approve the February 26, 2009, minutes as submitted. The motion carried by voice vote.

5. <u>Continued Public Hearing</u>

Case 634-AT-08 Petitioner: **Zoning Administrator** Request: **Amend the *Champaign County Zoning Ordinance* as follows: A. Authorize the County Board to approve Special Use Permits (SUP) and to**

change the requirements for development of wind turbine developments (wind farms) to a County Board Special Use Permit (CBSUP) and a rezoning to the new Wind Farm Overlay Zoning District (WFO); B. Change the requirements for private wind turbines; and C. Add a requirement for a CBSUP for subdivisions in a Rural Residential Overlay.

Mr. Bluhm stated that at the February 26, 2009, public hearing an error was performed at the end of the meeting in that a motion was made to close the public hearing. He requested a majority vote of those members present and voting at the last meeting to make a motion to re-open the public hearing for Case 634-AT-08.

Ms. Capel moved, seconded by Mr. Courson to re-open the public hearing for Case 634-AT-08, Zoning Administrator. The motion carried by voice vote.

Mr. Bluhm announced that he must recuse himself from Case 634-AT-08 because he is a landowner in one of the areas that is in development for a proposed wind farm.

Mr. Hall informed the Board that according to the ZBA By-laws they need to vote and appoint an interim Chair for this public hearing.

Ms. Capel moved, seconded by Mr. Courson to appoint Eric Thorsland as interim Chair for the March 12, 2009, Zoning Board of Appeals meeting. The motion carried by voice vote.

Mr. Thorsland requested that County Board members refrain from presenting testimony at tonight's public hearing.

Mr. Thorsland informed the audience that everyone is welcome to speak although the Board would like to limit redundant testimony.

Mr. Hall distributed two handouts to the Board for review. He said that the Supplemental Memorandum dated March 12, 2009, reviews the basis for the proposed fee and identified a problem with the threshold for storage of flammable liquids which was included in the revised Subparagraph 6.1.4 C.9. He said that the threshold was 500 gallons which is ridiculously small but it has been revised to 10,000 gallons capacity keeping in line with the State Fire Marshall regulations for storage, transportation, sale and use of gasoline and volatile oils (see attachment to the handout). He said that the Supplemental Memorandum includes additional information regarding possible wind turbine noise levels. He said that by use of a sound calculator staff is able to convert the noise levels that are reported at octave levels into a single decibel level and this manipulation of noise level is just to give the Board some background. He said that the sound calculator is available on the public website and staff cannot vouch for its accuracy. He said that it would be fantastic if the wind farm developers could provide better information because staff does not have an acoustician in our department nor do we have the funds to hire one. He said that the Supplemental Memorandum includes the results of using the noise rating calculator on the website from The Engineering Toolbox to calculate the single number decibel rating for the various Illinois Pollution Control Board limits and comparing to the results of the Danish Wind Industry Association website sound calculator. He said that those results are as

follows: 1. the proposed minimum required separations to dwellings of 1,000 feet and 1,200 feet should result in noise levels below the maximum noise level required by the IPCB regulations. The Danish Wind Industry Association website sound calculator resulted in noise levels of 43 decibels and 42 decibels at these respective separations which are well below the IPCB maximum allowable noise level of 48 decibels; and 2. Compared to a possible background ambient nighttime noise level that may be as low as 30 decibels (based on the IPCB Category 5 Rural long term background ambient noise level nighttime), this increase to 43 decibels or 42 decibels at the minimum separations may be perceived as more than doubling of the current noise level. The actual IPCB limit of 48 decibels would be perceived as nearly a quadrupling of the current noise level; and 3. There should be an expected increase in the perceived noise from a wind farm (relative to the long term background ambient noise level) at a distance of as much as 1,000 meters (3,250 feet).

Mr. Hall stated that he anticipates complaints regarding noise although some of those complaints may not be valid and staff will need a way to determine which complaints are valid and which are invalid. He said that staff is comfortable with the separation and noise levels even though none of these numbers would actually be permissible in a hearing. He said that the Supplemental Memorandum dated March 6, 2009, revealed that there is no staff at the Illinois Environmental Protection Agency (IEPA) to enforce the Illinois Pollution Control Board (IPCB) noise regulations. The County can enforce the regulations on its own if it hires appropriate consultants. He said that the Sangamon County Zoning Ordinance included such a provision and Livingston County included it in at least one wind farm approval and charges the wind farm owner for the cost of the enforcement action. He said that he believes that if Champaign County does not provide some means of enforcing those regulations it is a problem but that is up to the ZBA to make such a recommendation and the County Board to accept that recommendation.

Mr. Hall stated that staff has recommended three additional conditions to paragraph 6.1.4 I. to explicitly authorize the County to enforce the IPCB noise regulations: 1. Authorize the County to take enforcement action to investigate noise complaints and take such action as proves warranted; and 2. Require the Wind Farm owner to cooperate fully with the enforcement actions including shutting down all wind turbines to allow documentation of ambient noise levels; and 3. In the event that a violation of the noise limit is identified, require the Wind Farm owner to take whatever actions are necessary to stop the violation and comply with the noise regulations. He said that these three conditions cannot be investigated by staff but by a professional sound engineer and those funds must be authorized by the Environment and Land Use Committee. He said that staff will receive complaints that are unfounded and a professional sound engineer cannot be utilized every time staff receives a complaint therefore this process will not be done lightly and hopefully staff will be able to have a high degree of confidence as to whether a complaint is valid or invalid and perhaps the wind farm developers would have some suggestions. He said that staff is comfortable with the noise regulations to date except for the fact that there is no enforcement therefore adopting a noise regulation without a means of enforcement does not achieve much.

Mr. Hall stated that the second handout dated March 12, 2009, analyzes what staff means when they discuss what areas will be included as part of the Special Use Permit and what areas will require rezoning. He said that this is based on a small portion of another east central Illinois wind farm and the layout is not done according to Champaign County's regulations therefore there are areas which overlap the street, which would be problem, but it does give a picture of what a layout will look like when it comes to the ZBA for a

public hearing.

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

Mr. Thorsland called Mr. Herb Schildt as the Chairman of the Newcomb Township Plan Commission to testify.

Mr. Herb Schildt, Chairman of the Newcomb Township Plan Commission said that their review of Case 634-AT-08 is ongoing and at this time they have no new comments or concerns, but their original comment and concerns still stand. He said that it is important to point out that they received the current draft amendment just prior to their meeting on March 9th and the commission members are currently in the process of reviewing the nearly completed draft. He said that they may have additional comments, issues or concerns in the future. He said that the Newcomb Township Plan Commission did note that the setback from pipelines was increased to 1,200 feet as described in Section 6.1.4.C.8 and that a 1,600 foot setback has been added for the situations described in 6.1.4.C.9. Mr. Schildt submitted his written statement as a Document of Record.

Mr. Thorsland asked the Board if there were any questions for Mr. Schildt and there were none.

Mr. Thorsland asked if staff had any questions for Mr. Schildt and there were none.

Mr. Thorsland called Mr. Herb Schildt as a private citizen.

Mr. Herb Schildt, who resides at 398 CR 2500N, Mahomet stated that he is the Chairman of the Newcomb Township Plan Commission however, he is not speaking in that capacity at this time rather these are his personal comments. He said that he will begin by reviewing why text amendment 634-AT-08 is so important. He said that simply put, a wind farm will fundamentally and profoundly change the character and the nature of the County. He said that everyone needs to clearly understand that each commercial wind turbine is as tall as a 40 to 50 story building and as a result these turbines affect an area much larger than the acres they occupy. He said to understand how much larger consider this example, he can clearly see the 400 foot turbines in McLean County from Highway 47 just north of Mahomet and at this point the turbines are approximately 15 miles away and the same result will occur here. He said that the effects of a wind farm in Champaign County will be felt throughout the entire County and we will live with those effects for what will essentially be the rest of our lives. He said that it is important to get this ordinance right because once a wind farm is built it's too late to say "oops!"

Mr. Schildt stated because the impact of a wind farm is so widely felt ordinance that permits them must incorporate two fundamental objectives: 1. a wind farm should not be sited where it's not wanted or where it's not appropriate; and 2. the setbacks must be sufficiently large to protect the health, safety and quality of life of non-participating landowners. He said that meeting these two goals will ensure that property rights are protected and the negative impact of a wind farm is minimized. He said that with these two goals as a backdrop, he will return to the themes that he has been discussing for the past two hearings. He will begin with the issue of the Manlove Gas Storage Field. He said that as the Board knows, he and his wife live in

the Manlove Field and they believe (as do many others in Newcomb Township) that wind turbines should not be allowed in the Manlove Field. He said that as he has explained the Manlove Field constitutes a unique situation in the County and consists of many miles of high-pressure gas pipelines, numerous injections wells, and storage tanks. He said that because of the extensive system of underground high-pressure pipes the Manlove Field represents a far different situation than the more common low-pressure gas lines that feed your house. He said that simply put, any damage to high-pressure pipeline, well-head or tank is a major event.

Mr. Schildt stated that he has already given the Board a letter written by John Jay, Chief of the Cornbelt Fire Protection District that certifies the increased risk posed by locating commercial wind turbines in the Manlove Field. He said that the Cornbelt Fire Protection District covers about half of the Manlove field including the portion in which he and his wife live. He said that in Chief Jay's letter he states that his department cannot fight fires over 110 feet in the air and that any uncontrolled fire within the Manlove Field will pose increased risk to the surrounding area.

Mr. Schildt stated that as far as he has been able to determine, the situation that is faced with the Manlove Field is unprecedented and it seems that no one knows for sure how the two technologies, wind turbines and gas storage fields, will interact or even if they are compatible and he has not found any studies that examine this combination. He said that he asked the manager of the Peoples Gas Manlove Facility if he knew of any studies and he indicated that he did not. Mr. Schildt stated that this is why Chief Jay's comments are so important because it lets us know one thing with certainty, an uncontrolled fire in the Manlove Field poses increased risk and as he said before he doesn't want to be a guinea pig in this experiment.

Mr. Schildt stated that he was pleased to see that a setback of 1,200 feet from a pipeline and 1,600 feet from a tank had been added to this version of the amendment. He said that he believes that this is a positive development that will help protect the residents of the County in general however he does not think that these setbacks are sufficient to provide the needed protection in the case of the Manlove Field. He said that the reason is that 1,200 feet is less than the known potential debris field of a turbine failure because a commercial wind turbine is very heavy weighing many tons. He said that according to the specs that he has just the rotor for the Vestas V82-1.65 MW turbine weighs 43 metric tons and if a blade detaches and hits a well head or penetrates the ground and punctures a pipeline the results could be disastrous. He said that even though two of the examples he presented had debris fields of 1,600 feet those turbines were less than 400 feet tall and we really have no idea how large a setback would be required for a 500 foot turbine, which is one reason why we need to limit turbine height to 400 feet. He said that there is essentially no data available for the effects of risks posed by a 500 foot turbine.

Mr. Schildt stated that it is important for the Board, the members of the ZBA, to understand that the Manlove Gas Storage Field consists of an interconnected network of high-pressure pipelines and injection wells. He said that it is a complex rather than simple structure and what might be a relatively minor failure of a normal gas line can be a very serious event in the Manlove Field. He said that this is why the increased risk of damage caused by a turbine failure or fire is unacceptable to he and his wife and this issue must be resolved.

Mr. Schildt stated that in Mr. Hall's cover letter for the current draft he indicates that "Self-destruction of wind turbines as reported in articles submitted in the public hearing seems exceedingly rare..." Mr. Schildt stated that he disagrees with this assessment and asserts that catastrophic turbine failures are not exceedingly rare. He said that an exceedingly rare event is something that almost never happens such as an airplane hitting your house and because it is exceedingly rare we do not build houses to withstand the impact of an airplane. He said that in contrast a severe turbine failure is not exceedingly rare, uncommon, yes, exceedingly rare, no. He said that there are many examples of turbine failures and he has already presented news stories and photos that describe just a few and although we do not typically guard against exceedingly rare events we often guard against uncommon ones, for example, we put guard rails up to prevent people form going off the road where there is a steep embankment. He said that because of the extremely serious consequences that could result form a turbine failure in the Manlove Field it makes sense to prohibit them, in other words, it makes sense to put some "guard rails" around the Manlove field to prevent serious harm.

Mr. Schildt stated that to lend a bit more credence to his assertion that turbine failures are not exceedingly rare he will present another example. He said that interestingly, this turbine failure occurred only last Friday, March 6, 2009, in Altona, New York and resulted in the complete collapse and catastrophic destruction on one 392 foot turbine and damage to another. He said that he has included several articles about it and as the caption for the two photos shows, the turbine that collapsed was less than one year old. He said that the entire wind farm is less than a year old with construction beginning in June of 2008, according to the developer's website. He said that the developer of the wind farm is Noble Environmental Power. He the following quotes from the news stories:

> "Residents in the area told News Channel 4 they heard what sounded like a large explosion and said that loud noises lasted for several minutes. Others equated the sound to an earthquake and speculated one of the company's large windmills may have thrown a blade. Another local resident told News Channel 5 that she could see flames coming from Noble."
>
> "Mike Fellion flew over the wreckage Saturday morning and was amazed to see that pieces of the structure appeared to have been thrown "about a quarter-mile away.'"
>
> "As the preliminary investigation continues into how a massive turbine suddenly collapsed, Nobel officials said this week that the entire wind park experienced a loss of power Friday and that two of its 65 turbines apparently malfunctioned."
>
> "Each General Electric turbine is equipped with a system that is supposed to immediately shut down during power outages."
>
> "Data suggests an unspecified wiring abnormality kept two turbines running and likely contributed to the collapse."

Mr. Schildt stated that there are three key points about these failures: 1. the turbines were new being less than one year old so the failures were not a result of old technology; and 2. the wind farm in which they were located consists of 65 turbines and two failed. This is a failure rate of more than 1 in 33 at this wind farm and as he has said a severe turbine failure is not an exceedingly rare event; and 3. notice that the estimated

debris field exceeds 1,200 feet. He said that because of the possibility of such a failure commercial wind turbines do not belong in the Manlove Field, the risks are too great.

Mr. Schildt stated that at this point he is speaking to the ZBA directly. He said that he has come before the ZBA three times requesting their help because he and his wife are seriously concerned about this issue because they live there.

Mr. Schroeder asked Mr. Schildt if he was aware that his area is not being considered for a wind farm although the Board realizes that Mr. Schildt's area is a danger area.

Mr. Schildt stated that he was not aware of that.

Mr. Schroeder stated that there are three areas identified for the proposed wind farm and not one of those areas is near him.

Mr. Thorsland requested that Mr. Schildt complete his comments and then he will ask the Board if they have any questions for Mr. Schildt.

Mr. Schildt stated that in Mr. Hall's cover letter he states that "It is difficult if not impossible to actually define the Manlove Gas Storage Field for such a purpose because the actual geologic structure that is the principal component of the gas storage field is thousands of feet deep and quite extensive." and Mr. Hall suggests the use of setbacks from the injection wells as an alternative approach. Mr. Schildt stated that the Manlove Gas Storage Field is easy to define because it is covered by gas storage easement agreements and these easements are recorded with the title work for each parcel of land in the field. Thus, the Manlove Field can be identified by the gas storage easements and this approach is easy to specify and easy to verify therefore he urged the Board to use this approach to prohibit commercial wind turbines within the Manlove Gas Storage Field. Mr. Schildt stated that if for some reason this approach proves to be unworkable he is willing to consider the use of setbacks from pipelines, injection wells, and tanks as a means of prohibiting commercial wind turbines in the Manlove Field, and of course, a much larger setback is needed. He said that he is willing to work with Mr. Hall in this regard if he thinks that his input would be helpful but the Board needs to be aware of one potential trouble with using setbacks. He said that under the current agreements Peoples Gas can install a new pipeline or injection well at any time within the Manlove Field and it is not clear that the County currently has regulatory authority over the placement of these new pipelines or wells. He said that if it doesn't then even if the turbines are set back from existing pipelines and wells new pipelines or wells could be placed closer to a turbine than the required setback. He said that no matter what approach is used some resolution to this issue is needed.

Mr. Schildt stated that at this time he would like to turn to setbacks from non-participating dwellings. He said that it is still his view that 1,200 feet is far too short and as he explained last time several jurisdictions have used ½ mile setbacks, the Champaign County Farm Bureau survey results clustered around ½ mile, and Trempealeau County uses 1 mile. He said that he again recommends using at least a one mile setback to non-participating dwellings and as far as he is concerned the setback to a participating dwelling can be shorter if agreed to by the owner. He said that he does not see how having a one mile setback to a non-

participating dwelling presents much of a restriction to the wind farm developer. He said that before he concludes his testimony it is important to point out that there are two types of non-participating landowners. He said that the first has land on which a turbine could be placed but for one reason or another the landowner does not want one. He said that the second owns land that is either unsuitable for a turbine, perhaps because it is low ground, or because the land lies just outside the border of the wind farm. He said that in either case, the rights of both types of non-participating landowners must be protected and it is not proper to subject non-participating landowners to increased risk against their will or to diminish the quality of their lives. He said that the best way to avoid doing so is with adequate setbacks and he again suggested at least one mile.

Mr. Schildt stated that he does not know if a wind farm will be sited in Champaign County but if one is it will significantly alter the landscape and its presence will be felt throughout the area. He said that it will also represent what many will find to be a life changing event and ultimately it is us, the citizens of the County, that will be living with the consequences.

Mr. Thorsland asked if staff had any questions for Mr. Schildt and there were none.

Mr. Thorsland asked the Board if there were any questions for Mr. Schildt.

Mr. Schroeder stated it is his understanding that Mr. Schildt's area is not involved in any of the three proposed wind farms.

Mr. Hall stated that Mr. Schildt has his own concerns and if the Ordinance is not made as he recommends his concern could still come to fruition and with his concern his point is well taken.

Mr. Schildt stated that he appreciates Mr. Schroeder's information but he has been told different information in that potentially there is a proposed wind farm coming to the northwest portion of the County. He asked if this proposal has been taken off the table.

Mr. Hall stated that such a proposal has not been placed on the table to date.

Mr. Schildt stated that currently there is a test tower which is just over the county line which is about 4 miles west of where he lives.

Mr. Thorsland stated that four miles from his home is not in Champaign County.

Mr. Schildt stated that this is true but he is basing his information on what he has been told. He said that if there is no wind farm proposed in his area then there would be no harm in removing the Manlove Field from the possibility and he would request that the Board do so. He said that he would not be here requesting such if it wasn't a big concern. Mr. Schildt submitted his written statement as a Document of Record.

Mr. Thorsland asked the Board if there were any additional questions for Mr. Schildt and there were none.

Mr. Thorsland called Ms. Sherry Schildt to testify.

Ms. Sherry Schildt, who resides at 398 CR 2500N, Mahomet stated that the test tower, a meteorological tower that wind companies use to gauge the wind, was constructed about two weeks ago. She said that because the test tower was so close to their property, although in Piatt County, she called Piatt County to find out information about the tower. She said that the Piatt County Zoning Administrator told her that Midwest Energy intends to put approximately 70 wind turbines in Piatt County and 30 in Champaign County therefore that is why she and her husband have the idea that they will come across the line into the Manlove Gas Storage Field.

Ms. Schildt stated that after reading the summation on Page 4 of the Supplemental Memorandum dated March 6, 2009, of her concern regarding setbacks from non-participating dwellings, she realized that perhaps she did not communicate clearly enough at the last hearing. She said that it is her firm conviction that any minimum turbine setback from non-participating land should be measured from the property line of that land and not from a dwelling on that land. She said that she has two reasons for this and the first is that a non-participating land owner should not be forced to have any of his or her land within the hazard area of a wind turbine. She said that it was previously mentioned that 1300 feet is the safety zone required by at least one turbine manufacturer for its employees. She said that if the 1200 foot setback to a non-participating dwelling in the draft ordinance stands, then all of that area and beyond would be potentially unsafe. She said that they are expecting their first grandchild in September and they have begun dreaming about swing sets and sand boxes and if they had a home whose back yard happened to come within that 1200 feet she would certainly not want her grandchild to be playing there. She said that she would not to be gardening or relaxing out there herself. She said that this was her sole concern last time.

Ms. Schildt stated that the second reason why setbacks should be measured from the property line, and that is that every property does come with wind rights, and at some point the owner may want to exercise those rights. She said that a 400 or 500 foot wind turbine as close as 1200 feet could interfere with those rights. She said that a non-participating landowner should not be forced to yield his wind rights because of a turbine on an adjacent property. She said that it is not right for one landowner to take the wind rights of another and she expects the issue of wind rights to become quite contentious in the future.

Ms. Schildt stated that her second point is in regards to the rather dismissive comments made at the last hearing that because of the larger setbacks required in some Wisconsin townships, Wisconsin was "out of control" and had "locked themselves out" of wind development. She said that she was born and raised in Wisconsin and most of her family is still there so she would like to defend her beloved home state. She said that the more stringent township ordinances are the result of at least one year's worth of serious study of the issues, governed by a concern for the health and safety of their citizens. She said that according to the American Wind Energy Association, four new wind projects came online in Illinois in 2008, with a total of 148 turbines and total power capacity of 215.7 MW. She said that by contract, in Wisconsin four new projects also came online in 2008, but with a total of 215 turbines (67 more than in Illinois) and a total power capacity of 314.85 MW (126.15 more MW than in Illinois). She said that clearly the larger setbacks have not prevented wind development in Wisconsin.

Ms. Schildt stated that her final point is a warning of sorts. She said that local taxing bodies such as school

districts, who are looking forward to increased tax revenue through commercial wind developments should be aware that the Illinois law that regulates wind energy property assessment (35ILCS 200/Art.10 Div.18) has provisions that apply only for assessment years 2007 through 2011. She said that since we do not know what will happen in 2011 any projections of revenue are tentative and short-lived at best. She said that whatever property tax revenues might be gained from a wind development could be offset by a decline in property values caused by the negative impact of the turbines. Ms. Schildt submitted her written statement as a Document of Record.

Mr. Thorsland asked if staff had any questions for Ms. Schildt and there were none.

Mr. Thorsland asked the Board if there were any questions for Ms. Schildt.

Ms. Capel asked Mrs. Schildt if she knew what the setbacks were for the wind farms in Wisconsin.

Ms. Schildt stated no.

Ms. Capel asked Ms. Schildt if the wind farms were located in any of the counties which had the larger setbacks.

Ms. Schildt stated that they are in Fond du Lac County and Dodge County and Fond du Lac County does have a very stringent ordinance. She said that it is her understanding that one of the reasons why the ordinances were produced was because of the serious consequences that people were experiencing based on shorter setbacks and the counties wanted to protect their citizens from those consequences. She said that there was numerous testimony regarding the noise created by the turbines and the counties wanted to address this issue for their citizens.

Mr. Hall stated that Trempealeau County has more hills and valleys which tends to more focus the noise which makes it more problematic.

Ms. Schildt stated that this is not the case in Fond du Lac County. She said that Trempealeau County does allow participating landowners the opportunity to waive their stringent restrictions therefore if a developer desires to place a turbine on a property they can work with the landowner.

Mr. Thorsland asked the Board if there were any additional questions for Ms. Schildt and there were none.

Mr. Thorsland called Mr. John Chandler to testify.

Mr. John Chandler, representative for Invenergy, stated that he is only present at tonight's meeting to answer any questions that the Board or staff may have.

Mr. Thorsland asked if staff had any questions for Mr. Chandler and there were none.

Mr. Thorsland asked the Board if there were any questions for Mr. Chandler.

Mr. Roger Miller asked Mr. Chandler if Invenergy would pursue development in an area where there were underground gas storage fields.

Mr. Chandler stated that he is not familiar with the gas storage fields therefore he is not qualified to answer Mr. Miller's question.

Mr. Miller asked Mr. Chandler if, after hearing testimony regarding the gas storage fields, is he concerned about developing in these areas.

Mr. Chandler stated that after hearing testimony regarding the gas storage field he would personally be concerned about placement in these areas and would certainly want safe setbacks.

Mr. Miller stated that he was hoping that Invenergy would realize the imminent danger and not pursue developing in an area such as the Manlove Gas Storage Field.

Mr. Chandler stated that Invenergy has to maintain a certain amount of liability insurance, $5 million per incident, because they are aware that unexpected things do occur. He said that generally they think in terms of the construction time period when heavy equipment and ditches are present on the properties because they do not want kids playing in those ditches. He said that if during the operational phase something would happen they do not want any exposure or liability therefore if it was up to him he would stay away from a gas storage field. He said that he would not know why a company would want to develop in an area that already has potential hazards.

Mr. Schroeder stated that he appreciates the interest in the County for the development of wind farms and 70 years ago he turned on the first electric light bulb in Champaign County. He said that taking coal and gas out of the ground to produce electricity cannot go on forever therefore the only alternative that we have is the wind and we better start using it. He said that there are going to be a lot of people who are angry but it is better to have that light switch work than not.

Mr. Chandler stated that he does not know the format of these meetings because he is usually out talking to the landowners rather than attending meetings but he believes that all of our energy starts with the sun and the next two derivatives off of that are wind and water. He said that in the Midwest we do not have great solar resources but we do have wind and water. He said that if we were down in the southwest in the desert we would just cover the land with solar panels and everything would be great but in this area we have great wind resources. He said that turbine technology has advanced incredibly over the years and we are now at about a 90% reduction in the cost of generating electricity from wind. He said that every year the wind turbines are getting more refined and efficient and hopefully safer too. He said that he lives in Minneapolis and he drove past the wind farm on Highway 9 and he could actually hear the turbines. He said that he went to the observation post where there was a turbine within 1,000 feet and he could actually hear it which surprised him because he is not used to being able to hear them. He said that he then drove up to the site at Grand Ridge Wind Farm located north of Bloomington and he could not hear those turbines until he got right up next them at which point he could hear the "swoosh" of the blades. He encouraged anyone who has a

concern about noise to go up to the Grand Ridge Wind Farm and listen to them.

Mr. Thorsland asked the Board if there were any additional questions for Mr. Chandler and there were none.

Mr. Thorsland called Mr. Steve Burdin to testify.

Mr. Steve Burdin, who resides at 2527 CR 455E, Mahomet stated that before he gets started he would like to say that the members of this Board are real trailblazers because if he remembers the history correctly rural electrification was not without alot of controversy because people were actually scared of electricity. He said that some of the concerns at that time are very different but in a way very similar to what we are hearing today. He said that in a lot of peoples minds a lot of the issues are unknown therefore it is hard to talk about risks when you are talking about unknowns. He said that it is almost an exploration of how comfortable each of us are with the unknown which is not to say that there are valid concerns. He said that he would like to address setbacks, fires and blade failures during his testimony.

Mr. Burdin stated that setbacks are an attempt to mandate a safe distance to allow operation without disturbing the safety or health of surrounding areas beyond an acceptable level, while providing reasonable protection should a problem arise. He said that we ask ourselves at what point should we be more worried about debris from a turbine that has experienced some structural failure, presumably in high winds, versus debris from our neighbor's yard or our own. He said that he has seen some interesting things blow by in the wind including an entire steel storage shed rolling across his yard. He said that if a turbine disintegrates due to a failure what is reasonable to expect in terms of distance and the sizes of the pieces. He said that a 100-pound object could travel farther than a multi-ton blade or it could fall straight down. He said that it depends upon many factors including size, shape, wind resistance and more and this is difficult to predict or model without restricting the possibilities in the model.

Mr. Burdin stated that with respect to health motivated setbacks we simply do not know if large setbacks are warranted and this is mainly due to the conflicting information we find out there. He said that some sources deny the very existence of problematic sonic emissions while others maintain their presence. He said that personally he would like to try to measure an existing installation unfortunately the difficulties reported in performing good measurements are not exaggerated because these measurements require special equipment, perfect conditions and exacting adherence to strict protocols so that they are comparable.

Mr. Burdin stated that the next thing he would like to discuss is fires. He said that turbine fires may seem terrifying and he is sure that they can be but all too often it seems we hear about fires that are equally terrifying such as railroad cars full of noxious chemicals, and buildings with people in them. He said that turbine fires are caused by lightning, mechanical failure, essentially overheating, and worker error or accident. He said that he has included two articles as references on the subject, sources submitted with written testimony, and quoted the following statement from *WhyWind.org* which was in response to a question about the requirement for extra services when a wind farm exists, "...one fails to find documented cases of fire fighters putting out fires in wind turbines either in Canada or the United States on a regular basis."

Mr. Burdin stated that we have heard that the fire departments cannot fight these fires but there is no indication that anyone recommends fighting a fire at these heights rather it seems that the strategy is to let the fire burn, while monitoring the ground for fires from materials that may fall to the ground. He said that falling debris can be carried by the wind and we have that possibility with other fires as well. He said that the fact that the debris is farther from the ground may actually help because the material may extinguish during its descent and this isn't farfetched at all because we rely on this all of the time as in the case of fireworks. He said that the sparks that we see in fireworks are commonly metal particles including magnesium and we rely on the fact that these particles will burn out before they hit the ground or another structure after we intentionally shoot them high into the air to ignite them. He said that he looked up physical data on a synthetic, fire resistant hydraulic oil for comparison purposes and it shows data such as the fire point but unfortunately this isn't a good indicator of the temperature of the burning material. He said that his guess is that it's not as high as magnesium which burns at 4000 degrees Fahrenheit. He said that you can also get an idea of the temperature of a fire by its color. He said that in either case even if the material hits the ground burning there may or may not be a fire. In addition, how do you predict the size of droplets of burning oil or melted fiberglass resin or how likely are they to reach the ground still burning. He said that he is not making these points just to be on one side of the issue but all of these are variables and many more make this unpredictable.

Mr. Burdin stated that there is one thing that he believes has not been mentioned regarding this subject and that is if a wind turbine is erected and later it turns out to be in a location that seems particularly catastrophic should a fire occur, a fire suppression system can be installed to contain fires. He said that a company called FireTrace manufactures suppression systems that work automatically with no electricity to deliver extinguishing media directly where there's a fire and one of the applications they list is indeed wind turbines.

Mr. Burdin stated that the last thing that he would like to address is blade failures and we have heard quite a bit about this as well. He said that on one hand we hear about ice throw and conversely we hear that sensors stop turbines whose blades may be iced or that heaters keep ice from accumulating on blades installed in ice-prone regions. He said that we hear about blade detachment and many questions arise such as: How likely is this really and how far would blades land from the turbine; and how likely is it that they'll remain in one piece; and how big would pieces be? He said that there are many factors that make this difficult to determine. He said that there may be some help in this area but not in predicting the dynamics of blade destruction or size distribution of pieces. He said that Sandia National Labs hosted an annual conference on reliability of turbine subsystems and the last conference, held in May, 2008, was on turbine blades. He said that they are compiling a national database and show data from five wind farms with over 425 turbines. He said that the data shows some interesting things and some blade wear and tear is simply leading edge erosion and trailing edge splitting which are both from cutting through the wind continuously. He said that there is some delamination occurring and discovery of some voids in the composite structure, so there is clearly room for manufacturing and materials improvements. He said that one farm reports lots of lightning strikes but only two blade replacements while others report blade replacements too. He said that it is an interesting study with more detail than he mentioned tonight but it is worth looking at.

Mr. Burdin stated that his main message is that we must be realistic. He said that we do not opt to live in caves instead of houses because we are overly worried about something man-made falling from the sky nor

do we stop transporting things by railroad. He said that we are human and everything that we do has an uncertainty and it is not realistic to plan for the exceedingly uncommon. He said that we must trust each other to some extent as we do in life each day. He said that it is reasonable for us to expect that turbines will be improved and maintained to minimize the unknowns that we may worry about today. Mr. Burdin submitted his written statement as a Document of Record.

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

Mr. Thorsland asked if the Board had any questions for Mr. Burdin and there were none.

Mr. Thorsland called Ms. Kim Schertz to testify.

Ms. Kim Schertz, who resides in Hudson, IL desired to address the comment that was made to Mr. Schildt regarding that no wind farms were planned in his area therefore he did not need to worry about any dangers. She said that when McLean County first opened their county to turbines there was one wind farm planned and that same wind farm now has seven phases. She said that Livingston County has plans for over 4,000 wind turbines and that sort of thing does not happen until the county opens itself up for the first project. She said that she attended a recent wind conference and they gave the average number of turbines per wind farm and that number was between 100 to 200 wind turbines. She said that the numbers of how many wind turbines were currently in Illinois and how many are planned were discussed. She said that if there are 200 turbines on a wind farm there are 21,000 turbines planned for Illinois therefore Mr. Schildt should not be concerned about his area because once the county opens itself up to this development there will not be a square inch that is not applied for.

Ms. Schertz stated that in response to Mr. Burdin's comments, the blades are up to seven and one-half tons now and there have been major problems with shredding and these blades rarely stay together and fall down by themselves. She said that when they are hit by lightning they explode and when they start delaminating they fall apart. She said that the blades have four different skins that are glued together by resin and there is at least a piece of metal shrapnel in the middle which is the lightning protection. She said that if the blades are operating at their maximum which is 188 miles per hour that's the speed in the wind that is being discussed however when you have them spinning out of control it is unknown how fast the blades are turning.

Ms. Schertz stated that she would have to agree that the setbacks have to be set from the property line and not from the wall of the residence. She said that if you allow wind companies to use people's property for their noise buffers then you violate the rights of every property owner affected and you violate the Illinois Pollution Control Board standards. She said that this is a property rights issue and if you measure from the wall of residence you are essentially restricting the resident from the ability to use his own property, preventing him from building a future addition to his home, preventing him from using his own barns and outbuildings without protection from unwanted noise spreading over onto his yard. She said that she does not think that waivers discussed at the last meeting for non-participants is the answer because people move to the country for the quiet rural atmosphere not a waiver telling them it's okay to allow more noise pollution on their property as long as they sign off on it. She said that the answer is a setback of a mile or more from a

property line which is a setback which protects your citizens from unwanted turbine noise, not one that protects the commercial interests of a wind developer at the expense of the existing property owners.

Ms. Schertz stated that there are several problems with using the Illinois Pollution Control Board rules and as you well know there is no active enforcement agency. She said that violations would have to be handled by the county or by the individual citizen. She said that one attorney told her that for an individual citizen to effectively file a complaint, realistically, it would cost about $100,000 to present a well-prepared legal defense. She said that another problem is that rules were made about 35 years ago for noise problems in suburban areas not rural country sides. She said that Champaign County is trying to impose rules for metropolitan areas onto a different geographic area completely. She said that another problem is using the classification of agricultural land as a C receiver and the problem with that, as she understands it, is that any time a residence is placed in the middle of farm ground that entire parcel becomes a Class A or residential receiver and must comply with the stricter residential rules at points on that property. She said that the biggest problem with using the Illinois Pollution Control Board rules is their use of the A-weighting which averages all of the frequency levels together. The flagrant noise violations which people complain about whenever a wind farm moves in occurs at the lowest individual hertz levels and some of those levels are beneath the level of human hearing. She said that she believes the Pollution Control Board only addresses audible levels and she has not heard of a case where manufacturers of turbines have released their sound power data from those lowest unweighted hertz levels because she believes they know those are the ones which violate the most and cause people the most distress. She said that the sound issue is so complex that she would implore the Board to hire a sound expert to advise them and if they choose not to they are essentially allowing the wind developers to write the laws for Champaign County as they have already done with most of the Model Wind Ordinances around the state, at the expense of the residents.

Ms. Schertz stated that she has taken several noise readings near Ellsworth and in the Twin Groves wind farm and when she was a few miles away from the wind farm she got nighttime readings between 24 and 30 decibels and this was about 10 p.m. with a 9 to 14 MPH wind. She said that as she got nearer to the general area of the wind farm the readings nearly doubled shooting up to 50 decibels. She said that there is a reason that other countries around the world, who have had many more years experience with turbines sited too close to homes, are now recommending setbacks of more than a mile from any residence. She submitted a transcript from the Logan County Zoning Board hearings so that the Board can read for themselves what some of the folks living underneath the turbines in Ellsworth had to say about the turbines and how the developers are to work with once they have invaded your county. She said that Nancy Knittle testified about how Horizon dealt with her noise complaints and she said, "I wrote a letter to Bill Whitlock, whom is with Horizon, and I sent a copy of that letter to the home office in Texas. I received no reply. This went on and I made several contacts. I called. I left messages. In five months, I tried to contact them twelve times and we have had only two responses and then somebody did not show up. It has been extremely stressful."

Ms. Schertz stated that another lady testified at the Logan County Zoning Board hearings and testified that she took readings at the wall of their home and it registered 90 decibels. She said that her property has three turbines near it and the closest one is 1,500 feet away from the north wall of her home and she gets additional noise from a substation which was placed 870 feet from her property line.

Ms. Schertz stated that at the last hearing Steve Burdin told the Board about a landowner who was quite positive about the turbines and had indicated no problems with them. She said that she does not find it surprising at all that the landowner's had not experienced as many negative effects or was unable to talk about them considering her home was more than ½ mile from a turbine. Ms. Schertz stated that she wonders if Mr. Burdin is aware that anyone signing a lease is under a Noise Easement and a Confidentiality agreement, also commonly known as a gag order which prevents them from saying anything negative about a developer under threat of being sued by them for breach of contract. She said that the same clause appears in most Good Neighbor Agreements. She said that it will be very hard for the Board to drive over to a wind farm and get the actual truth about any problems because the majority of the people that you are trying to speak to have signed those leases and they are bound to not say anything negative. She said that the problem that they have is that they signed a lease before the wind farm was built and the problems that they have to deal with occurred after therefore leaving them no recourse.

Ms. Schertz stated that she found Mr. Kenn Davis' testimony interesting because he indicated at the last hearing that each wind turbine takes 2,000 to 2,500 craftsman hours to get the turbine into place and in previous testimony in McLean County he stated that he figures decommissioning the same way. She said that Mr. Davis indicated that he understood how much it cost to put the wind towers up and it will take just as much to take them down. Ms. Schertz stated that based on the average pay scale which she believes was stated as $45 per hour, non-union, the labor alone for one turbine would start at a minimum of $90,000 and this would not include crane transportation, crane rental, environmental disposal of nearly 21 tones of non-recyclable fiberglass blades, hauling expenses, etc. She said that in regard to decommissioning she believes that Champaign County will be taken to the cleaners because the proposed $125,000, in the form of a letter of credit, will be inadequate. She said that there has never been an estimate, that she is aware of, to remove the entire 350 yards of concrete and there has never been an estimate that she is aware of to figure in the astronomical cost of bringing back in a 450-600 ton crane to do that work. She said that Mr. Davis also testified that, to his knowledge, no one has ever taken down a tower in the United States therefore she would caution the Board to carefully consider the fact that the decommissioning of these thousands of acres of steel dinosaurs will ultimately fall to them and the costs discussed in most decommissioning agreements are woefully inadequate to even begin to address this expensive venture which really has never been done.

Ms. Schertz stated that she also takes issue with Mr. Davis' comment at the last hearing in which he stated that a wind farm will take only approximately one to one-half acre out of production. She said that there are several problems with this and one of the major problems is that the reduced yields due to severe compaction. She said that in signing a lease which can potentially last for 50 years with the rights to renewal in it the landowner has essentially given the developer the right to bring back that 600 ton crane any time during the life of that project and roll it right back across his land. She said that because the cranes are so massive they roll them across the farmland in a straight line from turbine to turbine causing what is sometimes permanent compaction of the soil reducing yields and ability to actively farm larger areas of the farm. She said that another issue is the cutting, crushing and outright removal of field tiles from an active farm because the weight of the equipment crushes tiles and many drainage tiles within a certain distance of the turbine are removed as per the lease which often causes drainage problems for the entire farm and not just the area immediately around the turbine, further reducing yields.

Ms. Schertz stated that Mr. Burdin discussed firework's debris in comparison to wind turbine debris. She said that she has been to many fireworks displays that have been cancelled due to drought conditions therefore the Board should think about what one spark from a turbine will do on a hot August day during a drought period with dry corn sitting in the fields around these turbines.

Ms. Schertz stated that the crop reduction issue that she is most familiar with is the one of inability to spray a field by air. She said that you cannot get a crop duster in to spray for spider mites, aphids or soybean rust and she is submitting spray statements from five central Illinois pilots who state their position on spraying in and around wind farms. She said that most stated that they reserve the right to refuse to spray a field in or near a wind farm when it's just too dangerous for a pilot to do so and most say that if a field can be sprayed it takes more time to plan, more time to spray and they have to carry a lighter load which means there is more time involved in spraying. She said that the pilots indicate that they will charge a 50% increase in crop spraying within a certain distance from a wind farm, some within a mile, some within a half mile.

Ms. Schertz stated that Chuck Holzwarth, last year's president of the state association testified, "Aerial application can be done in maybe ten percent of the fields inside those wind farms. I don't know where the information came that you can operate an airplane inside these wind farms but none of my airplanes will go in there. There are a few cases where there is a field here and there that we can get to but it isn't worth somebody's life to get in there and try to do that." She said that at the Livingston County hearing Scott Peterson from Pontiac testified, "once these wind towers go up, if you have property that is located within a grouping of or within close proximity to, we will not risk our lives to go in there and spray your crops. Now I know it's been brought to attention that a lot of people have said, yeah, once they put them up, we'll call him and he'll come anyway but I am here to tell you that I'm not coming when you are in need of somebody to save your crop."

Ms. Schertz stated that her concern is with the non-participating landowner who may have a field within that one mile area because if he cannot get his field sprayed due to his neighbor's right to put a turbine who will compensate that farmer for the loss of 80% of his crop due to Asian Rust. She asked where does the right of the landowner, who puts up a turbine, end when it infringes on his neighbor's rights for noise violation, crop protection, etc. She said that it greatly annoys her when she hears developers state that they are working with our industry because they have ignored most of our needs. She said that the developers do not line the turbines up in a straight pattern, they do not put lights on the turbines, they do not put hazard markings on the turbines and they refuse to notify landowners and farmers of the possibility that their ground may no longer be sprayed by air. She said that they have even pushed over prior FAA rules which used to require any obstacle over 150 feet to be lighted. She said that Scott Peterson testified that the developers put up test towers up as high as 196 feet to by-pass that rule therefore a crop duster that has been spraying a field for the last 20 years suddenly goes out to spray a field at four o'clock in the morning and they come up on a test tower that is not marked or illuminated. She said that in a 2007 FAA Advisory Circular, they decided that their goal would be to only light the outside edge of a wind farm to show it as one large hazard to be completely avoided by pilots. She said that they eliminated the daytime lighting, they eliminated the hazard marking, and they downgraded the previous bright white paint down to a non-reflective white or gray, not the bright white paint which they used as an excuse for eliminating all the daytime lights in the first place. She said that she cannot believe that the Board is even seriously considering the line in your ordinance which

states that the minimum lighting requirements of the FAA shall not be exceeded and unless otherwise required by the FAA. She said that the Board is giving away their right to request more lights for the safety of the pilots and businesses in your area. She said that she just sat in on a hearing at Minonk where a gentleman had received a Special Use Permit to operate a Heliport and he has since learned that his heliport will be surrounded by turbines so he petitioned the Board for lights on the three turbines nearest his landing area and was granted those lights. She asked the Board if they realize that if they leave that wording in the *Ordinance* it will effectively prevent you from taking any additional measures to ensure safety for your pilots. She said that she finds that absurd, even more so considering that the University of Illinois has its own airport and teaches flying to inexperienced students.

Ms. Schertz stated that there are so many issues which she does not have time to even begin to adequately address. She said that there is the Ben Hoen property report which states that property values do not decline but then he gives a chart which shows a plus or minus degree of accuracy of fifteen homes within ¼ mile view shed of a turbine. She said that the Hoen report excluded the property values in the area of the Palm Springs, California turbine site even though setbacks from homes there are one mile. She said that there is the real estate appraisal study from Texas which someone had mentioned in an earlier hearing which shows property devaluation of up to 30%. She said that the Iowa State University Center for Agricultural Law and Taxation report states, "Most recent anecdotal data from Illinois indicates that assessed value on farmland is dropping approximately 22-30 percent on farmland that is near land where wind turbines have been placed."

Ms. Schertz stated that there is the State Assessment Tax upon which all these wonderful dollar amounts are promised to County Boards and School Boards which is set to expire in 2011, about the same time these proposed wind farms are set to come online. She said that she has no doubt that there are hundreds of wind lobbyists down in Springfield trying to change that law to a tax rate based on actual production, not rated capacity. She said that at last year's wind conference in Bloomington she heard Joel Link of Invenergy comment on the fact that Illinois has the highest tax rate and hopefully our lobbyists will have that taken care of by 2011.

Ms. Schertz urged the Board to protect the citizens of Champaign County with meaningful setbacks and not allowing the county to be run roughshod over by wind developers who are trying to fast track these ordinances through your Board trying to get you to sign on the dotted line before you have time to catch your breath and thoroughly research the consequences of your actions.

Mr. Thorsland asked if staff had any questions for Ms. Schertz and there were none.

Mr. Roger Miller asked Ms. Schertz how many decibels are created by the wind blowing through an oak tree.

Ms. Schertz stated that there is no existing tree that stands at a height of 500 feet and that is where the noise violations occur. She said that the noise violations occur when you have 9 to 15 miles and hour on the ground but 300-500 feet in the air there may be strong winds and that is where you get the severe noise violations. She said that the wind developers will tell you to go out to a wind farm site on a windy day and listen but the problem is that at night when the ground wind speed drops and the higher wind speeds don't you have more severe noise violations.

Mr. Miller stated that he does not intend on living 500 feet in the air therefore on an average windy day how many decibels does a 30 MPH wind produce when it is blowing through trees or around roof tops and buildings.

Ms. Schertz stated that this is exactly why the County needs to hire a noise expert to answer these questions. She said that she took preliminary readings because she wanted to know the background noise but it seems to her that this Board has the cart before the horse if they want to do a noise ordinance but only after the turbines are up to obtain ambient noise level readings. She asked why this Board is not acquiring ambient noise levels now so that they know what the current decibels are instead of after the fact.

Mr. Schroeder asked Ms. Schertz how many injuries or deaths from turbine failures have occurred and how many homes have been damaged from the turbines in these areas.

Ms. Schertz stated that Mr. Schroeder's question is a very good one but the disturbing fact is that no data or statistics are required to be turned into anyone. She said that there are some incomplete statistics out there but you pretty much have to take the developer's word because there is no reporting required. She said that she testified at a hearing in Tazewell County and she took a picture of a broken blade from Twin Groves and showed it to Mr. Whitlock and asked him if he considered this photo as a blade failure and he indicated no. She said that she has heard of cases overseas where blades have been thrown into buildings and through car windows therefore larger setbacks have been required but she does not know of a case where someone has been injured. She said that the ratios used must consider the phenomenal amount of wind turbines that are proposed for Illinois and their close proximity to residences but these are questions that the Board should require answers to before they allow these turbines to be built in your county.

Mr. Miller stated that it will be impossible for any developer to comply if the expectation is to have a one mile setback for each tower from a residence. He said that if you look at a map there is a good chance that there is going to be a residence within a section.

Ms. Schertz stated that this is a decision that Champaign County will have to make. She asked the Board if they are willing to make money, which is not guaranteed, for the turbines or are you willing to protect the people of the County who have been paying their taxes and being a good citizen for their entire lives. She said that it is her personal opinion that if this Board considers anything under one-half mile it is a slap in the face to your citizens. She said that she finds it hard to believe that the developers will not find a way around the setbacks because if they want it they could buy the property and go to the participating farm and put them in to the middle of their property but don't ask the non-participating landowner to be their noise buffer. Ms. Schertz submitted a written copy of her testimony as well as an entire packet of information, used as her sources, as Documents of Record.

Mr. Thorsland asked the Board if there were any additional questions for Ms. Schertz and there were none.

Mr. Thorsland called Mr. Daniel Cain to testify.

Mr. Daniel Cain, who resides at 2567 CR 2600E, Penfield stated that he is a landowner within the proposed Invenergy wind farm. He said that he does not understand why the property upon which the wind turbines are proposed is required to be rezoned from agriculture to commercial.

Mr. Hall stated that the proposal is to keep the property AG-1, Agriculture Zoning District with a wind farm overlay to provide for the Special Use Permit for the wind farm.

Mr. Cain thanked Mr. Hall for his clarification. He said that the second concern he has is about taxes. He said that if the turbines were to be decommissioned will the taxes be dissolved and if not who will have to make up for that money.

Mr. Hall stated that the decommissioning is only required when the structures are no longer being used. He said that it is not clear to him that there would be any taxes at that point.

Mr. Thorsland asked if staff had any questions for Mr. Cain and there were none.

Mr. Thorsland asked the Board if there were any questions for Mr. Cain.

Mr. Miller stated that it is good to have testimony from a participating resident as well as a local farmer. He asked Mr. Cain, as a producer, if he had any concerns regarding the wind turbines.

Mr. Cain stated that there should be enough ground rigs where chemical application can be applied. He said that he does believe that there are some helicopter pilots in the area that would spray in these areas.

Mr. Thorsland asked the Board if there were any additional questions for Mr. Cain and there were none.

Mr. Thorsland called Mr. Tim Polz to testify.

Mr. Tim Polz, Project Manager for Midwest Wind Energy, stated that there seems to be some confusion on the wind power projects and where they are potentially going to be located in the county. He said that they are definitely looking at a project area that is indeed in the northeast portion of Piatt County and a very small portion of northwest Champaign County, close to the area where Mr. and Mrs. Schildt are residents. He said that their project is in its infancy stage and there is a lot of planning and work that has to be done. He said that one of the first things that they look at, in addition to whether or not the wind resource was adequate and the land use was compatible, was indeed the Manlove Gas Storage Field and it was determined that they would not locate wind energy facilities within that area. He said that the Manlove Gas Storage Facility is unique because it does have some above ground appurtenances but the below ground of the facility, from what he understands, is anywhere from 5,000 to 7,000 feet under the ground. He said that there are injection sites throughout the storage area and they would not propose any wind turbines within the area that contains those above ground injection sites or well heads and would indeed setback from those sites at a safe distance which is believed to be 1,200 feet from any injection site. He said that there would be a perimeter around the gas storage field, as it exists today, of about 1,200 feet. He said that someone mentioned underground high pressure gas lines and that is not something that is unique to the Manlove Gas Storage Field because

Midwest Wind Energy has done several projects throughout Illinois, Wisconsin and Nebraska and about half of those facilities have high pressure gas lines running through them. He said that they have successfully worked with the owners of those facilities to safely site wind turbines, access roads, construction pathways, and underground cabling around those underground high pressure gas lines. He said that what they typically see as the setback from those types of pipelines is approximately 1.1 times the height of the tower therefore to the extent what the *Ordinance* does not account for he would suggest that Champaign County incorporate something that is in line with what has been in done in other areas of the country and here in Illinois. He said that their Big Sky Wind Project, that is currently under construction is a 240 mega-watt project that is located in Lee and Bureau County and that project has approximately 5 high pressure pipelines running through the project area. He said that they have 114 turbines sited amongst those pipelines and they have worked with the pipeline companies and the counties to site the turbines and all of the facilities associated with the turbines so that they are at a safe distance and done in a correct manner. He stressed that they are in the preliminary stages of this project therefore if something were to come up as they work with People's Gas and they find that the two land uses are not compatible the wind power facilities would not be proposed within that area.

Mr. Thorsland asked if staff had any questions for Mr. Polz and there were none.

Mr. Thorsland asked the Board if there were any questions for Mr. Polz and there were none.

Mr. Schroeder moved, seconded by Mr. Courson to recess the March 12, 2009, public hearing for a five minute recess. The motion carried by voice vote.

The Board recessed at 8:35 p.m.
The Board resumed at 8:43 p.m.

Mr. Thorsland recalled Mr. Tim Polz to testify.

Mr. Polz stated that based on previous testimony a Board member requested the setback in Wisconsin counties that do have wind farms. He said that Midwest Wind Energy did develop two of the four wind projects in Wisconsin and they were in Dodge and Fond du Lac County. He said that in those counties the setbacks that were imposed on the wind farm projects, from non-participating residences, was three times the total turbine height. He said that when you base that measurement on the wind turbines that were constructed there it comes to just over 1,200 feet from non-participating dwellings. He said that those counties that are attempting to impose setbacks of one mile or greater from non-participating dwellings do not have any existing projects in them. He said that Wisconsin has a State Renewable Portfolio Standard therefore they have placed a very high priority on developing wind energy and developers are having a hard time in meeting those standards and utilities are having a difficult time in meeting those standards. He said that as a result of these standards there is a movement in the state legislature to take the zoning authority on wind energy projects out of the hands of the local community and give it to the State of Wisconsin Power Commission. He said that they would have uniform siting standards that would be imposed by the state on a state level by a state agency and if the local townships or counties tried to impose a more stringent setback or rules or regulations on wind energy development it would be kicked immediately to the public service

committee.

Ms. Capel stated that Kim Schertz and Sherry Schildt were both concerned about setbacks from non-participating property lines were more appropriate rather than from non-participating dwellings. She asked Mr. Polz asked if he had a preference between the two.

Mr. Polz stated that he will not discuss what he personally believes is proper but he will discuss what Midwest Wind Energy has experienced in other counties. He said that the setbacks from dwellings from dwellings has always been just that and not from property lines or anything else. He said that there is always a separate setback from a property line or a road way or any other land use that requires a setback. He said that typically what they have seen is 1.1 times the height of the tower from non-participating property lines with the possibility of obtaining a waiver and placing them closer to the property line. He said that his company makes a practice of not siting turbines closer than about 200 feet from any property line even if there is a waiver because if a blade hangs over an adjacent property line there are some property rights issues involved. He said that there are separate setbacks from property lines and from homes.

Mr. Thorsland asked the Board if there were any additional questions for Mr. Polz and there were none.

Mr. Thorsland called Michael Jarboe to testify.

Mr. Michael Jarboe, who resides at 2792 CR 2400N, Penfield stated that he lives in the southeast corner of Section 33 in Compromise Township East which is right in the middle of this project. He said that he attended the February 12, 2009, public hearing and the big discussion at that time appeared to be the setbacks although the memorandum indicates that the setback for participating landowners will be 1,000 feet and 1,200 feet for non-participating landowners. He said that he believes that the proposed setbacks appear to be pretty average and adequate because before it was indicated that the setback would be 1.1 times the height for the participating landowners and he felt that the language should be more specific. He said that they are developing new technology all of the time and the wind turbines could be no higher than 100 feet. He requested clarification of the industrial overlay.

Mr. Hall stated that it is not an industrial overlay but a wind farm overlay specifically to provide for the wind farm special use permit. He said that if the *Ordinance* is adopted the property will still be zoned AG-1 with a wind farm overlay and the only change is that the landowner can apply for a wind farm special use permit.

Mr. Jarboe stated that Mr. Hall indicated that there would be no taxes applied if the wind turbines are decommissioned.

Mr. Hall stated that he does not know about taxes and all he said was that he could not see that there would be any taxes to pay if the turbine is not working. He said that he is not a tax expert therefore he cannot testify to that issue.

Mr. Thorsland stated that it would be nice to have that clarification in the *Ordinance* so that it is clear as to who is responsible for the taxes should something happen to the turbine.

Mr. Jarboe stated that LED lights are being installed in the Champaign area because they can be directed down to prevent glare. He asked if the developers could be encouraged to use the LED lights on their substations to prevent glare and to use less energy.

Mr. Thorsland asked if staff had any questions for Mr. Jarboe and there were none.

Mr. Thorsland asked the Board if there were any questions for Mr. Jarboe and there were none.

Mr. Thorsland called Mr. Jed Gerdes.

Mr. Jed Gerdes, who resides at 1448 CR 2700E, Ogden stated that he is a landowner and resident of Champaign County. He said that his father's home is in the epicenter of the Broadlands wind project and he also farms around the Manlove Gas Storage Field therefore he will have a lot of contact with this project. He said that he visited the wind farms developed by Horizon and he was not impressed with how it was done or why certain things were done. He said that it is a matter of priorities and what is Champaign County. He said that he sat in this very meeting room and heard the Board's talk about how Champaign County is an urban county and not a rural county. He said that this is a massive power plant that will generate electricity that will not be used in this County but shipped off to other locations. He said that it is a matter of priorities as to if this is for the residents or is this for a massive power plant. He asked the Board how they wanted to use Champaign County or what do they want to see when they look out their window at night. He said that we live in a location where some of the best farm ground in the world is located. He said that he just got back from Arizona and he passed thousands and thousands of miles of wind ravaged country where there is no topsoil because the wind blows there all of the time therefore is Champaign County the best place in the nation to generate wind. He asked what will happen in 30 years when the contract is up and the huge ball of concrete is still in the landowner's field. He asked the Board if they have ever seen how much dirt is moved when the turbines are installed and after that dirt is moved the ground is never the same afterwards. He asked the Board if Champaign County is in the business of producing food or electricity and what is the best use for Champaign County. He asked if everyone is going to want to move to Champaign County if all they can see for miles and miles are red lights and will it draw people to the County or push them away. He said that every time any maintenance is required on a turbine the crane will be placed on the field which will continue to compact the soil. He said that there was a gentleman from southern Illinois which spoke at the Vermillion County meeting and he indicated that after the development was complete he and his fertilizer dealer went out with a GPS unit and drove over their fields and on 100 acres of his farm the wind farm developer compacted 45 acres. The gentleman stated that he only had a clause for five years for the developer to reimburse him for losses and after five years it still shows up on the monitor of exactly where they went. He asked the Board how much the corn crop is worth in comparison to the amount of electricity that will be generated. He said that the corn crop can produce much more energy than the windmill ever will.

Mr. Gerdes asked the Board what they are going to saddle the next generation with in allowing this development. He said that the developers indicate that a setback of 1,200 feet is sufficient but if his children visit their grandfather's farm and something flies off of that turbine and hits one of them then each member

of the Board should be held personally responsible for that accident because they made the decision to allow it. He said that there are many unknowns involved because we really don't know what the wind decibels are because there is really no good measurement out there and there is no good way to regulate it therefore why should an *Ordinance* be adopted on something that we really don't know anything about. He requested that the Board think about what they are recommending before they do it and not just for this generation but for the generations to come. He said that whatever this Board recommends should be something that they should be proud of, not only for today but also for the future.

Mr. Gerdes stated that a setback of 1,200 feet is not sufficient for non-participating residences and landowners. He said that if he owns 80 acres in the rural area he should be able to build a house on the property even if his neighbor on both sides of his property installs turbines on their property. He said that if this scenario occurs there would be zero room left for a home on his 80 acres and the ability to build a house was given to the wind farm. He asked if this fair because the wind farm developer is only leasing the land on both sides of that 80 acres. He asked if the landowner's rights would trump the wind farm developer's lease rights.

Mr. Gerdes stated that the landowner who spoke in Vermillion County stated that the wind farm developer fixed destroyed farm tile by inserting four inch tile into a six inch tile with no packing underneath and anyone should know that the life of that tile will not be long. He asked how often the wind farms are sold. He said that Horizon was built by Goldman-Sachs and sold to a Portuguese company therefore after the wind farm was built the new people who were running it had nothing to do with its construction. He requested that the Board decide what they want Champaign County to look like in 100 years.

Mr. Thorsland asked if staff had any questions for Mr. Gerdes.

Mr. Hall asked Mr. Gerdes to explain his reasoning why he does not believe that a home could be built on the 80 acres.

Mr. Gerdes stated that if there are three 80-acre parcels sitting in a row and the setback from property lines is 500 feet.

Mr. Hall stated that the required separation between the wind turbine and the property line is 1.1 times the height which would approximately be 550 feet or less except when it is within a quarter-mile of the street then the setback is 1.5 times the height.

Mr. Gerdes stated that an 80 acre parcel is ¼ mile wide so that means that County will pin the property owner, if he could even squeeze a house onto the property, into locating the home in center of that 80 acres.

Mr. Hall stated that 1,200 feet would not be the requirement because there is no requirement for separation of a future home.

Mr. Gerdes stated that you would not want to put your new house closer to the wind turbine.

Mr. Hall stated that the landowner could not be within 1.1 times the height and the safe distance is the one required for participating dwellings which is 1,000 feet.

Mr. Gerdes stated that the landowner should be able to put his house on any location on their 80 acres and yet be a safe distance from the turbine.

Mr. Hall stated that the *Ordinance* states that a safe distance would be anything greater than 1.1 times the height of the turbine.

Mr. Gerdes asked if that is a safe distance for sound decibels and breakage.

Mr. Hall stated that is the absolute minimum with a waiver.

Mr. Gerdes stated that the County will be giving away rights to a property across the property line. He said that the landowner should be able to build his home anywhere on that 80 acres with a safe distance setback.

Mr. Hall stated that there are no restrictions on where the landowner can build but where he chooses to build is a different issue.

Mr. Gerdes stated that he understands what is going on there and asked if anyone else had any questions. He requested that the Board consider how they want Champaign County to appear.

Mr. Thorsland asked the Board if there were any questions for Mr. Gerdes and there were none.

Mr. Thorsland called Kyle Krapf to testify.

Mr. Kyle Krapf, who resides at 809 Riverside, Mahomet stated that he is present at tonight's meeting to represent the Champaign County Farm Bureau Land Use Committee but he would like to defer his comments at this time.

Mr. Thorsland called Mr. Eric McKeever to testify.

Mr. Eric McKeever asked if the Board wanted testimony regarding Part B of the amendment.

Mr. Hall noted that staff has not had the opportunity to work on Part B of Case 634-AT-08, and does not anticipate working on Part B until Part A is complete. He said that Part B will be a lot easier than Part A but Part A is what we are focusing on at this time. He said that if the Board would like to hear testimony regarding Part B then that is their call.

The consensus of the Board was to not hear testimony regarding Part B at this time.

Mr. Thorsland called Ms. Judy Campbell to testify.

Ms. Judy Campbell, who resides at 28816N 800East Rd, Manville, stated that she is a resident and County Board member of Livingston County is not present at tonight's public hearing to speak in behalf of Livingston County but to give her personal testimony. She said that wind energy is very intermittent and unpredictable and it is actually a useless appendage to the grid because it will require backup from gas power. She said that many environmentalists discuss wind and gas energy as partners. She said that there have been a lot of comments made in news articles that there should be support of wind energy because it will help our dependence on foreign oil but our dependence is due to liquid fuel not electricity. She said that currently the United States is competing for subsidies between ethanol and solar and wind.

Ms. Campbell stated that she and her husband farm in Livingston County and they have plenty of acres that could house wind turbines although they have chosen not to because they value the rural life, the soil, and are proud to feed people and they love the rural character of their county. She said that in 2005 the Regional Planning Commission introduced the Ordinance to Livingston County and the Zoning Administrator indicated that they were only adding some items to the zoning code. She said that the residents of Livingston County, at that time, were not aware of how many wind turbines were proposed although they had heard that the wind working group had been working with a company called Invenergy and neighbors in her area and further north were trying to decide whether to deal with Invenergy or Horizon. She said that when she first heard that Champaign County was going to amend the *Ordinance*, she understood that it would be by use of a map amendment although when she found out how the map amendment would be done she became concerned. She said that she believes that the map amendment should occur before the developers tell the County where they are going to place the turbines. She said that the County should tell the developers where the appropriate location would be before they tell the County therefore the residents of Champaign County would be involved early in the process rather than later. She said that the State Statute would require staff to notify every landowner about the development when the County does the map amendment.

Ms. Campbell stated that in the situations that she has been involved in it appears that the landowners with big parcels are offered the leases and the developers then bring a *Model Ordinance* to the county. She said that the developers indicate to the county that this is the way that they want to develop in the county by providing a *Model Ordinance* and then from that point on the county can either use their power by either counter-offering a different ordinance or agree to their model. She said that Livingston County did tweak their *Model Ordinance* by adding some stipulations and they still did not know what was going to be proposed.

Ms. Campbell indicated the location of existing and proposed wind farm projects in Livingston County on a map for the Board's review. She submitted the map as a Document of Record. She said that there are no wind farms located in the existing gas storage fields in Livingston County and it is not because Livingston County prohibited it. She said that she asked the question as to how many wind turbines are proposed in Livingston County and she was informed that the numbers change weekly. She said that there is a State Statute which allows a county to specifically limit the number and size of the wind turbines and if the Board does not plan for it the developers will. She said that there are a lot of unpredictables during this type of development therefore any authority that a county has should be utilized. She said that one of the things that were discussed during the public hearings in Livingston County was a property value guarantee plan and Livingston County decided that they could work on such a plan at a later date. She said that when

Livingston County did decide to work on the plan the developers did not like it much and sent letters to the Livingston County Zoning Board voicing their opposition. Ms. Campbell submitted a letter from PPM Energy dated June 6, 2006, regarding such opposition as a Document of Record. She said that she does not believe that PPM Energy will find any particular county more attractive than on other because as long as there are high lines located in that county they are going to want to develop in it due to those high lines are their free access, other than inter-connection charges, to the grid.

Ms. Campbell informed the Board that this is their county but she would suggest that a noise expert be hired to address everyone's concerns about noise pollution and form a citizen's group including participating and non-participating landowners to offer some suggestions on how to write the wind ordinance so that it is completed right the first time.

Mr. Thorsland asked if staff had any questions for Ms. Campbell.

Mr. Hall stated that Livingston County is one of the counties that require the 1,200 foot separation from non-participating dwellings. He asked Ms. Campbell if she had any comments regarding that requirement.

Ms. Campbell stated that she does not believe that people should have to live inside a power plant although this is her personal position on that issue not Livingston County's position.

Mr. Thorsland asked the Board if there were any questions for Ms. Campbell and there were none.

Mr. Thorsland stated that this concludes the names on the witness register and asked the audience if anyone else desired to present testimony in this case.

Mr. Thorsland called Mr. Mike Babb to testify.

Mr. Mike Babb, Compromise Township Supervisor, stated that the Board should know that not everyone is against the proposed project. He said that Mr. Gerdes indicated that he has attended other meetings and has heard that Champaign County is an urban county not a rural county. Mr. Babb stated that he agrees with that statement but when you go out to Compromise Township you will find that there is not a lot of development. He said that he believes that if someone is a landowner then you should be able to decide what you want to do with your property and in his area the vast majority of the landowners support the proposed wind farm. He said that he also serves on the Armstrong School District Board and there are no towns within the school district, it is all rural. He said that there is no possible way that Armstrong School District can increase their tax base except for this project. He said that he has no facts to present but he could not leave this meeting tonight without saying that there are a lot of people who are in favor of the wind project therefore he hopes that the Board will keep that in mind during their final determination.

Mr. Thorsland asked if staff had any questions for Mr. Babb and there were none.

Mr. Thorsland asked the Board if there were any questions for Mr. Babb.

Mr. Courson asked Mr. Babb if he would still be in favor of the wind farm project if Armstrong School District did not receive any additional tax revenue.

Mr. Babb stated yes, because that is not going to happen. He said that the Superintendent of Armstrong Township High School District has projected the District will possibly receive the tax revenue from 100 wind towers and that would generate approximately $650,000 the first year and in a 25 year period it would go down to about $185,000, which granted the tax revenue will go down but that is the responsibility of the school board to know that and if the wind towers got to be at a zero value it is not Champaign County's responsibility to come up with that money it is the responsibility of the school board. He said that if the school district did not receive any tax revenue and it would benefit the farmers and landowners then he would still be on board with this project, although that is not the case.

Mr. Courson asked Mr. Babb if he understands that the wind farm taxes are set by the State and could go to zero if needed therefore that revenue is not guaranteed forever.

Mr. Babb stated that this is true but they are going to be there for a little while. He said that there is risk in everything and this is an opportunity for his school district to obtain over ½ their budget which will enable them to complete some different projects and lower the taxes for their taxpayers.

Mr. Courson asked Mr. Babb again, if he would still support the wind farm project if the school district did not receive any tax revenue.

Mr. Babb stated yes.

Mr. Steve Moser, County Board member, requested the opportunity to ask Mr. Babb a question.

Mr. Thorsland requested that Ms. Papavasiliou address Mr. Moser's request.

Ms. Papavasiliou denied Mr. Moser's request.

Mr. Thorsland called Mr. Rob Parker to testify.

Mr. Rob Parker, who resides at 467 CR 2500N, Mahomet submitted a written statement from his wife, Kris Parker, who was unable to attend tonight's meeting. He said that many good questions have been discussed at tonight's meeting and he is glad that Ms. Schertz and Mr. Gerdes are in attendance at tonight's meeting to present their comments and concerns. He said that at a previous meeting he discussed his concerns regarding township roads and it appears that the latest revision alleviates most of his concerns on that issue. He said that the next concern that he has is the placement of wind turbines on top or too close to the gas storage fields. He said that the storage facility is a small percentage of our County but the risk is greater and prohibiting the wind turbines within that storage field does not mean that they could not be situated elsewhere in the County. He said that as he understands it, even if there is a setback for the wind turbine from the pipeline, as documented in the latest revision, he is not sure that it will restrict the gas company if they choose to add a new gas well after the wind turbine already exists. He said that it is his personal

opinion but it appears that most of the contention about setbacks may be addressed by making the differentiation between participating and non-participating. He said that if you are a participating landowner or have signed waivers the setbacks may be at the minimum but the *Ordinance* needs to be written to protect the health and safety of those who choose not to waive their rights, this is the purpose of zoning. He said that the greatest of his concerns regarding setbacks is noise because noise is a very sensitive thing and he happens to have a greater sensitivity to it than others and it doesn't have to be loud to affect him. He said that a leaky faucet will drive you nuts but it doesn't violate any noise pollution regulations. He said that if a wind turbine is driving him nuts he won't be able to just turn it off or muffle the noise. He said that another example is an autistic child in the Urbana School District who continually complained about a scratching noise that no one else could hear and a couple of weeks later a dead raccoon was found in the ceiling hence no more scratching noise was heard by the child.

Mr. Parker stated that the wind turbines will be there for more than 20 years therefore it is important that we get this right. He said that as he understands the Illinois Pollution Control Board Regulations they were not designed for rural areas but rather for urban and city environments. He said that the regulations were created for a noise source that was less than 30 meters high not the 150 meter height of multiple wind turbines which means that Champaign County should have their own regulations pertinent to wind turbines which leads to enforcement. He said that the March 6, 2009, Supplemental Memorandum indicates that the IPCB has no ability to enforce their regulations which only leaves someone with a complaint to hire their own lawyer at their own expense. He said that he believes that the County should be prepared to enforce all our zoning. He said that during his testimony at the first hearing Mr. Hall requested his recommendation for setbacks and after much research it appears that it could take anywhere from ½ mile to 1.2 miles to make the noise from a wind turbine indistinguishable. He said that in our current climate a small amount of noise could be tolerated if it provides substantial benefits such as tax credits for schools, which are set to expire in 2011, but it should not be allowed to the point where it could affect the health of someone. He said that perhaps it could be looked into whether a small increase in noise above the ambient level would be a simpler method keeping in mind those three decibels is a doubling of the sound pressure. He said that perhaps for enforcement the County could require the wind farm operator to pay for the study if a complaint is filed. He said that he concurs with Mr. Burdin's previous testimony regarding the C-weighted measurement because the he does not believe that the A-weighted takes everything in to account.

Mr. Parker stated that he would like to know if the wind turbines will be allowed to become an eye sore or will they be required to be repainted and will any advertising be allowed upon them. He said that at a previous hearing fire protection was discussed. He said that he was a volunteer fire fighter with the Cornbelt Fire Protection District but was forced to give it up because he could not make the considerable time commitment. He requested that the Board keep in mind that more time will be asked of the volunteers of the rural fire protection districts especially in the event that they have to stand by and watch one of those turbines burn itself out. He said that the time commitment issue may be one of the biggest obstacles that the Cornbelt Fire Protection District has in manning its department. He encouraged the Board to act on the setbacks because they have an obligation to get it right, even if an outside noise consultant has to be hired. He requested that the noise not be based on a computer model rather than actual measurements from the property line when it affects a non-participating landowner otherwise it simply uses their property as an easement with no compensation. He said that this *Ordinance* needs to take into account that the potential

developer might make profits at the expense of the health and safety of the County's residents.

Mr. Thorsland asked if staff had any questions for Mr. Parker and there were none.

Mr. Thorsland asked the Board if there were any questions for Mr. Parker and there were none.

Mr. Thorsland called Ms. Jamie Stevens to testify.

Ms. Jamie Stevens, who resides at 809 S. First St, Fisher stated that she is a parent of a child with autism and a resident of Newcomb Township and her husband is a farmer in Champaign and Ford Counties. She said that a lot of people have been talking about how the electricity will not be used here and if Champaign County wants to produce food or energy but she has not heard a lot of people complaining that our crops are being sent all over. She said that she doubts that the corn that her husband produced last year stayed in Champaign County.

Ms. Stevens stated that being that her son has autism she is concerned about noise therefore at the next meeting it might be nice to know how much a noise consultant would cost Champaign County. She said that her son is a student of the Fisher School District and she has been on the advisory board of the C-U Autism Network in Champaign-Urbana for about 2 ½ years. She said that she is present at tonight's meeting to voice her support for the development of wind farms in Champaign County but her concern is that there has been so much discussion in regards to the risk of the development of wind farms and not on the benefits. She said that there has been a lot of talk about what it will give our children and as a mother of three boys, an 8 year old with autism, a five and a two year old, and she is very concerned about what we will be giving them. She said that she has lived in this community her whole life and intends to continue living in it the rest of her life therefore she is just as concerned as everyone else about getting this right.

Ms. Stevens stated that half of the power from our nation comes from coal and some of the states percentages are as high as 88%. She said that the United States Environmental Protection Agency estimated the environmental mercury release from coal burning plants at 158 million tons annually nationwide. She said that according to research conducted by the University of Texas Health Science Center at San Antonio there is a statistically significant link between pounds of industrial release of mercury and increased autism rates. She said that the study found that for every 1,000 pounds of mercury released by Texas power plants in 1998, there was a corresponding 3.7 % increase in autism rates. She said that Dr. Raymond F. Palmer, PH.D., Associate Professor of Family and Community Medicine at the University of Texas Health Science Center San Antonio stated that, "We need to be concerned about global mercury emissions since a substantial proportion of mercury releases are spread around the world by long-range air and ocean currents and steps for controlling and eliminating mercury pollution on a worldwide basis may be advantageous." She said that this in no doubt directly correlates with the increased rate of autism nationwide from 1 in every 10,000 children in the early 1990's to the recent number of 1 in every 150 children. She said that Dr. Palmer also added the following, "Steps for controlling and eliminating mercury pollution on a worldwide basis is necessary. This entails greener, non-mercury polluting technologies." "Do we need yet another reason to push for a faster transition to renewable energy." Ms. Stevens stated that it is time for us, as citizens, to take responsibility for our own energy needs.

Ms. Stevens stated that the second benefit that she would like to discuss is the positive effect the development of wind farms would have on our roads. She said that there are many times that the conditions of our rural roads are unsafe and this is not a direct reflection of our township staff but more so a reflection of our local financial restrictions. She said that with the development of wind farms would come updates to our roads which undoubtedly would make our local travel safer. She said that the last benefit that she would like to discuss is something that is very close to her heart. She said that her son was diagnosed with autism five years ago and they moved back to the Fisher School District three years ago. She said that they lived in Gibson City for five years and her son's special needs pediatrician is in Bloomington therefore they got to see the entire progress of the Bloomington wind farm's construction and personally she likes how they work. She said that she is so impressed with the quality of service and care that Fisher Schools have provided her son. She said that the staff has always treated both her son and herself with respect and understanding and the teachers and administration have always worked hard to provide every opportunity possible for Isaac. She said that the only restrictions they have faced in this district are financial ones and as with most small school districts there are always places that could use more money. She said that providing high quality education for our kids costs money and the development of a wind farm in our township would provide our local schools with that money and her fear is that the setbacks are too far and knock Champaign County out of the running for the wind farm. She said that for every turbine placed within its district the schools to look to receive somewhere between $6,000 to $9,000 annually which is a substantial amount of money which would benefit our children.

Ms. Stevens stated that there has been much discussion of the safety of wind farms and she asked the Board to take a step back and consider all of the benefits of a wind farm. She said that she realizes that this is not an issue to be taken lightly but we take risks in everything that we do each day. She said that the benefits of a wind farm far out weight the risks and that is why as a mother, citizen and special needs advocate supports the development of a wind farm in Newcomb Township.

Ms. Stevens submitted her comments in writing with attachments regarding her sources as a Document of Record.

Mr. Thorsland asked if staff had any questions for Ms. Stevens and there were none.

Mr. Thorsland asked the Board if there were any questions for Ms. Stevens and there were none.

Mr. Schildt requested the opportunity to ask Mr. Tim Polz a question.

Mr. Thorsland informed Mr. Schildt that this is not an Administrative Hearing therefore cross-examination is not allowed although if Mr. Schildt would like to ask Mr. Polz a general question then he will allow him that courtesy.

Mr. Schildt asked Mr. Polz when he last spoke to Tom Puracchio.

Mr. Polz stated that it was approximately three or four weeks ago.

Mr. Schildt stated that he also had conversations with Mr. Puracchio and it appears that their conversations were a little different.

Mr. Polz asked Mr. Schildt how the conversations differed.

Mr. Schildt stated that Mr. Puracchio indicated that there were unknowns associated with the combination although he did not rule out the possibility that the two may be able to co-exist and that he was not aware of all of the consequences of catastrophic failure. Mr. Schildt stated that he actually contacted Mr. Puracchio to see if there were any studies which examined the safety issues associated with the placement of wind turbines in a gas storage field. Mr. Schildt stated that Mr. Polz discussed working around other high pressure lines. He asked Mr. Polz to indicate the pressure of those lines.

Mr. Polz stated that one was either a 36 or 48 inch high pressure natural gas line which runs through the south end of Ohio.

Mr. Schildt asked Mr. Polz if was aware of the pressure of the lines in his area.

Mr. Polz stated no.

Mr. Schildt stated that he has lived in this area for 28 years and the Newcomb Plan Commission has a grave concern in this regard and it is fair to say that the township board shares that concern. He said that he, his wife and others have asked for this project to be taken off of the table because they live there and they understand the complexity of the area. He said that he is confused because Mr. Schroeder indicated that there is no wind farm proposed for his area although Mr. Polz indicated that it is an area of consideration. He said that he would truly like an answer to this question.

Mr. Polz stated that he can answer his question in regard to the area that they are considering. He said that they are in the infancy of the planning stages of this project and they may find something that causes them to determine that this area is indeed not safe. He said that one of the things that they looked at was the Manlove Gas Storage Facility and they contacted People's Gas to obtain some basic information on the facility and he was told by Mr. Puracchio that the actual gas storage facility is actually 5,000 to 7,000 feet underground. He said that the area where that facility may be vulnerable is where the injection sites are located. He said that in speaking to other people as to what a safe distance would be it has been determined that 1,200 feet would be adequate but it depends on what the County requires and what their investigations discover. He said that if 1,000 or 1,200 feet is a safe distance from a home then he would consider it to be a safe distance from an injection site.

Mr. Schildt stated that he wants to make it clear that he is not opposed to wind turbines but he does strongly oppose them in the Manlove Gas Storage Field. He said that one of the things that is perfectly clear is that Mr. Polz has not experienced a high pressure gas line breach and Newcomb Township has therefore they do know what they are talking about. He said that he does not believe that Mr. Polz understands how many high pressure lines are buried approximately four feet underground therefore just the crush factor alone due

to moving the heavy cranes could damage a line. He said that the situation is not as simple as it appears although he is not criticizing him for that but it is clear that Mr. Polz does not understand the danger.

Mr. Thorsland interrupted Mr. Schildt and requested that he further his comments at the next public hearing. He asked Mr. Schildt if he received an answer to his question.

Mr. Schildt stated that he did not. He said that Mr. Polz is not aware of the pressure in the underground high pressure gas lines and he does not know the pressure of the lines that he claims are high pressure lines.

Mr. Polz stated that he does not know that pressure in the lines but normally they let the gas companies dictate to them how they can go about crossing one of their facilities. He said that roads cross their facilities and other construction equipment cross their facilities therefore the gas companies dictate to them how they can cross their facilities in a safe manner therefore they are not using conjecture or assumptions.

Mr. Thorsland informed Mr. Schildt that Mr. Polz answered his question and the Board will now move forward. He thanked Mr. Schildt and Mr. Polz for their information.

Ms. Kim Schertz asked the Board if they have researched the tax assessment law because of the testimony that she is hearing regarding tax revenue to the schools does not happen. She said that the tax code as written is as a tax offset to property taxes and the only way that the schools get an increase in money is if the local assessor raises the property taxes in the area.

Mr. Hall stated that the tax implications are not relevant to the material facts of what this Board needs to be concerned about which are to protect the public health, safety and welfare of the neighbor's of the wind farm.

Ms. Schertz stated that testimony is being given about that tax benefits but the Board is not supposed to consider it.

Mr. Hall stated that it is not material to the standards required in the *Ordinance* to protect the public health, safety and welfare. He said that it may be considered in the facts regarding a specific wind farm when it is proposed but it is immaterial to what the *Ordinance* should require. He said that he is aware that the Board has heard a lot of testimony regarding about it and staff will present the Board with a Finding of Fact which outlines material evidence to the amending of the *Zoning Ordinance*. He said that a lot of time should not be spent discussing tax issues because it is irrelevant to what belongs in the *Zoning Ordinance*.

Mr. Thorsland requested a motion to close the witness register for the March 12, 2009, public hearing.

Ms. Capel moved, seconded by Mr. Courson to close the witness register for the March 12, 2009, public hearing. The motion carried by voice vote.

Mr. Hall requested direction from the Board. He said that there has been a lot of criticism received from the public but no input from the Board.

Mr. Courson stated that he would like to investigate the property rights of non-participating landowners.

Mr. Hall asked Mr. Courson which landowners are he concerned about, those who own five acres, 10 acres or 60 acres.

Mr. Courson stated any non-participating landowner regardless of the size of their property.

Mr. Hall asked Mr. Courson what type of encroachment is he assuming might happen.

Mr. Courson asked if the non-participating landowner would be prohibited from constructing a building within the required setback from the wind turbine.

Mr. Hall stated that the setback from the property line is 1.1 times the height of the wind turbine therefore the maximum would be 550 feet and presumably it would be less than that. He said that there is no requirement for separation from new buildings. He said that if we assume that 1,000 feet is presumed for safety, which is the least that is required, that would mean that there would be an additional 450 foot setback required on the neighboring land in regards to a side lot line. He said that this is a little over twice the average lot width in the rural districts and he has no idea how that relates into acreage. He said that there is only one other county, Sangamon County, in Illinois that has the requirement of 1,000 feet separation from the property line and that county indicated that this requirement drove one wind turbine company out of their county and the Sangamon County Zoning Administrator can confirm this information. He said that if the 1,000 foot separation is what the Board desires then that is what we can require.

Mr. Courson stated that he is just considering the safety standpoint. He asked Mr. Hall if there will only be a separation distance from an existing dwelling but not from a dwelling being constructed. He asked how this will protect a new home because if it isn't safe for an existing home how could it be safe for a new home.

Mr. Hall stated that the landowner can make that decision themselves.

Mr. Thorsland stated that the landowner is being given the right to decide where they want to place their home. He said that we have the minimum which is 1.1 times the height but the landowner can put their house where they want after the wind farm overlay is implemented.

Mr. Hall stated that if the 450 feet overlaps onto the adjacent property and that property is only 450 feet wide the landowner has no area in which to meet that 1,000 foot separation distance, even if they wanted to. He said that we could take the approach that we take in regards to the setback from a street. He said that within a quarter mile of the street where it is most feasible to place a home the Board could require a greater setback from the side property line but he does not believe that it would be reasonable to require that setback along the entire property line and he does not know if the County wants to encourage the placement of homes that far from the street.

Mr. Courson stated that the County doesn't own the property the landowner does therefore if he had an 80

acre field with no structures on it and he wanted to a build a house on that 80 acres he should have the right to build a house on it.

Mr. Hall stated that if someone had an 80 acre parcel they would have 400 feet in the middle in which they could choose to place a house and they would be 1,000 feet from any adjacent wind turbine. He said that if someone has less than a normal 80 acre parcel, therefore being narrower, it depends on the geometry of the individual tract.

Mr. Courson stated that the County may restrict a home to be built in the center of that property.

Mr. Hall stated that it depends on the width of the property but if the Board desires to require a 1,000 foot separation from all adjacent property lines then that is how staff can write it.

Mr. Courson stated that he is only speaking of non-participating landowners.

Mr. Hall stated that non-participating landowners are who staff is talking about when they discuss the separation around the perimeter of the wind farm. He said that a wind farm is a problematic thing because the perimeter could actually surround non-participating landowners.

Mr. Thorsland stated that over the past three meetings the biggest issue has been the setback distances and the number tossed around most often, on average, has been 1,200 feet from the dwelling. He said that Mr. Courson is concerned about future construction for a non-participating landowner and he would like a buffer zone. Mr. Thorsland stated that Mr. Hall did the buffer zone with the road and shortened it up so that the property across the street did not drive the wind turbine to far back from the street. He asked Mr. Courson what type of setback he would like to see from the property line. He said that 1,200 feet, on some parcels, would push the participating too far back therefore making it hard for them site a turbine. He said that it is the wind farm developers job to go out and get over half of the landowners on board with their proposal and we have heard testimony from landowners in Penfield that support the wind farm. He said that the Board has also received testimony that 1,200 feet from the dwelling is also acceptable therefore the Board needs to decide which way they want staff to proceed. He said that he is happy with the way that it is now and future construction will not be totally limited and on some level Newcomb Township already has issues with where things can be sited due to the pipeline impact radius. He said that the Board approved a text amendment to the *Ordinance* and in general most people were pretty happy with that text amendment and some of the setbacks in that area are close to 400 feet but it still allows buildable areas and there was an exemption for by-right lots with no buildable area. He asked the Board if the goal is to protect the non-participant or is the issue just noise related.

Mr. Courson stated that the noise would be an issue also and he is also concerned that the large blades will swing which will bring the turbine closer to the property especially if you are measuring off the center of the wind tower.

Mr. Thorsland stated that Mr. Hall provided a handout which shows where the wind overlay district would occur. Mr. Thorsland stated that the 1.1 times the height takes care of the blade swing. He said that the

1,200 feet would be more than that 1.1 restriction.

Mr. Hall stated that on a 10 acre parcel, at 330 feet wide, and a wind farm is adjacent there would be a 550 foot maximum setback so within 450 feet a home could not be placed on that 10 acres that would be 1,000 feet away from the nearest turbine although on a 20 acre tract a home could be constructed if a wind farm was located on each side of the tract.

Mr. Thorsland requested a motion for a fifteen minute continuance of the March 12, 2009, public hearing.

Ms. Capel moved, seconded by Mr. Courson to grant a fifteen minute continuance of the March 12, 2009, public hearing. The motion carried by voice vote.

Mr. Thorsland asked Mr. Courson what he would like staff to do.

Mr. Courson stated that it appears that if someone desires to stay on small lots the landowner will be limited to building on that small lot.

Mr. Hall stated no, the Board will take the choice away from placing the home 1,000 feet from the wind farm. He said that we are not going to prohibit a home from being built they just cannot locate it within 1,000 feet of the wind farm.

Mr. Courson stated that this will assure the safety of the landowner and the citizen's of Champaign County.

Mr. Hall stated that if the Board feels that the 1,000 feet is unsafe then the Board may not want to allow participating landowner's to sign a waiver.

Mr. Courson stated that if the participating landowner's wants to sign the waiver then they should have that right.

Mr. Thorsland asked the Board if they are comfortable with the 1,000 foot setback for participating landowners and 1,200 feet for non-participating landowners. He said that generally most wind farm projects are not intertwined between five and ten acre lots and are located in a more open area. He said that when the Board discussed the pipeline setbacks someone who farmed within the Manlove Gas Storage Field indicated that no homes should be allowed in that area.

Mr. Hall stated that in fairness, there could be a standard that would be a little more complex but allow 1.1 times the height of the turbine separation to the property line but require 1,000 feet when it would have that result on the non-participating adjacent parcel. He said that he would be happy to construct such language and he could see this issue happening.

Mr. Courson stated that a landowner with a large parcel has more choice as to where they want to locate a home but a landowner with a smaller parcel or a non-participating adjacent landowner is more restricted. He said that if you are a non-participating landowner then you are not receiving any benefit from the wind

turbine although you do own your property and are restricted for construction.

Ms. Capel stated that new landowner's are not always told about such things and they do not know to research it.

Mr. Thorsland stated that perhaps provisions are being made for this matter much like those for the pipelines.

Mr. Hall stated that if a landowner is a non-participant and they are not located in the wind farm overlay district then there is no notification.

Mr. Thorsland asked if any other Board members had suggestions for Mr. Hall.

Mr. Thorsland stated that he reviewed the road agreement and he believes that staff did a fine job. He said that he has heard testimony that decommissioning is more complicated than once thought.

Mr. Palmgren asked if there is back-up power for the project.

Mr. Hall stated that back-up power is not relevant because it is a utility issue.

Mr. Palmgren stated that hiring a professional regarding noise is an excellent suggestion and perhaps we should look at the C-weighted measurement.

Mr. Hall stated that he believes that we need a professional to review any wind farm that is proposed. He said that the way that the *Ordinance* is written once we have a professional acoustical engineer on our side all of the setbacks have to meet the Pollution Control Board requirement. He said that if the Board believes that this should be the standard then that will be a guaranteed thing that will be done. He said that he does not believe that we need a professional right now but if the Board wants to develop a C-weighted scale then we need a professional and we will need an additional six months although I don't believe anyone wants to give us another six months.

Mr. Palmgren stated that he is not sure how important hiring a professional is at this point but in hearing some of the testimony it appears that it is necessary.

Mr. Hall stated that if the Trempealeau County standard, which is the most stringent wind farm noise ordinance that he is aware of, is reviewed they almost require the identical octaves that are regulated by the Pollution Control Board in the A-Class which is much lower than the C-Class to the A-Class. He said that there is a Pollution Control Board standard that does almost what Trempealeau County does. He said that developing modifications like this will take time and will cost money.

Mr. Palmgren asked Mr. Hall if other counties which have wind farms located within them have become more stringent in regards to noise and setbacks.

Mr. Hall stated that most of the counties have just adopted the Pollution Control Board standards and don't even have the relevant legal citation. He said that this is the amount of time that they put in on it and they didn't want bothered to identify the citation therefore no, they are very quick in adopting the IPCB's standards. He said that in regard to the setbacks, Livingston, LaSalle and Sangamon County require a 1,200 foot setback to non-participating dwellings and those are the largest that he has found in Illinois and that is also what Champaign County is proposing.

Ms. Capel asked if provisions will be made for enforcement other than a civil suit.

Mr. Hall stated no. He said that Livingston County goes so far to say that if they find a violation the company will pay the cost of the acoustical consultant that was required to do the enforcement.

Ms. Capel stated that perhaps this will alleviate the problem.

Mr. Hall stated that testimony has been received indicating that noise is not unusual for wind farm developments.

Ms. Capel stated that this makes sense to her although we will have to find some way of applying standards where we will not always require a consultant because some complaints may not be valid.

Mr. Hall stated that one of the most difficult things will be weeding out the invalid complaints from the possibly valid complaints. He said that he would like to hear some discussion from the Board regarding the map amendment.

Mr. Thorsland stated that he has had personal experience with people for and against the map amendment. He said that some of the agricultural people are very positive about the wind farm development and would rather not see a map amendment, only a County Board Special Use Permit. He said that the map amendment gives protest rights, if 20% of the landowners protest, which would require a super-majority of the County Board. He said that if we do not have a map amendment the participating landowner's can lobby the County Board and try to get less than a normal majority to approve a particular site but without a map amendment the protest rights of both townships and adjacent landowners is taken away.

Ms. Capel asked Mr. Hall what the Environment and Land Use Committee preferred.

Mr. Thorsland stated that no real direction was given from ELUC.

Mr. Miller stated that a realistic concern is that if a map amendment is included which authorizes protest rights it will make it so complex and difficult for any developer to consider Champaign County therefore moving the project out of the County. He asked the Board if this is Champaign County's intention.

Mr. Hall stated that the concern should be whether or not the map amendment is warranted. He said that the affects on the wind farm developer is irrelevant because if a map amendment is warranted then that is what the Board should recommend.

Mr. Thorsland requested an additional fifteen minute continuance of the March 12, 2009, public hearing.

Ms. Capel moved, seconded by Mr. Courson to grant an additional fifteen minute continuance of the March 12, 2009, public hearing. The motion carried by voice vote.

Mr. Hall stated that these concerns can be looked at in different ways to determine if a map amendment is warranted, such as, the affects on aerial application of agriculture. He said that if someone can provide all of the spraying that is required via ground then the issue with aerial application is of interest but certainly not critical. He said that if all of the spraying can be done on the ground then the wind farm would be compatible with agriculture although when he visited McLean County a farmer with three wind turbines on his property complained about flicker annoyance. He said that there may be other parts that farmers are opposed to and it may not just be aerial application. He said that if someone is farming in an area that receives flicker then that could be an annoyance to that landowner. He said that noise is also an issue which has been discussed and even the agricultural district will be subjected to a higher level of noise. He said that the Board should focus on the whole group of impacts when considering the importance of a map amendment.

Mr. Schroeder stated that he lives close to I-57, it destroys his crops and the noise rattles his windows and he can't do anything about it.

Mr. Hall stated that the construction of I-57 did not require zoning permission.

Mr. Thorsland stated that the utility companies do not have to request permission either.

Mr. Hall stated that he is not sure if Mr. Thorsland's statement is accurate.

Mr. Thorsland stated that he will play advocate for not having a map amendment. He said that we have one filter before they can apply, which is the 50%, and one statement was received from the one company that was talking to landowners obtained support of over 72.5% of the landowners; and the second filter would be that the developer could lobby the County Board.

Ms. Capel asked Mr. Hall to clarify the mission of the Zoning Board of Appeals.

Mr. Hall stated that the mission is to protect the health, safety and welfare of the citizen's of Champaign County.

Ms. Capel asked if a safeguard could be built into the County Board Special Use Permit that would allow safety.

Mr. Thorsland stated that what is before the Board currently is primarily dictated by safety. He said that it was said by a visitor of the McLean County wind farm project that people need to be reminded that they do not own their view and if they want to look at a clear sky for as far as you can see then you will have to

purchase that view. Mr. Thorsland stated that this is a valid point and he has been on both sides of that coin in that he grew up on the east coast where the view was being taken away and he came from a county in New Jersey that was built out and the only development that occurs now is when something is rebuilt. He said that he has seen land go from corn and soybeans to nothing and every time that happens that's, on a small scale, is a big thing in some people's minds and it has polarized them. He said that if you are considering health, safety and welfare then the County Board Special Use Permit takes care of that but if you want protest rights then the map amendment must be required. He said that he does not know how many other counties which house wind farms have a map amendment requirement in place therefore Champaign County may set a precedence, which may mean that the developers will move to a different county. He said that personally, if the wind farm is in Piatt County he will still see them without any benefit.

Ms. Capel asked Mr. Hall if he will draft something that will guarantee a non-participating landowner the right to build on their property.

Mr. Hall stated that he would draft language that would guarantee someone that they would have room on their property to build a house that would at least be 1,000 feet from the nearest turbine. He said the impact of the wind farm development is unlike anything else. He said that we do not have any other County Board Special Use Permit so maybe a County Board Special Use Permit is an appropriate route to take.

Mr. Thorsland noted that the map amendment gives the property owner's rights and there have been times when we wished he could have a map amendment in his own personal existence, but he didn't, and he has to remind himself that he does not own his view either. He said that at this point Mr. Miller is the only Board member that has indicted that he is not in favor of the map amendment.

Mr. Miller stated that he is not in favor of the map amendment but what might help one cause may be creating another problem.

Mr. Thorsland stated that we already have two bars to jump over, one the 50% plus, and indications are that when people want the wind turbines in their area and then there is still the method of addressing the County Board, which is a much stricter thing than just having the Zoning Board approve a Special Use Permit.

Mr. Miller stated that just having a map amendment and protest rights will not prevent the real issues which have been addressed.

Mr. Thorsland stated that the Board has addressed many of the concerns that have been addressed in the last two meetings.

Mr. Hall stated that the other thing about protest rights is that if you consider the impacts of the turbines that are 500 feet tall the protest rights will give the township a chance to weigh in if they desire, if they have a plan commission. He said that he believes that this is extremely important because it gives the township a way to actually take a roll in the process but there are not many townships that have seen the need for a plan commission so perhaps that is not important after all.

Mr. Thorsland stated that long ago, at a Champaign County Farm Bureau Policy meeting, there was a policy floated that if a plan commission exists in a township, after a certain amount of time, a plan should be established. He said that it is his belief that some plan commissions may have been formed just because of the protest rights.

Mr. Hall stated that Champaign County has barely had plan for 30 years and there is no statutory requirement for that therefore he could take a little issue with Mr. Thorsland's statement.

Mr. Thorsland stated he is just trying to play both sides so that he can obtain more input for Mr. Hall.

Ms. Capel stated that she assumes that none of the wind farms will be located within one-and-one half miles of any municipality.

Mr. Hall stated that the State of Illinois will not allow a county to authorize a wind farm within a one-and-one half mile of a municipality.

Mr. Miller stated that the Board has not received any comments regarding the road agreements or protests. He said that there seems to be an expectation by the developers that Champaign County will be on board and have direction with their proposals by the end of March but he does not see that happening.

Mr. Hall stated that Champaign County has never sent a message that they will be on board with anything by the end of March and in fact it has always been by the end of May.

Mr. Miller stated that he is only indicating that he asked the question to one of the developers and that was their answer.

Mr. Palmgren moved, seconded by Mr. Courson to close the March 12, 2009, public hearing. The motion carried by voice vote.

Mr. Courson moved, seconded by Ms. Capel to continue Case 634-AT-08, Zoning Administrator to March 26, 2009. The motion carried by voice vote.

6. New Public Hearings

None

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 10:32 p.m.

Respectfully submitted

Secretary of Zoning Board of Appeals

CASE NO. 634-AT-08

SUPPLEMENTAL MEMORANDUM

March 20, 2009

Petitioner: **Zoning Administrator**

Champaign County Department of PLANNING & ZONING

Prepared by: **John Hall**
Zoning Administrator

J.R. Knight
Associate Planner

Brookens Administrative Center
1776 E. Washington Street
Urbana, Illinois 61802
(217) 384-3708
FAX (217) 328-2426

*Request:

(A)* Authorize the County Board to approve Special Use Permits (SUP) and to change the requirements for the development of wind turbine developments (wind farms) to a County Board Special Use Permit (CBSUP) and a rezoning to the new Wind Farm Overlay Zoning District (WFO).

(B)* Change the requirements for private wind turbines.

(C)* Add a requirement for a County Board Special Use Permit for subdivisions in a Rural Residential Overlay District.

(*NOTE: SEE ATTACHMENT FOR FULL LEGAL ADVERTISEMENT)

STATUS

This case was continued from the March 12, 2009, meeting. The minutes of that meeting are included separately and are ready for approval.

A memorandum (see Attachment A) has been received from ZBA member Paul Palmgren that includes three recommendations. Other revisions have been made to the Draft Amendment are briefly reviewed below and indicated in the Annotated Ordinance (see Attachment X).

Justification for the map amendment is also reviewed and an alternative amendment with no map amendment is included for consideration. A Draft Finding of Fact is also attached. No information has been provided regarding Parts B and C. Part A is ready for final action and Parts B and C can be completed later.

PAUL PALMGREN RECOMMENDATIONS

A memorandum was received from Board member Paul Palmgren on March 17, 2009, that outlined the following three suggested changes to the Draft amendment:

1. **Increase the minimum required separation to non-participating dwellings to 1,500 feet in par. 6.1.4 C. (2).** In his memorandum Mr. Palmgren doubts that 1,200 feet is adequate to satisfy non-participating residents related to wind farm noise impacts and he suggests that an additional 300 feet of separation is a reasonable trade-off in lieu of taking the time to hire a noise consultant to make a more informed choice. See the discussion below regarding the noise impacts of the 1,200 separation.

Staff analysis using the Danish Wind Association sound calculator has determined the following:

- A 1,200 feet separation will result in approximate noise ratings at a non-participating dwelling of between 38 decibel (dB) relative to one turbine and 41 dB relative to two turbines and 42 dB relative to four turbines. Recall that (1) the assumption in the Illinois Pollution Control Board (IPCB) noise regulations are that the rural long term background ambient noise level for nighttime condition is 30 dB and (2) a 10 dB increase is generally perceived as a doubling of the noise level. Thus, the 1,200 feet separation will sometimes result in more than a doubling (a 12 dB increase relative to four turbines) of the existing noise level.

- A 1,500 feet separation will result in approximate noise ratings at a non-participating dwelling of between 36 decibel (dB) relative to one turbine and 39 dB relative to two turbines and 40 dB relative to four turbines. Thus, the 1,500 feet separation will also result in a doubling (only a 10 dB increase relative to four turbines) of the existing noise level but only under conditions relative to more than two turbines.

- Note that a 1,800 feet separation is required to ensure that there is less than a doubling of the existing noise level relative to more than two turbines.

It is not clear what a reasonable increase in noise level should be for existing non-participating landowners. However, note that the IPCB regulations limit the allowable noise level from Class C land to Class A land to a maximum of 48 dB which is in fact an increase of 10 dB over the 38 dB limit of what one Class A land can send to another Class A land, or about a doubling of the quiet residential noise level.

The Draft Ordinance has been revised to include a minimum 1,500 feet separation in subpar. 6.1.4 C. (2).

2. **Require a minimum 3,500 feet separation between wind farm towers and residential airports and restricted landing areas**. Mr. Palmgren actually recommends requiring a different gradient for the "transitional" surface at the sides of "residential airports" and "restricted landing areas" (defined terms in the Ordinance) by increasing the gradient from 4:1 to 7: 1 but the same effect can be achieved by simply requiring a greater minimum separation relative to wind farm towers.

   The Draft Ordinance has been revised to include a minimum 3,500 feet separation in new subpar. 6.1.4 C. 10.

3. **Require all wind farm towers to be lighted with the minimum required FAA lighting and require each light to be flashing red.** Mr. Palmgren is a private pilot and as such is very concerned about the requirements for wind farm lighting in subparagraph 6.1.4 D. 7. In particular, even though the FAA would allow the interior wind farm towers to be unlighted Mr. Palmgren is concerned that could be mistaken as a safe nighttime landing area and recommends lighting of all towers. Further, white lights are detrimental to night vision and Mr. Palmgren recommends red lights.

The wind farm lighting requirements in the Draft Amendment are based on recommendations to minimize avian impacts. In general, human safety is no less important than avian safety. Subparagraph 6.1.4 D. 7. of the Draft Ordinance has been revised to incorporate these suggestions.

OTHER REVISIONS TO THE PROPOSED ORDINANCE

Several minor changes have been made throughout the Revised Draft Amendment and Board members should review the complete Draft. In particular, the Board should consider the following changes which have been included in the Revised Draft even though they are simply staff recommendations:

- **Prohibition of Wind Farm County Board special use permit from areas with underground gas lease unless the lease ensures minimum separations (see new subpar. 6.1.4 A. 2. (c).** The Newcomb Township Plan Commission raised a valid concern in regards to the risk posed by areas that are under lease for gas storage but that do not currently have gas injection wells. If the requirement for a minimum separation from gas injection wells (subpar. 6.1.4 C. 8.) is really necessary for safety then it is also necessary to ensure that future gas injection wells also comply with the requirement. However, these wells are installed by a company that is considered a utility and so is exempt from County zoning. The Draft amendment has been revised to require that the underground gas storage lease must be revised to ensure conformance with the minimum separation from gas injection wells (subpar. 6.1.4 C. 8.).

- **Requirement for 1,000 feet separation of wind farm towers from the perimeter of the wind farm within ¼ mile of a public street.** Board member Courson had requested a separation that would ensure that non-participating landowners can build on their property and be guaranteed to have a minimum 1,000 feet separation from the nearest wind farm tower. New subparagraph 5.5 C. 3. requires that separation but only on land that is within ¼ mile of a public street. This revision does not require the 1,000 feet separation on areas more remote from the public street. Note also that a portion of the land that is located across the street from a wind farm will actually fall within the 1,000 feet distance for the 190 feet that is closest to the street but there should be adequate area to build a home outside of the 1,000 feet separation.

- **Revision of the description of the area of the Wind Farm Overlay Zoning District**. In making the revision requested by Tom Courson it became apparent that the previous description of the area to be included in the Wind Farm Overlay Zoning District was flawed. The description has been revised.

MITIGATION OF IMPACTS OF THE SPECIAL USE

One of the criteria that must be met for approval of any special use is

> "that it so designed, located, and proposed as to be operated so that it will not be injurious to the DISTRICT in which it shall be located or otherwise detrimental to the public welfare;

The standard conditions of a special use should mitigate as many of the impacts as possible so that the special use is not injurious to the district. Attachments B and C summarize the impacts of a wind farm on non-participating agriculture and non-participating dwellings. The attachments indicate that the following impacts are not completely mitigated by the conditions:

- **Shadow flicker distractions for adjacent farmers**. The degree of problem that shadow flicker might cause for adjacent farmland is not clear but it may be a nuisance for some farmers. Paragraph 6.1.4 M. requires a submittal to identify areas with more than one hour of flicker per year but it remains to be seen how much flicker might affect adjacent farmland. The impact is presumably greater on future by-right lots that may be sold off from the adjacent farmland.

- **Interference with aerial application of chemicals**. The degree of incompatibility is not clear. Testimony has been received that aerial application can be made by helicopter and that ground application can be used instead. It seems unlikely that this would amount to a total interference but it also seems certain that some degree of interference is certain.

- **Visual impact for adjacent dwellings**. There should be no visual impact on agricultural production even though individual farmers may not like the visual impact. The impact is presumably greater on future by-right lots that may be sold off and on adjacent non-participating dwellings. Subpar. 6.1.4 C. 2. requires a minimum separation from the base of a wind farm tower to the nearest non-participating dwelling; subpar. 6.1.4 D. 6. requires simple color and no advertising; and par. 6.1.4 N. requires a visual assessment to illustrate what the visual impact will be. However, there is little or no mitigation for the visual impact of a wind farm in a prairie landscape.

- **Noise impacts are likely.** Attachments B and C indicate there will be some mitigation of noise impacts and that the wind farm should be within the noise limits of the Illinois Pollution Control Board but because of how much noise is allowable under the IPCB regulations noise complaints are likely to result. Wind farms generate a level of noise that is generally higher than that from agriculture and the noise occurs year round. The perceived effect will be that the existing noise level is more than doubled. The greater separation required for non-participating dwellings in subparagraph 6.1.4 C.2. should limit the increase to no more than double.

CONSIDERATIONS RELATED TO NEED FOR A MAP AMENDMENT

Attachment D is a review of considerations related to the need for a map amendment. The attachment indicates there is some justification for use of a map amendment in wind farm authorization because of the impacts related to shadow flicker, aerial application of farm chemicals, and visual impact that cannot be mitigated within the special use permit area.

However, neither of these impacts alone appears to be terribly significant. The greatest significance is probably the totality of all impacts (even those that are mitigated) and it is that totality that makes a wind farm unlike any other land use. Nonetheless, because of the relatively minor significance of these unmitigated impacts the Board has some discretion in whether or not to recommend a map amendment. The Finding of Fact needs to be especially carefully written to support whatever recommendation is made.

ALTERNATIVE AMENDMENT WITHOUT MAP AMENDMENT

Because there appears to be some discretion regarding the need for a map amendment, an alternative amendment has been prepared that omits the map amendment.

The Board should expect at least one protest (from Newcomb Township) if this alternative is recommended.

DRAFT FINDING OF FACT

A Draft Finding of Fact is included separately. The Draft Finding reviews the proposed amendment for achievement and conformance with relevant goals and policies. Staff has recommendations for all relevant goals and policies.

Note that goals and policies related to compatibility with agriculture have only "general" achievement or conformance. In this context "general" has been used to indicate "almost complete" achievement or conformance. Complete achievement or conformance cannot be recommended in many instances because of the concerns about interference with aerial application.

Item 11. I. of the Finding is the assessment regarding Land Use Regulatory Policy (LURP) 1.1 regarding the highest and best use of farmland. This LURP is the highest level LURP because it incorporates the other LURPs. And, because the LURPs take dominance over the Land Use Goals and Policies, this LURP is perhaps the single most important land use policy. The proposed amendment appears to "fully conform" to this LURP. Note that in regard to compatibility with agriculture, LURP 1.1 only requires that the potential for conflict with agriculture be minimized.

ATTACHMENTS

A Memorandum from ZBA member Paul Palmgren received March 17, 2009

B Mitigation Of Wind Farm Impacts On Adjacent Non-Participating Agriculture

C Mitigation Of Wind Farm Impacts On Existing Non-Participating Dwellings

D Considerations Related To The Need For A Map Amendment

E Annotated Revised Draft Ordinance

F Legal advertisement for Case 634-AT-08

G Minutes of February 26, 2009, public hearing (included separately)

H Revised Draft Ordinance (included separately)

I Alternative Draft Ordinance Without Map Amendment (included separately)

J Draft Finding of Fact (included separately)

RECEIVED
MAR 17 2009
CHAMPAIGN CO. P & Z DEPARTMENT

March 16, 2009

John Hall
Zoning Administrator,
Champaign County, IL
Brookens Administration Bldg.
Urbana, IL.

John,

Enclosed is some input concerning the hearings for the wind farms and some guidance that you have asked of the ZBA members, including me. I believe this is one of the most important and controversial issues for Champaign County in many years. As your newest member and only four meetings into the procedures of the board, I am still feeling my way. It is quite different sitting on the decision side vs. the petition side because there is more to digest. At times, information overload and emotional presentations can cloud the issues. I'm sure that I can come up to speed with a little more "seat time" to become a more contributing member.

I seem to work better when I can spread the information out and pick through it. The enclosed summary provides input in two areas; potential noise with proposed distances, and FAA distances and gradients for tall structures, especially near airports. These are *my recommendations* and the reasoning, but you have at least five other members that may have another opinion.

Let me know if there is some better procedure I should be following or another method of presenting input or requests to the Administrator. I assume that this input will be part of the public record or discussed at the next (last?) wind farm hearing.

Lastly, I am impressed with the volume of research that comes out of your office. You and your staff should be commended for providing outstanding service in an occasionally thankless position.

Sincerely,

Paul Palmgren,
CCZBA

March 16, 2009

Re: Input from Champaign County ZBA member Paul Palmgren to John Hall, Zoning Administrator, concerning **DRAFT, PROPOSED NEW SECTION 6.1.4, WIND FARM County Board SPECIAL USE Permit.**

Paragraph 6.1.4.C (2) Distance to non-participating dwellings: Reviewing the provided data published by Kamperman and James, as well as testimony presented by Burdin, Parker and others at the Champaign County ZBA wind farm hearings, I don't think that 1200' is enough distance from the center base of a power-generating wind turbine to a *non-participating* dwelling. Although testimony from wind farm developers think numbers in the 1000-1200' range is ok, it may not necessarily follow that it is an adequate distance to satisfy non-participating residents under wind farm conditions. There also appear to be waivers both up and down from this number by the developers in special circumstances. Little available hard independent data presents noise measurements down in the very low frequency range that wind turbines apparently generate. Also, there does not seem to be much interest, time or money to do c-weighted (low frequency weighted) noise testing. Furthermore, Champaign County may be charged with policing the State of Illinois's noise ordinance due to the fact that the State EPA Noise Pollution Control Board (NPCB) has reported to the Zoning Administer that they don't have the necessary personnel for enforcement. It seems that noise from a wind turbine is different enough (very low frequency) from other noises yet the NCPB does not appear to have a specific category listed for wind farms and the potential for low frequency noise. I'm not sure that the "one-size-fits-all" approach to noise measurements work for wind farms. This lack of specifics in the NCPB rules and the lack of personnel to service potential complaints could be an issue for the county concerning noise complaints. *Therefore, I am recommending that non-participating dwellings be separated from the base center of a wind farm turbine by a minimum distance of **1500'**, providing the noise level caused by the wind farm at the particular building complies with the applicable Illinois Noise Pollution Control Board regulations.* This number is 1.5x that of a participating dwelling. If consensus from the industry prefers 1200', an extra 300' should provide a little extra insurance in lieu of proper, expensive and time consuming actual testing. From ***6.1.4 C (3)***, waivers are conditionally available for both participating and non-participating separations down to 1.1x the maximum tower height.

I believe that other distances listed within 6.1.4.C seem reasonable, considering the information provided.

Paragraph 6.1.4 D (7)
Complying with FAA regulations: Subpart B, Notice of Construction or Alteration, *Section 77.13, Construction or alteration requiring notice and section 77.25, Civil airport imaginary surfaces:* These sections refer to gradients and clear areas around airports as well as required hearings for construction of wind farms. I believe that gradients for large public use airports are *acceptable* at 20:1 from the runway ends and 7:1 from the sides. Therefore, a 500' (wind) tower would need to be 10,000' from the end

of a runway and 3,500' to the side at these gradients. However, small Residential airports in Champaign County use gradients of 15:1 at the runway ends and 4:1 at the sides. The end figure of 15:1 is *adequate* (7,500' for 500' tower) but the side 4:1 gradient (2,000') is *not acceptable* because this would be in the landing pattern where aircraft would transit at a lower altitude for landing. I, as a private pilot, *recommend that the 7:1 gradient for public use airports also be used for Residential airports* and restricted landing areas (RLA) in the interest of safety.

Ref: Obstruction Marking and Lighting: FAA Advisory Circular AC 70/7460-1K, Chapter13, Marking and Lighting Wind Turbine Farms, Section 131, General Standards: Paragraph ***6.1.4 D (7)*** also states that *"The minimum lighting requirements of the FAA shall be used at night and only the minimum number of such lights with the minimum intensity and the minimum number of flashes per minute (longest duration between flashes) allowed by the FAA."* I agree with the word minimum; however, as a private pilot, ***all the towers should be lighted and the lights should be red,*** not white strobes. The wind farm east of Bloomington, IL is a good example; all towers are lighted red for safety because 1) this installation is within a flight path for the Bloomington-Normal Airport and 2) red lights do not harm night vision like a white, flashing strobe. Pilots routinely turn off the aircraft strobe lights when in cloud or fog, especially at night, to preserve night vision. Additionally, all towers should be lighted because if an off-airport, night emergency landing is required (a pilot's worst nightmare), pilots are taught to aim for areas *without lights*, ideally an area without structures. Proposed wind farms to the northeast and northwest of Champaign County would both be in areas where commercial, as well as training aircraft, would routinely fly over to land at U of I.-Willard.

Sincerely,

Paul Palmgren

Attachment B. Mitigation Of Wind Farm Impacts On Adjacent Non-Participating Agriculture

Case 634-AT-09 March 18, 2009

Wind Farm Impact	Required Standard Condition	Degree of Mitigation	Notes
Visual impact	***NO CONDITION REQUIRED FOR AGRICULTURE*** ***(Note: Farm dwellings are considered residential)***	***NONE REQUIRED***	There should be no visual impact on agricultural production even though individual farmers may not like the visual impact. The impact is presumably greater on future by-right lots that may be sold off. There is no mitigation for the visual impact of a wind farm.
Shadow flicker	Par. 6.1.4 M. requires a submittal to identify areas with more than one hour of flicker per year	Uncertain-Assumed ***NONE***	The degree of problem that shadow flicker might cause for adjacent farmland is not clear but it may be a nuisance for some farmers. The impact is presumably greater on future by-right lots that may be sold off.
Noise	***NO CONDITION REQUIRED FOR AGRICULTURE*** ***(Note: Farm dwellings are considered residential)***	***NONE REQUIRED***	The IPCB regulations required by 6.1.4 I. do not regulate noise relative to agriculture. Unlike agriculture the wind farm will generate noise on a 24/7 basis and the overall noise level will be much greater than would result from almost any agricultural activity. And because of how much noise is allowable under the IPCB regulations complaints are likely to result because the perceived effect will be that the existing noise level is more than doubled. The impact is presumably greater on future by-right lots that may be sold off. The minimum required separations in 6.1.4 C. 5.5.3 C.3. should ensure that the noise impacts on any future dwelling are below the maximum allowed by the IPCB rules.
Transportation	Par. 6.1.4 F. requires a road agreement that requires farm traffic to have priority over wind farm traffic	High	Because of the special condition there will be little or no long term impact on agriculture or future by-right lots.
Drainage	Par. 6.1.4 E. requires all tile to work as well after wind farm construction as before.	High	Because of the special condition there will be little or no long term impact on agriculture or future by-right lots
Interference with aerial application of chemicals	***NONE***	***NONE***	The degree of incompatibility is not clear. Testimony has been received that aerial application can be made by helicopter and that ground application can be used instead.
Possible electromagnetic interruption	Par. 6.1.4 H. requires notice to be given to any microwave transmission provider or 911 service and reasonable measures to mitigate any anticipated interference (including broadcast television). Interference may result but the wind farm operator is supposed to correct the interference by reasonable means.	High	Because of the special condition there will be little or no long term impact on agriculture or future by-right lots.
Dereliction of wind farm turbines	Par. 6.1.4 Q. requires decommissioning and a reclamation agreement with an Irrevocable Letter of Credit worth 150% of the construction cost to be in place before construction begins.	High	The landowner should incur no costs for decommissioning.
Safety risk posed by turbine fire/ destruction	Minimum separations required by subpar. 6.1.4 A. 4. Par. 6.1.4 G requires coordination with local fire protection district. Liability insurance required by par. 6.1.4 O.	High	The probability of a major turbine accident seems very remote.

Attachment C. Mitigation Of Wind Farm Impacts On Existing Non-Participating Dwellings

Case 634-AT-09 March 18, 2009

Wind Farm Impact	Required Standard Condition	Degree of Mitigation	Notes
Visual impact	Subpar. 6.1.4 C. 2. requires a minimum separation from the base of a wind farm tower to the nearest non-participating dwelling. Subpar. 6.1.4 D. 6. requires simple color and no advertising. Par. 6.1.4 N. requires a visual assessment.	*NONE*	There is no way to mitigate the visual impact of a wind farm.
Shadow flicker	Subpar. 6.1.4 M. requires a submittal to identify areas with more than one hour of flicker per year.	High	The impact is presumably greater on future by-right lots that may be sold off because less separation is required. The impact is presumably greater on future dwellings that may be created out of adjacent farmland because less separation is required.
Noise	Subpar. 6.1.4 C. 2. requires a minimum separation from the base of a wind farm tower to the nearest non-participating dwelling. A separation of 1,200 feet was originally proposed. Depending upon the final recommendation for this separation, the noise impact of the wind farm may be less. At a minimum par. 6.1.4 I. requires noise levels to be in compliance with the Illinois Pollution Control Board (IPCB) rules.	Low	Unlike row crop agriculture, the wind farm will generate noise on a 24/7 basis so the IPCB rules will allow a much greater increase in noise than is likely to occur under row crop agriculture. The minimum required separation should be more than enough to allow the IPCB rules to be met. However, because of how much noise is allowable under the IPCB regulations complaints are likely to result because the perceived effect at 1,200 feet is likely to more than double the existing noise level for existing dwellings.
	ALTERNATIVE: A minimum required separation of approximately 1,500 feet is probably necessary to ensure existing residents do not perceive more than a doubling of the noise level as a result of wind farm development.	High	A minimum separation of 1,500 feet should provide a Noise Rating of approximately 36 to 40 which is presumably less than a doubling of the existing noise and is equivalent to the IPCB rules for Class A land and should be considered full mitigation
Transportation	Par. 6.1.4 F. requires a road agreement that will minimize road conflicts.	High	Some inconvenience is likely during wind farm construction.
Drainage	Par. 6.1.4 E. requires all tile to work as well after wind farm construction as before.	High	Little or no impact on existing non-participating dwellings
Possible electromagnetic interruption	Subpar. 6.1.4 H. requires notice to be given to any microwave transmission provider or 911 service and reasonable measures to mitigate any anticipated interference (including broadcast television).. After construction the wind farm operator is supposed to correct any interference by reasonable means.	High	Interference may result but the wind farm operator is supposed to correct the interference by reasonable means.
Dereliction of wind farm turbines	Par. 6.1.4 Q. requires decommissioning and a reclamation agreement with an Irrevocable Letter of Credit worth 150% of the construction cost to be in place before construction begins.	High	The landowner should incur no costs for decommissioning.
Safety risk posed by turbine fire or destruction	Minimum separations required by subpar. 6.1.4 A. 4. Par. 6.1.4 G requires coordination with local fire protection district. Liability insurance required by par. 6.1.4 O.	High	The probability of a major turbine accident seems very remote.

CONSIDERATIONS RELATED TO NEED FOR A MAP AMENDMENT

The following summarizes relevant considerations related to the need for a map amendment:

1. **A modern wind farm is unlike any other use and there are no similar uses for comparison.** A modern wind farm is a substantial industrial use involving perhaps a hundred or more turbines on thousands of acres of land and perhaps hundreds of landowners. During construction, a modern wind farm cause disruption of local streets and disruption of underground tile drainage and after construction a wind farm causes noise, shadow flicker, possible electromagnetic interruption, possible wildlife impacts, and visual impacts and all on a scale like no other type of development. There is no other land use (except for agriculture) that has such extensive geography and no other land use with such extensive impacts.

2. **Counties that have never found a reason to adopt a Zoning Ordinance have adopted regulations for wind farms.** This suggests that the impacts of a wind farm exceed the impacts of any other common development.

3. **The decision regarding the appropriate uses to allow in a zoning district is a legislative decision but it should be consistent with the overall system of planning and regulation.** There is no way to conclusively determine whether a particular use should be in one zoning district or another. The decision is a legislative decision made by the relevant authority (County Board in this instance). However, the decision should be consistent with other relevant land use regulations and all relevant land use goals and policies which themselves may be changed in order to provide consistency. Relevant considerations are the following:

    - In the Champaign County Zoning Ordinance, sewage disposal plants, gas turbine peaker plants, and sawmills are the only other types of industrial and non-agricultural development that may be authorized in the AG-1 district and water treatment plants are authorized in the AG-2 District. Those uses all require special use permits authorized by the Zoning Board of Appeals and require no review by the County Board. None of those uses benefit multiple farmland owners like a wind farm but none of those uses are as extensive in their impacts as a wind farm.

    - The Champaign County Zoning Ordinance also requires rural residential subdivisions involving the creation of more than three (sometimes four) lots since 1/1/98 to be rezoned to the Rural Residential Overlay Zoning District. One purpose of this rezoning is specifically to allow the County Board to consider the impact of the proposed residential development on surrounding agriculture.

    - The Champaign County Land Use Regulatory Policies also recognize that some non-agricultural uses are better located in a rural area which is contrary to most of the County's land use policies.

4. **A special use permit process is adequate if the impacts on neighbors can be mitigated with special conditions of approval.** One indication that a use is suitable for authorization as a special use permit is whether or not special conditions can be used to mitigate the impacts on adjacent properties. A dozen or more standard conditions are required to ensure that a wind farm will not cause injury to adjacent properties. There is no other special use that requires so many conditions

for approval. Also, not all impacts of the wind farm can be mitigated by special conditions. It could be argued that this alone indicates the need for a map amendment.

5. **Not all impacts of wind farms can be mitigated with special conditions.** The following wind farm impacts can apparently not be completely mitigated with special conditions:

   a. Wind farms do not appear to be completely compatible with modern agriculture in regard to the following:

      - It appears that the presence of a wind farm on a property will increase the costs of (or even prevent) aerial (airplane) application on adjacent properties. Testimony has been received that helicopter aerial application is still possible as is ground application in many instances.

      - The shadow flicker caused by the rotor can also cause problems for farm equipment operators on adjacent lands. The degree of problem that shadow flicker might cause for adjacent farmland is not clear but it may be a nuisance for some farmers. The impact is presumably greater on future by-right lots that may be sold off.

   b. Because of the large areal extent of a modern wind farm and the height of the turbine towers no other land use has the visual impact of a wind farm in a prairie landscape. In general, there is no way to mitigate the visual impact of a wind farm in a prairie landscape.

      Visual impact is only an aesthetic consideration and aesthetics are generally not given a great deal of weight in rural land use regulations.

6. **A modern wind farm can be expected to surround parcels of land that are not included in the wind farm development.** There is no other example of a special use permit that surrounds land that is not part of the special use permit. This is one of the most unusual aspects of a wind farm and it could be argued that this alone indicates the need for a map amendment.

7. **A map amendment is the only way to allow adjacent non-participating farmers who border the wind farm some say in the approval of this non-agricultural development that may impact their farmland.** Requiring a map amendment is the only way to provide bordering landowners an affirmative means of opposition to a proposed wind farm. Non-farm bordering neighbors would also have protest rights but as a practical matter, the number of non-farm neighbors should be very small for any wind farm.

8. **A map amendment also provides a voice for the affected township.** An entire township may feel the impact of a wind farm development or the impact of a lost opportunity if a wind farm is not approved by the County Board. If a township has a plan commission it has protest rights on a wind farm map amendment and can therefore vote to protest a wind farm map amendment or vote to affirm the approval.

Attachment E. Annotated Revised Draft Ordinance
MARCH 20, 2009

1. Add new purpose 2.(r) as follows:

(r) provide for the safe and efficient development of renewable energy sources in those parts of the COUNTY that are most suited to their development.

2. Add the following to Section 3.0 Definitions:

DWELLING OR PRINCIPAL BUILDING, PARTICIPATING: A DWELLING on land that is ~~owned by a landowner who has agreed to lease land~~ leased to a WIND FARM.

DWELLING OR PRINCIPAL BUILDING, NON- PARTICIPATING: A DWELLING on land that is ~~owned by a landowner who has not agreed to lease land~~ not leased to a WIND FARM.

PRIVATE WAIVER: A written statement asserting that a landowner has agreed to waive a specific WIND FARM standard condition and has knowingly agreed to accept the consequences of the waiver. A PRIVATE WAIVER must be signed by the landowner.

WIND FARM: A unified development of WIND FARM TOWERS and all other necessary components including cabling, transformers, a common switching station, and maintenance and management facilities which are intended to produce electricity by conversion of wind energy and to deliver the electricity to the power grid and having a name plate capacity of more than 10 megawatts (MW). A WIND FARM is under a common ownership and operating control even though the individual WIND FARM TOWERS may be located on land that is leased from many different landowners.

WIND FARM TOWER: A wind turbine nacelle and rotor and the supporting tower structure that are part of a WIND FARM development and intended to produce electricity for the power grid.

WIND TOWER, TEST:
{NOTE: Staff is still drafting this definition.}

WIND TURBINE TOWER: A wind turbine nacelle and rotor and the supporting tower structure that is owned by a private landowner for the purpose of producing electrical energy that may be used onsite or sold to a utility.

2. Add new subparagraph 4.2.1 C.2. as follows:

2. A WIND FARM may be authorized as a County Board SPECIAL USE permit in the AG-1, Agriculture Zoning District, and WIND FARM Overlay Zoning District as a second PRINCIPAL USE on a LOT with another PRINCIPAL USE. WIND FARM TOWERS may be authorized by County Board SPECIAL USE permit as multiple PRINCIPAL STRUCTURES on a single LOT in the AG-1, Agriculture Zoning District.

3. Add new subparagraph 4.3.1 F. as follows:

F. HEIGHT regulations shall not apply to WIND FARM TOWERS except as HEIGHT regulations are required as a standard condition in Section 6.1.4.

4. Add new subparagraph 4.3.4 H. 4. h. as follows:

h. WIND FARMS and WIND FARM TOWERS except as PIPELINE IMPACT RADIUS regulations are required in Subsection 6.1.4.

5. Add new Subsection 5.1.17 as follows:

5.1.17 WIND FARM OVERLAY
The WIND FARM OVERLAY Zoning District is intended to provide areas that are suitable for development of a WIND FARM County Board SPECIAL USE Permit.

6. Amend Section 5.2 as follows:

Add "WIND FARM" as a COUNTY BOARD Special Use Permit in the AG-1 District by a "B" and indicate footnote 17.

7. Add the following as footnote 17 in Section 5.2:

17. A WIND FARM County Board SPECIAL USE Permit is only authorized in the WIND FARM OVERLAY Zoning DISTRICT in areas also zoned AG-1.

8. Add the following as footnote 14 under the Special Provisions for the AG-1 District in Section 5.3:

14. LOTS in the WIND FARM OVERLAY Zoning DISTRICT intended for WIND FARM TOWERS, substations, and WIND FARM maintenance and management facilities are exempt from the requirements of Section 5.3 except as such regulations are required by Subsection 6.1.4.

9. Add new paragraph 5.4.3 E. as follows:

E. The Rural Residential Overlay Zoning District is prohibited from being established in areas also zoned WIND FARM Overlay Zoning District.

10. Add new subsection 5.5 as follows:

5.5 WIND FARM OVERLAY Zoning DISTRICT

5.5.1 Acts Prohibited
No WIND FARM or WIND FARM TOWER or cabling, transformers, common switching station, or other necessary device or STRUCTURE serving a WIND FARM shall be constructed in the AG-1 District on land that is not in conformance with this Section.

5.5.2 Exemptions

A. The following may be authorized without the creation of a WIND FARM OVERLAY Zoning District:

1. The construction of a WIND TURBINE TOWER.

2. The construction of a TEST WIND TOWER.

5.5.3 Establishment of the WIND FARM OVERLAY Zoning District

A. The establishment of the WIND FARM OVERLAY Zoning District is an amendment to the Champaign County Zoning Ordinance and shall be implemented in accord with the provisions of Subsection 9.2 as modified herein.

B. The adoption of the WIND FARM OVERLAY Zoning District shall augment the provisions of the underlying DISTRICT and shall alter the following requirements:

1. The height regulations of Section 4.3.1 and Section 5.3 as applied only to WIND FARM TOWERS except as height regulations are required as a standard condition in Section 6.1.4.

2. The minimum lot requirements of Section 5.3 and paragraph 4.3.4 B. as applied only to WIND FARM TOWERS except as minimum lot requirements are required as a standard condition in Section 6.1.4.

3. The requirements of paragraph 4.3.4 H. regarding Pipeline Impact Radius as applied only to WIND FARM TOWERS and other WIND FARM components except as Pipeline Impact Radius regulations are required as a standard condition in Section 6.1.4.

4. New DWELLINGS and PRINCIPAL BUILDINGS may not be constructed as follows:

(a) less than 1.10 times the total WIND FARM TOWER height (measured to the tip of the highest rotor blade) from the base of a WIND FARM TOWER or on any other part of the area of a WIND FARM County Board SPECIAL USE Permit; or

(b) The Rural Residential Overlay Zoning District shall not be established less than 1,000 feet from the base of a WIND FARM TOWER.

C. The WIND FARM OVERLAY Zoning District shall include the following areas:

1. All of the area in the WIND FARM County Board SPECIAL USE Permit; and

~~1~~ 2. All land that is within a distance of 1.50 times the total WIND FARM TOWER height (measured to the tip of the highest rotor blade) from the base of each WIND FARM TOWER except ~~that~~ any such land that is more than 1,320 feet from any existing public STREET right of way ~~in which case the area of the WIND FARM need only include all land that is within a distance equal to 1.10 times the total~~

~~WIND FARM TOWER height (measured to the tip of the highest rotor blade) from the base of a WIND FARM TOWER~~; and

3. 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 WIND FARM TOWER except that in the case of WIND FARM TOWERS 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 WIND FARM Overlay District; and

~~2~~ 3. Any existing ~~tracts~~ tax parcel of land that ~~are~~ is not included in the area of the WIND FARM County Board SPECIAL USE Permit ~~but~~ and that ~~are~~ is surrounded by the area of the WIND FARM County Board SPECIAL USE Permit except that any such ~~tracts~~ parcels of land that are larger than five acres may be omitted from the area of the Overlay District; and provided that

~~4. The area of the WIND FARM OVERLAY Zoning District shall also include such tracts of land so as to make a single contiguous area and such land as required to result in a legal description of the WIND FARM Overlay Zoning District area that will conform to rectilinear land descriptions;~~

4. The boundary of the WIND FARM OVERLAY Zoning District shall only follow tax parcel lines and shall not bisect or cross any tax parcel boundary. New tax parcels may be created to accommodate a proposed WIND FARM Overlay Zoning District provided that any resulting tax parcel ~~LOT~~ that fully conforms to all Ordinance requirements and conforms to a rectilinear land description.

D. BOARD Findings

1. The BOARD shall make the following finding before forwarding a recommendation to the GOVERNING BODY with respect to a map amendment case to create a WIND FARM OVERLAY Zoning District:

> That based on the considerations in the related COUNTY BOARD SPECIAL USE PERMIT (insert actual case number) the proposed site is or is not suitable for the development of the specified maximum number of WIND FARM TOWERS.

2. In making the finding, the BOARD shall consider the following:

   a. The degree of conformance of the related WIND FARM County Board SPECIAL USE permit with the standard conditions for WIND FARM County Board SPECIAL USE permit established in Section 6.1.4 as recommended by the BOARD including any necessary waiver of standard conditions.

b. The recommended findings of the BOARD in the related WIND FARM County Board SPECIAL USE permit.

3. The BOARD may also make recommendations for specific conditions that should be imposed upon the adoption of any WIND FARM Overlay Zoning District.

E. APPLICANTS Rights and Limitations Upon Approval

1. Approval of a WIND FARM OVERLAY DISTRICT is specific to the tracts of land designated on the application.

2. Approval of a WIND FARM OVERLAY DISTRICT shall not be deemed to be an approval of a WIND FARM County Board SPECIAL USE permit.

3. WIND FARM OVERLAY DISTRICT designation expires in 10 years if no Zoning Use Permit is granted.

5.4.5 Submittals Required Upon Application

A. A written application as required in Subsection 9.2.1 may be submitted by the WIND FARM Applicant provided that it includes the signatures of the OWNERS of more than 50% of the area involved.

B. The application shall include a plan of the proposed WIND FARM OVERLAY District indicating the overall dimensions and acreage of the proposed DISTRICT; existing STREETS and STREET numbers; existing tax parcels; township section and range; and location of the proposed WIND FARM County Board SPECIAL USE Permit.

10. Renumber existing paragraph 6.1.2 to be subsection 6.1 Standards for Special Uses

11. Rename existing subsection 6.1.1 to Standard Conditions that May Apply to Specific SPECIAL USES

12. Move existing paragraphs 6.1.1 A. and B. to become new subparagraphs 9.1.11 7. and 8.

13. Renumber existing paragraph 6.1.1 C. to become new paragraph 6.1.1 A.

14. Revise existing subparagraph 6.1.1 C. 5. to read as follows:

5. No Zoning Use Permit for such SPECIAL USE will be issued until the developer provides the COUNTY with an irrevocable letter of credit to be drawn upon a federally insured financial institution within 200 miles of Urbana or reasonable and anticipated travel costs shall be added to the amount of the letter of credit. The irrevocable letter of credit shall be in the amount of one hundred fifty percent (150%) of an independent engineer's cost estimate to complete the work described in Section 6.1.1C4a. This letter of credit, or a successor letter of credit pursuant to Section 6.1.1C6 or

6.1.1C12 shall remain in effect and shall be made available to the COUNTY for an indefinite term.

15. Rename subsection 6.1.2 to be Standard Conditions for All SPECIAL USES

16. Renumber existing paragraph 6.1.1 D. to become new paragraph 6.1.2 A.

17. Rename subsection 6.1.3 to Schedule of Standard Conditions for Specific Types of Special Uses

18. Add new subsection 6.1.4 as follows:

6.1.4 WIND FARM County Board SPECIAL USE Permit
A WIND FARM County Board SPECIAL USE Permit may only be authorized in the WIND FARM OVERLAY Zoning District subject to the following standard conditions.

A. General Standard Conditions

1. The area of the WIND FARM County Board SPECIAL USE Permit must include the following minimum areas:

(a) All land that is a distance equal to 1.10 times the total WIND FARM TOWER height (measured to the tip of the highest rotor blade) from the base of that WIND FARM TOWER.

(b) All land that will be exposed to a noise level greater than that authorized to Class A land under paragraph 6.1.4 I.

(c) All land that will be exposed to shadow flicker in excess of that authorized under paragraph 6.1.4M. and for which other mitigation is not proposed.

(d) All necessary access lanes or driveways and any required new PRIVATE ACCESSWAYS. For purposes of determining the minimum area of the special use permit, access lanes or driveways shall be provided a minimum 40 feet wide area.

(e) All necessary WIND FARM ACCESSORY STRUCTURES including electrical distribution lines, transformers, common switching stations, and substations not under the ownership of a PUBLICLY REGULATED UTILITY. For purposes of determining the minimum area of the special use permit, underground cable installations shall be provided a minimum 40 feet wide area.

2. The WIND FARM County Board SPECIAL USE Permit shall not be located in the following areas:

(a) Less than one-and-one-half miles from an incorporated municipality that has a zoning ordinance ~~in conformance with {legal citation to municipal zoning enabling statute}.~~

(b) Less than one mile from the CR Conservation Recreation Zoning District.

(c) In any area leased for underground gas storage unless the lease requires that gas injection wells and other above-ground appurtenances be located in conformance with paragraph 6.1.4 C.8.

B. Minimum Lot Standard Conditions

1. There are no minimum LOT AREA, AVERAGE LOT WIDTH, SETBACK, YARD, or maximum LOT COVERAGE requirements for a WIND FARM or for LOTS for WIND FARM TOWERS, substations, and WIND FARM maintenance and management facilities.

C. Minimum Standard Conditions for Separations for WIND FARM TOWERS from adjacent USES and STRUCTURES

The location of each WIND FARM TOWER shall provide the following required separations as measured from the exterior of the above ground portion of the WIND FARM TOWER:

1. At least 1,000 feet separation from the exterior above-ground base of a WIND FARM TOWER to any PARTICIPATING DWELLING OR PRINCIPAL BUILDING provided that the noise level caused by the WIND FARM at the particular building complies with the applicable Illinois Pollution Control Board regulations.

2. At least ***{1,500 feet}*** feet separation from the exterior above-ground base of a WIND FARM TOWER to any existing NON-PARTICIPATING DWELLING OR PRINCIPAL BUILDING provided that the noise level caused by the WIND FARM at the particular building complies with the applicable Illinois Pollution Control Board regulations.

3. The above separations may be reduced to a distance no less than 1.10 times the total WIND FARM TOWER height (measured to the tip of the highest rotor blade) upon submission of a PRIVATE WAIVER signed by the owner of said dwelling or building or adjacent property. The PRIVATE WAIVER must specify the agreed minimum separation and specifically acknowledge that the grantor accepts the resulting noise level caused by the WIND FARM.

4. A separation distance equal to 1.10 times the total WIND FARM TOWER height (measured to the tip of the highest rotor blade) from the exterior above-ground base of a WIND FARM TOWER to the nearest adjacent property line for property that is also part of the WIND FARM County Board SPECIAL USE Permit. This separation may be reduced upon submission of a PRIVATE WAIVER signed by the owner of the adjacent property. The PRIVATE WAIVER must specify the agreed minimum separation.

5. A separation distance equal to 1.50 times the total WIND FARM TOWER height (measured to the tip of the highest rotor blade) from the exterior above-ground base of a WIND FARM TOWER to the nearest public STREET RIGHT OF WAY unless the WIND FARM is located on both sides of the STREET in which case the minimum separation distance between a WIND FARM TOWER and the public STREET RIGHT OF WAY is equal to 1.10 times the total WIND FARM TOWER height (measured to the tip of the highest rotor blade.

6. A separation distance equal to 1.10 times the total WIND FARM TOWER height (measured to the tip of the highest rotor blade) from the exterior above-ground base of a WIND FARM TOWER to the nearest third party electrical transmission lines, communication towers, or railroad 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 public street maintenance jurisdiction. The PRIVATE WAIVER must specify the agreed minimum separation.

7. Any PRIVATE WAIVER establishing an agreement for a lesser minimum separation as authorized above shall be submitted prior to the final determination by the BOARD 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. No waiver of a standard condition shall be required in the event of a duly agreed and signed PRIVATE WAIVER.

8. At least 1,200 feet separation from the exterior above-ground base of a WIND FARM TOWER to any of the following:
   (a) any easement for a GAS PIPELINE or HAZARDOUS LIQUID PIPELINE; or

   (b) any wellhead or other above ground fixture that is accessory to a GAS PIPELINE or to any valve or other above ground fixture for any HAZARDOUS LIQUID PIPELINE;

   (c) provided however that if the relevant PIPELINE IMPACT RADIUS required by paragraph 4.3.4 H. is greater than 1,200 feet then that PIPELINE IMPACT RADIUS shall be the minimum separation of any of the above; or

   (d) any easement for an underground water main or to the actual water main if there is no easement.

9. At least 1,600 feet separation from the exterior above-ground base of a WIND FARM TOWER to any Liquefied Natural Gas Storage; or Liquefied Petroleum Gas Storage; or Gasoline and Volatile Oils Storage exceeding 500 gallons capacity in the aggregate; or other commercial or industrial use of a flammable, explosive, or hazardous nature.

10. At least 3,500 feet separation from the exterior above-ground base of a WIND FARM TOWER to any RESTRICTED LANDING AREA or RESIDENTIAL AIRPORT.

D. Standard Conditions for Design and Installation of WIND FARM TOWERS

1. Design Safety Certification

(a) WIND FARM TOWERS, turbines, and all related construction shall conform to applicable industry standards, including those of the American National Standards Institute ("ANSI"). Applicants shall submit certificates of design compliance that equipment manufacturers have obtained from Underwriters Laboratories ("UL"), Det Norske Veritas ("DNV"), Germanischer Lloyd Wind Energy ("GL"), or equivalent third party.

(b) Each Zoning Use Permit Application for a WIND FARM TOWER shall include a certification by an Illinois Professional Engineer or Illinois Licensed Structural Engineer that the foundation and tower design of the WIND FARM TOWER is within accepted professional standards, given local soil and climate conditions.

2. Controls and Brakes

(a) All WIND FARM TOWER turbines shall be equipped with a redundant braking system. This includes both aerodynamic over speed controls (including variable pitch, tip, and other similar systems) and mechanical brakes.

(b) Mechanical brakes shall be operated in fail-safe mode.

(c) Stall regulation shall not be considered a sufficient braking system for over speed protection.

3. Electrical Components. All electrical components of the WIND FARM shall conform to applicable state and national codes including, and relevant national and international standards (e.g. ANSI and International Electrical Commission).

4. The WIND FARM TOWER must be a monopole construction.

5. The total WIND FARM TOWER height (measured to the tip of the highest rotor blade) must be less than 500 feet.

6. WIND FARM TOWERS, turbine nacelles, and blades shall be painted white or gray or another non-reflective, unobtrusive color as specified in the application and authorized by the BOARD.

7. The WIND FARM shall comply with all applicable Federal Aviation Administration (FAA) requirements which shall be explained in the application. The minimum lighting requirements of the FAA shall not be exceeded except that all WIND FARM TOWERS shall be lighted and unless otherwise required by the FAA only ~~white strobe~~ red flashing lights shall be used at night and only the minimum number of such lights with the minimum intensity and the minimum number of flashes per minute (longest duration between flashes) allowed by FAA.

8. Warnings
   (a) A reasonably visible warning sign concerning voltage must be placed at the base of all pad-mounted transformers and Substations.

   (b) Visible, reflective, colored objects, such as flags, reflectors, or tape shall be placed on the anchor points of guy wires and along the guy wires up to a height of 15 feet from the ground.

9. All WIND FARM TOWERS 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 WIND FARM TOWER.

E. Standard Conditions to Mitigate Damage to Farmland

1. All underground wiring or cabling for the WIND FARM shall be at a minimum depth of 4 feet below grade or deeper if required to maintain a minimum one foot of clearance between the wire or cable and any agricultural drainage tile.

2. Protection of agricultural drainage tile
   (a) The applicant shall endeavor to locate all existing agricultural drainage tile prior to establishing any construction staging areas, construction of any necessary WIND FARM TOWER access lanes or driveways, construction of any WIND FARM TOWERS, any common switching stations, substations, and installation of underground wiring or cabling. The applicant shall contact affected landowners and tenants for their knowledge of tile line locations prior to the proposed construction. Drainage districts shall be notified at least two weeks prior to disruption of tile.

   (b) All identified drainage district tile lines shall be staked or flagged prior to construction to alert construction crews of the possible need for tile line repairs unless this requirement is waived in writing by the drainage district.

   (c) Any agricultural drainage tile located underneath construction staging areas, access lanes, driveways, any common switching stations, and substations shall be replaced as required in paragraph 7.2 of the Champaign County Stormwater Management Policy.

(d) Any agricultural drainage tile that must be relocated shall be relocated as required in the Champaign County Stormwater Management Policy.

(e) Conformance of any relocation of drainage district tile with the Stormwater Management Policy shall be certified by an Illinois Professional Engineer. Written approval by the drainage district shall be received prior to any backfilling of the relocated drain tile and a copy of the approval shall be submitted to the Zoning Administrator. As-built drawings shall be provided to both the relevant drainage district and the Zoning Administrator of any relocated drainage district tile.

(f) All tile lines that are damaged, cut, or removed shall be staked or flagged in such manner that they will remain visible until the permanent repairs are completed.

(g) All exposed tile lines shall be screened or otherwise protected to prevent the entry into the tile of foreign materials, loose soil, small mammals, etc.

(h) Permanent repairs shall be made within 14 days of the tile damage provided that weather and soil conditions are suitable or a temporary tile repair shall be made. Immediate temporary repair shall also be required if water is flowing through any damaged tile line. Temporary repairs are not needed if the tile lines are dry and water is not flowing in the tile provided the permanent repairs can be made within 14 days of the damage.

(i) All damaged tile shall be repaired so as to operate as well after construction as before the construction began.

(j) Following completion of the WIND FARM construction the applicant shall be responsible for correcting all tile line repairs that fail, provided that the failed repair was made by the Applicant.

3. All soil conservation practices (such as terraces, grassed waterways, etc.) that are damaged by WIND FARM construction shall be restored by the applicant to the pre-WIND FARM construction condition.

4. Topsoil replacement

For any open trenching required pursuant to WIND FARM construction, the topsoil shall be stripped and replaced as follows:

(a) The top 12 inches of topsoil shall first be stripped from the area to be trenched and from an adjacent area to be used for subsoil storage. The topsoil shall be stored in a windrow parallel to the trench in such a manner that it will not become intermixed with subsoil materials.

(c) All subsoil material that is removed from the trench shall be placed in the second adjacent stripped windrow parallel to the trench but separate from the topsoil windrow.

(d) In backfilling the trench, the stockpiled subsoil material shall be placed back into the trench before replacing the topsoil.

(e) The topsoil must be replaced such that after settling occurs, the topsoil's original depth and contour (with an allowance for settling) will be restored.

5. Mitigation of soil compaction and rutting

(a) The Applicant shall not be responsible for mitigation of soil compaction and rutting if exempted by the WIND FARM lease.

(b) Unless specifically provided for otherwise in the WIND FARM lease, the Applicant shall mitigate soil compaction and rutting for all areas of farmland that were traversed with vehicles and construction equipment or where topsoil is replaced in open trenches as follows:

(1) After WIND FARM construction is complete the soil shall be ripped at least 18 inches deep (or more shallow if required to miss tile lines) and then disked by the applicant. Three passes shall be made across any agricultural land that is ripped.

(2) All ripping and disking shall be done at a time when the soil is dry enough for normal tillage operations to occur on undisturbed farmland adjacent to the areas to be ripped.

(3) The Applicant shall restore all rutted land to the original condition.

6. Land leveling

(a) The Applicant shall not be responsible for leveling of disturbed land if exempted by the WIND FARM lease.

(b) Unless specifically provided for otherwise in the WIND FARM lease, the Applicant shall level all disturbed land as follows:

(1) Following the completion of any open trenching, the applicant shall restore all land to its original pre-construction elevation and contour.

(2) Should uneven settling occur or surface drainage problems develop as a result of the trenching within the first year after completion, the applicant shall again restore the land to its original pre-construction elevation and contour.

F. Standard Conditions for Use of Public Streets

Any WIND FARM Applicant proposing to use any County Highway or a township or municipal STREET for the purpose of transporting WIND FARM TOWERS or Substation parts and/or equipment for construction, operation, or maintenance of the WIND FARM TOWERS or Substations(s), shall identify all such public STREETS and pay the costs of any necessary permits and the costs to repair any damage to the STREETS caused by the WIND FARM construction, as follows:

1. Prior to the close of the public hearing before the BOARD, the Applicant shall enter into a Roadway Upgrade and Maintenance agreement approved by the County Engineer and State's Attorney; or Township Highway Commissioner; or municipality where relevant, and the signed and executed Roadway Upgrade and Maintenance agreements must provide for the following minimum conditions:

    a. The applicant shall agree to conduct a pre-WIND FARM construction baseline survey to determine existing STREET conditions for assessing potential future damage including the following:

        (1) A videotape of the affected length of each subject STREET supplemented by photographs if necessary.

        (2) Pay for costs of the County to hire a consultant to make a study of any structure on the proposed route that the County Engineer feels may not carry the loads likely during the WIND FARM construction.

        (3) Pay for any strengthening of STREET structures that may be necessary to accommodate the proposed traffic loads caused by the WIND FARM construction.

    b. The Applicant shall agree to pay for costs of the County Engineer to hire a consultant to make a study of any structure on the proposed route that the County Engineer feels may not carry the loads likely during the WIND FARM construction and pay for any strengthening of structures that may be necessary to accommodate the proposed traffic loads caused by the WIND FARM construction.

    c. The Applicant shall agree upon an estimate of costs for any other necessary roadway improvements prior to construction.

    d. The Applicant shall obtain any necessary approvals for the STREET improvements from the relevant STREET maintenance authority.

e. The Applicant shall obtain any necessary Access Permits including any required plans.

f. The Applicant shall erect permanent markers indicating the presence of underground cables.

g. The Applicant shall install marker tape in any cable trench.

h. The Applicant shall become a member of the Illinois state wide One-Call Notice System (otherwise known as the Joint Utility Locating Information for Excavators or "JULIE") and provide JULIE with all of the information necessary to update its record with respect to the WIND FARM.

i. The Applicant shall use directional boring equipment to make all crossings of County Highways for the cable collection system.

j. The Applicant shall provide plans for the widening of any corner radius that is necessary to facilitate the turning movements of the transport trucks used by the Applicant.

k. The Applicant shall pay for the necessary temporary STREET improvements for the widened corner radii and pay for the cost to return the widened radii to their original lines and grades when no longer needed for the WIND FARM construction unless the STREET maintenance authority requests that the widened radii remain as improved.

l. The Applicant shall notify the STREET maintenance authority in advance of all oversize moves and crane crossings.

m. The Applicant shall provide the County Engineer with a copy of each overweight and oversize permit issued by the Illinois Department of Transportation for WIND FARM construction.

n. The Applicant shall transport the WIND FARM TOWER segments and other oversize loads so as to minimize adverse impact on the local traffic including farm traffic.

o. The Applicant shall schedule WIND FARM construction traffic in a way to minimize adverse impacts on emergency response vehicles, rural mail delivery, school bus traffic, and local agricultural traffic.

p. The Applicant shall provide as much advance notice as is commercially reasonable to obtain approval of the STREET maintenance authority when it is necessary for a STREET to be closed due to a crane crossing or for any other reason.

Notwithstanding the generality of the aforementioned, the Applicant will provide 48 hours notice to the extent reasonably practicable.

q. The Applicant shall provide signs indicating all highway and STREET closures and work zones in accordance with the Illinois Department of Transportation Manual on Uniform Traffic Control Devices.

r. The Applicant shall establish a single escrow account and a single Irrevocable Letter of Credit for the cost of all STREET upgrades and repairs pursuant to the WIND FARM construction.

s. The Applicant shall notify all relevant parties of any temporary STREET closures

t. The Applicant shall obtain easements and other land rights needed to fulfill the Applicant's obligations under this Agreement.

u. The Applicant shall agree that the County shall design all STREET upgrades in accordance with the IDOT Bureau of Local Roads and Streets Manual, 2005 edition.

v. The Applicant shall provide written Notice to Proceed to the relevant STREET maintenance authority by December 31 of each year that identifies the STREETS to be upgraded during the following year.

w. The Applicant shall provide dust control and grading work to the reasonable satisfaction of the County Engineer on STREETS that become aggregate surface STREETS.

x. The Applicant shall conduct a post-WIND FARM construction baseline survey similar to the pre- WIND FARM construction baseline survey to identify the extent of repairs necessary to return the STREET to the pre- WIND FARM construction condition.

y. The Applicant shall pay for the cost of all repairs to all STREETS that are damaged by the Applicant during the construction of the WIND FARM and restore such STREETS to the condition they were in at the time of the pre-WIND FARM construction inventory.

z. All WIND FARM construction traffic shall exclusively use routes designated in the approved Transportation Impact Analysis.

aa. The Applicant shall provide liability insurance in an acceptable amount to cover the required STREET construction activities.

bb. The Applicant shall pay for the present worth costs of life consumed by the construction traffic as determined by the pavement management surveys and reports on the roads which do not show significant enough deterioration to warrant immediate restoration.

cc. Provisions for expiration date on the agreement.

dd. Other conditions that may be required.

2. A condition of the County Board Special Use Permit approval shall be that the Zoning Administrator shall not authorize a Zoning Use Permit for the WIND FARM until the County Engineer and State's Attorney; or Township Highway Commissioner; or municipality where relevant, has approved a Transportation Impact Analysis provided by the Applicant and prepared by an independent engineer that is mutually acceptable to the Applicant and the County Engineer and State's Attorney; or Township Highway Commissioner; or municipality where relevant, that includes the following:

(a) Identify all such public STREETS or portions thereof that are intended to be used by the Applicant during construction of the WIND FARM as well as the number of loads, per axle weight of each load; and type of equipment that will be used to transport each load.

(b) A schedule of the across road culverts and bridges affected by the project and the recommendations as to actions, if any, required with respect to such culverts and bridges and estimated of the cost to replace such culverts and bridges;

(c) A schedule of the anticipated STREET repair costs to be made in advance of the WIND FARM construction and following construction of the WIND FARM.

(d) The Applicant shall reimburse the County Engineer; or Township Highway Commissioner; or municipality where relevant, for all reasonable engineering fees including the costs of a third party consultant, incurred in connection with the review and approval of the Transportation Impact Analysis.

G. Standard Conditions for Coordination with Local Fire Protection District

1. The Applicant shall submit to the local fire protection district a copy of the site plan.

2. Upon request by the local fire protection district, the Owner or Operator shall cooperate with the local fire protection district to develop the fire protection district's emergency response plan.

3. Nothing in this section shall alleviate the need to comply with all other applicable fire laws and regulations.

H. Standard Conditions to Mitigate Electromagnetic Interference

1. The Applicant shall provide the applicable microwave transmission providers and local emergency service provider(s) (911 operators) copies of the project summary and site plan.

2. To the extent that any relevant microwave transmission provider and local emergency service provider demonstrates a likelihood of interference with its communications resulting from the WIND FARM, the Applicant shall take reasonable measures to mitigate such anticipated interference.

3. If, after construction of the WIND FARM, the Owner or Operator receives a written complaint related to the above-mentioned interference, the Owner or Operator shall take reasonable steps to respond to the complaint.

4. If, after construction of the WIND FARM, the Owner or Operator receives a written complaint related to interference with local broadcast residential television, the Owner or Operator shall take reasonable steps to respond to the complaint.

I. Standard Conditions for Allowable Noise Level

1. Noise levels from each WIND FARM TOWER or WIND FARM shall be in compliance with the applicable Illinois Pollution Control Board (IPCB) regulations (35 *Illinois Administrative Code* Subtitle H: Noise Parts 900, 901, 910).

2. The Applicant shall submit manufacturer's wind turbine sound power level characteristics and other relevant data regarding wind turbine noise characteristics necessary for a competent noise analysis.

3. The Applicant, through the use of a qualified professional, as part of the siting approval application process, shall appropriately demonstrate compliance with the above noise requirements.

4. The Applicant shall submit a map of the relevant noise contours for the proposed WIND FARM and indicate the proposed WIND FARM TOWERS and all existing PRINCIPAL BUILDINGS within at least 1,200 feet of any WIND FARM TOWER or within the coverage of the relevant noise contours.

5. If a computer model is used to generate the required noise contours the Applicant shall clearly state the assumptions of the model's construction and algorithms so that a competent and objective third party can as simply as possible verify the noise contours and noise data.

J. Standard Conditions for Endangered Species Consultation
The Applicant shall apply for consultation with the Endangered Species Program of the Illinois Department of Natural Resources. The Application shall include a copy of the Agency Action Report from the Endangered Species Program of the Illinois Department of Natural Resources.

K. Standard Conditions for Historic and Archaeological Resources Review
The Applicant shall apply for consultation with the State Historic Preservation Officer of the Illinois Department of Natural Resources. The Application shall include a copy of the Agency Action Report from the State Historic Preservation Officer of the Illinois Department of Natural Resources.

L. Standard Conditions for Acceptable Wildlife Impacts

1. The WIND FARM shall be located, designed, constructed, and operated so as to avoid and if necessary mitigate the impacts to wildlife as much as possible including the following:
   (a) Avoid locating WIND FARM TOWERS in known bird and bat migration pathways and daily movement flyways and known hibernacula and flight paths between bat colonies and bat feeding areas.

   (b) As much as possible, orient rows of WIND FARM TOWERS parallel to known movement patterns.

2. A qualified professional, such as an ornithologist or wildlife biologist, shall conduct a pre-construction site assessment study to estimate the impacts of the construction and operation of the proposed WIND FARM on birds and bats. The pre-construction site assessment shall be submitted with the application and shall include the following minimum information:

   (a) A literature review of existing information on species and potential habitats in the vicinity of the proposed WIND FARM area.

   (b) A mapping of the general vegetation and land cover types, wildlife habitat and quality, and physical characteristics of the proposed WIND FARM area.

   (c) A full year of site specific avian use surveys from the beginning of the spring migration for birds or bats, and extending through the end of the fall migration for birds or bats and include both the spring and fall migration for both birds and bats in the proposed WIND FARM area.

(d) If the above information suggests the probable occurrence of a state or federal threatened or endangered or sensitive-status species in the proposed WIND FARM area, focused surveys must be conducted during the appropriate season to determine the presence or likelihood of the species of interest and the results submitted with the application.

3. A qualified professional, such as an ornithologist or wildlife biologist, shall also conduct a post-construction mortality monitoring study to quantify the mortality impacts of the WIND FARM on birds and bats. The post-construction mortality monitoring study shall consist of the following minimum information at a minimum:

(a) At least two full years of site specific mortality monitoring from the beginning of the spring migration for birds or bats, and extend through the end of the fall migration for birds or bats and include both the spring and fall migration for both birds and bats in the immediate vicinity of some or all of the WIND FARM TOWERS.

(b) The application shall include a specific proposal for the degree of precision of the mortality monitoring study including how many days the monitoring is done, at how many towers, for how long each day, and at what radius around the tower, and the extent of monitoring outside of the spring and fall migrations.

(c) A written report on avian and bat mortality shall be submitted at the end of first two full years of WIND FARM operation. The mortality rate estimates should reflect consideration of carcass removal by scavengers and predators.

(d) If the Environment and Land Use Committee determines there are legitimate mortality concerns indicated by the monitoring the post-construction mortality monitoring study shall continue in full year increments until the monitoring indicates that the mortality concerns are resolved. When mortality concerns cannot be resolved in any other way, particular WIND FARM TOWERS shall be shut down during periods of peak risk to birds or bats.

4. During both pre-construction assessment and post-construction monitoring, other information required by the United States Fish and Wildlife Service and the Illinois Department of Natural Resources shall also be provided to the County.

M. Standard Conditions for Shadow flicker

1. The Applicant shall submit the results of a study on potential shadow flicker. The shadow flicker study shall identify the locations of both summer and winter shadow flicker that may be caused by the project and the expected durations of the shadow flicker at these locations particularly areas where shadow flicker may interfere more than one hour per year.

2. The Applicant shall ensure the following:
   (a) Existing DWELLINGS shall not be subjected to shadow flicker.

   (b) No public STREET shall be subjected to shadow flicker.

N. Standard Conditions for Visual Impact Assessment

1. The Applicant shall submit simulated images of the proposed WIND FARM from the following viewpoints:
   (a) Any portion of the WIND FARM that will be visible from and within one mile of any non-participating dwelling or other non-participating principal use.

   (b) Any portion of the WIND FARM that will be visible from and within five miles of any forest preserve district facility.

2. The simulated images shall be as follows:
   (a) Full color photographic printing on paper that is minimum 8 ½ by 11 inches in format.
   (b) As accurate as practical in matching the scale, perspective, and color of the probable actual visual impact.

   (c) Computer visualization images may be provided in addition to the full color photographic simulations.

3. The Applicant shall also submit a written report indicating the location of the individual images relative to the proposed site plan and explaining the techniques used to ensure that the images provide maximum practical realism.

O. Standard Condition for Liability Insurance

1. The Owner or Operator of the WIND FARM shall maintain a current general liability policy covering bodily injury and property damage with limits of a least $1 million per occurrence and $1 million in the aggregate. The amount of the limit shall be increased annually to account for the effects of inflation.

2. The general liability policy shall identify landowners in the SPECIAL USE permit as additional insured.

P. Operational Standard Conditions

1. Maintenance

   (a) The Owner or Operator of the WIND FARM must submit, on an annual basis, a summary of the operation and maintenance reports to the Environment and Land Use Committee and any other operation and maintenance reports as the Environment and Land Use Committee reasonably requests.

   (b) Any physical modification to the WIND FARM that alters the mechanical load, mechanical load path, or major electrical components shall require a new County Board SPECIAL USE Permit. Like-kind replacements shall not require re-certification nor will replacement of transformers, cabling, etc. provided replacement is done in a fashion similar to the original installation. Prior to making any physical modification (other than a like-kind replacement), the owner of operator shall confer with a relevant third-party certifying entity identified in subparagraph 6.1.4 D. 1. (a) to determine whether the physical modification requires re-certification.

2. Materials Handling, Storage and Disposal

   (a) All solid wastes related to the construction, operation and maintenance of the WIND FARM shall be removed from the site promptly and disposed of in accordance with all federal, state and local laws.

   (b) All hazardous materials related to the construction, operation and maintenance of the WIND FARM shall be handled, stored, transported and disposed of in accordance with all applicable local, state and federal laws.

Q. Standard Condition for Decommissioning Plan and Reclamation Agreement

1. The Applicant shall submit a signed site reclamation agreement conforming to the requirements of paragraph 6.1.1 A.

2. In addition to the purposes listed in subparagraph 6.1.1 A. 4. the reclamation agreement shall also include provisions for anticipated repairs to any public STREET used for the purpose of reclamation of the WIND FARM and all costs related to removal of access driveways.

3. In addition to the conditions listed in subparagraph 6.1.1 A. 9. the Zoning Administrator may also draw on the funds for the following reasons:

   (a) In the event that any wind turbine or component thereof ceases to be functional for more than six consecutive months and the Owner is not diligently repairing such wind turbine or component.

(b) In the event that the Owner declares any wind turbine or other component to be functionally obsolete for tax purposes.

4. The Site Reclamation Agreement shall be included as a condition of approval by the BOARD and the signed and executed Site Reclamation Agreement must be submitted to the Zoning Administrator prior to any Zoning Use Permit approval.

R. Complaint Hotline

1. Prior to the commencement of construction on the WIND FARM and during the entire term of the County Board SPECIAL USE permit and any extension, the Applicant and Owner shall establish a telephone number hotline for the general public to call with any complaints or questions.

2. The telephone number hotline shall be publicized and posted at the operations and maintenance center and the construction marshalling yard.

3. The telephone number hotline shall be manned during usual business hours and shall be an answering recording service during other hours.

4. Each complaint call to the telephone number hotline shall be logged and identify the name and address of the caller and the reason for the call.

5. All calls shall be recorded and the recording shall be saved for transcription for a minimum of two years.

6. A copy of the telephone number hotline shall be provided to the Zoning Administrator on a monthly basis.

7. The Applicant and Owner shall take necessary actions to resolve all legitimate complaints.

S. Standard Condition for Expiration of WIND FARM County Board SPECIAL USE Permit

A WIND FARM County Board SPECIAL USE Permit designation shall expire pursuant to any time limit included in the Roadway Upgrade and Maintenance agreement required by paragaph 6.1.4 G. or in 10 years if no Zoning Use Permit is granted.

T. Application Requirements

1. In addition to all other information required on the SPECIAL USE Permit application and required by Section 9.1.11 A. 2. the application shall contain or be accompanied by the following information:
   (a) A WIND FARM Project Summary, including, to the extent available:
      (1) A general description of the project, including its approximate name plate generating capacity; the potential equipment manufacturer(s), type(s) of wind turbines, number of wind turbines, and name plate

generating capacity of each wind turbine; the maximum height of the WECS Tower(s); and the maximum diameter of the WECS(s) rotor(s).

(2) The specific proposed location of the WIND FARM including all tax parcels on which the WIND FARM will be constructed.

(3) The specific proposed location of all tax parcels required to be included in the WIND FARM Overlay Zoning District.

(4) A description of the Applicant; Owner and Operator, including their respective business structures.

(b) The name(s), address(es), and phone number(s) of the Applicant(s), Owner and Operator, and all property owner(s) for both the WIND FARM County Board SPECIAL USE permit and the WIND FARM Overlay Zoning District.

(c) A site plan for the installation of all WIND FARM TOWERS indicating the following:

(1) The approximate planned location of each WIND FARM TOWER, other PRINCIPAL STRUCTURES, property lines (including identification of adjoining properties), required separations, public access roads and turnout locations, substation(s), electrical cabling from the WIND FARM TOWER to the Substations(s), ancillary equipment, third party transmission lines, maintenance and management facilities, and layout of all structures within the geographical boundaries of any applicable setback.

(2) The site plan shall clearly indicate the area of the proposed WIND FARM County Board SPECIAL USE Permit as required by subparagraph 6.1.4 A. 1. as well as the area of the related WIND FARM Overlay Zoning District as required by paragraph 5.3.3 C.

(3) The separation of all WIND FARM structures from adjacent NON-PARTICIPATING DWELLINGS OR PRINCIPAL BUILDINGS or uses shall be dimensioned on the approved site plan and that dimension shall establish the effective minimum separation that shall be required for any Zoning Use Permit. Greater separation and somewhat different locations may be provided in the approved site plan for the Zoning Use Permit provided that that the greater separation does not increase the noise impacts that were approved in the WIND FARM County Board SPECIAL USE Permit. WIND FARM structures includes WIND FARM TOWERS, substations, third party transmission lines, maintenance and management facilities, or other significant structures.

(d) All other required studies, reports, certifications, and approvals demonstrating compliance with the provisions of this Ordinance.

2. The Applicant shall notify the COUNTY of any changes to the information provided above that occurs while the County Board SPECIAL USE permit application is pending.

19. Revise Subsection 9.1.11 as follows:

9.1.11 SPECIAL USES

A. Authorized SPECIAL USES

1. The BOARD may grant SPECIAL USE permits only for such SPECIAL USES as are specifically authorized in this ordinance, and are not prohibited by Section 14.2.1.

2. The GOVERNING BODY may grant SPECIAL USE permits only for such County Board SPECIAL USES as are specifically authorized in this ordinance, and are not prohibited by Section 14.2.1.

3. The BOARD or GOVERNING BODY may grant such SPECIAL USE permits only upon written application and after conduct of a public hearing.

a. The written application for a SPECIAL USE permit shall include:

i. The signature of the petitioner; and

ii. The signature of the owner or owners of all the land included in the petition, or the legal representative(s) thereof; and, if applicable, a copy of the petitioner's purchase contract.

B. SPECIAL USE Criteria

A SPECIAL USE permit shall not be granted by the BOARD or GOVERNING BODY unless the public hearing record and written application demonstrate:

1. that it is necessary for the public convenience at that location;

2. that it is so designed, located, and proposed as to be operated so that it will not be injurious to the DISTRICT in which it shall be located or otherwise detrimental to the public welfare;

3. that it conforms to the applicable regulations and standards of and preserves the essential character of the DISTRICT in which it shall be located, except where such regulations and standards are modified by Section 6.

4. that granting the SPECIAL USE is in harmony with the general purpose and intent of this ordinance.

5. that, in the case of an existing NONCONFORMING USE, it will make such USE more compatible with its surroundings.

6. approval of a SPECIAL USE permit shall authorize USE, CONSTRUCTION and operation only in a manner that is fully consistent with all testimony and evidence submitted by the petitioner or petitioner's agent(s).

C. Findings

1. The BOARD or GOVERNING BODY shall make findings that the requirements of Section 9.1.11B have been met by the applicant for a SPECIAL USE.

2. The BOARD or GOVERNING BODY shall further make a finding that the reasons set forth in the application justify with respect to the criteria set forth in Section 9.1.11B the waiver of any standard condition or the imposition of any special condition.

3. The BOARD or GOVERNING BODY may make a finding that a proposed STRUCTURE or physical change to a site, as a part of a SPECIAL USE request, is a NON-ADAPTABLE STRUCTURE. In such a case the requirements of Section 6.1.1~~C~~A shall be applicable.

4. Within a reasonable time after the public hearing for any County Board SPECIAL USE Permit, the BOARD shall make a report to the GOVERNING BODY.

D. Conditions

1. Any other provision of this ordinance not withstanding, the BOARD or GOVERNING BODY, in granting any SPECIAL USE, may waive upon application any standard or requirement for the specific SPECIAL USE enumerated in Section 6.1.3 Schedule of Requirements and Standard Conditions, to the extent that they exceed the minimum standards of the DISTRICT, except for any state or federal regulation incorporated by reference, upon finding that such waiver is in accordance with the general purpose and intent of this ordinance, and will not be injurious to the neighborhood or to the public health, safety and welfare.

2. In granting any SPECIAL USE, the BOARD or GOVERNING BODY may prescribe SPECIAL CONDITIONS as to appropriate conditions and safeguards in conformity with the ordinance. Violation of such SPECIAL CONDITIONS when made a part of the terms under which the SPECIAL USE is granted, shall be deemed a violation of this ordinance and punishable under this ordinance.

3. In granting any SPECIAL USE Permit as authorized in Section 4.2.1F for more than one MAIN or PRINCIPAL STRUCTURE or BUILDING, the BOARD shall state that any future sale of said LOT or tract of land may be subject to the *Illinois Plat Act,* (765 ILCS 205/0.01 *et seq.*) or the *Champaign County Subdivision Regulations;* or the SUBDIVISION regulations of a municipality that has jurisdiction within one and one-half miles of the corporate limits.

4. RESIDENTIAL PLANNED UNIT DEVELOPMENTS shall, in addition to or in lieu of the above, meet the provisions of Section 6.3.

5. The BOARD or GOVERNING BODY shall require that all applicable provisions of the *Champaign County Stormwater Management Policy* (as amended February 20, 2003) are met before approving any SPECIAL USE.

6. Under no circumstances shall the BOARD or GOVERNING BODY grant a SPECIAL USE to allow a USE not permissible under the terms of this ordinance, in the DISTRICT involved, or any USE expressly or by implication prohibited under the terms of this ordinance in said DISTRICT, nor shall the BOARD or GOVERNING BODY waive compliance with state or federal regulations incorporated into this ordinance.

20. Add the following paragraph 9.3.1 H. for Zoning Use Permit fee:

H. WIND FARM TOWER $4000

21. Revise subsection 9.3.3 as follows:

9.3.3 Zoning Case Filing Fees

A. General Provisions

1. No zoning case filing shall be accepted until the filing fee has been paid.

2. No zoning case filing fee shall be waived unless the Zoning Administrator determines that the petition is the only means reasonably available to bring a property into compliance with the provisions of this ordinance and the non-compliance is due solely to staff error.

3. No zoning case filing fee shall be refunded after required legal notice has been made by mail or publication unless the Zoning Administrator determines such filing to have been based solely upon staff error.

4. No amendment to any petition which requires new legal notice shall be considered until an amended petition fee has been received unless the Zoning Administrator determines such amendment to be required due solely to staff error.

5. The fee for SPECIAL USE permits shall be determined based on the larger of the following (except for County Board WIND FARM Special Use Permits):

   a. the area of farmland taken out of production as a result of the SPECIAL USE; or

   b. when farmland will not be taken out of production as a result of the SPECIAL USE, the land area taken up by the existing STRUCTURES and all proposed CONSTRUCTION proposed in the SPECIAL USE application.

6. When some combination of VARIANCE, SPECIAL USE and Map Amendment cases is required simultaneously for the same property, the total filing fee shall include the following (except for County Board WIND FARM Special Use Permits):

   a. The standard fee for the most expensive individual zoning case; and

   b. one-half of the standard fee for any other required VARIANCE, SPECIAL USE, or Map Amendment provided that

   c. no additional fees shall be included for multiple zoning cases of the same type that can be advertised in the same legal advertisement.

7. There shall be no reduction in fees for combined applications of County Board WIND FARM Special Use Permit and a map amendment to the WIND FARM Overlay Zoning District.

B. Fees

1. VARIANCES.

   a. ADMINISTRATIVE VARIANCES $100

   b. Minor or Major VARIANCES $200

2 SPECIAL USE permits and Map Amendments (except for County Board WIND FARM Special Use Permit and a map amendment to the WIND FARM Overlay Zoning District)

a. Two acres or less and Base Fee for larger areas $400

b. More than two acres but no more than 12 acres ..... add $40 per acre to Base Fee for each acre over two acres

c. More than 12 acres add $10 per acre for each acre over 12 acres and add to fees in a. and b. above

3. Appeals and Interpretations $200

4. Change of Nonconforming Use $100

5. Amendment to Petitions (requiring new legal notice) $100

6. County Board WIND FARM Special Use Permit.....
$440 per WIND FARM TURBINE TOWER

7. Map Amendment to the WIND FARM Overlay Zoning District.....
$100 per WIND FARM TURBINE TOWER

LEGAL PUBLICATION: WEDNESDAY, JANUARY 28, 2009 **CASE: 634-AT-08**

NOTICE OF PUBLIC HEARING IN REGARD TO AN AMENDMENT TO THE CHAMPAIGN COUNTY ZONING ORDINANCE.

CASE: 634-AT-08

The Champaign County Zoning Administrator, 1776 East Washington Street, Urbana, has filed a petition to change the text of the Champaign County Zoning Ordinance. The petition is on file in the office of the Champaign County Department of Planning and Zoning, 1776 East Washington Street, Urbana, IL.

A public hearing will be held **Thursday, February 12, 2009, at 6:30 p.m.** prevailing time in the Lyle Shields Meeting Room, Brookens Administrative Center, 1776 East Washington Street, Urbana, IL, at which time and place the Champaign County Zoning Board of Appeals will consider a petition to:

Amend the Champaign County Zoning Ordinance as follows:

PART A

1. In Section 2, add a purpose statement regarding promotion of wind energy in a safe manner.

2. In Section 3, add definitions for "WIND FARM" and "WIND FARM TOWER".

3. Add subparagraph 4.2.1 C. 2. to indicate that WIND FARM may be authorized by County Board special use permit as a second principal use on a lot in the AG-1 District and indicate that WIND FARM TOWER may be authorized by County Board special use permit as multiple principal structures per lot in the AG-1 District.

4. Amend subsection 4.3.1 to exempt WIND FARM TOWER from the height regulations except as height regulations are required as a standard condition in Section 6.1.3.

5. Amend paragraph 4.3.4 A. to exempt WIND FARM TOWER lots from the minimum lot requirements of Section 5.3 and paragraph 4.3.4 B. except as minimum lot requirements are required as a standard condition in Section 6.1.3.

6. Amend paragraph 4.3.4 H. to exempt WIND FARM and WIND FARM TOWER from the Pipeline Impact Radius regulations except as Pipeline Impact Radius regulations are required as a standard condition in Section 6.1.3.

7. In Section 5.1, add the WIND FARM Overlay Zoning District with a new purpose and intent statement.

8. In Section 5.2 delete the uses "Wind Turbine (more than 3 wind turbines)" and "Wind Turbine (1- 3 wind turbines)"; add the uses "WIND FARM" and "WIND FARM TOWER" and indicate that both are authorized by County Board Special Use Permit in the AG-1 Zoning District and indicate footnote 17; and add new

footnote 17 indicating WIND FARM County Board special use permit is only authorized in the WIND FARM Overlay Zoning District in areas also zoned AG-1.

9. In Section 5.3 add new footnote 14 that exempts WIND FARM TOWER lots in the WIND FARM Overlay Zoning District from the minimum lot requirements of Section 5.3 except as such regulations are required as a standard condition in Section 6.1.3.

10. Amend Section 5.4 to prohibit the establishment of the Rural Residential Overlay Zoning District on land also zoned WIND FARM Overlay Zoning District.

11. Add new Section 5.5 WIND FARM Overlay Zoning District that limits the overlay district to areas also zoned AG-1; reviews basic considerations in the establishment of the overlay district; requires any WIND FARM TOWER to be authorized in the WIND FARM County Board Special Use Permit; requires minimum separation distances between a new PRINCIPAL USE and a WIND FARM TOWER; establishes an expiration for the overlay district designation; and authorizes the Zoning Board and County Board to recommend specific conditions on the adoption of the overlay district.

12. Amend existing paragraph 6.1.1 C. Site Reclamation to require the irrevocable letter of credit to be drawn upon a federally insured financial institution within 200 miles of Urbana or that reasonable and anticipated travel costs be added to the amount of the letter of credit.

13. In Section 6 relocate existing paragraphs 6.1.1 A. and B. to new subparagraphs 9.1.11 A. 3. and 4.; change the name of Subsection 6.1.1 to indicate standard conditions that may apply to specific special uses; renumber existing paragraph 6.1.1 C. to 6.1.1. A.; change the name of Subsection 6.1.2 to indicate standard conditions that apply to all special use permits; relocate existing text in Subsection 6.1.2 to be under the Section 6.1 heading; relocate and renumber existing paragraph 6.1.1 D. to become new paragraph 6.1.2 A.; and change the name of Subsection 6.1.3 to indicate standard conditions that apply to specific types of special use permits.

14. Add new subsection 6.1.4 with new standard conditions for a WIND FARM, WIND FARM TOWER, and WIND FARM TOWER lot.

15. Amend existing subsection 9.1.11 Special Uses to require the County Board to authorize certain special use permits where identified in Section 5.2; require the County Board to adopt findings; authorize the County Board to waive any standard conditions; authorize the County Board to prescribe any special conditions that it may determine to be appropriate; and clarify all requirements in Section 6 are standard conditions.

16. Amend subsection 9.3.1 to add fees for WIND FARM and WIND FARM TOWER zoning use permits.

17. Amend subsection 9.3.3 to add application fees for WIND FARM County Board special use permit and WIND FARM Overlay Zoning District map amendment.

PART B

1. In Section 3, add a definition for "PRIVATE WIND TURBINE TOWER".

2. Amend subsection 4.3.1 to require that height regulations do not apply to a PRIVATE WIND TURBINE TOWER that is not part of a WIND FARM and require PRIVATE WIND TURBINE TOWER to be located from the nearest property line at least 1.10 times the overall height to the tip of the rotor; and require PRIVATE WIND TURBINE TOWERS that are more than 125 feet in height to be authorized by special use permit.

3. In subsection 6.1.3 add new standard conditions for PRIVATE WIND TURBINE TOWER taller than 125 feet.

4. Add new subsection 7.6.4 PRIVATE WIND TURBINE TOWER and require that there can be no more than one PRIVATE WIND TURBINE TOWER per lot and add other requirements.

PART C

1. Amend Section 5.2 to require a County Board Special Use Permit for any subdivision that requires the Rural Residential Overlay Zoning District.

2. Amend Section 5.4 to require a County Board Special Use Permit for any authorized subdivision in the Rural Residential Overlay Zoning District.

All persons interested are invited to attend said hearing and be heard. The hearing may be continued and reconvened at a later time.

Doug Bluhm, Chair
Champaign County Zoning Board of Appeals

TO BE PUBLISHED: WEDNESDAY, JANUARY 28, 2009 ONLY

Send bill and one copy to: Champaign County Planning and Zoning Dept.
Brookens Administrative Center
1776 E. Washington Street
Urbana, IL 61802
Phone: 384-3708

Attachment H. Revised Draft Ordinance
MARCH 20, 2009

1. Add new purpose 2.(r) as follows:

(r) provide for the safe and efficient development of renewable energy sources in those parts of the COUNTY that are most suited to their development.

2. Add the following to Section 3.0 Definitions:

DWELLING OR PRINCIPAL BUILDING, PARTICIPATING: A DWELLING on land that is leased to a WIND FARM.

DWELLING OR PRINCIPAL BUILDING, NON- PARTICIPATING: A DWELLING on land that is not leased to a WIND FARM.

PRIVATE WAIVER: A written statement asserting that a landowner has agreed to waive a specific WIND FARM standard condition and has knowingly agreed to accept the consequences of the waiver. A PRIVATE WAIVER must be signed by the landowner.

WIND FARM: A unified development of WIND FARM TOWERS and all other necessary components including cabling, transformers, a common switching station, and maintenance and management facilities which are intended to produce electricity by conversion of wind energy and to deliver the electricity to the power grid and having a name plate capacity of more than 10 megawatts (MW). A WIND FARM is under a common ownership and operating control even though the individual WIND FARM TOWERS may be located on land that is leased from many different landowners.

WIND FARM TOWER: A wind turbine nacelle and rotor and the supporting tower structure that are part of a WIND FARM development and intended to produce electricity for the power grid.

WIND TOWER, TEST:
{NOTE: Staff is still drafting this definition.}

WIND TURBINE TOWER: A wind turbine nacelle and rotor and the supporting tower structure that is owned by a private landowner for the purpose of producing electrical energy that may be used onsite or sold to a utility.

2. Add new subparagraph 4.2.1 C.2. as follows:

2. A WIND FARM may be authorized as a County Board SPECIAL USE permit in the AG-1, Agriculture Zoning District, and WIND FARM Overlay Zoning District as a second PRINCIPAL USE on a LOT with another PRINCIPAL USE. WIND FARM TOWERS may be authorized by County Board SPECIAL USE permit as multiple PRINCIPAL STRUCTURES on a single LOT in the AG-1, Agriculture Zoning District.

3. Add new subparagraph 4.3.1 F. as follows:

F. HEIGHT regulations shall not apply to WIND FARM TOWERS except as HEIGHT regulations are required as a standard condition in Section 6.1.4.

4. Add new subparagraph 4.3.4 H. 4. h. as follows:

h. WIND FARMS and WIND FARM TOWERS except as PIPELINE IMPACT RADIUS regulations are required in Subsection 6.1.4.

5. Add new Subsection 5.1.17 as follows:

5.1.17 WIND FARM OVERLAY
The WIND FARM OVERLAY Zoning District is intended to provide areas that are suitable for development of a WIND FARM County Board SPECIAL USE Permit.

6. Amend Section 5.2 as follows:

Add "WIND FARM" as a COUNTY BOARD Special Use Permit in the AG-1 District by a "B" and indicate footnote 17.

7. Add the following as footnote 17 in Section 5.2:

17. A WIND FARM County Board SPECIAL USE Permit is only authorized in the WIND FARM OVERLAY Zoning DISTRICT in areas also zoned AG-1.

8. Add the following as footnote 14 under the Special Provisions for the AG-1 District in Section 5.3:

14. LOTS in the WIND FARM OVERLAY Zoning DISTRICT intended for WIND FARM TOWERS, substations, and WIND FARM maintenance and management facilities are exempt from the requirements of Section 5.3 except as such regulations are required by Subsection 6.1.4.

9. Add new paragraph 5.4.3 E. as follows:

E. The Rural Residential Overlay Zoning District is prohibited from being established in areas also zoned WIND FARM Overlay Zoning District.

10. Add new subsection 5.5 as follows:

5.5 WIND FARM OVERLAY Zoning DISTRICT

5.5.1 Acts Prohibited
No WIND FARM or WIND FARM TOWER or cabling, transformers, common switching station, or other necessary device or STRUCTURE serving a WIND FARM shall be constructed in the AG-1 District on land that is not in conformance with this Section.

5.5.2 Exemptions

A. The following may be authorized without the creation of a WIND FARM OVERLAY Zoning District:

1. The construction of a WIND TURBINE TOWER.

2. The construction of a TEST WIND TOWER.

5.5.3 Establishment of the WIND FARM OVERLAY Zoning District

A. The establishment of the WIND FARM OVERLAY Zoning District is an amendment to the Champaign County Zoning Ordinance and shall be implemented in accord with the provisions of Subsection 9.2 as modified herein.

B. The adoption of the WIND FARM OVERLAY Zoning District shall augment the provisions of the underlying DISTRICT and shall alter the following requirements:

1. The height regulations of Section 4.3.1 and Section 5.3 as applied only to WIND FARM TOWERS except as height regulations are required as a standard condition in Section 6.1.4.

2. The minimum lot requirements of Section 5.3 and paragraph 4.3.4 B. as applied only to WIND FARM TOWERS except as minimum lot requirements are required as a standard condition in Section 6.1.4.

3. The requirements of paragraph 4.3.4 H. regarding Pipeline Impact Radius as applied only to WIND FARM TOWERS and other WIND FARM components except as Pipeline Impact Radius regulations are required as a standard condition in Section 6.1.4.

4. New DWELLINGS and PRINCIPAL BUILDINGS may not be constructed as follows:
   (a) less than 1.10 times the total WIND FARM TOWER height (measured to the tip of the highest rotor blade) from the base of a WIND FARM TOWER or on any other part of the area of a WIND FARM County Board SPECIAL USE Permit; or

   (b) The Rural Residential Overlay Zoning District shall not be established less than 1,000 feet from the base of a WIND FARM TOWER.

C. The WIND FARM OVERLAY Zoning District shall include the following areas:

1. All of the area in the WIND FARM County Board SPECIAL USE Permit; and

2. All land that is within a distance of 1.50 times the total WIND FARM TOWER height (measured to the tip of the highest rotor blade) from the base of each WIND FARM TOWER except any such land that is more than 1,320 feet from any existing public STREET right of way; and

3. 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 WIND FARM TOWER except that in the case of WIND FARM TOWERS 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 WIND FARM Overlay District; and

3. Any existing tax parcel of land that is not included in the area of the WIND FARM County Board SPECIAL USE Permit and that is surrounded by the area of the WIND FARM County Board SPECIAL USE Permit except that any such parcels of land that are larger than five acres may be omitted from the area of the Overlay District; and provided that

4. The boundary of the WIND FARM OVERLAY Zoning District shall only follow tax parcel lines and shall not bisect or cross any tax parcel boundary. New tax parcels may be created to accommodate a proposed WIND FARM Overlay Zoning District provided that any resulting tax parcel that fully conforms to all Ordinance requirements and conforms to a rectilinear land description.

D. BOARD Findings

1. The BOARD shall make the following finding before forwarding a recommendation to the GOVERNING BODY with respect to a map amendment case to create a WIND FARM OVERLAY Zoning District:

> That based on the considerations in the related COUNTY BOARD SPECIAL USE PERMIT (insert actual case number) the proposed site is or is not suitable for the development of the specified maximum number of WIND FARM TOWERS.

2. In making the finding, the BOARD shall consider the following:

   a. The degree of conformance of the related WIND FARM County Board SPECIAL USE permit with the standard conditions for WIND FARM County Board SPECIAL USE permit established in Section 6.1.4 as recommended by the BOARD including any necessary waiver of standard conditions.

   b. The recommended findings of the BOARD in the related WIND FARM County Board SPECIAL USE permit.

3. The BOARD may also make recommendations for specific conditions that should be imposed upon the adoption of any WIND FARM Overlay Zoning District.

E. APPLICANTS Rights and Limitations Upon Approval

1. Approval of a WIND FARM OVERLAY DISTRICT is specific to the tracts of land designated on the application.

2. Approval of a WIND FARM OVERLAY DISTRICT shall not be deemed to be an approval of a WIND FARM County Board SPECIAL USE permit.

3. WIND FARM OVERLAY DISTRICT designation expires in 10 years if no Zoning Use Permit is granted.

5.4.5 Submittals Required Upon Application

A. A written application as required in Subsection 9.2.1 may be submitted by the WIND FARM Applicant provided that it includes the signatures of the OWNERS of more than 50% of the area involved.

B. The application shall include a plan of the proposed WIND FARM OVERLAY District indicating the overall dimensions and acreage of the proposed DISTRICT; existing STREETS and STREET numbers; existing tax parcels; township section and range; and location of the proposed WIND FARM County Board SPECIAL USE Permit.

10. Renumber existing paragraph 6.1.2 to be subsection 6.1 Standards for Special Uses

11. Rename existing subsection 6.1.1 to Standard Conditions that May Apply to Specific SPECIAL USES

12. Move existing paragraphs 6.1.1 A. and B. to become new subparagraphs 9.1.11 7. and 8.

13. Renumber existing paragraph 6.1.1 C. to become new paragraph 6.1.1 A.

14. Revise existing subparagraph 6.1.1 C. 5. to read as follows:

5. No Zoning Use Permit for such SPECIAL USE will be issued until the developer provides the COUNTY with an irrevocable letter of credit to be drawn upon a federally insured financial institution within 200 miles of Urbana or reasonable and anticipated travel costs shall be added to the amount of the letter of credit. The irrevocable letter of credit shall be in the amount of one hundred fifty percent (150%) of an independent engineer's cost estimate to complete the work described in Section 6.1.1C4a. This letter of credit, or a successor letter of credit pursuant to Section 6.1.1C6 or 6.1.1C12 shall remain in effect and shall be made available to the COUNTY for an indefinite term.

15. Rename subsection 6.1.2 to be Standard Conditions for All SPECIAL USES

16. Renumber existing paragraph 6.1.1 D. to become new paragraph 6.1.2 A.

17. Rename subsection 6.1.3 to Schedule of Standard Conditions for Specific Types of Special Uses

18. Add new subsection 6.1.4 as follows:

6.1.4 WIND FARM County Board SPECIAL USE Permit

A WIND FARM County Board SPECIAL USE Permit may only be authorized in the WIND FARM OVERLAY Zoning District subject to the following standard conditions.

A. General Standard Conditions

1. The area of the WIND FARM County Board SPECIAL USE Permit must include the following minimum areas:

   (a) All land that is a distance equal to 1.10 times the total WIND FARM TOWER height (measured to the tip of the highest rotor blade) from the base of that WIND FARM TOWER.

   (b) All land that will be exposed to a noise level greater than that authorized to Class A land under paragraph 6.1.4 I.

   (c) All land that will be exposed to shadow flicker in excess of that authorized under paragraph 6.1.4M. and for which other mitigation is not proposed.

   (d) All necessary access lanes or driveways and any required new PRIVATE ACCESSWAYS. For purposes of determining the minimum area of the special use permit, access lanes or driveways shall be provided a minimum 40 feet wide area.

   (e) All necessary WIND FARM ACCESSORY STRUCTURES including electrical distribution lines, transformers, common switching stations, and substations not under the ownership of a PUBLICLY REGULATED UTILITY. For purposes of determining the minimum area of the special use permit, underground cable installations shall be provided a minimum 40 feet wide area.

2. The WIND FARM County Board SPECIAL USE Permit shall not be located in the following areas:

   (a) Less than one-and-one-half miles from an incorporated municipality that has a zoning ordinance.

   (b) Less than one mile from the CR Conservation Recreation Zoning District.

   (c) In any area leased for underground gas storage unless the lease requires that gas injection wells and other above-ground appurtenances be located in conformance with paragraph 6.1.4 C.8.

B. Minimum Lot Standard Conditions

1. There are no minimum LOT AREA, AVERAGE LOT WIDTH, SETBACK, YARD, or maximum LOT COVERAGE requirements for a WIND FARM or for LOTS for WIND FARM TOWERS, substations, and WIND FARM maintenance and management facilities.

C. Minimum Standard Conditions for Separations for WIND FARM TOWERS from adjacent USES and STRUCTURES

The location of each WIND FARM TOWER shall provide the following required separations as measured from the exterior of the above ground portion of the WIND FARM TOWER:

1. At least 1,000 feet separation from the exterior above-ground base of a WIND FARM TOWER to any PARTICIPATING DWELLING OR PRINCIPAL BUILDING provided that the noise level caused by the WIND FARM at the particular building complies with the applicable Illinois Pollution Control Board regulations.

2. At least 1,500 feet separation from the exterior above-ground base of a WIND FARM TOWER to any existing NON-PARTICIPATING DWELLING OR PRINCIPAL BUILDING provided that the noise level caused by the WIND FARM at the particular building complies with the applicable Illinois Pollution Control Board regulations.

3. The above separations may be reduced to a distance no less than 1.10 times the total WIND FARM TOWER height (measured to the tip of the highest rotor blade) upon submission of a PRIVATE WAIVER signed by the owner of said dwelling or building or adjacent property. The PRIVATE WAIVER must specify the agreed minimum separation and specifically acknowledge that the grantor accepts the resulting noise level caused by the WIND FARM.

4. A separation distance equal to 1.10 times the total WIND FARM TOWER height (measured to the tip of the highest rotor blade) from the exterior above-ground base of a WIND FARM TOWER to the nearest adjacent property line for property that is also part of the WIND FARM County Board SPECIAL USE Permit. This separation may be reduced upon submission of a PRIVATE WAIVER signed by the owner of the adjacent property. The PRIVATE WAIVER must specify the agreed minimum separation.

5. A separation distance equal to 1.50 times the total WIND FARM TOWER height (measured to the tip of the highest rotor blade) from the exterior above-ground base of a WIND FARM TOWER to the nearest public STREET RIGHT OF WAY unless the WIND FARM is located on both sides of the STREET in which case the minimum separation distance between a WIND FARM TOWER and the public STREET RIGHT OF WAY is equal to 1.10 times the total WIND FARM TOWER height (measured to the tip of the highest rotor blade.

6. A separation distance equal to 1.10 times the total WIND FARM TOWER height (measured to the tip of the highest rotor blade) from the exterior above-ground base of a WIND FARM TOWER to the nearest third party electrical transmission lines, communication towers, or railroad 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 public street maintenance jurisdiction. The PRIVATE WAIVER must specify the agreed minimum separation.

7. Any PRIVATE WAIVER establishing an agreement for a lesser minimum separation as authorized above shall be submitted prior to the final determination by the BOARD 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. No waiver of a standard condition shall be required in the event of a duly agreed and signed PRIVATE WAIVER.

8. At least 1,200 feet separation from the exterior above-ground base of a WIND FARM TOWER to any of the following:
   (a) any easement for a GAS PIPELINE or HAZARDOUS LIQUID PIPELINE; or

   (b) any wellhead or other above ground fixture that is accessory to a GAS PIPELINE or to any valve or other above ground fixture for any HAZARDOUS LIQUID PIPELINE;

   (c) provided however that if the relevant PIPELINE IMPACT RADIUS required by paragraph 4.3.4 H. is greater than 1,200 feet then that PIPELINE IMPACT RADIUS shall be the minimum separation of any of the above; or

   (d) any easement for an underground water main or to the actual water main if there is no easement.

9. At least 1,600 feet separation from the exterior above-ground base of a WIND FARM TOWER to any Liquefied Natural Gas Storage; or Liquefied Petroleum Gas Storage; or Gasoline and Volatile Oils Storage exceeding 500 gallons capacity in the aggregate; or other commercial or industrial use of a flammable, explosive, or hazardous nature.

10. At least 3,500 feet separation from the exterior above-ground base of a WIND FARM TOWER to any RESTRICTED LANDING AREA or RESIDENTIAL AIRPORT.

D. Standard Conditions for Design and Installation of WIND FARM TOWERS

1. Design Safety Certification

   (a) WIND FARM TOWERS, turbines, and all related construction shall conform to applicable industry standards, including those of the American National Standards Institute ("ANSI"). Applicants shall submit certificates

of design compliance that equipment manufacturers have obtained from Underwriters Laboratories ("UL"), Det Norske Veritas ("DNV"), Germanischer Lloyd Wind Energy ("GL"), or equivalent third party.

(b) Each Zoning Use Permit Application for a WIND FARM TOWER shall include a certification by an Illinois Professional Engineer or Illinois Licensed Structural Engineer that the foundation and tower design of the WIND FARM TOWER is within accepted professional standards, given local soil and climate conditions.

2. Controls and Brakes
   (a) All WIND FARM TOWER turbines shall be equipped with a redundant braking system. This includes both aerodynamic over speed controls (including variable pitch, tip, and other similar systems) and mechanical brakes.

   (b) Mechanical brakes shall be operated in fail-safe mode.

   (c) Stall regulation shall not be considered a sufficient braking system for over speed protection.

3. Electrical Components. All electrical components of the WIND FARM shall conform to applicable state and national codes including, and relevant national and international standards (e.g. ANSI and International Electrical Commission).

4. The WIND FARM TOWER must be a monopole construction.

5. The total WIND FARM TOWER height (measured to the tip of the highest rotor blade) must be less than 500 feet.

6. WIND FARM TOWERS, turbine nacelles, and blades shall be painted white or gray or another non-reflective, unobtrusive color as specified in the application and authorized by the BOARD.

7. The WIND FARM shall comply with all applicable Federal Aviation Administration (FAA) requirements which shall be explained in the application. The minimum lighting requirements of the FAA shall not be exceeded except that all WIND FARM TOWERS shall be lighted and unless otherwise required by the FAA only red flashing lights shall be used at night and only the minimum number of such lights with the minimum intensity and the minimum number of flashes per minute (longest duration between flashes) allowed by FAA.

8. Warnings
   (a) A reasonably visible warning sign concerning voltage must be placed at the base of all pad-mounted transformers and Substations.

(b) Visible, reflective, colored objects, such as flags, reflectors, or tape shall be placed on the anchor points of guy wires and along the guy wires up to a height of 15 feet from the ground.

9. All WIND FARM TOWERS 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 WIND FARM TOWER.

E. Standard Conditions to Mitigate Damage to Farmland

1. All underground wiring or cabling for the WIND FARM shall be at a minimum depth of 4 feet below grade or deeper if required to maintain a minimum one foot of clearance between the wire or cable and any agricultural drainage tile.

2. Protection of agricultural drainage tile

(a) The applicant shall endeavor to locate all existing agricultural drainage tile prior to establishing any construction staging areas, construction of any necessary WIND FARM TOWER access lanes or driveways, construction of any WIND FARM TOWERS, any common switching stations, substations, and installation of underground wiring or cabling. The applicant shall contact affected landowners and tenants for their knowledge of tile line locations prior to the proposed construction. Drainage districts shall be notified at least two weeks prior to disruption of tile.

(b) All identified drainage district tile lines shall be staked or flagged prior to construction to alert construction crews of the possible need for tile line repairs unless this requirement is waived in writing by the drainage district.

(c) Any agricultural drainage tile located underneath construction staging areas, access lanes, driveways, any common switching stations, and substations shall be replaced as required in paragraph 7.2 of the Champaign County Stormwater Management Policy.

(d) Any agricultural drainage tile that must be relocated shall be relocated as required in the Champaign County Stormwater Management Policy.

(e) Conformance of any relocation of drainage district tile with the Stormwater Management Policy shall be certified by an Illinois Professional Engineer. Written approval by the drainage district shall be received prior to any backfilling of the relocated drain tile and a copy of the approval shall be submitted to the Zoning Administrator. As-built drawings shall be provided to both the relevant drainage district and the Zoning Administrator of any relocated drainage district tile.

(f) All tile lines that are damaged, cut, or removed shall be staked or flagged in such manner that they will remain visible until the permanent repairs are completed.

(g) All exposed tile lines shall be screened or otherwise protected to prevent the entry into the tile of foreign materials, loose soil, small mammals, etc.

(h) Permanent repairs shall be made within 14 days of the tile damage provided that weather and soil conditions are suitable or a temporary tile repair shall be made. Immediate temporary repair shall also be required if water is flowing through any damaged tile line. Temporary repairs are not needed if the tile lines are dry and water is not flowing in the tile provided the permanent repairs can be made within 14 days of the damage.

(i) All damaged tile shall be repaired so as to operate as well after construction as before the construction began.

(j) Following completion of the WIND FARM construction the applicant shall be responsible for correcting all tile line repairs that fail, provided that the failed repair was made by the Applicant.

3. All soil conservation practices (such as terraces, grassed waterways, etc.) that are damaged by WIND FARM construction shall be restored by the applicant to the pre-WIND FARM construction condition.

4. Topsoil replacement

For any open trenching required pursuant to WIND FARM construction, the topsoil shall be stripped and replaced as follows:

(a) The top 12 inches of topsoil shall first be stripped from the area to be trenched and from an adjacent area to be used for subsoil storage. The topsoil shall be stored in a windrow parallel to the trench in such a manner that it will not become intermixed with subsoil materials.

(c) All subsoil material that is removed from the trench shall be placed in the second adjacent stripped windrow parallel to the trench but separate from the topsoil windrow.

(d) In backfilling the trench, the stockpiled subsoil material shall be placed back into the trench before replacing the topsoil.

(e) The topsoil must be replaced such that after settling occurs, the topsoil's original depth and contour (with an allowance for settling) will be restored.

5. Mitigation of soil compaction and rutting

   (a) The Applicant shall not be responsible for mitigation of soil compaction and rutting if exempted by the WIND FARM lease.

   (b) Unless specifically provided for otherwise in the WIND FARM lease, the Applicant shall mitigate soil compaction and rutting for all areas of farmland that were traversed with vehicles and construction equipment or where topsoil is replaced in open trenches as follows:

      (1) After WIND FARM construction is complete the soil shall be ripped at least 18 inches deep (or more shallow if required to miss tile lines) and then disked by the applicant. Three passes shall be made across any agricultural land that is ripped.

      (2) All ripping and disking shall be done at a time when the soil is dry enough for normal tillage operations to occur on undisturbed farmland adjacent to the areas to be ripped.

      (3) The Applicant shall restore all rutted land to the original condition.

6. Land leveling

   (a) The Applicant shall not be responsible for leveling of disturbed land if exempted by the WIND FARM lease.

   (b) Unless specifically provided for otherwise in the WIND FARM lease, the Applicant shall level all disturbed land as follows:

      (1) Following the completion of any open trenching, the applicant shall restore all land to its original pre-construction elevation and contour.

      (2) Should uneven settling occur or surface drainage problems develop as a result of the trenching within the first year after completion, the applicant shall again restore the land to its original pre-construction elevation and contour.

F. Standard Conditions for Use of Public Streets

Any WIND FARM Applicant proposing to use any County Highway or a township or municipal STREET for the purpose of transporting WIND FARM TOWERS or Substation parts and/or equipment for construction, operation, or maintenance of the WIND FARM TOWERS or Substations(s), shall identify all such public STREETS and pay the costs of any necessary permits and the costs to repair any damage to the STREETS caused by the WIND FARM construction, as follows:

1. Prior to the close of the public hearing before the BOARD, the Applicant shall enter into a Roadway Upgrade and Maintenance agreement approved by the County Engineer and State's Attorney; or Township Highway Commissioner; or municipality where relevant, and the signed and executed Roadway Upgrade and Maintenance agreements must provide for the following minimum conditions:

    a. The applicant shall agree to conduct a pre-WIND FARM construction baseline survey to determine existing STREET conditions for assessing potential future damage including the following:

        (1) A videotape of the affected length of each subject STREET supplemented by photographs if necessary.

        (2) Pay for costs of the County to hire a consultant to make a study of any structure on the proposed route that the County Engineer feels may not carry the loads likely during the WIND FARM construction.

        (3) Pay for any strengthening of STREET structures that may be necessary to accommodate the proposed traffic loads caused by the WIND FARM construction.

    b. The Applicant shall agree to pay for costs of the County Engineer to hire a consultant to make a study of any structure on the proposed route that the County Engineer feels may not carry the loads likely during the WIND FARM construction and pay for any strengthening of structures that may be necessary to accommodate the proposed traffic loads caused by the WIND FARM construction.

    c. The Applicant shall agree upon an estimate of costs for any other necessary roadway improvements prior to construction.

    d. The Applicant shall obtain any necessary approvals for the STREET improvements from the relevant STREET maintenance authority.

    e. The Applicant shall obtain any necessary Access Permits including any required plans.

    f. The Applicant shall erect permanent markers indicating the presence of underground cables.

    g. The Applicant shall install marker tape in any cable trench.

    h. The Applicant shall become a member of the Illinois state wide One-Call Notice System (otherwise known as the Joint Utility Locating Information for Excavators or "JULIE") and provide

JULIE with all of the information necessary to update its record with respect to the WIND FARM.

i. The Applicant shall use directional boring equipment to make all crossings of County Highways for the cable collection system.

j. The Applicant shall provide plans for the widening of any corner radius that is necessary to facilitate the turning movements of the transport trucks used by the Applicant.

k. The Applicant shall pay for the necessary temporary STREET improvements for the widened corner radii and pay for the cost to return the widened radii to their original lines and grades when no longer needed for the WIND FARM construction unless the STREET maintenance authority requests that the widened radii remain as improved.

l. The Applicant shall notify the STREET maintenance authority in advance of all oversize moves and crane crossings.

m. The Applicant shall provide the County Engineer with a copy of each overweight and oversize permit issued by the Illinois Department of Transportation for WIND FARM construction.

n. The Applicant shall transport the WIND FARM TOWER segments and other oversize loads so as to minimize adverse impact on the local traffic including farm traffic.

o. The Applicant shall schedule WIND FARM construction traffic in a way to minimize adverse impacts on emergency response vehicles, rural mail delivery, school bus traffic, and local agricultural traffic.

p. The Applicant shall provide as much advance notice as is commercially reasonable to obtain approval of the STREET maintenance authority when it is necessary for a STREET to be closed due to a crane crossing or for any other reason. Notwithstanding the generality of the aforementioned, the Applicant will provide 48 hours notice to the extent reasonably practicable.

q. The Applicant shall provide signs indicating all highway and STREET closures and work zones in accordance with the Illinois Department of Transportation Manual on Uniform Traffic Control Devices.

r. The Applicant shall establish a single escrow account and a single Irrevocable Letter of Credit for the cost of all STREET upgrades and repairs pursuant to the WIND FARM construction.

s. The Applicant shall notify all relevant parties of any temporary STREET closures

t. The Applicant shall obtain easements and other land rights needed to fulfill the Applicant's obligations under this Agreement.

u. The Applicant shall agree that the County shall design all STREET upgrades in accordance with the IDOT Bureau of Local Roads and Streets Manual, 2005 edition.

v. The Applicant shall provide written Notice to Proceed to the relevant STREET maintenance authority by December 31 of each year that identifies the STREETS to be upgraded during the following year.

w. The Applicant shall provide dust control and grading work to the reasonable satisfaction of the County Engineer on STREETS that become aggregate surface STREETS.

x. The Applicant shall conduct a post-WIND FARM construction baseline survey similar to the pre- WIND FARM construction baseline survey to identify the extent of repairs necessary to return the STREET to the pre- WIND FARM construction condition.

y. The Applicant shall pay for the cost of all repairs to all STREETS that are damaged by the Applicant during the construction of the WIND FARM and restore such STREETS to the condition they were in at the time of the pre-WIND FARM construction inventory.

z. All WIND FARM construction traffic shall exclusively use routes designated in the approved Transportation Impact Analysis.

aa. The Applicant shall provide liability insurance in an acceptable amount to cover the required STREET construction activities.

bb. The Applicant shall pay for the present worth costs of life consumed by the construction traffic as determined by the pavement management surveys and reports on the roads which do not show significant enough deterioration to warrant immediate restoration.

cc. Provisions for expiration date on the agreement.

dd. Other conditions that may be required.

2. A condition of the County Board Special Use Permit approval shall be that the Zoning Administrator shall not authorize a Zoning Use Permit for the WIND FARM until the County Engineer and State's Attorney; or Township Highway Commissioner; or municipality where relevant, has approved a Transportation Impact Analysis provided by the Applicant and prepared by an independent engineer that is mutually acceptable to the Applicant and the County Engineer and State's Attorney; or Township Highway Commissioner; or municipality where relevant, that includes the following:

   (a) Identify all such public STREETS or portions thereof that are intended to be used by the Applicant during construction of the WIND FARM as well as the number of loads, per axle weight of each load; and type of equipment that will be used to transport each load.

   (b) A schedule of the across road culverts and bridges affected by the project and the recommendations as to actions, if any, required with respect to such culverts and bridges and estimated of the cost to replace such culverts and bridges;

   (c) A schedule of the anticipated STREET repair costs to be made in advance of the WIND FARM construction and following construction of the WIND FARM.

   (d) The Applicant shall reimburse the County Engineer; or Township Highway Commissioner; or municipality where relevant, for all reasonable engineering fees including the costs of a third party consultant, incurred in connection with the review and approval of the Transportation Impact Analysis.

G. Standard Conditions for Coordination with Local Fire Protection District

1. The Applicant shall submit to the local fire protection district a copy of the site plan.

2. Upon request by the local fire protection district, the Owner or Operator shall cooperate with the local fire protection district to develop the fire protection district's emergency response plan.

3. Nothing in this section shall alleviate the need to comply with all other applicable fire laws and regulations.

H. Standard Conditions to Mitigate Electromagnetic Interference

1. The Applicant shall provide the applicable microwave transmission providers and local emergency service provider(s) (911 operators) copies of the project summary and site plan.

2. To the extent that any relevant microwave transmission provider and local emergency service provider demonstrates a likelihood of interference with its communications resulting from the WIND FARM, the Applicant shall take reasonable measures to mitigate such anticipated interference.

3. If, after construction of the WIND FARM, the Owner or Operator receives a written complaint related to the above-mentioned interference, the Owner or Operator shall take reasonable steps to respond to the complaint.

4. If, after construction of the WIND FARM, the Owner or Operator receives a written complaint related to interference with local broadcast residential television, the Owner or Operator shall take reasonable steps to respond to the complaint.

I. Standard Conditions for Allowable Noise Level

1. Noise levels from each WIND FARM TOWER or WIND FARM shall be in compliance with the applicable Illinois Pollution Control Board (IPCB) regulations (35 *Illinois Administrative Code* Subtitle H: Noise Parts 900, 901, 910).

2. The Applicant shall submit manufacturer's wind turbine sound power level characteristics and other relevant data regarding wind turbine noise characteristics necessary for a competent noise analysis.

3. The Applicant, through the use of a qualified professional, as part of the siting approval application process, shall appropriately demonstrate compliance with the above noise requirements.

4. The Applicant shall submit a map of the relevant noise contours for the proposed WIND FARM and indicate the proposed WIND FARM TOWERS and all existing PRINCIPAL BUILDINGS within at least 1,200 feet of any WIND FARM TOWER or within the coverage of the relevant noise contours.

5. If a computer model is used to generate the required noise contours the Applicant shall clearly state the assumptions of the model's construction and algorithms so that a competent and objective third party can as simply as possible verify the noise contours and noise data.

J. Standard Conditions for Endangered Species Consultation
The Applicant shall apply for consultation with the Endangered Species Program of the Illinois Department of Natural Resources. The Application shall include a copy of the Agency Action Report from the Endangered Species Program of the Illinois Department of Natural Resources.

K. Standard Conditions for Historic and Archaeological Resources Review
The Applicant shall apply for consultation with the State Historic Preservation Officer of the Illinois Department of Natural Resources. The Application shall include a copy of the Agency Action Report from the State Historic Preservation Officer of the Illinois Department of Natural Resources.

L. Standard Conditions for Acceptable Wildlife Impacts

1. The WIND FARM shall be located, designed, constructed, and operated so as to avoid and if necessary mitigate the impacts to wildlife as much as possible including the following:
   (a) Avoid locating WIND FARM TOWERS in known bird and bat migration pathways and daily movement flyways and known hibernacula and flight paths between bat colonies and bat feeding areas.

   (b) As much as possible, orient rows of WIND FARM TOWERS parallel to known movement patterns.

2. A qualified professional, such as an ornithologist or wildlife biologist, shall conduct a pre-construction site assessment study to estimate the impacts of the construction and operation of the proposed WIND FARM on birds and bats. The pre-construction site assessment shall be submitted with the application and shall include the following minimum information:

   (a) A literature review of existing information on species and potential habitats in the vicinity of the proposed WIND FARM area.

   (b) A mapping of the general vegetation and land cover types, wildlife habitat and quality, and physical characteristics of the proposed WIND FARM area.

   (c) A full year of site specific avian use surveys from the beginning of the spring migration for birds or bats, and extending through the end of the fall migration for birds or bats and include both the spring and fall migration for both birds and bats in the proposed WIND FARM area.

   (d) If the above information suggests the probable occurrence of a state or federal threatened or endangered or sensitive-status species in the proposed WIND FARM area, focused surveys must be conducted during the appropriate season to determine the presence or likelihood of the species of interest and the results submitted with the application.

3. A qualified professional, such as an ornithologist or wildlife biologist, shall also conduct a post-construction mortality monitoring study to quantify the mortality impacts of the WIND FARM on birds and bats. The post-construction mortality

monitoring study shall consist of the following minimum information at a minimum:

(a) At least two full years of site specific mortality monitoring from the beginning of the spring migration for birds or bats, and extend through the end of the fall migration for birds or bats and include both the spring and fall migration for both birds and bats in the immediate vicinity of some or all of the WIND FARM TOWERS.

(b) The application shall include a specific proposal for the degree of precision of the mortality monitoring study including how many days the monitoring is done, at how many towers, for how long each day, and at what radius around the tower, and the extent of monitoring outside of the spring and fall migrations.

(c) A written report on avian and bat mortality shall be submitted at the end of first two full years of WIND FARM operation. The mortality rate estimates should reflect consideration of carcass removal by scavengers and predators.

(d) If the Environment and Land Use Committee determines there are legitimate mortality concerns indicated by the monitoring the post-construction mortality monitoring study shall continue in full year increments until the monitoring indicates that the mortality concerns are resolved. When mortality concerns cannot be resolved in any other way, particular WIND FARM TOWERS shall be shut down during periods of peak risk to birds or bats.

4. During both pre-construction assessment and post-construction monitoring, other information required by the United States Fish and Wildlife Service and the Illinois Department of Natural Resources shall also be provided to the County.

M. Standard Conditions for Shadow flicker

1. The Applicant shall submit the results of a study on potential shadow flicker. The shadow flicker study shall identify the locations of both summer and winter shadow flicker that may be caused by the project and the expected durations of the shadow flicker at these locations particularly areas where shadow flicker may interfere more than one hour per year.

2. The Applicant shall ensure the following:
   (a) Existing DWELLINGS shall not be subjected to shadow flicker.

   (b) No public STREET shall be subjected to shadow flicker.

N. Standard Conditions for Visual Impact Assessment

1. The Applicant shall submit simulated images of the proposed WIND FARM from the following viewpoints:
   (a) Any portion of the WIND FARM that will be visible from and within one mile of any non-participating dwelling or other non-participating principal use.

   (b) Any portion of the WIND FARM that will be visible from and within five miles of any forest preserve district facility.

2. The simulated images shall be as follows:
   (a) Full color photographic printing on paper that is minimum 8 ½ by 11 inches in format.

   (b) As accurate as practical in matching the scale, perspective, and color of the probable actual visual impact.

   (c) Computer visualization images may be provided in addition to the full color photographic simulations.

3. The Applicant shall also submit a written report indicating the location of the individual images relative to the proposed site plan and explaining the techniques used to ensure that the images provide maximum practical realism.

O. Standard Condition for Liability Insurance

1. The Owner or Operator of the WIND FARM shall maintain a current general liability policy covering bodily injury and property damage with limits of a least $1 million per occurrence and $1 million in the aggregate. The amount of the limit shall be increased annually to account for the effects of inflation.

2. The general liability policy shall identify landowners in the SPECIAL USE permit as additional insured.

P. Operational Standard Conditions

1. Maintenance

   (a) The Owner or Operator of the WIND FARM must submit, on an annual basis, a summary of the operation and maintenance reports to the Environment and Land Use Committee and any other operation and maintenance reports as the Environment and Land Use Committee reasonably requests.

(b) Any physical modification to the WIND FARM that alters the mechanical load, mechanical load path, or major electrical components shall require a new County Board SPECIAL USE Permit. Like-kind replacements shall not require re-certification nor will replacement of transformers, cabling, etc. provided replacement is done in a fashion similar to the original installation. Prior to making any physical modification (other than a like-kind replacement), the owner of operator shall confer with a relevant third-party certifying entity identified in subparagraph 6.1.4 D. 1. (a) to determine whether the physical modification requires re-certification.

2. Materials Handling, Storage and Disposal

(a) All solid wastes related to the construction, operation and maintenance of the WIND FARM shall be removed from the site promptly and disposed of in accordance with all federal, state and local laws.

(b) All hazardous materials related to the construction, operation and maintenance of the WIND FARM shall be handled, stored, transported and disposed of in accordance with all applicable local, state and federal laws.

Q. Standard Condition for Decommissioning Plan and Reclamation Agreement

1. The Applicant shall submit a signed site reclamation agreement conforming to the requirements of paragraph 6.1.1 A.

2. In addition to the purposes listed in subparagraph 6.1.1 A. 4. the reclamation agreement shall also include provisions for anticipated repairs to any public STREET used for the purpose of reclamation of the WIND FARM and all costs related to removal of access driveways.

3. In addition to the conditions listed in subparagraph 6.1.1 A. 9. the Zoning Administrator may also draw on the funds for the following reasons:

(a) In the event that any wind turbine or component thereof ceases to be functional for more than six consecutive months and the Owner is not diligently repairing such wind turbine or component.

(b) In the event that the Owner declares any wind turbine or other component to be functionally obsolete for tax purposes.

4. The Site Reclamation Agreement shall be included as a condition of approval by the BOARD and the signed and executed Site Reclamation Agreement must be submitted to the Zoning Administrator prior to any Zoning Use Permit approval.

R. Complaint Hotline

1. Prior to the commencement of construction on the WIND FARM and during the entire term of the County Board SPECIAL USE permit and any extension, the Applicant and Owner shall establish a telephone number hotline for the general public to call with any complaints or questions.

2. The telephone number hotline shall be publicized and posted at the operations and maintenance center and the construction marshalling yard.

3. The telephone number hotline shall be manned during usual business hours and shall be an answering recording service during other hours.

4. Each complaint call to the telephone number hotline shall be logged and identify the name and address of the caller and the reason for the call.

5. All calls shall be recorded and the recording shall be saved for transcription for a minimum of two years.

6. A copy of the telephone number hotline shall be provided to the Zoning Administrator on a monthly basis.

7. The Applicant and Owner shall take necessary actions to resolve all legitimate complaints.

S. Standard Condition for Expiration of WIND FARM County Board SPECIAL USE Permit

A WIND FARM County Board SPECIAL USE Permit designation shall expire pursuant to any time limit included in the Roadway Upgrade and Maintenance agreement required by paragraph 6.1.4 G. or in 10 years if no Zoning Use Permit is granted.

T. Application Requirements

1. In addition to all other information required on the SPECIAL USE Permit application and required by Section 9.1.11 A. 2. the application shall contain or be accompanied by the following information:
   (a) A WIND FARM Project Summary, including, to the extent available:
      (1) A general description of the project, including its approximate name plate generating capacity; the potential equipment manufacturer(s), type(s) of wind turbines, number of wind turbines, and name plate generating capacity of each wind turbine; the maximum height of the WECS Tower(s); and the maximum diameter of the WECS(s) rotor(s).

      (2) The specific proposed location of the WIND FARM including all tax parcels on which the WIND FARM will be constructed.

(3) The specific proposed location of all tax parcels required to be included in the WIND FARM Overlay Zoning District.

(4) A description of the Applicant; Owner and Operator, including their respective business structures.

(b) The name(s), address(es), and phone number(s) of the Applicant(s), Owner and Operator, and all property owner(s) for both the WIND FARM County Board SPECIAL USE permit and the WIND FARM Overlay Zoning District.

(c) A site plan for the installation of all WIND FARM TOWERS indicating the following:

(1) The approximate planned location of each WIND FARM TOWER, other PRINCIPAL STRUCTURES, property lines (including identification of adjoining properties), required separations, public access roads and turnout locations, substation(s), electrical cabling from the WIND FARM TOWER to the Substations(s), ancillary equipment, third party transmission lines, maintenance and management facilities, and layout of all structures within the geographical boundaries of any applicable setback.

(2) The site plan shall clearly indicate the area of the proposed WIND FARM County Board SPECIAL USE Permit as required by subparagraph 6.1.4 A. 1. as well as the area of the related WIND FARM Overlay Zoning District as required by paragraph 5.3.3 C.

(3) The separation of all WIND FARM structures from adjacent NON-PARTICIPATING DWELLINGS OR PRINCIPAL BUILDINGS or uses shall be dimensioned on the approved site plan and that dimension shall establish the effective minimum separation that shall be required for any Zoning Use Permit. Greater separation and somewhat different locations may be provided in the approved site plan for the Zoning Use Permit provided that that the greater separation does not increase the noise impacts that were approved in the WIND FARM County Board SPECIAL USE Permit. WIND FARM structures includes WIND FARM TOWERS, substations, third party transmission lines, maintenance and management facilities, or other significant structures.

(d) All other required studies, reports, certifications, and approvals demonstrating compliance with the provisions of this Ordinance.

2. The Applicant shall notify the COUNTY of any changes to the information provided above that occurs while the County Board SPECIAL USE permit application is pending.

19. Revise Subsection 9.1.11 as follows:

9.1.11 SPECIAL USES

A. Authorized SPECIAL USES

1. The BOARD may grant SPECIAL USE permits only for such SPECIAL USES as are specifically authorized in this ordinance, and are not prohibited by Section 14.2.1.

2. The GOVERNING BODY may grant SPECIAL USE permits only for such County Board SPECIAL USES as are specifically authorized in this ordinance, and are not prohibited by Section 14.2.1.

3. The BOARD or GOVERNING BODY may grant such SPECIAL USE permits only upon written application and after conduct of a public hearing.

a. The written application for a SPECIAL USE permit shall include:

i. The signature of the petitioner; and

ii. The signature of the owner or owners of all the land included in the petition, or the legal representative(s) thereof; and, if applicable, a copy of the petitioner's purchase contract.

B. SPECIAL USE Criteria

A SPECIAL USE permit shall not be granted by the BOARD or GOVERNING BODY unless the public hearing record and written application demonstrate:

1. that it is necessary for the public convenience at that location;

2. that it is so designed, located, and proposed as to be operated so that it will not be injurious to the DISTRICT in which it shall be located or otherwise detrimental to the public welfare;

3. that it conforms to the applicable regulations and standards of and preserves the essential character of the DISTRICT in which it shall be located, except where such regulations and standards are modified by Section 6.

4. that granting the SPECIAL USE is in harmony with the general purpose and intent of this ordinance.

5. that, in the case of an existing NONCONFORMING USE, it will make such USE more compatible with its surroundings.

6. approval of a SPECIAL USE permit shall authorize USE, CONSTRUCTION and operation only in a manner that is fully consistent with all testimony and evidence submitted by the petitioner or petitioner's agent(s).

C. Findings

1. The BOARD or GOVERNING BODY shall make findings that the requirements of Section 9.1.11B have been met by the applicant for a SPECIAL USE.

2. The BOARD or GOVERNING BODY shall further make a finding that the reasons set forth in the application justify with respect to the criteria set forth in Section 9.1.11B the waiver of any standard condition or the imposition of any special condition.

3. The BOARD or GOVERNING BODY may make a finding that a proposed STRUCTURE or physical change to a site, as a part of a SPECIAL USE request, is a NON-ADAPTABLE STRUCTURE. In such a case the requirements of Section 6.1.1~~C~~A shall be applicable.

4. Within a reasonable time after the public hearing for any County Board SPECIAL USE Permit, the BOARD shall make a report to the GOVERNING BODY.

D. Conditions

1. Any other provision of this ordinance not withstanding, the BOARD or GOVERNING BODY, in granting any SPECIAL USE, may waive upon application any standard or requirement for the specific SPECIAL USE enumerated in Section 6.1.3 Schedule of Requirements and Standard Conditions, to the extent that they exceed the minimum standards of the DISTRICT, except for any state or federal regulation incorporated by reference, upon finding that such waiver is in accordance with the general purpose and intent of this ordinance, and will not be injurious to the neighborhood or to the public health, safety and welfare.

2. In granting any SPECIAL USE, the BOARD or GOVERNING BODY may prescribe SPECIAL CONDITIONS as to appropriate conditions and safeguards in conformity with the ordinance. Violation of such SPECIAL CONDITIONS when made a part of the terms under which the SPECIAL USE is granted, shall be deemed a violation of this ordinance and punishable under this ordinance.

3. In granting any SPECIAL USE Permit as authorized in Section 4.2.1F for more than one MAIN or PRINCIPAL STRUCTURE or BUILDING, the

BOARD shall state that any future sale of said LOT or tract of land may be subject to the *Illinois Plat Act,* (765 ILCS 205/0.01 *et seq.*) or the *Champaign County Subdivision Regulations;* or the SUBDIVISION regulations of a municipality that has jurisdiction within one and one-half miles of the corporate limits.

4. RESIDENTIAL PLANNED UNIT DEVELOPMENTS shall, in addition to or in lieu of the above, meet the provisions of Section 6.3.

5. The BOARD or GOVERNING BODY shall require that all applicable provisions of the *Champaign County Stormwater Management Policy* (as amended February 20, 2003) are met before approving any SPECIAL USE.

6. Under no circumstances shall the BOARD or GOVERNING BODY grant a SPECIAL USE to allow a USE not permissible under the terms of this ordinance, in the DISTRICT involved, or any USE expressly or by implication prohibited under the terms of this ordinance in said DISTRICT, nor shall the BOARD or GOVERNING BODY waive compliance with state or federal regulations incorporated into this ordinance.

20. Add the following paragraph 9.3.1 H. for Zoning Use Permit fee:

H. WIND FARM TOWER $4000

21. Revise subsection 9.3.3 as follows:

9.3.3 Zoning Case Filing Fees

A. General Provisions

1. No zoning case filing shall be accepted until the filing fee has been paid.

2. No zoning case filing fee shall be waived unless the Zoning Administrator determines that the petition is the only means reasonably available to bring a property into compliance with the provisions of this ordinance and the non-compliance is due solely to staff error.

3. No zoning case filing fee shall be refunded after required legal notice has been made by mail or publication unless the Zoning Administrator determines such filing to have been based solely upon staff error.

4. No amendment to any petition which requires new legal notice shall be considered until an amended petition fee has been received unless the Zoning Administrator determines such amendment to be required due solely to staff error.

5. The fee for SPECIAL USE permits shall be determined based on the larger of the following (except for County Board WIND FARM Special Use Permits):

   a. the area of farmland taken out of production as a result of the SPECIAL USE; or

   b. when farmland will not be taken out of production as a result of the SPECIAL USE, the land area taken up by the existing STRUCTURES and all proposed CONSTRUCTION proposed in the SPECIAL USE application.

6. When some combination of VARIANCE, SPECIAL USE and Map Amendment cases is required simultaneously for the same property, the total filing fee shall include the following (except for County Board WIND FARM Special Use Permits):

   a. The standard fee for the most expensive individual zoning case; and

   b. one-half of the standard fee for any other required VARIANCE, SPECIAL USE, or Map Amendment provided that

   c. no additional fees shall be included for multiple zoning cases of the same type that can be advertised in the same legal advertisement.

7. There shall be no reduction in fees for combined applications of County Board WIND FARM Special Use Permit and a map amendment to the WIND FARM Overlay Zoning District.

B. Fees

1. VARIANCES.

   a. ADMINISTRATIVE VARIANCES $100

   b. Minor or Major VARIANCES $200

2 SPECIAL USE permits and Map Amendments (except for County Board WIND FARM Special Use Permit and a map amendment to the WIND FARM Overlay Zoning District)

   a. Two acres or less and Base Fee for larger areas $400

   b. More than two acres but no more than 12 acres ..... add $40 per acre to Base Fee for each acre over two acres

   c. More than 12 acres add $10 per acre for each acre over 12 acres and add to fees in a. and b. above

3. Appeals and Interpretations $200

4. Change of Nonconforming Use $100

5. Amendment to Petitions (requiring new legal notice) $100

6. County Board WIND FARM Special Use Permit.....
$440 per WIND FARM TURBINE TOWER

7. Map Amendment to the WIND FARM Overlay Zoning District.....
$100 per WIND FARM TURBINE TOWER

Attachment I. Alternative Draft Ordinance Without Map Amendment
MARCH 20, 2009

1. Add new purpose 2.(r) as follows:

(r) provide for the safe and efficient development of renewable energy sources in those parts of the COUNTY that are most suited to their development.

2. Add the following to Section 3.0 Definitions:

DWELLING OR PRINCIPAL BUILDING, PARTICIPATING: A DWELLING on land that is leased to a WIND FARM.

DWELLING OR PRINCIPAL BUILDING, NON- PARTICIPATING: A DWELLING on land that is not leased to a WIND FARM.

PRIVATE WAIVER: A written statement asserting that a landowner has agreed to waive a specific WIND FARM standard condition and has knowingly agreed to accept the consequences of the waiver. A PRIVATE WAIVER must be signed by the landowner.

WIND FARM: A unified development of WIND FARM TOWERS and all other necessary components including cabling, transformers, a common switching station, and maintenance and management facilities which are intended to produce electricity by conversion of wind energy and to deliver the electricity to the power grid and having a name plate capacity of more than 10 megawatts (MW). A WIND FARM is under a common ownership and operating control even though the individual WIND FARM TOWERS may be located on land that is leased from many different landowners.

WIND FARM TOWER: A wind turbine nacelle and rotor and the supporting tower structure that are part of a WIND FARM development and intended to produce electricity for the power grid.

WIND TOWER, TEST:
{NOTE: Staff is still drafting this definition.}

WIND TURBINE TOWER: A wind turbine nacelle and rotor and the supporting tower structure that is owned by a private landowner for the purpose of producing electrical energy that may be used onsite or sold to a utility.

2. Add new subparagraph 4.2.1 C.2. as follows:

2. A WIND FARM may be authorized as a County Board SPECIAL USE permit in the AG-1, Agriculture Zoning District as a second PRINCIPAL USE on a LOT with another PRINCIPAL USE. WIND FARM TOWERS may be authorized by County Board SPECIAL USE permit as multiple PRINCIPAL STRUCTURES on a single LOT in the AG-1, Agriculture Zoning District.

3. Add new subparagraph 4.3.1 F. as follows:

F. HEIGHT regulations shall not apply to WIND FARM TOWERS except as HEIGHT regulations are required as a standard condition in Section 6.1.4.

4. Add new subparagraph 4.3.4 H. 4. h. as follows:

h. WIND FARMS and WIND FARM TOWERS except as PIPELINE IMPACT RADIUS regulations are required in Subsection 6.1.4.

5. Amend Section 5.2 as follows:

Add "WIND FARM" as a COUNTY BOARD Special Use Permit in the AG-1 District by a "B".

6. Add the following as footnote 14 under the Special Provisions for the AG-1 District in Section 5.3:

14. LOTS in a WIND FARM County Board SPECIAL USE Permit and intended for WIND FARM TOWERS, substations, and WIND FARM maintenance and management facilities are exempt from the requirements of Section 5.3 except as such regulations are required by Subsection 6.1.4.

7. Add new paragraph 5.4.3 E. as follows:

E. The Rural Residential Overlay Zoning District is prohibited from being established within a WIND FARM County Board SPECIAL USE Permit.

8. Renumber existing paragraph 6.1.2 to be subsection 6.1 Standards for Special Uses

8. Rename existing subsection 6.1.1 to Standard Conditions that May Apply to Specific SPECIAL USES

9. Move existing paragraphs 6.1.1 A. and B. to become new subparagraphs 9.1.11 7. and 8.

10. Renumber existing paragraph 6.1.1 C. to become new paragraph 6.1.1 A.

11. Revise existing subparagraph 6.1.1 C. 5. to read as follows:

5. No Zoning Use Permit for such SPECIAL USE will be issued until the developer provides the COUNTY with an irrevocable letter of credit to be drawn upon a federally insured financial institution within 200 miles of Urbana or reasonable and anticipated travel costs shall be added to the amount of the letter of credit. The irrevocable letter of credit shall be in the amount of one hundred fifty percent (150%) of an independent engineer's cost estimate to complete the work described in Section 6.1.1C4a. This letter of credit, or a successor letter of credit pursuant to Section 6.1.1C6 or 6.1.1C12 shall remain in effect and shall be made available to the COUNTY for an indefinite term.

12. Rename subsection 6.1.2 to be Standard Conditions for All SPECIAL USES

13. Renumber existing paragraph 6.1.1 D. to become new paragraph 6.1.2 A.

14. Rename subsection 6.1.3 to Schedule of Standard Conditions for Specific Types of Special Uses

15. Add new subsection 6.1.4 as follows:

6.1.4 WIND FARM County Board SPECIAL USE Permit
A WIND FARM County Board SPECIAL USE Permit may only be authorized in the AG-1 Zoning District subject to the following standard conditions.

A. General Standard Conditions

1. The area of the WIND FARM County Board SPECIAL USE Permit must include the following minimum areas:

(a) All land that is a distance equal to 1.10 times the total WIND FARM TOWER height (measured to the tip of the highest rotor blade) from the base of that WIND FARM TOWER.

(b) All land that will be exposed to a noise level greater than that authorized to Class A land under paragraph 6.1.4 I.

(c) All land that will be exposed to shadow flicker in excess of that authorized under paragraph 6.1.4M. and for which other mitigation is not proposed.

(d) All necessary access lanes or driveways and any required new PRIVATE ACCESSWAYS. For purposes of determining the minimum area of the special use permit, access lanes or driveways shall be provided a minimum 40 feet wide area.

(e) All necessary WIND FARM ACCESSORY STRUCTURES including electrical distribution lines, transformers, common switching stations, and substations not under the ownership of a PUBLICLY REGULATED UTILITY. For purposes of determining the minimum area of the special use permit, underground cable installations shall be provided a minimum 40 feet wide area.

(f) All land that is within 1.50 times the total WIND FARM TOWER height (measured to the tip of the highest rotor blade) from the base of each WIND FARM TOWER except any such land that is more than 1,320 feet from any existing public STREET right of way.

(g) 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 WIND FARM TOWER except that in the case of WIND FARM TOWERS 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.

2. The WIND FARM County Board SPECIAL USE Permit shall not be located in the following areas:
   (a) Less than one-and-one-half miles from an incorporated municipality that has a zoning ordinance.

   (b) Less than one mile from the CR Conservation Recreation Zoning District.

   (c) In any area leased for underground gas storage unless the lease requires that gas injection wells and other above-ground appurtenances be located in conformance with paragraph 6.1.4 C.8.

B. Minimum Lot Standard Conditions

1. There are no minimum LOT AREA, AVERAGE LOT WIDTH, SETBACK, YARD, or maximum LOT COVERAGE requirements for a WIND FARM or for LOTS for WIND FARM TOWERS, substations, and WIND FARM maintenance and management facilities.

C. Minimum Standard Conditions for Separations for WIND FARM TOWERS from adjacent USES and STRUCTURES

The location of each WIND FARM TOWER shall provide the following required separations as measured from the exterior of the above ground portion of the WIND FARM TOWER:

1. At least 1,000 feet separation from the exterior above-ground base of a WIND FARM TOWER to any PARTICIPATING DWELLING OR PRINCIPAL BUILDING provided that the noise level caused by the WIND FARM at the particular building complies with the applicable Illinois Pollution Control Board regulations.

2. At least 1,500 feet separation from the exterior above-ground base of a WIND FARM TOWER to any existing NON-PARTICIPATING DWELLING OR PRINCIPAL BUILDING provided that the noise level caused by the WIND FARM at the particular building complies with the applicable Illinois Pollution Control Board regulations.

3. The above separations may be reduced to a distance no less than 1.10 times the total WIND FARM TOWER height (measured to the tip of the highest rotor blade) upon submission of a PRIVATE WAIVER signed by the owner of said dwelling or building or adjacent property. The PRIVATE WAIVER must specify the agreed minimum separation and specifically acknowledge that the grantor accepts the resulting noise level caused by the WIND FARM.

4. A separation distance equal to 1.10 times the total WIND FARM TOWER height (measured to the tip of the highest rotor blade) from the exterior above-ground base of a WIND FARM TOWER to the nearest adjacent property line for property that is also part of the WIND FARM County Board SPECIAL USE Permit. This separation may be reduced upon submission of a PRIVATE WAIVER signed by the owner of the adjacent property. The PRIVATE WAIVER must specify the agreed minimum separation.

5. A separation distance equal to 1.50 times the total WIND FARM TOWER height (measured to the tip of the highest rotor blade) from the exterior above-ground base of a WIND FARM TOWER to the nearest public STREET RIGHT OF WAY unless the WIND FARM is located on both sides of the STREET in which case the minimum separation distance between a WIND FARM TOWER and the public STREET RIGHT OF WAY is equal to 1.10 times the total WIND FARM TOWER height (measured to the tip of the highest rotor blade.

6. A separation distance equal to 1.10 times the total WIND FARM TOWER height (measured to the tip of the highest rotor blade) from the exterior above-ground base of a WIND FARM TOWER to the nearest third party electrical transmission lines, communication towers, or railroad 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 public street maintenance jurisdiction. The PRIVATE WAIVER must specify the agreed minimum separation.

7. Any PRIVATE WAIVER establishing an agreement for a lesser minimum separation as authorized above shall be submitted prior to the final determination by the BOARD 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. No waiver of a standard condition shall be required in the event of a duly agreed and signed PRIVATE WAIVER.

8. At least 1,200 feet separation from the exterior above-ground base of a WIND FARM TOWER to any of the following:
   (a) any easement for a GAS PIPELINE or HAZARDOUS LIQUID PIPELINE; or

   (b) any wellhead or other above ground fixture that is accessory to a GAS PIPELINE or to any valve or other above ground fixture for any HAZARDOUS LIQUID PIPELINE;

   (c) provided however that if the relevant PIPELINE IMPACT RADIUS required by paragraph 4.3.4 H. is greater than 1,200 feet then that PIPELINE IMPACT RADIUS shall be the minimum separation of any of the above; or

(d) any easement for an underground water main or to the actual water main if there is no easement.

9. At least 1,600 feet separation from the exterior above-ground base of a WIND FARM TOWER to any Liquefied Natural Gas Storage; or Liquefied Petroleum Gas Storage; or Gasoline and Volatile Oils Storage exceeding 500 gallons capacity in the aggregate; or other commercial or industrial use of a flammable, explosive, or hazardous nature.

10. At least 3,500 feet separation from the exterior above-ground base of a WIND FARM TOWER to any RESTRICTED LANDING AREA or RESIDENTIAL AIRPORT.

D. Standard Conditions for Design and Installation of WIND FARM TOWERS

1. Design Safety Certification

(a) WIND FARM TOWERS, turbines, and all related construction shall conform to applicable industry standards, including those of the American National Standards Institute ("ANSI"). Applicants shall submit certificates of design compliance that equipment manufacturers have obtained from Underwriters Laboratories ("UL"), Det Norske Veritas ("DNV"), Germanischer Lloyd Wind Energy ("GL"), or equivalent third party.

(b) Each Zoning Use Permit Application for a WIND FARM TOWER shall include a certification by an Illinois Professional Engineer or Illinois Licensed Structural Engineer that the foundation and tower design of the WIND FARM TOWER is within accepted professional standards, given local soil and climate conditions.

2. Controls and Brakes

(a) All WIND FARM TOWER turbines shall be equipped with a redundant braking system. This includes both aerodynamic over speed controls (including variable pitch, tip, and other similar systems) and mechanical brakes.

(b) Mechanical brakes shall be operated in fail-safe mode.

(c) Stall regulation shall not be considered a sufficient braking system for over speed protection.

3. Electrical Components. All electrical components of the WIND FARM shall conform to applicable state and national codes including, and relevant national and international standards (e.g. ANSI and International Electrical Commission).

4. The WIND FARM TOWER must be a monopole construction.

5. The total WIND FARM TOWER height (measured to the tip of the highest rotor blade) must be less than 500 feet.

6. WIND FARM TOWERS, turbine nacelles, and blades shall be painted white or gray or another non-reflective, unobtrusive color as specified in the application and authorized by the BOARD.

7. The WIND FARM shall comply with all applicable Federal Aviation Administration (FAA) requirements which shall be explained in the application. The minimum lighting requirements of the FAA shall not be exceeded except that all WIND FARM TOWERS shall be lighted and unless otherwise required by the FAA only red flashing lights shall be used at night and only the minimum number of such lights with the minimum intensity and the minimum number of flashes per minute (longest duration between flashes) allowed by FAA.

8. Warnings
   (a) A reasonably visible warning sign concerning voltage must be placed at the base of all pad-mounted transformers and Substations.

   (b) Visible, reflective, colored objects, such as flags, reflectors, or tape shall be placed on the anchor points of guy wires and along the guy wires up to a height of 15 feet from the ground.

9. All WIND FARM TOWERS 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 WIND FARM TOWER.

E. Standard Conditions to Mitigate Damage to Farmland

1. All underground wiring or cabling for the WIND FARM shall be at a minimum depth of 4 feet below grade or deeper if required to maintain a minimum one foot of clearance between the wire or cable and any agricultural drainage tile.

2. Protection of agricultural drainage tile
   (a) The applicant shall endeavor to locate all existing agricultural drainage tile prior to establishing any construction staging areas, construction of any necessary WIND FARM TOWER access lanes or driveways, construction of any WIND FARM TOWERS, any common switching stations, substations, and installation of underground wiring or cabling. The applicant shall contact affected landowners and tenants for their knowledge of tile line locations prior to the proposed construction. Drainage districts shall be notified at least two weeks prior to disruption of tile.

(b) All identified drainage district tile lines shall be staked or flagged prior to construction to alert construction crews of the possible need for tile line repairs unless this requirement is waived in writing by the drainage district.

(c) Any agricultural drainage tile located underneath construction staging areas, access lanes, driveways, any common switching stations, and substations shall be replaced as required in paragraph 7.2 of the Champaign County Stormwater Management Policy.

(d) Any agricultural drainage tile that must be relocated shall be relocated as required in the Champaign County Stormwater Management Policy.

(e) Conformance of any relocation of drainage district tile with the Stormwater Management Policy shall be certified by an Illinois Professional Engineer. Written approval by the drainage district shall be received prior to any backfilling of the relocated drain tile and a copy of the approval shall be submitted to the Zoning Administrator. As-built drawings shall be provided to both the relevant drainage district and the Zoning Administrator of any relocated drainage district tile.

(f) All tile lines that are damaged, cut, or removed shall be staked or flagged in such manner that they will remain visible until the permanent repairs are completed.

(g) All exposed tile lines shall be screened or otherwise protected to prevent the entry into the tile of foreign materials, loose soil, small mammals, etc.

(h) Permanent repairs shall be made within 14 days of the tile damage provided that weather and soil conditions are suitable or a temporary tile repair shall be made. Immediate temporary repair shall also be required if water is flowing through any damaged tile line. Temporary repairs are not needed if the tile lines are dry and water is not flowing in the tile provided the permanent repairs can be made within 14 days of the damage.

(i) All damaged tile shall be repaired so as to operate as well after construction as before the construction began.

(j) Following completion of the WIND FARM construction the applicant shall be responsible for correcting all tile line repairs that fail, provided that the failed repair was made by the Applicant.

3. All soil conservation practices (such as terraces, grassed waterways, etc.) that are damaged by WIND FARM construction shall be restored by the applicant to the pre-WIND FARM construction condition.

4. Topsoil replacement

For any open trenching required pursuant to WIND FARM construction, the topsoil shall be stripped and replaced as follows:

(a) The top 12 inches of topsoil shall first be stripped from the area to be trenched and from an adjacent area to be used for subsoil storage. The topsoil shall be stored in a windrow parallel to the trench in such a manner that it will not become intermixed with subsoil materials.

(c) All subsoil material that is removed from the trench shall be placed in the second adjacent stripped windrow parallel to the trench but separate from the topsoil windrow.

(d) In backfilling the trench, the stockpiled subsoil material shall be placed back into the trench before replacing the topsoil.

(e) The topsoil must be replaced such that after settling occurs, the topsoil's original depth and contour (with an allowance for settling) will be restored.

5. Mitigation of soil compaction and rutting

(a) The Applicant shall not be responsible for mitigation of soil compaction and rutting if exempted by the WIND FARM lease.

(b) Unless specifically provided for otherwise in the WIND FARM lease, the Applicant shall mitigate soil compaction and rutting for all areas of farmland that were traversed with vehicles and construction equipment or where topsoil is replaced in open trenches as follows:

(1) After WIND FARM construction is complete the soil shall be ripped at least 18 inches deep (or more shallow if required to miss tile lines) and then disked by the applicant. Three passes shall be made across any agricultural land that is ripped.

(2) All ripping and disking shall be done at a time when the soil is dry enough for normal tillage operations to occur on undisturbed farmland adjacent to the areas to be ripped.

(3) The Applicant shall restore all rutted land to the original condition.

6. Land leveling

(a) The Applicant shall not be responsible for leveling of disturbed land if exempted by the WIND FARM lease.

(b) Unless specifically provided for otherwise in the WIND FARM lease, the Applicant shall level all disturbed land as follows:

(1) Following the completion of any open trenching, the applicant shall restore all land to its original pre-construction elevation and contour.

(2) Should uneven settling occur or surface drainage problems develop as a result of the trenching within the first year after completion, the applicant shall again restore the land to its original pre-construction elevation and contour.

F. Standard Conditions for Use of Public Streets

Any WIND FARM Applicant proposing to use any County Highway or a township or municipal STREET for the purpose of transporting WIND FARM TOWERS or Substation parts and/or equipment for construction, operation, or maintenance of the WIND FARM TOWERS or Substations(s), shall identify all such public STREETS and pay the costs of any necessary permits and the costs to repair any damage to the STREETS caused by the WIND FARM construction, as follows:

1. Prior to the close of the public hearing before the BOARD, the Applicant shall enter into a Roadway Upgrade and Maintenance agreement approved by the County Engineer and State's Attorney; or Township Highway Commissioner; or municipality where relevant, and the signed and executed Roadway Upgrade and Maintenance agreements must provide for the following minimum conditions:

a. The applicant shall agree to conduct a pre-WIND FARM construction baseline survey to determine existing STREET conditions for assessing potential future damage including the following:

(1) A videotape of the affected length of each subject STREET supplemented by photographs if necessary.

(2) Pay for costs of the County to hire a consultant to make a study of any structure on the proposed route that the County Engineer feels may not carry the loads likely during the WIND FARM construction.

(3) Pay for any strengthening of STREET structures that may be necessary to accommodate the proposed traffic loads caused by the WIND FARM construction.

b. The Applicant shall agree to pay for costs of the County Engineer to hire a consultant to make a study of any structure on the proposed route that the County Engineer feels may not carry the loads likely during the WIND FARM construction and pay for any strengthening

of structures that may be necessary to accommodate the proposed traffic loads caused by the WIND FARM construction.

c. The Applicant shall agree upon an estimate of costs for any other necessary roadway improvements prior to construction.

d. The Applicant shall obtain any necessary approvals for the STREET improvements from the relevant STREET maintenance authority.

e. The Applicant shall obtain any necessary Access Permits including any required plans.

f. The Applicant shall erect permanent markers indicating the presence of underground cables.

g. The Applicant shall install marker tape in any cable trench.

h. The Applicant shall become a member of the Illinois state wide One-Call Notice System (otherwise known as the Joint Utility Locating Information for Excavators or "JULIE") and provide JULIE with all of the information necessary to update its record with respect to the WIND FARM.

i. The Applicant shall use directional boring equipment to make all crossings of County Highways for the cable collection system.

j. The Applicant shall provide plans for the widening of any corner radius that is necessary to facilitate the turning movements of the transport trucks used by the Applicant.

k. The Applicant shall pay for the necessary temporary STREET improvements for the widened corner radii and pay for the cost to return the widened radii to their original lines and grades when no longer needed for the WIND FARM construction unless the STREET maintenance authority requests that the widened radii remain as improved.

l. The Applicant shall notify the STREET maintenance authority in advance of all oversize moves and crane crossings.

m. The Applicant shall provide the County Engineer with a copy of each overweight and oversize permit issued by the Illinois Department of Transportation for WIND FARM construction.

n. The Applicant shall transport the WIND FARM TOWER segments and other oversize loads so as to minimize adverse impact on the local traffic including farm traffic.

o. The Applicant shall schedule WIND FARM construction traffic in a way to minimize adverse impacts on emergency response vehicles, rural mail delivery, school bus traffic, and local agricultural traffic.

p. The Applicant shall provide as much advance notice as is commercially reasonable to obtain approval of the STREET maintenance authority when it is necessary for a STREET to be closed due to a crane crossing or for any other reason. Notwithstanding the generality of the aforementioned, the Applicant will provide 48 hours notice to the extent reasonably practicable.

q. The Applicant shall provide signs indicating all highway and STREET closures and work zones in accordance with the Illinois Department of Transportation Manual on Uniform Traffic Control Devices.

r. The Applicant shall establish a single escrow account and a single Irrevocable Letter of Credit for the cost of all STREET upgrades and repairs pursuant to the WIND FARM construction.

s. The Applicant shall notify all relevant parties of any temporary STREET closures

t. The Applicant shall obtain easements and other land rights needed to fulfill the Applicant's obligations under this Agreement.

u. The Applicant shall agree that the County shall design all STREET upgrades in accordance with the IDOT Bureau of Local Roads and Streets Manual, 2005 edition.

v. The Applicant shall provide written Notice to Proceed to the relevant STREET maintenance authority by December 31 of each year that identifies the STREETS to be upgraded during the following year.

w. The Applicant shall provide dust control and grading work to the reasonable satisfaction of the County Engineer on STREETS that become aggregate surface STREETS.

x. The Applicant shall conduct a post-WIND FARM construction baseline survey similar to the pre- WIND FARM construction baseline survey to identify the extent of repairs necessary to return the STREET to the pre- WIND FARM construction condition.

y. The Applicant shall pay for the cost of all repairs to all STREETS that are damaged by the Applicant during the construction of the WIND FARM and restore such STREETS to the condition they were in at the time of the pre-WIND FARM construction inventory.

z. All WIND FARM construction traffic shall exclusively use routes designated in the approved Transportation Impact Analysis.

aa. The Applicant shall provide liability insurance in an acceptable amount to cover the required STREET construction activities.

bb. The Applicant shall pay for the present worth costs of life consumed by the construction traffic as determined by the pavement management surveys and reports on the roads which do not show significant enough deterioration to warrant immediate restoration.

cc. Provisions for expiration date on the agreement.

dd. Other conditions that may be required.

2. A condition of the County Board Special Use Permit approval shall be that the Zoning Administrator shall not authorize a Zoning Use Permit for the WIND FARM until the County Engineer and State's Attorney; or Township Highway Commissioner; or municipality where relevant, has approved a Transportation Impact Analysis provided by the Applicant and prepared by an independent engineer that is mutually acceptable to the Applicant and the County Engineer and State's Attorney; or Township Highway Commissioner; or municipality where relevant, that includes the following:

(a) Identify all such public STREETS or portions thereof that are intended to be used by the Applicant during construction of the WIND FARM as well as the number of loads, per axle weight of each load; and type of equipment that will be used to transport each load.

(b) A schedule of the across road culverts and bridges affected by the project and the recommendations as to actions, if any, required with respect to such culverts and bridges and estimated of the cost to replace such culverts and bridges;

(c) A schedule of the anticipated STREET repair costs to be made in advance of the WIND FARM construction and following construction of the WIND FARM.

(d) The Applicant shall reimburse the County Engineer; or Township Highway Commissioner; or municipality where relevant, for all reasonable engineering fees including the costs of a third party consultant, incurred in

connection with the review and approval of the Transportation Impact Analysis.

G. Standard Conditions for Coordination with Local Fire Protection District

1. The Applicant shall submit to the local fire protection district a copy of the site plan.

2. Upon request by the local fire protection district, the Owner or Operator shall cooperate with the local fire protection district to develop the fire protection district's emergency response plan.

3. Nothing in this section shall alleviate the need to comply with all other applicable fire laws and regulations.

H. Standard Conditions to Mitigate Electromagnetic Interference

1. The Applicant shall provide the applicable microwave transmission providers and local emergency service provider(s) (911 operators) copies of the project summary and site plan.

2. To the extent that any relevant microwave transmission provider and local emergency service provider demonstrates a likelihood of interference with its communications resulting from the WIND FARM, the Applicant shall take reasonable measures to mitigate such anticipated interference.

3. If, after construction of the WIND FARM, the Owner or Operator receives a written complaint related to the above-mentioned interference, the Owner or Operator shall take reasonable steps to respond to the complaint.

4. If, after construction of the WIND FARM, the Owner or Operator receives a written complaint related to interference with local broadcast residential television, the Owner or Operator shall take reasonable steps to respond to the complaint.

I. Standard Conditions for Allowable Noise Level

1. Noise levels from each WIND FARM TOWER or WIND FARM shall be in compliance with the applicable Illinois Pollution Control Board (IPCB) regulations (35 *Illinois Administrative Code* Subtitle H: Noise Parts 900, 901, 910).

2. The Applicant shall submit manufacturer's wind turbine sound power level characteristics and other relevant data regarding wind turbine noise characteristics necessary for a competent noise analysis.

3. The Applicant, through the use of a qualified professional, as part of the siting approval application process, shall appropriately demonstrate compliance with the above noise requirements.

4. The Applicant shall submit a map of the relevant noise contours for the proposed WIND FARM and indicate the proposed WIND FARM TOWERS and all existing PRINCIPAL BUILDINGS within at least 1,200 feet of any WIND FARM TOWER or within the coverage of the relevant noise contours.

5. If a computer model is used to generate the required noise contours the Applicant shall clearly state the assumptions of the model's construction and algorithms so that a competent and objective third party can as simply as possible verify the noise contours and noise data.

J. Standard Conditions for Endangered Species Consultation
The Applicant shall apply for consultation with the Endangered Species Program of the Illinois Department of Natural Resources. The Application shall include a copy of the Agency Action Report from the Endangered Species Program of the Illinois Department of Natural Resources.

K. Standard Conditions for Historic and Archaeological Resources Review
The Applicant shall apply for consultation with the State Historic Preservation Officer of the Illinois Department of Natural Resources. The Application shall include a copy of the Agency Action Report from the State Historic Preservation Officer of the Illinois Department of Natural Resources.

L. Standard Conditions for Acceptable Wildlife Impacts

1. The WIND FARM shall be located, designed, constructed, and operated so as to avoid and if necessary mitigate the impacts to wildlife as much as possible including the following:
   (a) Avoid locating WIND FARM TOWERS in known bird and bat migration pathways and daily movement flyways and known hibernacula and flight paths between bat colonies and bat feeding areas.

   (b) As much as possible, orient rows of WIND FARM TOWERS parallel to known movement patterns.

2. A qualified professional, such as an ornithologist or wildlife biologist, shall conduct a pre-construction site assessment study to estimate the impacts of the construction and operation of the proposed WIND FARM on birds and bats. The pre-construction site assessment shall be submitted with the application and shall include the following minimum information:

   (a) A literature review of existing information on species and potential habitats in the vicinity of the proposed WIND FARM area.

(b) A mapping of the general vegetation and land cover types, wildlife habitat and quality, and physical characteristics of the proposed WIND FARM area.

(c) A full year of site specific avian use surveys from the beginning of the spring migration for birds or bats, and extending through the end of the fall migration for birds or bats and include both the spring and fall migration for both birds and bats in the proposed WIND FARM area.

(d) If the above information suggests the probable occurrence of a state or federal threatened or endangered or sensitive-status species in the proposed WIND FARM area, focused surveys must be conducted during the appropriate season to determine the presence or likelihood of the species of interest and the results submitted with the application.

3. A qualified professional, such as an ornithologist or wildlife biologist, shall also conduct a post-construction mortality monitoring study to quantify the mortality impacts of the WIND FARM on birds and bats. The post-construction mortality monitoring study shall consist of the following minimum information at a minimum:

(a) At least two full years of site specific mortality monitoring from the beginning of the spring migration for birds or bats, and extend through the end of the fall migration for birds or bats and include both the spring and fall migration for both birds and bats in the immediate vicinity of some or all of the WIND FARM TOWERS.

(b) The application shall include a specific proposal for the degree of precision of the mortality monitoring study including how many days the monitoring is done, at how many towers, for how long each day, and at what radius around the tower, and the extent of monitoring outside of the spring and fall migrations.

(c) A written report on avian and bat mortality shall be submitted at the end of first two full years of WIND FARM operation. The mortality rate estimates should reflect consideration of carcass removal by scavengers and predators.

(d) If the Environment and Land Use Committee determines there are legitimate mortality concerns indicated by the monitoring the post-construction mortality monitoring study shall continue in full year increments until the monitoring indicates that the mortality concerns are resolved. When mortality concerns cannot be resolved in any other way, particular WIND FARM TOWERS shall be shut down during periods of peak risk to birds or bats.

4. During both pre-construction assessment and post-construction monitoring, other information required by the United States Fish and Wildlife Service and the Illinois Department of Natural Resources shall also be provided to the County.

M. Standard Conditions for Shadow flicker

1. The Applicant shall submit the results of a study on potential shadow flicker. The shadow flicker study shall identify the locations of both summer and winter shadow flicker that may be caused by the project and the expected durations of the shadow flicker at these locations particularly areas where shadow flicker may interfere more than one hour per year.

2. The Applicant shall ensure the following:
   (a) Existing DWELLINGS shall not be subjected to shadow flicker.

   (b) No public STREET shall be subjected to shadow flicker.

N. Standard Conditions for Visual Impact Assessment

1. The Applicant shall submit simulated images of the proposed WIND FARM from the following viewpoints:
   (a) Any portion of the WIND FARM that will be visible from and within one mile of any non-participating dwelling or other non-participating principal use.

   (b) Any portion of the WIND FARM that will be visible from and within five miles of any forest preserve district facility.

2. The simulated images shall be as follows:
   (a) Full color photographic printing on paper that is minimum 8 ½ by 11 inches in format.

   (b) As accurate as practical in matching the scale, perspective, and color of the probable actual visual impact.

   (c) Computer visualization images may be provided in addition to the full color photographic simulations.

3. The Applicant shall also submit a written report indicating the location of the individual images relative to the proposed site plan and explaining the techniques used to ensure that the images provide maximum practical realism.

O. Standard Condition for Liability Insurance

1. The Owner or Operator of the WIND FARM shall maintain a current general liability policy covering bodily injury and property damage with limits of a least $1 million per occurrence and $1 million in the aggregate. The amount of the limit shall be increased annually to account for the effects of inflation.

2. The general liability policy shall identify landowners in the SPECIAL USE permit as additional insured.

P. Operational Standard Conditions

1. Maintenance

(a) The Owner or Operator of the WIND FARM must submit, on an annual basis, a summary of the operation and maintenance reports to the Environment and Land Use Committee and any other operation and maintenance reports as the Environment and Land Use Committee reasonably requests.

(b) Any physical modification to the WIND FARM that alters the mechanical load, mechanical load path, or major electrical components shall require a new County Board SPECIAL USE Permit. Like-kind replacements shall not require re-certification nor will replacement of transformers, cabling, etc. provided replacement is done in a fashion similar to the original installation. Prior to making any physical modification (other than a like-kind replacement), the owner of operator shall confer with a relevant third-party certifying entity identified in subparagraph 6.1.4 D. 1. (a) to determine whether the physical modification requires re-certification.

2. Materials Handling, Storage and Disposal

(a) All solid wastes related to the construction, operation and maintenance of the WIND FARM shall be removed from the site promptly and disposed of in accordance with all federal, state and local laws.

(b) All hazardous materials related to the construction, operation and maintenance of the WIND FARM shall be handled, stored, transported and disposed of in accordance with all applicable local, state and federal laws.

Q. Standard Condition for Decommissioning Plan and Reclamation Agreement

1. The Applicant shall submit a signed site reclamation agreement conforming to the requirements of paragraph 6.1.1 A.

2. In addition to the purposes listed in subparagraph 6.1.1 A. 4. the reclamation agreement shall also include provisions for anticipated repairs to any public

STREET used for the purpose of reclamation of the WIND FARM and all costs related to removal of access driveways.

3. In addition to the conditions listed in subparagraph 6.1.1 A. 9. the Zoning Administrator may also draw on the funds for the following reasons:

   (a) In the event that any wind turbine or component thereof ceases to be functional for more than six consecutive months and the Owner is not diligently repairing such wind turbine or component.

   (b) In the event that the Owner declares any wind turbine or other component to be functionally obsolete for tax purposes.

4. The Site Reclamation Agreement shall be included as a condition of approval by the BOARD and the signed and executed Site Reclamation Agreement must be submitted to the Zoning Administrator prior to any Zoning Use Permit approval.

R. Complaint Hotline

1. Prior to the commencement of construction on the WIND FARM and during the entire term of the County Board SPECIAL USE permit and any extension, the Applicant and Owner shall establish a telephone number hotline for the general public to call with any complaints or questions.

2. The telephone number hotline shall be publicized and posted at the operations and maintenance center and the construction marshalling yard.
3. The telephone number hotline shall be manned during usual business hours and shall be an answering recording service during other hours.

4. Each complaint call to the telephone number hotline shall be logged and identify the name and address of the caller and the reason for the call.

5. All calls shall be recorded and the recording shall be saved for transcription for a minimum of two years.

6. A copy of the telephone number hotline shall be provided to the Zoning Administrator on a monthly basis.

7. The Applicant and Owner shall take necessary actions to resolve all legitimate complaints.

S. Standard Condition for Expiration of WIND FARM County Board SPECIAL USE Permit

A WIND FARM County Board SPECIAL USE Permit designation shall expire pursuant to any time limit included in the Roadway Upgrade and Maintenance agreement required by paragraph 6.1.4 G. or in 10 years if no Zoning Use Permit is granted.

T. Application Requirements

1. In addition to all other information required on the SPECIAL USE Permit application and required by Section 9.1.11 A. 2. the application shall contain or be accompanied by the following information:

(a) A WIND FARM Project Summary, including, to the extent available:

(1) A general description of the project, including its approximate name plate generating capacity; the potential equipment manufacturer(s), type(s) of wind turbines, number of wind turbines, and name plate generating capacity of each wind turbine; the maximum height of the WECS Tower(s); and the maximum diameter of the WECS(s) rotor(s).

(2) The specific proposed location of the WIND FARM including all tax parcels on which the WIND FARM will be constructed.

(3) The specific proposed location of all tax parcels required to be included in the WIND FARM County Board SPECIAL USE Permit.

(4) A description of the Applicant; Owner and Operator, including their respective business structures.

(b) The name(s), address(es), and phone number(s) of the Applicant(s), Owner and Operator, and all property owner(s) for the WIND FARM County Board SPECIAL USE permit.

(c) A site plan for the installation of all WIND FARM TOWERS indicating the following:

(1) The approximate planned location of each WIND FARM TOWER, other PRINCIPAL STRUCTURES, property lines (including identification of adjoining properties), required separations, public access roads and turnout locations, substation(s), electrical cabling from the WIND FARM TOWER to the Substations(s), ancillary equipment, third party transmission lines, maintenance and management facilities, and layout of all structures within the geographical boundaries of any applicable setback.

(2) The site plan shall clearly indicate the area of the proposed WIND FARM County Board SPECIAL USE Permit as required by subparagraph 6.1.4 A. 1.

(3) The separation of all WIND FARM structures from adjacent NON-PARTICIPATING DWELLINGS OR PRINCIPAL BUILDINGS or uses shall be dimensioned on the approved site plan and that dimension shall establish the effective minimum separation that shall be required for any Zoning Use Permit. Greater separation and

somewhat different locations may be provided in the approved site plan for the Zoning Use Permit provided that that the greater separation does not increase the noise impacts that were approved in the WIND FARM County Board SPECIAL USE Permit. WIND FARM structures includes WIND FARM TOWERS, substations, third party transmission lines, maintenance and management facilities, or other significant structures.

(d) All other required studies, reports, certifications, and approvals demonstrating compliance with the provisions of this Ordinance.

2. The Applicant shall notify the COUNTY of any changes to the information provided above that occurs while the County Board SPECIAL USE permit application is pending.

19. Revise Subsection 9.1.11 as follows:

9.1.11 SPECIAL USES

A. Authorized SPECIAL USES

1. The BOARD may grant SPECIAL USE permits only for such SPECIAL USES as are specifically authorized in this ordinance, and are not prohibited by Section 14.2.1.

2. The GOVERNING BODY may grant SPECIAL USE permits only for such County Board SPECIAL USES as are specifically authorized in this ordinance, and are not prohibited by Section 14.2.1.

3. The BOARD or GOVERNING BODY may grant such SPECIAL USE permits only upon written application and after conduct of a public hearing.

a. The written application for a SPECIAL USE permit shall include:

i. The signature of the petitioner; and

ii. The signature of the owner or owners of all the land included in the petition, or the legal representative(s) thereof; and, if applicable, a copy of the petitioner's purchase contract.

B. SPECIAL USE Criteria

A SPECIAL USE permit shall not be granted by the BOARD or GOVERNING BODY unless the public hearing record and written application demonstrate:

1. that it is necessary for the public convenience at that location;

2. that it is so designed, located, and proposed as to be operated so that it will not be injurious to the DISTRICT in which it shall be located or otherwise detrimental to the public welfare;

3. that it conforms to the applicable regulations and standards of and preserves the essential character of the DISTRICT in which it shall be located, except where such regulations and standards are modified by Section 6.

4. that granting the SPECIAL USE is in harmony with the general purpose and intent of this ordinance.

5. that, in the case of an existing NONCONFORMING USE, it will make such USE more compatible with its surroundings.

6. approval of a SPECIAL USE permit shall authorize USE, CONSTRUCTION and operation only in a manner that is fully consistent with all testimony and evidence submitted by the petitioner or petitioner's agent(s).

C. Findings

1. The BOARD or GOVERNING BODY shall make findings that the requirements of Section 9.1.11B have been met by the applicant for a SPECIAL USE.

2. The BOARD or GOVERNING BODY shall further make a finding that the reasons set forth in the application justify with respect to the criteria set forth in Section 9.1.11B the waiver of any standard condition or the imposition of any special condition.

3. The BOARD or GOVERNING BODY may make a finding that a proposed STRUCTURE or physical change to a site, as a part of a SPECIAL USE request, is a NON-ADAPTABLE STRUCTURE. In such a case the requirements of Section 6.1.1~~C~~A shall be applicable.

4. Within a reasonable time after the public hearing for any County Board SPECIAL USE Permit, the BOARD shall make a report to the GOVERNING BODY.

D. Conditions

1. Any other provision of this ordinance not withstanding, the BOARD or GOVERNING BODY, in granting any SPECIAL USE, may waive upon application any standard or requirement for the specific SPECIAL USE enumerated in Section 6.1.3 Schedule of Requirements and Standard Conditions, to the extent that they exceed the minimum standards of the

DISTRICT, except for any state or federal regulation incorporated by reference, upon finding that such waiver is in accordance with the general purpose and intent of this ordinance, and will not be injurious to the neighborhood or to the public health, safety and welfare.

2. In granting any SPECIAL USE, the BOARD or GOVERNING BODY may prescribe SPECIAL CONDITIONS as to appropriate conditions and safeguards in conformity with the ordinance. Violation of such SPECIAL CONDITIONS when made a part of the terms under which the SPECIAL USE is granted, shall be deemed a violation of this ordinance and punishable under this ordinance.

3. In granting any SPECIAL USE Permit as authorized in Section 4.2.1F for more than one MAIN or PRINCIPAL STRUCTURE or BUILDING, the BOARD shall state that any future sale of said LOT or tract of land may be subject to the *Illinois Plat Act,* (765 ILCS 205/0.01 *et seq.*) or the *Champaign County Subdivision Regulations;* or the SUBDIVISION regulations of a municipality that has jurisdiction within one and one-half miles of the corporate limits.

4. RESIDENTIAL PLANNED UNIT DEVELOPMENTS shall, in addition to or in lieu of the above, meet the provisions of Section 6.3.

5. The BOARD or GOVERNING BODY shall require that all applicable provisions of the *Champaign County Stormwater Management Policy* (as amended February 20, 2003) are met before approving any SPECIAL USE.

6. Under no circumstances shall the BOARD or GOVERNING BODY grant a SPECIAL USE to allow a USE not permissible under the terms of this ordinance, in the DISTRICT involved, or any USE expressly or by implication prohibited under the terms of this ordinance in said DISTRICT, nor shall the BOARD or GOVERNING BODY waive compliance with state or federal regulations incorporated into this ordinance.

20. Add the following paragraph 9.3.1 H. for Zoning Use Permit fee:

H. WIND FARM TOWER $4000

21. Revise subsection 9.3.3 as follows:

9.3.3 Zoning Case Filing Fees

A. General Provisions

1. No zoning case filing shall be accepted until the filing fee has been paid.

2. No zoning case filing fee shall be waived unless the Zoning Administrator determines that the petition is the only means reasonably available to bring a property into compliance with the provisions of this ordinance and the non-compliance is due solely to staff error.

3. No zoning case filing fee shall be refunded after required legal notice has been made by mail or publication unless the Zoning Administrator determines such filing to have been based solely upon staff error.

4. No amendment to any petition which requires new legal notice shall be considered until an amended petition fee has been received unless the Zoning Administrator determines such amendment to be required due solely to staff error.

5. The fee for SPECIAL USE permits shall be determined based on the larger of the following (except for County Board WIND FARM Special Use Permits):

   a. the area of farmland taken out of production as a result of the SPECIAL USE; or

   b. when farmland will not be taken out of production as a result of the SPECIAL USE, the land area taken up by the existing STRUCTURES and all proposed CONSTRUCTION proposed in the SPECIAL USE application.

6. When some combination of VARIANCE, SPECIAL USE and Map Amendment cases is required simultaneously for the same property, the total filing fee shall include the following (except for County Board WIND FARM Special Use Permits):

   a. The standard fee for the most expensive individual zoning case; and

   b. one-half of the standard fee for any other required VARIANCE, SPECIAL USE, or Map Amendment provided that

   c. no additional fees shall be included for multiple zoning cases of the same type that can be advertised in the same legal advertisement.

B. Fees

1. VARIANCES.

   a. ADMINISTRATIVE VARIANCES $100

   b. Minor or Major VARIANCES $200

2 SPECIAL USE permits and Map Amendments (except for County Board WIND FARM Special Use Permit and a map amendment to the WIND FARM Overlay Zoning District)

a. Two acres or less and Base Fee for larger areas $400

b. More than two acres but no more than 12 acres ..... add $40 per acre to Base Fee for each acre over two acres

c. More than 12 acres add $10 per acre for each acre over 12 acres and add to fees in a. and b. above

3. Appeals and Interpretations $200

4. Change of Nonconforming Use $100

5. Amendment to Petitions (requiring new legal notice) $100

6. County Board WIND FARM Special Use Permit.....
$440 per WIND FARM TURBINE TOWER

PRELIMINARY DRAFT

634-AT-08 Part A

FINDING OF FACT
AND FINAL DETERMINATION
of
Champaign County Zoning Board of Appeals

Final Determination: ***{RECOMMEND ENACTMENT/ RECOMMEND DENIAL}***

Date: March 26, 2009

Petitioner: Zoning Administrator

Request: Authorize the County Board to approve Special Use Permits (SUP) and to change the requirements for the development of wind turbine developments (wind farms) to a County Board Special Use Permit and a rezoning to the new Wind Farm Overlay Zoning District.

FINDING OF FACT

From the documents of record and the testimony and exhibits received at the public hearing conducted on **February 12, 2009, February 26, 2009, March 12, 2009, and March 26, 2009**, the Zoning Board of Appeals of Champaign County finds that:

1. The petitioner is the Zoning Administrator.

2. The need for the amendment came about as follows:
   A. Existing *Ordinance* requirements for wind turbines were developed in Case 236-AT-00. Item 11 from the Finding of Fact for that case stated the following (underlining added for emphasis):

      Coal, oil and fired steam turbines being larger plants with greater impacts are restricted to industrial districts. Large scale wind turbine facilities will normally need to be located in rural areas so they are permitted with a special use permit in the B-1 district as well. It is anticipated that developing any of these facilities would require rezoning in addition to the special use permit.

   B. A table titled "Zoning Related Impacts of Electric Power Plant Types" was included in the Documents of Record for Case 236-AT-00. That table and item 11 make it clear that the original proposal for Case 236-AT-00 did anticipate wind farms in the rural districts by means of rezoning and a special use permit but only in the B-1 Rural Trade Center District and not the AG-1 Agriculture District.

ITEM 2. CONTINUED

C. However, the original proposal for Case 236-AT-00 was modified by the Environment and Land Use Committee (ELUC) based on municipal comments at their September 13, 2000 meeting. The minutes of that meeting reveal that the municipalities objected to these facilities in the B-1 District and for some reason no other rural district was substituted. At the time the County was more concerned with adding requirements for peaker plants and less concerned with wind farms.

D. Nonetheless, the record is clear that in 2000 Champaign County expected that large scale wind turbine facilities would need to be located in rural areas and that approval should be a combined rezoning and a special use permit.

E. State law was changed in 2007 and it now requires that in a county zoning jurisdiction a wind farm must be authorized by action of the county board but it allows that regulations that were in place before remain valid.

F. No wind farms have yet been developed in Champaign County but three wind farm developers have contacted landowners about the possible development of three different wind farms in the County.

G. As amended by Ordinance No. 617 the current *Zoning Ordinance* would require a wind farm to be in the I-2 Heavy Industry District even though most of the acreage of the wind farm would not be suitable for other buildings or uses.

H. The Environment and Land Use Committee (ELUC) of the Champaign County Board discussed the current *Ordinance* requirements for wind farms at their August 2008 meeting and determined that the *Zoning Ordinance* should be amended to allow wind farm development in the rural districts subject to a County Board review.

I. At the November 6, 2008, ELUC meeting staff recommended that wind farms be authorized by County Board Special Use Permit. Four of the eight ELUC members present at the November 6 meeting voiced support for an alternative that included a zoning map amendment (overlay rezoning).

3. Municipalities with zoning and townships with planning commissions have protest rights on all text amendments and they are notified of such cases. The following comments have been received to date:

A. A letter was received from the Compromise Township Board on January 16, 2009, indicating the Board supported researching the feasibility of wind farms in Champaign County.

B. At the February 12, 2009, public hearing, Herb Schildt, Chair of the Newcomb Township Plan Commission, submitted a written statement regarding their initial review of the proposed amendment on behalf of the Commission, as follows:

(1) They are pleased by the requirement for both a special use permit and map amendment because they could not support an ordinance that did not require a map amendment. They feel that a special use permit alone would be insufficient.

ITEM 3.B. CONTINUED

(2) They also indicated several concerns, as follows:

(a) They believe that a setback larger than 1,200 feet is needed from any storage tank that holds flammable gas, flammable liquid, or other hazardous material. They believe that requiring a larger setback is a reasonable step that will provide an extra margin of safety in their Township. They further believe the setback must be sufficiently large to prevent damage to a tank from debris caused by a catastrophic turbine failure (possibility due to tornado), ice throw, or blade detachment.

(b) They have significant safety concerns about locating a wind farm in the Manlove Gas Storage Field in Newcomb Township. Among these concerns are damage to well heads caused by debris from a catastrophic turbine failure, ice throw, or blade detachment, and the potential for increased lightning strikes in the storage field. Until such time that the county can provide information from an accredited, independent authority that certifies to their satisfaction the safety of locating a wind farm in the Manlove Gas Storage field, they believe that Gas Storage Field should be added to the list of areas in which the County does not allow a wind farm to be located. This list is in Section 6.1.4.A.2

(c) They believe that a setback larger than 1,200 feet from any non-participating residence is required. They believe that requiring a larger setback is a reasonable step that provides an extra margin of safety in their Township. In addition to mitigating the effects of noise and shadow flicker, we believe the setback must be of sufficient length to prevent damage to a dwelling and to prevent harm to its occupants from debris caused by a catastrophic turbine failure, ice throw, or blade detachment. They believe that a larger setback is required for schools (both public and private), hospitals, churches, places of business, and any other place where people congregate (such as parking lots and cemeteries)

(d) They believe that turbine height should not exceed 400 feet.

GENERALLY REGARDING THE EXISTING ZONING REGULATIONS

4. Existing Zoning regulations regarding the separate parts of the proposed amendment are as follows:

A. Requirements for wind turbine facilities were added to the *Zoning Ordinance* by Ordinance No. 617 (Case 236-AT-00) on October 24, 2000. Ordinance No. 617 specifically authorized the following:

(1) Development of up to three wind turbines by Special Use Permit (approved by the Zoning Board of Appeals (ZBA)) in the AG-1 Agriculture, AG-2 Agriculture, I-1 Light Industry, and I-2 Heavy Industry Zoning Districts.

ITEM 4.A. CONTINUED

(2) Development of more than three wind turbines is authorized only in the I-2 Heavy Industry Zoning District and then only with a Special Use Permit (approved by the ZBA). (Note that Ordinance No. 617 did not distinguish between industrial wind turbines and small, private wind turbines, only the number.)

B. A related Ordinance No. 625 (Case 273-AT-00 Part B) added requirements for reclamation agreements on May 22, 2001. It is anticipated that any wind turbine tower would be considered a "non-adaptable structure" and the ZBA would require a reclamation agreement.

C. The following definitions from the *Zoning Ordinance* are especially relevant to this amendment (capitalized words are defined in the Ordinance):

(1) "ACCESSORY STRUCTURE" is a STRUCTURE on the same LOT with the MAIN OR PRINCIPAL STRUCTURE, or the main or principal USE, either DETACHED from or ATTACHED to the MAIN OR PRINCIPAL STRUCTURE, subordinate to and USED for purposes customarily incidental to the MAIN OR PRINCIPAL STRUCTURE or the main or principal USE.

(2) "ACCESSORY USE" is a USE on the same LOT customarily incidental and subordinate to the main or principal USE or MAIN or PRINCIPAL STRUCTURE.

(3) "AGRICULTURE" is the growing, harvesting and storing of crops including legumes, hay, grain, fruit and truck or vegetable crops, floriculture, horticulture, mushroom growing, orchards, forestry and the keeping, raising and feeding of livestock or poultry, including dairying, poultry, swine, sheep, beef cattle, pony and horse production, fur farms, and fish and wildlife farms; farm BUILDINGS used for growing, harvesting and preparing crop products for market, or for use on the farm; roadside stands, farm BUILDINGS for storing and protecting farm machinery and equipment from the elements, for housing livestock or poultry and for preparing livestock or poultry products for market; farm DWELLINGS occupied by farm OWNERS, operators, tenants or seasonal or year-round hired farm workers. It is intended by this definition to include within the definition of AGRICULTURE all types of agricultural operations, but to exclude therefrom industrial operations such as a grain elevator, canning or slaughterhouse, wherein agricultural products produced primarily by others are stored or processed. Agricultural purposes include, without limitation, the growing, developing, processing, conditioning, or selling of hybrid seed corn, seed beans, seed oats, or other farm seeds.

(4) "BUILDING, MAIN or PRINCIPAL" is the BUILDING in which is conducted the main or principal USE of the LOT on which it is located.

ITEM 4.C. CONTINUED

(5) "NON-ADAPTABLE STRUCTURE" is any STRUCTURE or physical alteration to the land which requires a SPECIAL USE permit, and which is likely to become economically unfeasible to remove or put to an alternate USE allowable in the DISTRIC (by-right or by SPECIAL USE).

(6) "OVERLAY" is a DISTRICT that modifies or supplements the standards and requirements of an underlying DISTRICT. Those standards and requirements of the underlying DISTRICT that are not specifically modified by the terms of the OVERLAY DISTRICT remain in full force and effect.

(7) "SPECIAL CONDITION" is a condition for the establishment of the SPECIAL USE.

(8) "SPECIAL USE" is a USE which may be permitted in a DISTRICT pursuant to, and in compliance with, procedures specified herein.

SUMMARY OF THE PROPOSED AMENDMENT

5. The proposed amendment establishes standards for the establishment of a wind farm development and reformats Section 6 of the *Zoning Ordinance*. See the attachment for the proposed amendment.

GENERALLY REGARDING RELEVANT LAND USE GOALS AND POLICIES

6. The *Land Use Goals and Policies* (LUGP) were adopted on November 29, 1977, and were the only guidance for amendments to the *Champaign County Zoning Ordinance* until the *Land Use Regulatory Policies- Rural Districts* were adopted on November 20, 2001, as part of the Rural Districts Phase of the Comprehensive Zoning Review (CZR) and subsequently revised on September 22, 2005. The relationship of the Land Use Goals and Policies to the Land Use Regulatory Policies is as follows:

A. Land Use Regulatory Policy 0.1.1 gives the Land Use Regulatory Policies dominance over the earlier Land Use Goals and Policies.

B. The Land Use Goals and Policies cannot be directly compared to the Land Use Regulatory Policies because the two sets of policies are so different. Some of the Land Use Regulatory Policies relate to specific types of land uses and relate to a particular chapter in the land use goals and policies and some of the Land Use Regulatory Policies relate to overall considerations and are similar to general land use goals and policies.

REGARDING SPECIFICALLY RELEVANT LAND USE POLICIES

7. There are policies for a variety of land uses in the Land Use Goals and Policies, but only some are relevant to the proposed amendment. Specifically relevant policies include two agricultural policies, one residential policy, four industrial policies, one transportation policy, and one utility policy, as follows:

ITEM 7. CONTINUED

A. Policy 1.2 of the Land Use Goals and Policies relates to agricultural land use and states that the Board of Appeals and the County Board will restrict non-agricultural uses to non-agricultural areas or those areas served by adequate utilities, transportation facilities and commercial services or those areas where non-agricultural uses will not be incompatible with existing agricultural uses.

The proposed amendment **GENERALLY CONFORMS** to Policy 1.2 because of the following:

(1) Wind farms do not require access to most utilities. The only required utility is access to the power grid at a power line with a minimum 138 kilovolt capacity.

(2) Wind turbines are generally compatible with agriculture, as follows:

(a) Wind turbines are not compatible with any land use that requires a structure to be located within 1.1 times the height of the turbine tower.

(b) Parks and agriculture are two uses that do not require structures. However, a public park is also a place where people would normally congregate in large numbers for some period of time that would place them at risk from a falling wind tower. An agricultural field, however, is unlikely to ever have more than one farmer traversing it at one time and the farmer's presence is more transient than people visiting a park.

(c) While agriculture appears to be the most appropriate use in the vicinity of a wind turbine tower, the presence of a wind farm appears to create difficulties in aerial spraying and a wind farm is likely to increase the costs of aerial application on adjacent non-participating fields as well as the participating fields. Ground application or aerial application by helicopter may be alternatives.

(d) Shadow flicker caused by the turbine rotors on adjacent farmland may be a nuisance but it is not clear how significant it is. Paragraph 6.1.4.M. requires a shadow flicker analysis and limits the amount of flicker.

(3) Regarding adequate transportation facilities, a standard condition is proposed in paragraph 6.1.4.F. that will prevent damage to and possibly improve roads used by a wind farm developer.

(4) The Wind Farm Overlay Zoning District is an Overlay map amendment that helps ensure compatibility with adjacent agricultural activities. The map amendment is warranted because of the unique character and specific impacts of a wind farm.

B. Policy 1.3 of the Land Use Goals and Policies relates to agricultural land use and states that the Environment and Land Use Committee and the Board of Appeals will work towards applying the concepts of development rights transfer, planned unit development, cluster development and special use permits to insure, when and where necessary, that development of non-agricultural uses is compatible to adjacent agricultural activities.

ITEM 7.B. CONTINUED

The proposed amendment **CONFORMS** to Policy 1.3 because of the following:

(1) A wind farm is a non-agricultural use that is proposed to be a County Board Special Use Permit with standard conditions to ensure that a proposed wind farm will be compatible with adjacent agricultural activities.

(2) The Wind Farm Overlay Zoning District is an Overlay map amendment that helps ensure compatibility with adjacent agricultural activities. The map amendment is warranted because of the unique character and specific impacts of a wind farm.

C. Policy 4.3 of the Land Use Goals and Policies relates to industrial land use and states that the County Board and the Environment and Land Use Committee will encourage the development of new industrial sites only in those areas having access to sewer, water, gas and electric utilities, adequate fire protection and to paved roads or major arterials, and rail lines, if necessary. Mass transit facilities will also be considered.

The proposed amendment **CONFORMS** to Policy 4.3 because of the following:

(1) Wind farms do not require access to most utilities. The only utility required is access to the power grid.

(2) Regarding adequate fire protection, a standard condition is proposed in Paragraph 6.1.4.G. to ensure that the local fire protection district is notified of the proposed site plan for a proposed wind farm and that the district can request help creating an emergency response plan for the wind farm.

(3) Regarding adequate transportation facilities, a standard condition is proposed in paragraph 6.1.4.F. that will prevent damage to and possibly improve roads used by a wind farm developer.

(4) A wind farm does not require access to mass transit facilities.

D. Policy 4.4 of the Land Use Goals and Policies relates to industrial land use and states that the Environment and Land Use Committee will urge the County Board to discourage new industrial development from intruding into productive agricultural areas

The proposed amendment **GENERALLY CONFORMS** to Policy 4.4 because of the following:

(1) Although wind farms are an industrial use involving thousands of acres of land, the actual amount of land removed from agricultural production is approximately one acre per turbine.

(2) Land owners receive an annual payment from the wind farm operator far in excess of the value of a crop from one acre of land. This annual payment lasts for the lifetime of the wind farm.

ITEM 7.D. CONTINUED

(3) A wind farm is generally compatible with agriculture. The presence of a wind farm appears to create difficulties in aerial spraying and a wind farm is likely to increase the costs of aerial application on adjacent non-participating fields as well as the participating fields. Ground application or aerial application by helicopter may be alternatives. Shadow flicker caused by the turbine rotors on adjacent farmland may be a nuisance but it is not clear how significant it is. Paragraph 6.1.4.M. requires a shadow flicker analysis and limits the amount of flicker.

(4) If the wind farm ever ceases to operate, paragraphs 6.1.4.Q. and 6.1.1.A. of the *Zoning Ordinance* require that the wind turbine be removed and the land restored to a state suitable for agricultural production.

(5) The Wind Farm Overlay Zoning District is an Overlay map amendment that helps ensure compatibility with adjacent agricultural activities. The map amendment is warranted because of the unique character and specific impacts of a wind farm.

E. Policy 4.5 of the Land Use Goals and Policies relates to industrial land use and states that the County Board will discourage development of new industrial uses where such development will overburden existing sewer or water facilities.

The proposed amendment appears to **CONFORM** to Policy 4.5 because wind farms require neither sewer nor water facilities.

F. Policy 4.6 of the Land Use Goals and Policies relates to industrial land use and states that the Environment and Land Use Committee will examine the use of zoning techniques such as special use permits and planned industrial development to permit and regulate new development. The Environment and Land Use Committee will examine existing lands zone for industrial uses to determine the desirability of retaining such industrial zoning.

The proposed amendment appears to **CONFORM** to Policy 4.6 because of the following:

(1) A wind farm is an industrial use that is proposed to be a County Board Special Use Permit with standard conditions to ensure that a proposed wind farm will be compatible with adjacent land uses.

(2) The Wind Farm Overlay Zoning District is an Overlay map amendment that helps ensure compatibility with adjacent agricultural activities. The map amendment is warranted because of the unique character and specific impacts of a wind farm.

G. Policy 5.7 of the Land Use Goals and Policies relates to conservation of natural resources, clean air and water, open space, recreation, and historic preservation and states that the County Board and the Environment and Land Use Committee will encourage the preservation of natural areas and will cooperate with the County Forest Preserve District and other interested groups in a preservation and restoration program.

ITEM 7.G. CONTINUED

The proposed amendment appears to **CONFORM** to Policy 5.7 because Subparagraph 6.1.4.A.2.(b) of the proposed amendment requires wind farms to be at least one mile from the CR District and the CR District is where natural areas are found.

H. None of the Residential, Commercial, Transportation, or Utilities Land Use Policies appear to be relevant to the proposed amendment.

REGARDING SPECIFICALLY RELEVANT LAND USE GOALS

8. There are goals for a variety of land uses in the Land Use Goals and Policies, but only some are relevant to the proposed amendment. Specifically relevant goals include one agricultural goal, three industrial goals, one goal for conservation of natural resources, one transportation goal, and one utility goal, as follows:

A. The first agricultural land use goal is the preservation and maintenance of as much agricultural land in food and fiber production as possible, and protection of these lands from encroachment by non-agricultural uses.

The proposed amendment **GENERALLY ACHIEVES** the first agricultural land use goal based on the conformance with Policy 4.4 of the Land Use Goals and Polices (see Item 7.D.).

B. The first industrial land use goal is the location of industrial development in areas served by utilities and transportation facilities as well as close to a local labor market throughout the County.

The proposed amendment appears to **ACHIEVE** the first industrial land use goal based on the conformance with Policy 4.3 of the Land Use Goals and Policies (see Item 7.C.).

C. The second industrial land use goal is the location and design of industrial development in a manner compatible with nearby non-industrial uses.

The proposed amendment **GENERALLY AC HIEVES** the second industrial land use goal because of the following:

(1) Compatibility with adjacent agricultural activities based the proposed amendment **GENERALLY CONFORMS** to Policy 1.2 (see Item 7.A.).

(2) Standard conditions that require a minimum separation from a wind farm tower and nearby dwellings or principal structures are proposed in Subparagraphs 6.1.4.C.1. & 6.1.4.C.2, as follows:

(a) The *Model Ordinance Regulating the Siting of Wind Energy Conversion Systems in Illinois* has a requirement that all wind farm towers be set back at least 1000 feet from any principal structure.

ITEM 8.C.(2) CONTINUED

(b) The proposed amendment requires a 1,000 feet separation from any wind farm tower to an existing, participating dwelling or principal structure, and a ***{1,500}*** feet separation from any wind farm tower to an existing, non-participating dwelling or principal structure.

(c) Requiring a 1,000 feet separation to existing, participating dwellings and future dwellings will result in a noise level of approximately 39dB to 43dB which could be perceived as somewhat more than doubling of the existing noise level based on the IPCB assumed Long Term Ambient Background Noise level of 30 dB (see Item 8.C.(4) below). It should be noted that a new resident will not experience the increase.

(d) Requiring a ***{1,500}*** feet separation to existing, non-participating dwellings will result in a noise level of approximately 36dB to 40dB which could be perceived as approximately doubling the existing noise level based on the IPCB assumed Long Term Ambient Background Noise level of 30 dB (see Item 8.C.(4) below).

(3) A standard condition is proposed in Paragraph 6.1.4.E. to mitigate damage to farmland, as follows:

(a) All underground wiring or cabling is required to be placed at least four feet deep or deeper to maintain a one foot buffer between the wiring and agricultural drainage tile. Wind farm developers are required to identify and mark any agricultural drainage tile within the construction area of a wind farm tower.

(b) Any agricultural drainage tile that requires repairs or relocating must be repaired or relocated in compliance with the *Champaign County Stormwater Management Policy*.

(c) Wind farm developers are also required to repair compaction of soil, rutting, leveling of disturbed land, and disturbed topsoil.

(d) The *Model Ordinance* does not include any requirements for mitigation of damage to farmland.

(4) A standard condition is proposed in Paragraph 6.1.4.H. to mitigate electromagnetic interference by providing local microwave service providers and local emergency providers with a project summary and site plan, and taking reasonable measures to mitigate any demonstrable, anticipated interference. Wind farm operators are also required to respond to complaints received after the wind farm has been constructed. This requirement is the same as the matching section of the *Model Ordinance*.

(5) A standard condition is proposed in Paragraph 6.1.4.I. that regulates maximum noise impacts, as follows:

ITEM 8.C.(5) CONTINUED

(a) The proposed amendment and the *Model Ordinance* require all wind farm towers and other uses that are part of a wind farm to comply with the applicable Illinois Pollution Control Board (IPCB) noise regulations in 35 *Illinois Administrative Code* Subtitle H: Noise Parts 900, 901, 910. Wind farm developers are required to submit documentation that they meet these standards.

(b) The maximum allowed noise pressure level a dwelling or principal structure may receive from a wind turbine is 48 decibels (dB).

(c) In contrast with the level of sound a dwelling may receive from a wind turbine the IPCB noise regulations also indicate that the Long-Term Ambient Background Noise level in most rural areas is 30 dB. Because an increase of 10 dB is perceived as a doubling of sound levels, 48 dB would be a significant increase to existing residents and could apparently quadruple the existing noise levels.

(d) The required minimum separations in Subparagraphs 6.1.4.C. 1 & 2 (see Item 8.C.(1) above) should prevent any participating dwelling from experiencing more than approximately 43 dB at the most and any non-participating dwelling from experiencing more than approximately 40 dB at the most.

(6) A standard condition in Paragraph 6.1.4.M. requires wind farm developers to do the following in regards to shadow flicker:

(a) Submit a study on potential shadow flicker for both summer and winter and the expected duration of shadow flicker at every affected location particularly location affected for more than one hour per year.

(b) Developers must also ensure that no existing dwelling or public road is subjected to shadow flicker.

(c) The *Model Ordinance* has no requirements for shadow flicker.

(7) A standard condition in Paragraph 6.1.4.N. requires wind farm developers to do the following regarding visual impact:

(a) Submit simulated photographic images of the visual impact of any wind turbine within one mile of a non-participating dwelling or principal use or any portion of a wind farm visible from and within five miles of any forest preserve district facility. A written report describing the viewpoints of the simulated photographs and their location on the site plan is also required.

(b) The *Model Ordinance* has no requirement regarding visual impact.

(8) The Wind Farm Overlay Zoning District is an Overlay map amendment that helps ensure compatibility with adjacent agricultural activities. The map amendment is warranted because of the unique character and specific impacts of a wind farm.

ITEM 8. CONTINUED

D. The third industrial land use goal is industrial development controls that will maintain the existing environmental quality and be sufficiently flexible to encourage types of industrial uses that will meet the needs of the labor market located in Champaign County.

The proposed amendment appears to **ACHIEVE** the third industrial land use goal because of the following:

(1) A wind farm is an industrial use that is proposed to be a County Board Special Use Permit with standard conditions to ensure that a proposed wind farm will be compatible with adjacent non-industrial uses.

(2) The Wind Farm Overlay Zoning District is an Overlay map amendment that helps ensure compatibility with adjacent agricultural activities. The map amendment is warranted because of the unique character and specific impacts of a wind farm.

(3) A standard condition is proposed in Subparagraph 6.1.4.A.2.(b) that prohibits any wind farm located less than one mile from the CR Conservation Recreation Zoning District. The *Model Ordinance* does not include any requirement for separation from natural areas.

(4) A standard condition is proposed in Paragraph 6.1.4.I. that regulates maximum noise impacts, as follows:

(a) The proposed amendment and the *Model Ordinance* require all wind farm towers and other uses that are part of a wind farm to comply with the applicable Illinois Pollution Control Board (IPCB) noise regulations in 35 *Illinois Administrative Code* Subtitle H: Noise Parts 900, 901, 910. Wind farm developers are required to submit documentation that they meet these standards.

(b) The maximum allowed noise pressure level a dwelling or principal structure may receive from a wind turbine is 48 decibels (dB).

(c) In contrast with the level of sound a dwelling may receive from a wind turbine the IPCB noise regulations also indicate that the Long-Term Ambient Background Noise level in most rural areas is 30 dB. Because an increase of 10 dB is perceived as a doubling of sound levels, 48 dB would be a significant increase to existing residents and could apparently quadruple the existing noise levels.

(d) The required minimum separations in Subparagraphs 6.1.4.C. 1 & 2 (see Item 8.C.(1) above) should prevent any participating dwelling from experiencing more than approximately 43 dB at the most and any non-participating dwelling from experiencing more than approximately 40 dB at the most.

ITEM 8.D. CONTINUED

(5) A standard condition is proposed in Paragraph 6.1.4.J. that requires wind farm developers to apply for Endangered Species Consultation with the Illinois Department of Natural Resources. The *Model Ordinance* does not include any requirements for endangered species protection.

(6) A standard condition is proposed in Paragraph 6.1.4.L. that requires wind farm developers to reduce impacts on wildlife, as follows:

(a) Wind farms must be designed to and operated to avoid impacts to wildlife, including placement in bird migration paths and flight paths between bat colonies and feeding areas.

(b) A qualified ornithologist or wildlife biologist is required to conduct a pre-construction study of a proposed wind farm project that should include existing information on the area of the wind farm, as well as year long studies of bird and bat migration. Should the pre-construction study indicate an impact on an endangered species further studies will be required to determine what the impact is on any specific species.

(c) A post-construction study, also conducted by a qualified professional, on mortality impacts on birds and bats in the area of the wind farm.

(d) The County shall also require that any information provided to the U.S. Fish and Wildlife Service and the Illinois Department of Natural Resources be provided to the County.

(f) The *Model Ordinance* only requires an avian habitat study as part of the approval process to determine if the wind farm will have a substantial adverse impact on birds. It does not include any requirements for mitigation of identified impacts or any requirements to minimize harm to bats.

E. The first goal for the conservation of natural resources, clean air and water, open space, recreation, and historic preservation is protection and conservation of publicly designated environmental and natural resources and historical sites through open space reservation, conservation, zoning, easement, development rights, tax exemption policy, public acquisition and performance standards for commercial and industrial development.

The proposed amendment appears to **ACHIEVE** the first goal for the conservation of natural resources because of the following:

(1) A standard condition is proposed in Subparagraph 6.1.4.A.2.(b) that prohibits any wind farm located less than one mile from the CR Conservation Recreation Zoning District.

(2) A standard condition is proposed in paragraph 6.1.4.J. that requires a wind farm developer to apply for consultation with the Endangered Species Program of the Illinois Department of Natural Resources (IDNR).

ITEM 8.E. CONTINUED

(3) A standard condition is proposed in paragraph 6.1.4.K. that requires a wind farm developer to apply for consultation with the State Historic Preservation Officer of IDNR.

(4) A standard condition is proposed in paragraph 6.1.4.L. that requires wind farms to avoid and, if necessary, mitigate any impacts to wildlife as much as possible.

F. The third transportation facilities goal is the provision and maintenance of adequate street and highway facilities to maintain service to existing land uses and desirable future land uses.

The proposed amendment appears to **ACHIEVE** the third transportation facilities goal because a standard condition is proposed in paragraph 6.1.4.F. that will prevent damage to and possibly improve roads used by a wind farm developer.

G. The third utilities goal is to encourage non-agricultural development only where it will not have an adverse affect on proper drainage patterns of nearby agricultural lands and drainage systems

The proposed amendment appears to **ACHIEVE** the third utilities goal because a standard condition is proposed in paragraph 6.1.4.E. that requires wind farm developers to protect existing agricultural drainage systems.

H. None of the Residential Land Use Goals or Commercial Land Use Goals appear to be relevant to the proposed amendment.

REGARDING THE GENERAL LAND USE GOALS AND POLICIES

9. Regarding the General Land Use Goals and Policies:

A. The first, third, fourth, and fifth General Land Use Goals appear to be relevant to the proposed amendment, as follows:

(1) The first General Land Use Goal is:

Promotion and protection of the health, safety, economy, convenience, appearance, and general welfare of the County by guiding the overall environmental development of the County through the continuous comprehensive planning process

The proposed amendment **GENERALLY ACHIEVES** the first General Land Use Goal because of the following:

(a) Based on the review of the preceding Goals and Policies relating to specific types of land uses (see Items 7 & 8).

(b) Based on evidence there will be significant positive effects on Equalized Assessed Valuation that will benefit local taxing bodies.

(c) Based on evidence there is no apparent detrimental effect on property values.

ITEM 9.A.(1) CONTINUED

(d) A standard condition is proposed in Paragraph 6.1.4.I. that requires conformance with the Illinois Pollution Control Board noise regulations.

(e) The minimum required separation of existing non-participating homes required by Paragraph 6.1.4.C.2. should result in no more than a doubling of existing long-term background ambient noise levels for non-participating rural residents.

(f) The minimum required separation in Paragraph 6.1.4.C. will guarantee that new homes can be constructed by non-participating land owners with a minimum 1000 feet separation from a wind turbine.

(g) The minimum required separations required in Subparagraphs 6.1.4.C.8. and 9. should ensure safety in regards to pipelines and storage of flammable liquids and gases.

(h) The Wind Farm Overlay Zoning District is an Overlay map amendment that helps ensure compatibility with adjacent agricultural activities. The map amendment is warranted because of the unique character and specific impacts of a wind farm.

(2) The third General Land Use Goal is:

Land uses appropriately located in terms of utilities, public facilities, site characteristics, and public services

The proposed amendment **GENERALLY ACHIEVES** the third General Land Use Goal because of the following:

(a) Based on achievement of the First Agricultural Land Use Goal (see Item 8.A.) and achievement of the Second Industrial Land Use Goal (see Item 8.C.).

(b) The Wind Farm Overlay Zoning District is an Overlay map amendment that helps ensure compatibility with adjacent agricultural activities. The map amendment is warranted because of the unique character and specific impacts of a wind farm.

(3) The fourth General Land Use Goal is:

Arrangement of land use patterns designed to promote mutual compatibility

The proposed amendment **GENERALLY ACHIEVES** the fourth General Land Use Goal because of the following:

(a) Based on achievement of the First Agricultural Land Use Goal (see Item 8.A.) and achievement of the Second Industrial Land Use Goal (see Item 8.C.).

ITEM 9.A.(3) CONTINUED

(b) The Wind Farm Overlay Zoning District is an Overlay map amendment that helps ensure compatibility with adjacent agricultural activities. The map amendment is warranted because of the unique character and specific impacts of a wind farm.

(4) The fifth General Land Use Goal is:

Establishment of processes of development to encourage the development of the types and uses of land that are in agreement with the Goals and Policies of this Land Use Plan

The proposed amendment appears to **ACHIEVE** the fifth General Land Use Goal because of the following:

(a) It creates a process of development for wind farm developments, which are in agreement with the Land Use Goals and Policies as reviewed in this finding of fact.

(b) The Wind Farm Overlay Zoning District is an Overlay map amendment that helps ensure compatibility with adjacent agricultural activities. The map amendment is warranted because of the unique character and specific impacts of a wind farm.

B. None of the General Land Use Policies appear to be relevant to the proposed amendment.

GENERALLY REGARDING COMPLIANCE WITH THE LAND USE REGULATORY POLICIES—RURAL DISTRICTS

10. The LURP's were originally adopted on November 20, 2001 as part of the Rural Districts Phase of the Comprehensive Zoning Review. The LURP's were amended September 22, 2005, but the amendment contradicts the current Zoning Ordinance and cannot be used in concert with the current Zoning Ordinance. The LURP's adopted on November 20, 2001, remain the relevant LURP's for discretionary approvals (such as map amendments) under the current Zoning Ordinance. Land Use Regulatory Policy 0.1.1 gives the Land Use Regulatory Policies dominance over the earlier Land Use Goals and Policies.

11. Regarding compliance with relevant Land Use Regulatory Policies (LURP's):

A. LURP 1.4.1 states that non-agricultural land uses will not be authorized unless they are of a type not negatively affected by agricultural activities or else are located and designed to minimize exposure to any negative effect caused by agricultural activities.

The proposed amendment **ACHIEVES** this policy because wind farms are not negatively affected by agricultural activities.

B. LURP 1.4.2 states that non-agricultural land uses will not be authorized if they would interfere with farm operations or would damage or negatively affect the operation of agricultural drainage systems, rural roads or other agriculture-related infrastructure.

The proposed amendment **GENERALLY ACHIEVES** this policy because of the following:

ITEM 11.B. CONTINUED

(1) The presence of a wind farm appears to create difficulties in aerial spraying and a wind farm is likely to increase the costs of aerial application on adjacent non-participating fields as well as the participating fields. Ground application or aerial application by helicopter may be alternatives. Shadow flicker caused by the turbine rotors on adjacent farmland may be a nuisance but it is not clear how significant it is. Paragraph 6.1.4.M. requires a shadow flicker analysis and limits the amount of flicker.

(2) A standard condition is proposed in Paragraph 6.1.4.E. to prevent damage to agricultural drainage systems, rural roads and other agriculture-related infrastructure.

(3) The separation distances proposed in Paragraph 6.1.4.C. should mitigate some impacts on aerial spraying on neighboring non-participating farms.

(4) A standard condition is proposed in paragraph 6.1.4.F. that will prevent damage to and possibly improve roads used by a wind farm developer.

(5) The Wind Farm Overlay Zoning District is an Overlay map amendment that helps ensure compatibility with adjacent agricultural activities. The map amendment is warranted because of the unique character and specific impacts of a wind farm.

C. LURP 1.5.2 states that development that requires discretionary review will not be allowed on best prime farmland unless the site is well suited, overall, for the proposed land use.

The proposed amendment **ACHIEVES** this policy because of the following:

(1) A County Board Special Use Permit will be required, which will allow for site specific review for a proposed wind farm which will ensure that any site approved for a wind farm would be well suited.

(2) The Wind Farm Overlay Zoning District is an Overlay map amendment that will help ensure compatibility with adjacent agricultural activities. The map amendment is warranted because of the unique character of a wind farm.

D. LURP 1.5.3 states that development that requires discretionary review will not be allowed if the existing infrastructure, together with the improvements proposed, is inadequate to support the proposed development effectively and safely without undue public expense.

The proposed amendment **ACHIEVES** this policy because standard conditions are proposed that require improvements to existing infrastructure without undue public expense.

E. LURP 1.5.4 states that development that requires discretionary review will not be allowed if the available public services are inadequate to support the proposed development effectively and safely without undue public expense.

ITEM 11.E. CONTINUED

The proposed amendment **ACHIEVES** this policy because a standard condition is proposed in Paragraph 6.1.4.G. to ensure that the local fire protection district is notified of the proposed site plan for a proposed wind farm and that the district can request help creating an emergency response plan for the wind farm.

F. LURP's 1.6.1 states that in all rural areas, businesses and other non-residential uses will be allowed if they support agriculture or involve a product or service that is provided better in a rural area than in an urban area.

The proposed amendment **ACHIEVES** this policy because of the following:

(1) Wind turbines are not compatible with any land use that requires a structure to be located within 1.1 times the height of the turbine tower, which makes them incompatible with urban areas.

(2) Although wind farms do not support surrounding agricultural uses directly land owners receive an annual payment from the wind farm operator far in excess of the value of a crop from one acre of land.

G. LURP 1.6.2 states that on the best prime farmland, businesses and other non-residential uses will not be authorized if they take any best prime farmland out of production unless they also serve the surrounding agricultural uses or an important public need; and cannot be located in an urban area or on a less productive site; or the uses are otherwise appropriate in a rural area and the site is very well suited to them.

The proposed amendment **ACHIEVES** this policy because of the following:

(1) A County Board Special Use Permit will be required, which will allow for site specific review for a proposed wind farm.

(2) Wind farms serve an important public need for renewable energy.

(3) Although wind farms do not serve surrounding agricultural uses directly land owners receive an annual payment from the wind farm operator far in excess of the value of a crop from one acre of land.

(4) Wind turbines are not compatible with any land use that requires a structure to be located within 1.1 times the height of the turbine tower, which makes them incompatible with urban areas.

(5) Wind farms must be located where there are adequate wind resources and where there can be a proper connection to the electrical distribution grid (generally a 138 kilovolt powerline).

ITEM 11.G. CONTINUED

(6) The Wind Farm Overlay Zoning District is an Overlay map amendment that helps ensure compatibility with adjacent agricultural activities. The map amendment is warranted because of the unique character and specific impacts of a wind farm.

H. LURP 1.7.2 states that development in rural areas will be permitted only if there has been reasonable effort to determine if especially sensitive and valuable features are present, and all reasonable effort has been made to prevent harm to those features.

The proposed amendment **ACHIEVES** this policy because of the following:

(1) A standard condition is proposed in Paragraph 6.1.4.J. that requires wind farm developers to apply for Endangered Species Consultation with the Illinois Department of Natural Resources. The *Model Ordinance* does not include any requirements for endangered species protection.

(2) Subparagraph 6.1.4.A.2.(b) of the proposed amendment requires wind farms to be at least one mile from the CR District and the CR District is where natural areas are found.

(3) A standard condition is proposed in paragraph 6.1.4.K. that requires a wind farm developer to apply for consultation with the State Historic Preservation Officer of IDNR.

(4) A standard condition is proposed in paragraph 6.1.4.L. that requires wind farms to avoid and, if necessary, mitigate any impacts to wildlife as much as possible.

I. LURP 1.1 states that commercial agriculture is the highest and best use of land in the areas of Champaign County that are by virtue of topography, soil and drainage, suited to its pursuit. Other land uses can be accommodated in those areas provided that:

a. the conversion of prime farmland is minimized;
b. the disturbance of natural areas is minimized;
c. the sites are suitable for the proposed use;
d. infrastructure and public services are adequate for the proposed use; and
e. the potential for conflicts with agriculture is minimized.

The proposed amendment **ACHIEVES** this policy because of the following:

(1) The conversion of prime farmland is minimized because of the following:

(a) The proposed amendment waives the minimum lot area requirement for lots wind farm tower lots and other parts of a wind farm to ensure that only a minimum amount of land is converted.

(b) The standard condition in Paragraph 6.1.4.E. contains requirements to mitigate damage to farmland, including: topsoil replacement, mitigation of soil compaction and rutting, and land leveling.

ITEM 11.I. CONTINUED

(2) The disturbance of natural areas is minimized by the following:

(a) Achievement of the third industrial land use goal and the first conservation goal (see Items 8.D. and 8.E. respectively).

(b) Conformance of Policy 5.7 (see Item 7.G.)

(3) The sites are suitable for the proposed use because of the following:

(a) A wind farm is a non-agricultural use that is proposed to be a County Board Special Use Permit with standard conditions to ensure that a proposed wind farm will be compatible with adjacent agricultural activities.

(b) The Wind Farm Overlay Zoning District is an Overlay map amendment that helps ensure compatibility with adjacent agricultural activities. The map amendment is warranted because of the unique character and specific impacts of a wind farm.

(4) Infrastructure and public services are adequate for the proposed use because of the following:

(a) Conformance with Policy 4.5 (see Item 7.E.).

(b) Achievement of the first industrial land use goal (see Item 8.B.) and the third transportation facilities goal (see Item 8.F.).

(c) General achievement of the third general land use goal (see Item 9.A.(2)).

(5) The potential for conflicts with agriculture is minimized by the following:

(a) General conformance with Policy 1.2 (see Item 7.A.).

(b) Conformance with Policy 1.3 (see Item 7.B.).

(c) Achievement of the third utilities goal (see Item 8.G.)

(d) General achievement of the first agricultural land use goal (see Item 8.A.), second industrial land use goal (see Item 8.C.), and the fourth general land use goal (see Item 9.A.(3)).

DOCUMENTS OF RECORD

1. Application for Text Amendment from Zoning Administrator, dated September 11, 2008

2. Preliminary Memorandum for Case 634-AT-08, dated February 6, 2009, with attachments:
   - A Ordinance No. 617 (Case 236-AT-00)
   - B Ordinance No. 647 (Case 273-AT-00 Part B)
   - C 55 ILCS 5/5-12020
   - D ELUC Memorandum of September 4, 2008 (without attachments)
   - E ELUC Memorandum of October 14, 2008 (without attachments)
   - F ELUC Memorandum of November 6, 2008 (with Attachment A)
   - G Legal Advertisement for Case 634-AT-08
   - H Draft Proposed Changes to Section 2
   - I Draft Proposed Changes to Section 3
   - J Draft Proposed Changes to Section 5
   - K Draft Proposed New Section 6.1.4
   - L *Model Ordinance Regulating the Siting of Wind Energy Conversion Systems in Illinois.* Chicago Legal Clinic, Inc. (included separately)
   - M *WIND ENERGY Model Ordinance Options.* New York State Energy Research and Development Authority (included separately)
   - N Excerpts from the Danish Wind Industry Association website (www.windpower.org) Guided Tour on Wind Energy (included separately)
   - O Title 35 Illinois Administrative Code Subtitle H: Noise Parts 900, 901, 910 (included separately)
   - P Chapter 21 Wind Generator and Wind Generating Facility Ordinance for Trempealeau County, Wisconsin (includes letter to Mr. David Vind from George Kamperman and Richard James dated October 24, 2007) (included separately)
   - R Excerpts from the Industrial Wind Action Group website (www.windaction.org) including *The "How to" Guide to Siting Wind Turbines To Prevent Health Risks From Sound* by George Kamperman and Richard James, October 28, 2008. (included separately)

3. Supplemental Memorandum for Case 634-AT-08, dated February 12, 2009, with attachments:
   - A Source or Brief Justification of All Proposed Standard Conditions
   - B Chapter One Executive Summary of *The Effect of Wind Development on Local Property Values.* George Sterzinger, Fredric Beck, Damian Lostiuk. Renewable Energy Policy Project. 2003.
   - C *Impact of Wind Farms on Surrounding Property Values* by Peter Poletti. Presentation at the Illinois Windworking Group Conference. February 4, 2009
   - D Section 7 of the Champaign County Stormwater Management Policy
   - E *Sky High Wind Towers may limit aerial applications.* Agrinews. Vol. 31-No. 33. October 24, 2008
   - F *Non-wind turbine landowners should investigate spraying impact.* Agrinews. Vol. 31-No. 33. October 24, 2008.
   - G Washington Department of Fish and Wildlife Wind Project Guidelines
   - H Pipeline Construction Standards and Policies for Agricultural Impact Mitigation Recommended by the Illinois Department of Agriculture (included separately)

DOCUMENTS OF RECORD, CONTINUED

I Road Upgrade and Maintenance between McClean County and High Trail Wind Farm and Old Trail Wind Farm (included separately)

J Road Upgrade and Maintenance between McClean County townships and High Trail Wind Farm and Old Trail Wind Farm (included separately)

K *The Possible Effects of Wind Energy on Illinois Birds and Bats.* Report of the Illinois Department of Natural Resources to Governor Rod Blagojevich and the 95th Illinois General Assembly. June 2007. (included separately)

4. Supplemental Memorandum #2 for Case 634-AT-08, dated February 12, 2009, with attachments:
   A Case 236-AT-00 Finding of Fact with attachments
   B Excerpt of ELUC minutes of 9/13/00
   C p. 5-12 from the *Zoning Ordinance*

5. Champaign County, Ohio, Wind Turbine Study Group Report, dated May 2008

6. Midwest Wind Energy Comments, submitted at February 12, 2009, public hearing

7. Written comments from Herb Schildt, Chair of Newcomb Township Plan Commission, on behalf of the Commission, submitted at February 12, 2009, public hearing

8. Written comments from Herb Schildt as private citizen, submitted at February 12, 2009, public hearing

9. Written comments from Sherry Schildt, submitted at February 12, 2009, public hearing

10. Handout from Victor White, Superintendent of Prairieview-Ogden School District #197, submitted at February 12, 2009, public hearing

11. Supplemental Memorandum for Case 634-AT-08, dated February 20, 2009, with attachments:
   A Title 14 of the Code of Federal Regulations (CFR) Part 77 Objects Affecting Navigable Airspace, Sections 77.1 through 77.39
   B Chapter 13 from FAA Advisory Circular AC 70/7460-1K Obstruction Marking and Lighting
   C Section 5.3 of the Zoning Ordinance
   D Relevant excerpts of Section 6.1.3 of the Zoning Ordinance
   E Minutes of February 12, 2009, public hearing (included separately)

12. Wind Turbine – Tax calculation from Andrew Larsen, Superintendent of Heritage School District, submitted February 26, 2009

13. Written comments from Herb Schildt as private citizen, submitted at February 26, 2009, public hearing

14. Supplementary Materials from Herb Schildt, submitted at February 26, 2009, public hearing

15. Supplemental Memorandum for Case 634-AT-08, dated March 6, 2009, with attachments:
   A Draft Proposed Change To Section 2 dated February 6, 2009

DOCUMENTS OF RECORD, CONTINUED

B Revised Proposed Changes To Section 3
C Draft Proposed Changes To Section 4
D Draft Proposed Change To Section 5.1 dated February 6, 2009
E Draft Proposed Changes To Section 5.2
F Draft Proposed Changes To Section 5.3
G Draft Proposed Changes To Section 5.4
H Revised Draft Proposed New Section 5.5
I Draft Proposed Change to Subsections 6.1.1, 6.1.2, and 6.1.3
J Revised Proposed New Subsection 6.1.4
K Draft Proposed Changes To Section 9.1.11
L Draft Proposed Changes To Section 9.3.1 and 9.3.3
M Illinois Livestock Management Facilities Act (510 ILCS 77/et seq.) General Requirements Related to Size of Facility
N Sections 7 and 12 of the Champaign County Stormwater Management Policy
O Existing Section 9.3 Fees
P ELUC Memorandum of November 10, 2008
Q Excerpts from Danish Wind Industry Association website
R Legal advertisement for Case 634-AT-08
S County Roads Agreement between Bureau County and Walnut Ridge Wind (included separately)
T Minutes of February 26, 2009, public hearing (included separately)

16. Supplemental Memorandum for Case 634-AT-08, dated March 12, 2009, with attachments:
A Comparison Of Wind Farm Fees For Selected Illinois Counties
B State Fire Marshal requirements for Storage, Transportation, Sale, and Use of Gasoline and Volatile Oils (Title 41 Ill ADM Code 180)
C-E Results of Online Noise Rating Calculator from The Engineering Toolbox (www.engineeringtoolbox.com/nr-noise-rating-d_518.html) for various sound pressure levels
F Excerpt from Danish Wind Industry Association website
G Legal advertisement for Case 634-AT-08
H Illustration of Special Use Permit and Map Amendment Areas (included separately)

17. Written comments from Herb Schildt, Chair of the Newcomb Township Plan Commission, submitted at March 12, 2009, public hearing

18. Written comments from Herb Schildt as private citizen, submitted at March 12, 2009, public hearing

19. Supplemental materials submitted by Herb Schildt at March 12, 2009, public hearing

20. Written comments from Sherry Schildt, submitted at March 12, 2009, public hearing

21. Written comments from Steve Burdin, submitted at March 12, 2009, public hearing, with attachments:
A 1 of 4 "Firemen climb 213-ft tower in rescue" from Storm Lake Pilot Tribune 2009
B 2 of 4 "Wind and Fire" from September-October 2004 Renewable Energy World

DOCUMENTS OF RECORD, CONTINUED

C 3 of 4 Fire Resistant Hydraulic Oil
D 4 of 4 Blade Workshop

22. Letter from Kris Parker, submitted at March 12, 2009, public hearing, with attachment:
    A www.windaction.org "Rene Taylor testimony before Union, WI planning commission"

23. Written comments from Jamie Stevens, submitted at March 12, 2009, public hearing

24. Written comments from Kim Schertz, submitted at March 12, 2009, public hearing, with 54 attachments

25. Materials submitted by Judy Campbell at the March 12, 2009, public hearing:
    A Map of Livingston County
    B Letter from Jesper J. Michaelson dated June 6, 2006

26. Supplemental Memorandum for Case 634-AT-08, dated March 19, 2009, with attachments:
    A Attachments, numbered 2-55, to Kim Schertz written comments, submitted on March 12, 2009, (included separately)
    B Attachments to Steve Burdin's written comments, submitted on March 12, 2009, (included separately)
    C Letter from Kris Parker, with attachment, submitted on March 12, 2009, (included separately)

27. Supplemental Memorandum for Case 634-AT-08, dated March 20, 2009, with attachments:
    A Memorandum from ZBA member Paul Palmgren received March 17, 2009
    B Mitigation Of Wind Farm Impacts On Adjacent Non-Participating Agriculture
    C Mitigation Of Wind Farm Impacts On Existing Non-Participating Dwellings
    D Considerations Related To The Need For A Map Amendment
    E Annotated Revised Draft Ordinance
    F Legal advertisement for Case 634-AT-08
    G Minutes of February 26, 2009, public hearing (included separately)
    H Revised Draft Ordinance (included separately)
    I Alternative Draft Ordinance Without Map Amendment (included separately)
    J Draft Finding of Fact (included separately)

FINAL DETERMINATION

Pursuant to the authority granted by Section 9.2 of the Champaign County Zoning Ordinance, the Zoning Board of Appeals of Champaign County determines that:

> The Zoning Ordinance Amendment requested in Case 634-AT-08 should ***{BE ENACTED/NOT BE ENACTED}*** by the County Board in the form attached hitherto.

The foregoing is an accurate and complete record of the Findings and Determination of the Zoning Board of Appeals of Champaign County.

SIGNED:

Acting Chair
Champaign County Zoning Board of Appeals

ATTEST:

Secretary to the Zoning Board of Appeals

Date

CASE NO. 634-AT-08

SUPPLEMENTAL MEMORANDUM
March 19, 2009

Champaign County Department of

PLANNING & ZONING

Brookens Administrative Center
1776 E. Washington Street
Urbana, Illinois 61802

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

Petitioner: **Zoning Administrator**

Prepared by: **John Hall**
Zoning Administrator

J.R. Knight
Associate Planner

Request:

(A) Authorize the County Board to approve Special Use Permits (SUP) and to change the requirements for the development of wind turbine developments (wind farms) to a County Board Special Use Permit (CBSUP) and a rezoning to the new Wind Farm Overlay Zoning District (WFO).

(B) Change the requirements for private wind turbines.

(C) Add a requirement for a County Board Special Use Permit for subdivisions in a Rural Residential Overlay District.

STATUS

This Supplemental Memo includes copies of handouts received at the last meeting that Board members did not get to see. They are being sent out before the mailing on Friday to save time.

ATTACHMENTS

A Attachments, numbered 2-55, to Kim Schertz written comments, submitted on March 12, 2009, (included separately)

B Attachments to Steve Burdin's written comments, submitted on March 12, 2009, (included separately)

C Letter from Kris Parker, with attachment, submitted on March 12, 2009, (included separately)

3-12-09

I have read some of the testimony of families that have lived near wind turbines. One story really resonated with me. They had a child with Autism who was significantly impacted by the constant noise and vibration of the turbine. This child has become sleep deprived and has had an increase in behavioral difficulties. I am a school psychologist and member of the Autism team for the Urbana School District #116. I know that children with sensory issues and Autism often become agitated by sensory input that is easily tolerated by other people, for example the buzzing and flickering of a florescent light can be very irritating to a child on the Autism spectrum. It is easy to accommodate if you can simply turn off the florescent light in a classroom and provide a floor lamp – but you can't turn off the wind turbine can you? The issue is that it's not that the constant noise is just annoying, for a child with Autism it results in behavioral outbursts, self injurious behavior, screaming, etc when the child can't tolerate the noise or feeling or sensory irritation.

I would hope that your panel will consider all of the possible effects of wind turbines on the families near their construction. The Centers for Disease Control and Prevention now estimates that one in 166 children born in the US today will fall somewhere on the Autism spectrum. With Autism on the rise it is hard to know how many children in our community could be impacted by the wind turbines.

I think that anything we can learn from the testimony of people who already live near wind turbines should be carefully considered. I hope we can learn from the experience of others rather than trusting the guidelines proposed by those who may be biased due to their own financial ties to the project.

Thank you,

Kris Parker

Kris Parker
School Psychologist

Personal Stories

Browse in : **All > Topics > Impact on People**
All > Topics > Impact on People > Noise
All > Location > USA > Illinois
Any of these categories - All of these categories

Note: when you create a new publication type, the articles module will automatically use the templates *user-display-[publicationtype].xd* and *user-summary-[publicationtype].xd*. If those templates do not exist when you try to preview or display a new article, you'll get this warning :-) Please place your own templates in themes/*yourtheme*/modules/articles The templates will get the extension .xt there.

Title: Rene Taylor testimony before Union, WI planning commission

Author: Lisa

Date: May 28, 2008 8:02:35 PM or Wed, 28 May 2008 20:02:35

Summary: Horizon Wind Twin Grove wind energy facility, McLean County IL

Body:

Rene Taylor of Ellsworth, IL details the story of how she and her family came to live within the footprint of a large wind energy installation and the impacts of the turbines on her family's health and general welfare. Ms. Taylor lives within 1500 feet of Horizon Wind's Twin Grove wind facility which at this writing consists of 240 utility-scale turbines.

Thank you for allowing me to submit testimony this evening. I live with my husband and children on a 4-acre homestead in rural Ellsworth, Illinois. Our property is located near three turbines, one of which is about 1500 feet from the North wall of our home, in the Twin Groves Wind Farm. In addition to living near turbines, one of the project's two electric substations is located about 870 feet from our East property line, and about 1000 feet from the east wall of our home.

We purchased our property in 2004. About two or three weeks before closing, the previous owner of our property contacted us to inform us he had received a letter inviting him to an open house for a wind farm that was coming to the area. He thought my husband and I might want to attend instead, since we were going to be purchasing the property.

We did attend the presentation, and though neither of us had heard of a Wind Farm before, we felt the project would be great for our area. We were told modern turbines made very little noise and it was very unlikely we would be able to hear them at all, especially above the noise of the wind. We were also told that shadow flicker would not be a problem and that it might occur for a few days a couple times a year when the sun was behind a turbine, but most homes would not be affected. We were actually excited that we might be able to view one or two turbines from our property. We had both seen turbines while traveling and thought they were kind of cool to watch.

The following year we received notice from McLean County that the zoning hearings for the wind farm would be held in early July, 2005. We were a bit concerned because the notice said Horizon was requesting a variance on the height of the turbines, at that time I believe there was a 200 or 300 foot limit, and also a variance that would allow turbines to be closer to several residences than the current zoning allowed.

At this point, we wanted to know exactly where the turbines would be in relation to our property and what other structures might be constructed near us. We contacted a representative of the wind developer in late June, 2005, to try and get an idea what would be around us so we could decide if we were going to raise any objections at the hearing. The representative told us there would be one turbine

PILOT TRIBUNE

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Burdin 1 of 4

Firemen climb 213-ft tower in rescue

December 07, 2004

Two electrical workers were treated and released at Buena Vista Regional Medical Center last week after they were rescued following a fire at one of the MidAmerican Energy turbines just south of Schaller.

The workers were doing electrical work on a control panel inside the 213-foot turbine support tube.

Firefighter Armon Haselhoff said the department received the call at 7:35 p.m. and responded to the turbine site where the doors were shut "to keep the oxygen from feeding it" since the tube could potentially have acted as a chimney.

Firefighters used 20-pound extinguishers to put out the fire, which had apparently started from a short circuit during testing.

Haselhoff said the workers were at the top of the tube where they were able to get ventilation through hatches. Once the fire was under control, two firefighters from the Schaller Fire Department, Jeff Sandhoff and Jason Currie, climbed the dizzying height to help the two workers down.

Currie said the turbine base acted "just like a smokestack" and he and Sandhoff set up fans to blow smoke through the top of the tower. While a fire in a 213-foot wind turbine may seem somewhat unusual, Currie said it was not something that was totally unexpected.

"We knew it was coming," Currie said. "We didn't know when."

Currie said he and Sandhoff ran out of air in their air packs before they reached the top but decided to keep going.

"It got worse every level we went up," Currie said. They passed through three hatches before they reached the workers at the top.

"Once we climbed the tower, it was just your hands reaching in front of you," Sandhoff said." We had radio contact. They (workers) had actually gone out on top of the turbine. They got fresh air once they got to the top."

Sandhoff said he ran out of air before Currie and had zero visibility. They were close enough to the top though that they could reach the trapped workers.

Sandhoff estimated there were a total of 15-18 firefighters responding.

According to Mark Reinders, MidAmerican communications manager, the workers were taken to Buena Vista Regional Medical Center in Storm Lake as a precautionary measure. He said there were no injuries.

Reinders said MidAmerican was not involved in the incident since the turbine is still under construction by General Electric. Reinders said the employees were hired by M.A. Mortenson, a General Electric subcontractor.

"We're still on schedule" to complete the Intrepid wind project by the end of the year, Reinders said. He said the project would be fully operational and commission before January 1. MidAmerican raised its last turbine for the project on Saturday.

Reinders said much of the underground wiring and foundation work on the eastern phase of the project in Wright and Hamilton counties is completed. "The weather has been extremely cooperative with us," Reinders said, noting that when completed the project will be "one of the largest in the United States."

On Oct. 29 MidAmerican Energy held an observance to celebrate raising the first turbine in the $323 million wind project. The 310.5-watt wind energy facility has 107 turbines in northern Sac and southern Buena Vista counties with an additional 100 planned at the Wright-Hamilton site near Blairsburg. In addition to 250 construction jobs, the project is expected to continue with 20 operations jobs.

The wind farm will provide energy for 85,000 homes.

©Storm Lake Pilot Tribune 2009

about 1500 feet from the wall of our home and that we would be able to see several others on the ridge north and east of our property. I asked if there would be any turbines in the field just west of our property and he said no. I then asked about the location of the electric substation and told him we did not want to live by that. I was told the substation would be located a couple miles east of us closer to the village of Arrowsmith. We were relieved but decided to attend all the hearings.

We did receive a neighbor agreement by mail to sign. Our family chose not to sign the agreement. The title of the agreement was "Memorandum of Wind Farm Neighbor Easement Agreement", and it stated, "Owner understands and accepts that operation of Generating Units may have some impacts on the Wind Farm's neighbors, including the Owners property." It went on to state that "Grantee wishes to obtain Effects, Sound and Shadow easements from landowners who are neighbors of the Wind Farm for the benefit of the Wind Farm and as an opportunity to provide Owner certain economic benefits to accrue from operation of the Wind Farm." The very things they had told us would not be a problem they were now asking us to accept by way of an easement in exchange for a small annual payment.

In March of 2006, we received another notice from McLean County for a hearing on a request to move the electric substation to section 12 of Dawson Township. Our property is located in Section 12. Again, we were concerned. We were totally unfamiliar with zoning laws and had no idea that if you receive a notice it's because your property is within close proximity to the area that will be affected by a zoning change.

We attended this hearing as well, and this time I asked several questions about the change. I asked how close property line to property line the substation would be from our property. The developer's representative answered that it would be about a ½ mile from our property. I also asked what kind of noise we could expect from the substation because we would likely have some noise from the turbines near us and now we'd have to deal with the substation too. We were told that it would be unlikely that we would be able to hear the substation.

With the information the developer had presented, we decided to raise no further objections to the purposed change. The village of Ellsworth is about ½ mile from our property, so we felt confident we could live with the change. The location change was approved by the zoning board.

Within a day or two of zoning approval, we noticed workers staking out an area near our home. It was very clear to us that this area was not ½ mile from us, so my husband and I took a measuring wheel and rolled off the distance from our east property line to the west line of the area that was being staked out. The measurement was about 870 feet, not the ½ mile we had been told.

At this point we no longer felt comfortable with anything the wind developer had told us. We contacted the county to see if we could object to the zoning change and we were told no, that we would have to wait for the County Board to vote on the matter and we could then file for an administrative review of the change.

Living with turbines has caused us to change many things in our lives. We often have to close windows during nice weather to avoid turbine noise in our home. This forces us to use air conditioning at times we would prefer not to. While we retain the use of our property, much of the time we are no longer able to enjoy it. We do what we need to do outside and hurry back inside, confined to our house to avoid the constant sounds from the turbines and substation. Even inside our home, we often still hear and feel the turbines.

This past winter, (which was our first winter), we experienced many days when we consider turbine noise excessive. On one occasion, we borrowed a Radio Shack sound meter to measure the sound level. Now we are aware that these sound meters are not extremely precise and we also know that we are not experts at taking sound readings, but the readings we were getting at the wall of our home were between 85 and 90 decibels.

We have found the sound from the turbines to be loudest at night and they cause us the most difficulty when the wind is from the south at 20mph or higher at the surface. We have experienced many occasions at night when no wind was blowing at the surface and the turbines noise was excessive because there were no surface winds to help mask the sound. When the winds are above 25mph, we no longer hear the swish or thump of the turbine blades, but hear a loud roar like a train running across the

back of our property. These sounds can clearly be heard inside our home, though not as loud.

The noise issue has been most difficult for our 10 year old son. He has been diagnosed with high functioning Autism and is very sensitive to sound. At times he seems to fixate on the sound, often times noise the rest of us can't hear, and becomes fitful and hard to deal with. For lack of anything else to call it, he has uncontrollable tantrums and nothing we do, except taking him out of the area when it's bad, helps. As parents, we do everything humanly possible to ensure the safety of our children. You have no idea how heart wrenching it is to watch your child sitting on the floor with hands over their ears crying, saying "It hurts mom, can't you hear it, make it stop", and know there's nothing you can do!

Every member of our family has experienced difficulty sleeping, headaches, irritability, pressure in our ears and fatigue since the turbines closest to us began operation last May. Some in our family have also experienced heart palpitations. My youngest daughter tells me it feels like a hamster running inside her chest. My fourteen year old daughter has become very withdrawn, sullen and is very negative about everything. This is totally out of character for her as she was always happy and positive. We feel some of these symptoms are likely due to a lack of sleep and we do not experience them all the time.

As I stated earlier, the noise is most common at night and occurs often between 11pm and 4am. We are often awaken by the noise and find it very difficult, if not impossible, to go back to sleep. Our youngest children have begun to have nightmares that also wake them. Many of these symptoms do seem to occur at the same time we are experiencing noise from the turbines, but some do occur even when the turbines are fairly quiet.

Thank you again for allowing me to submit testimony. Please listen to the people of your Town and understand that some of them could be more profoundly affected than others.

Notes: Rene Taylor

More fields may be available via dynamicdata ..

Nancy Smith Eize de Vries

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Borden Ladner

Wind and fire

Reducing the risk of fire damage in wind turbines

ncidences of wind turbines catching fire are, thankfully, rare, but when a fire does occur it almost always results in the total destruction of the turbine. Fire crews can do very little to tackle wind turbine blazes once they start - the sheer height of the turbines means that reaching them quickly is impossible, and fire engines cannot deliver sufficient water pressure to reach, let alone extinguish, a turbine blaze.

Once a wind turbine has burned down, it can lead to between nine and twelve months of down time, and therefore a considerable loss of income for a wind farm operator, according to insurers WindPro. (That said, the major manufacturers will frequently step in and replace the turbine as soon as possible - no company wants a burnt-out turbine 'on show'.) Figures suggest that fire damage accounts for between 9% (Umweltkontor) and 20% (WindPro) of the value of wind power insurance claims.

> Fire damage accounts for between 9% and 20% of wind power insurance claims



WHAT CAUSES WIND TURBINE FIRES?

Fires in wind turbines normally begin in one of two ways - a lightning strike or a technical fault. In both cases, the combination of either radiant heat or a spark with the transmission fluids or other lubricants is dangerous, and the plastics used in nacelle covers are highly flammable.

Lightning

Lightning does not necessarily lead to fire. Often, when a wind

turbine is struck by lightning it can simply lead to repairable damage - typically a turbine blade will be smashed and need to be replaced. Yet if a lightning bolt sparks a fire, it becomes totally destructive.

Susceptibility to lightning damage is heavily dependent on a wind turbine's location - and its size. According to Birger Madsen of BTM Consult, continental Europe is susceptible to lightning strike - there is a relatively high frequency of lightning in the north of Germany and the Alps, while Denmark is rarely affected. Insurers WindPro say that lightning strike is significantly more common in the US than in Europe. Some Texan sites, according to Birger Madsen, have shown themselves to be particularly exposed to lightning. Parts of Japan have experienced severe lightning losses: a technical paper by Lightning Eliminators and Consultants (LEC), *A Study of Lightning Protection Requirements for Large Wind Turbine Systems*, also cites problems in one area of Japan during a particularly turbulent winter. The paper states: 'Data collected from one winter season in Japan alone reveals losses of horrifying proportions. In just one season, and just one area of Honshu, at least 55 machines had blades destroyed by lightning. The total estimates [that] one year loss for those machines exceeded $5.5 million, and the cost of prevention is approximately one half that value'.

As turbine size increases, so does vulnerability to lightning. Offshore wind farms also face a higher risk. Thus, lightning conduction becomes a more essential, and more standard, element of wind turbine blades. In particular, the growing trend towards use of (highly conductive) carbon fibre in the larger blades - as a way of adding maximum strength with minimal weight - increases vulnerability from lightning.

Madsen says that manufacturers will need to look at much more sophisticated lightning conduction measures as machines continue to grow. By way of example, Vestas has included a lightning protection system in its latest V90 model, which takes the carbon fibres' conductive properties into consideration. Such systems extend from the tips of the blades to the bottom of the tower, where an earthing system is installed.

Much more sophisticated lightning conduction measures will be needed as machines continue to grow and move offshore

However, some manufacturers are not making use of carbon in their large blades - as Eize de Vries writes in his article on page 52, a proposed redesign of the blades for the 5 MW Multibrid machine will leave out the carbon. And Enercon has avoided the use of carbon in the blades of its E-112 machine.

UK-based engineering specialist EA Technology is tackling the problem of lightning in a more preventative way with its Lightning Location System. The system predicts where lightning will strike up to two hours in advance, giving wind farm operators the option of shutting down turbines to avoid damage

TURBINE DESIGN AND FLAMMABLE FLUIDS

About 85% of all turbines (reckoned on a megawatt-basis) sold worldwide in 2003 were conventional wind systems, with a drive train that typically comprises one or two main bearings, a main shaft, a gearbox, high-speed shaft, fail-safe brake, and generator. This type of system requires a large quantity of lubricant (oil). In these machines, the transformer is accommodated either in the nacelle or in the tower base.

The remaining, approximately 15%, share of the world market in 2003 was made up by turbines that use a direct-drive system. These contain a large ring generator, and do not need a gearbox. They therefore have no drive components that require a large amount of oil. On the other hand, the voluminous ring generators contain a significant quantity of (potentially) flammable resins.

In either case, any leakage of fluid can lead to problems.

According to EA's Benoit Dal Ferro, based on an average of 10 lightning strikes per year at a given location annual down time should be no more than four hours.

Technical faults and human error

The other main cause of fire is technical fault. Tracking the source of a fire, after the event, can take some time. Typically, as mentioned above, a fire that starts because of technical reasons will result from overheating, or sparking, in combination with flammable fluid or vapour.

Human error can also play a part. In the past, fires have been caused by loose or broken electrical connections, which can introduce sparks or heat. Nearby oil spills, grease, rubber cable linings, plastics covers and any other flammable materials can potentially be ignited.

Fires can also occur as a result of component failure. In 2003 the nacelle of the German 1.2 MW Vensys 62 prototype burned down, apparently due to a short circuit in a fail-safe battery pack of the pitch control system.

It can also happen that a bearing starts failing and runs dry. The resulting heat build-up in the component can finally - especially if combined with oil and or grease - lead to disastrous fires and consequent installation damage. Insufficient lubrication oil, failing cooling systems and other operational imperfections can also lead to problems which, under certain conditions, may lead to fire. Finally, a fail-safe brake running hot during a sustained brake action could be a potential cause of nacelle fire. Again, a combination of oil with grease spills increases the probability.

Turbine age

Another factor that affects susceptibility to fire is the age of the turbine. In the US, thousands of small wind turbines in the 80-150 kW range were installed in previous decades. At that time, it was very uncommon to fit lightning protection systems into the blades. As a result, lightning incidents resulting in a fire are more likely with these older turbines. Model and make are not thought to be particular factors, according to WindPro, though US wind veteran Paul Gipe has observed that old small-size Danish and German models are generally the most reliable,

Acculube:

Acculube Industrial Products

Office: 760.240.0909

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E-Mail sales@acculubeglobal.com

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Burden 3 of 4
CHAMPAIGN CO. P & D DEPARTMENT

ALH FR Series (Fire Resistant Hydraulic Oil)

Fire Resistant Hydraulic Oil

Benefits

- ALH FR fire-resistant hydraulic oils are based on high quality synthetic, organic, esters and carefully selected additives achieve excellent hydraulic fluid performance.
- Provides lubrication level equal to premium anti-wear hydraulic oils.
- Viscosity Grades of 46 and 68, to meet all hydraulic oil requirements.
- **Fire-resistant.**
- Self-extinguishing properties limit the spread of fire.
- Factory mutual certified.
- Non irritating and contains No hazardous ingredients.
- Ready Biodegradable and Non Toxic to aquatic life.
- Not Water Soluble.
- Easily removed from collector systems by standard skimming techniques.

Recommended applications

- ALH FR Series fire-resistant hyraulic oil are recommended for use in fire hazardous and environmentally sensitive hydraulic applications.

Physical Properties.

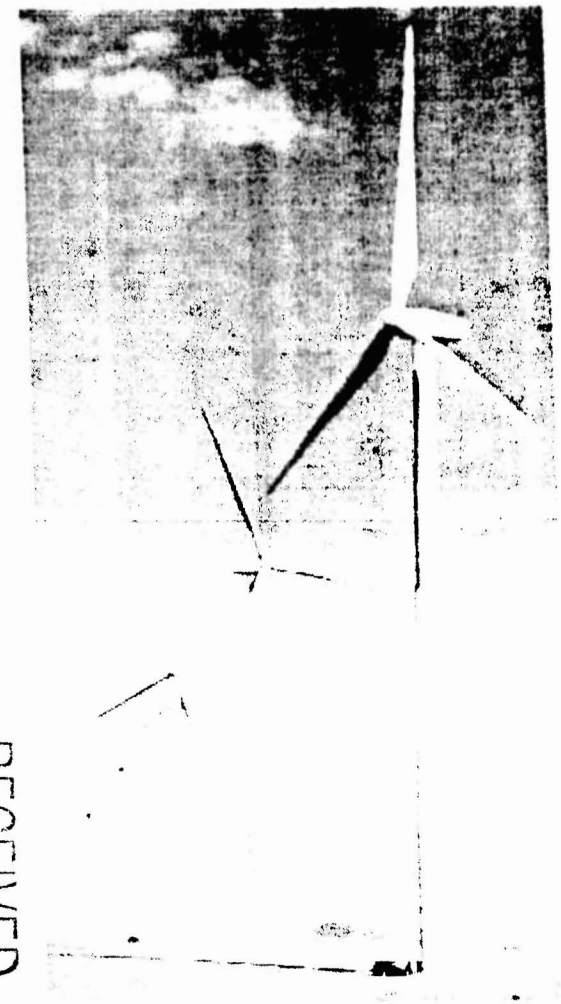
Products	ALH FR-46	ALH FR-68
Appearance	yellow to amber oil.	yellow to amber oil.
Kinematic Viscosity at 40C	46mm2/s or cst	68mm2/s or cst
at 100C	10mm2/s or cst	14mm2/s or cst
Viscosity Index	220	215
Density at 15C	0.90 g/cm3	0.91 g/cm3
Acid number	2.0 mg KOH/g	1.5 mg KOH/g
Pour Point	<-20C(<-4F)	<-20C(<-4F)
Foam Test	50-0 ml	50-0 ml
Corrosion protection	pass	pass
	pass	pass
Flash Point	302C(575F)	302C(575F)
Fire Point	360C(680F)	350C(662F)
Auto Ignition temperature	450C(842F)	450C(842F)
Fire resistance-Factory Mutual	pass	pass
Pump test- ASTM D2882	<5mg wear	<5mg wear
Gear lubrication	>12FZG load stage.	>12FZG load stage.
Demulsibility	41-39-0 (15) ml-ml-ml(min.)	42-38-0(30) ml-ml-ml(min.)

Contact Information

- Acculube Industrial Products
  877.240.0909 Toll free
- 877.637.0909 Fax

Blade Workshop

Initial National Reliability Database (NRD) Results



Roger Hill

Wind Energy Technology – Dept. 6333

rrhill@sandia.gov

505-844-6111

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Boulder 4 of 4

Sandia is a multiprogram laboratory operated by Sandia Corporation, a Lockheed Martin Company, for the United States Department of Energy's National Nuclear Security Administration under contract DE-AC04-94AL85000.

Sandia National Laboratories

- 0-5 years of operation
- 100+ turbines
- Two blade replacements due to lighting
- Lots of strikes

Wind Farm

- 5-10 years of operation
- 100+ turbines
- Manufacturing related issues-laminations, voids
- Leading edge erosion
- Trailing edge splits
- Every blade struck by lightning at least once
- Grounding
- $100k spent on blade repairs
- 3 blades replaced due to lightning over life
- 6 blades/year replaced - 1/time
- Tune blades with lead shot

- 0-5 years of operation
- 0-50 turbines
- Bonding/laminations - delaminations, voids
- No onsite inventory
- Clean every year
- Replace in sets– around 5 since start of ops

Wind Fa

- 5-10 years operation
- 100+ turbines
- Issues are QC
- Bug fouling, leading edge erosion
- Repairs, not replacements for lighting damage
- Clean when gearboxes are changed (rotor down)
- Around 40 blades replaced

Wind Farm E

- 0-5 years of operations
- 50-100 turbines
- No problems

Conclusions

- Non standardization of data
- O&M may not be standardized either
- Around 18 years MTBF
- Crane required for replacements
- Availability requirements in contracts typical

Press Release -- Noise
Noise Complaints On Rise with New Industrial Wind Power Projects
National Wind Watch calls for minimum 1-mile setbacks

RECEIVED
Schertz 20f55*
(*written comments are number 1)

Press Release

Contact: Eric Rosenbloom, East Hardwick, Vermont, President
David Roberson, Rowe, Massachusetts, Vice-President

Rowe, Mass., April 2, 2007 -- Noise created by commercial-scale wind turbines has become a major concern around the world as wind power development continues to proliferate. Although the industry claims that modern turbines are quieter -- even as they grow ever larger -- complaints are increasing from people who live near new projects.

While the wind itself may mask some of the noise under some atmospheric conditions, the deep unnatural thumping as the giant blades pass their supporting tower is particularly intrusive. Testimony from hundreds of turbine neighbors confirms this, most recently from Maine, Massachusetts, New York, Pennsylvania, Illinois, Wisconsin, Texas, Canada, the U.K., and New Zealand. Reports can be found at www.wind-watch.org/news and www.wind-watch.org/documents.

The noise is especially intrusive because wind energy facilities are often built in rural areas where the ambient sound level may be quite low, especially at night. On the logarithmic decibel (dB) scale, an increase of 10 dB is perceived as a doubling of the noise level. An increase of 6 dB is considered to be a serious community issue. Since a quiet night in the country is typically around 25 dB, the common claim by wind developers of 45 dB at the nearest home would be perceived as a noise four times louder than normal. And because it is intermittent and directional, those affected assert that one can never get used to it. The disruption of sleep alone presents serious health and human rights issues.

The problem is worse than the industry admits. Frits van den Berg, a physicist at the University of Groningen in The Netherlands, studied noise levels around a German facility of 17 turbines. In a paper published in the November 2004 *Journal of Sound and Vibration,* he found that at night, because the surface air is often more still than the air at the height of the blades, the noise from the turbines is 15 to 18 dB higher than during the day and carries farther. He noted that residents 1.9 kilometers (6,200 feet or 1.2 miles) away expressed strong annoyance with noise from the facility.

The French National Academy of Medicine has called for a halt of all large-scale wind development within 1.5 kilometers of any residence, because the sounds emitted by the blades constitute a permanent risk for people exposed to them. The U.K. Noise Association studied the issue and agreed with the recommendation of a 1-mile setback.

In the U.S., the National Wind Coordinating Committee could not avoid the conclusion that "those affected by noise generated by wind turbines live within a few miles of a large wind power plant or within several thousand feet of a small plant or individual turbine. Although the noise at these distances is not great, it nevertheless is sufficient to be heard indoors and may be especially disturbing in the middle of the night when traffic and household sounds are diminished."

National Wind Watch calls on the commercial wind industry to respect the people who reside in targeted development regions, to honor their right to healthy lives and peaceful enjoyment of their homes, by adopting meaningful setbacks -- measured in miles, not in feet.

National Wind Watch information and contacts are available at www.wind-watch.org.

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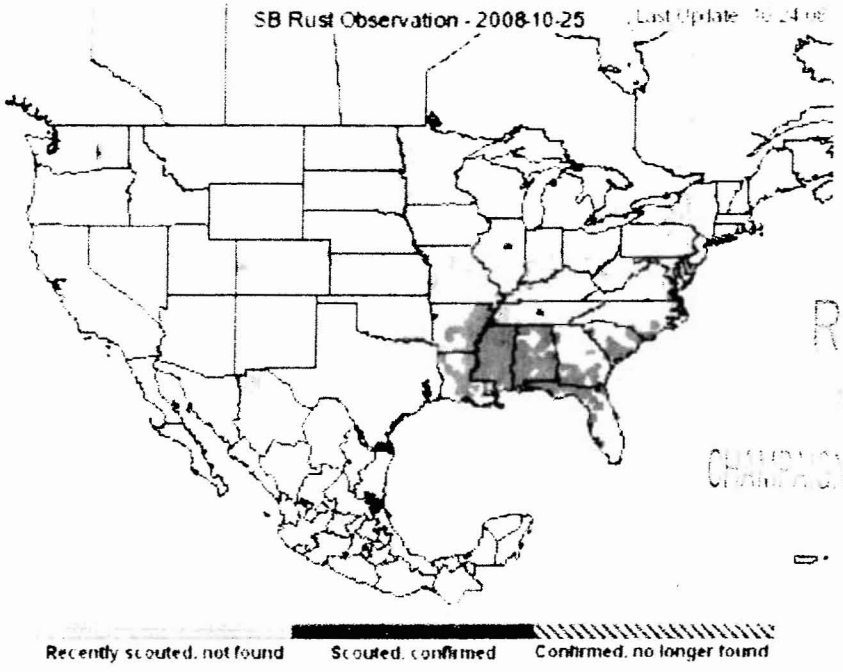
www.wind-watch.org

Asian Soybean Rust in Illinois



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United States Soybean Rust Commentary (updated: 10/24/08)
On October 24th, soybean rust was reported in Jefferson and Mitchell counties in Georgia.

On October 23nd, soybean rust was reported for the first time in Illinois, Missouri and Oklahoma in 2008. The disease was detected on soybeans in McLean County in central Illinois, in Scott County in eastern Missouri, and in Bryan County in southern Oklahoma. Soybean rust was also reported in McLean county in Kentucky.

Since January of 2008, soybean rust has been reported in 15 states. This includes 52 counties in Alabama, 32 counties in Arkansas, 31 counties in Georgia, 24 counties in Florida, one county in Illinois, 27 parishes in Louisiana, two counties in Kentucky, 78 counties in Mississippi, one county in Missouri; five counties in North Carolina, one county in Oklahoma, 16 counties in South Carolina, two counties in Tennessee, five counties in Texas, and four counties in Virginia. Rust was also reported in 10 municipalities (counties) in Mexico. Soybean rust is expected to spread northward until frost.

Source: United States Department of Agriculture : "U.S. Soybean Rust Commentary" (updated 1-20-09) http://sbr.ipmpipe.org/cgi-bin/sbr/public.cgi

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" Because Asian soybean Rust can progress rapidly and completely defoliate a field within four to six weeks, it is encouraged to control the pathogen, especially if it has been found and identified."

Source: "A Closer Look At Soybean Rust" 6-12-08 Syngenta www.farmassist.com

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"Aerial application platforms are well suited to combat soybean rust because of their speed, ability to work under wet field conditions, and because aerial applications do not compact the soil or disturb the crop."

Source: "The Importance of Aerial Application in Combating Asian Soybean Rust" National Agricultural Aviation Association" http://www.agaviation.org/combatingrust.htm

Expert: Soy rust still a threat to Midwest

The fact that soybean rust has yet to cause any significant crop damage in Illinois since it first was discovered here two seasons ago obviously is good news for growers.

However Kevin Black, GROWMARK insect/plant disease technical manager, is concerned growers may be "lulled into a false sense of security" by the lack of activity and disregard the annual threat posed by rust.

"This is a disease, even though we haven't had any major problems, that is always lurking in the background," Black told **FarmWeek**. "Given the right conditions, we know we could have a problem. It's just a matter of when."

Soy rust appears to be permanently established in the southern U.S., Black said. But it cannot overwinter in the Midwest and therefore requires the right conditions each year, such as mild temperatures, precipitation, and wind currents, to move north.

Rust so far this year has been confirmed in six Florida counties and one county in Texas.

"The last few years we've learned it is capable of long-distance hops from the southern U.S.," Black said.

Fortunately, weather conditions so far this year have not favored the spread of the disease, Black said.

But weather history shows the right conditions have existed in the past that would favor a major rust outbreak.

"All we really need are the right conditions that trigger the early development of rust and allow it to move into the Midwest in time to damage the crop," Black said.

Black encouraged farmers to track the spread and distribution of rust again this season at the website (www.sbrusa.net).

The website, officially named the Integrated Pest Management Pest Information Platform Extension and Education program, was formed to help growers manage rust and other pests.

However, its original federal funding from the Risk Management Agency was for development, not maintenance, of the website.

Black was among industry leaders who last month attended a USDA summit in Washington, D.C., to promote continued funding to support the program and its website.

The information available at the website, such as spore movement, is critical to help forecast the spread of rust.



Don Hines, GROWMARK Seed agronomist, left, and Carl Bradley, University of Illinois plant pathologist, examine soybean leaves in a rust-infected field in Macon County during a scouting trip last September. [illegible] soybean [illegible] rust signature [illegible] the [illegible] of spore movement [illegible] three [illegible]

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Plant diseases could pose problem

Farmers who have contended with wet soils this spring may want to keep an eye on the possible development of corn seedling and other plant diseases.

Pythium, fusarium, and a host of other problems often thrive in the cool and wet conditions that have been common across much of Illinois so far this growing season.

"Pythium could be an issue for anybody dealing with wet soils," said Kevin Black, GROWMARK insect/plant disease technical manager.

Farmers can counteract some of the potential disease problems by using treated seed. About 90 percent of corn seed and half of soybean seed is treated with fungicide, according to Tamra Jackson, Nebraska Ag Extension plant pathologist.

Black encouraged farmers to avoid planting in wet soils, though, as it can compound disease problems.

"Compaction (from planting in wet soil) is bad enough, but the stress you put on the crop can help (increase) disease pressure," Black said. "You will pay the price for that all season long."

Farmers scouting for root rot once the crops emerge can dig seedlings in wet or poorly drained areas of fields and check for root lesions caused by fungal pathogens. — **Daniel Grant**

Folicur labeled for use on wheat crop

Wheat growers last week gained another tool for possible use in the annual fight against fusarium head blight (scab).

Folicur fungicide received a full section 3 registration from the U.S. Environmental Protection Agency and is now [illegible]

sponsored by the U.S. Wheat and Barley Scab Initiative have shown Folicur is effective at reducing scab severity and reducing associated mycotoxins in harvested grain.

The registration of Folicur [illegible]

Can Your Field Be Sprayed?

And How Much Will It Cost?

Spray Policies From Central Illinois Cropdusters

Chuck Holzwarth Flying Service Aerial Application Requirements Concerning Wind Towers

CHFS can reject any field or portion of a field deemed unsafe for aerial application.

Before booking fields within the proximity of a wind farm, dealers should check with CHFS with a detailed aerial map to see if the field is deemed safe to be sprayed.

Any field within the proximity of a wind farm that is able to be sprayed will have at least an additional 50% application fee added.

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Palmer Flying Service inc.

Aerial Application Restrictions Due to Safety Issues.

Palmer Flying Service inc. has the right to decline or refuse all or any part of any field that has been presented for applications of products by its customers, due to safety issues to employment staff, or the general public. Before contracting jobs for aerial applications, please be aware of the surrounding areas to be treated. This would include fields with unsafe obstructions such as Wind Farm Turbines, and weather stations. Any wind tower or weather station located within one half of a mile to the field or fields being treated will have a minimum additional application fee of 50% of the original application fee, if deemed to pose a threat to safety, or additional expense to application operation, by Palmer Flying Service inc.

Curless Flying Service Application Guide 2008

CFS Application Guide Concerning Wind Towers

Retailers need to be considerate of surrounding area to be treated for safety, housing, or proximity to the public. Before any field with a wind tower is booked consult CFS for clearance or rejection on the field or area. CFS may refuse any field or portion of a field deemed not treatable.

CFS may reject any field within ½ mile of a wind tower due to safety concerns. CFS will charge an additional 50% application fee for any field deemed to be within the safety area of a wind tower.

From: "Schertz Aerial" <Schertz@SchertzAerial.com>
To: <kdschertz@verizon.net>
Sent: Tuesday, April 01, 2008 7:17 AM
Subject: Surcharges

Wind Turbine Areas (within 1 mile)-
if able to do - 50% application surcharge
This surcharge includes fields with Met Towers in them

Attachments that need to be included with Application Request Order form:

1. A county plat map of the township where the field is located.
   a. The Farm & Home Publishers Plat & Directory is not a good reference source for a county plat map.

2. The plat map needs the field to be sprayed outline in a black marker as shown on example included.
   a. On partial fields only outline the area of the field to be sprayed.
   Don't forget to inform us that you are spraying only the north ½ 40 ac of a total 80 ac field.

3. Mark the number of acres next to each field and name of field.
4. Make sure the name of requesting agent is record on the plat map.
5. A field map would be helpful if the field is an odd shape. Drawn in high lines, ponds, buildings, etc. is also very helpful.
6. **Field map is required for field that has wind turbines and/or wind sampling towers in the field and/or the surrounding area around the field.**

Restrictions

1. Fields next to towns, subdivisions, or golf courses can't be sprayed if 2 to 3 sides of the field is surround by these areas.
2. Notification needs to be given to bee keepers who have bees within 3 miles of field.
3. Notification needs to be given to people who have horses, cattle, organic gardens, sweet corn patches that are close to spray areas.
4. No partial fields unless time allows.
5. **If we can do a field with a wind turbine and/or a wind sampling tower in the field (providing the field map has been sent to us), the application charge will be an extra 50 % application surcharge.**

Cropduster Testimony On Wind Farms

"Can Your Field Be Sprayed?"

TAZEWELL COUNTY ZONING BOARD OF APPEALS HEARING

Date: April 1, 2008
Time: 6:00 p.m.
Location: Tazewell County Justice Center
101 South Capitol Street
Pekin, Illinois

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Mr. Flexsenhar, you're next.

(Witness sworn.)

CHAIRMAN TOEVS: Sit down and give us your name and address, please.

MR. FLEXSENHAR: Brandon Flexsenhar, 11577 Pfanz Road, Pekin, Illinois.

CHAIRMAN TOEVS: Go ahead with your comments.

MR. FLEXSENHAR: I don't really have anything prepared. I'm opposed to it just for the simple fact that I'm a crop duster, and I don't know what expert opinion they've had, but I have been in the plane and I've worked in them and it's not fun to work around. And it doesn't matter if you are in a helicopter, ground rig, whatever, they're just not fun to work around. So that's all I have.

CHAIRMAN TOEVS: Any questions? Go ahead, Russ.

MR. CRAWFORD: Again, as you were directed, you don't have to answer the question.

MS. DEININGER: Mich.

MR. CRAWFORD: Sorry. You said it's not fun to work around. I would like you to be a little more specific specially with regards to safety in the air.

MR. FLEXSENHAR: I say fun, it's not -- that shouldn't have been what I said -- it's dangerous. There is one up by Bradford that we work in. Last year I was up there, there was four

turbines on each side of the field. I was focused on the turbines themselves and as I was going through the field one of their monitoring towers was in there and I never saw it because I was focused on the spinning blades and everything else. And it's just, I came back and I told the farmer, never again.

And all the fields adjacent to it for the most part, you know, that were right there, we won't do. And up by Bradford they're also building another one. I believe I sprayed about 13 thousand acres and every field I sprayed had the turbines going up and we won't work in there again.

MR. CRAWFORD: If I might, one other question along the same line. I've seen a lot of, as of recent, as this has come about very quickly, I have been doing a little research as to the safety area. And I've noticed lighting and painting and other techniques in construction that have been used. And it seems like outside the United States is a whole lot safer than inside the United States, so my question is in your experience, and it's limited, I understand, but in your limited experience with regards to this, do

you see lighting or painting or the hash, you know, red and white or black and white kinds of things that would be a warning, more of a warning to any kind of air traffic whether it's dusting or otherwise?

MR. FLEXSENHAR: Yes, I believe so. Any little bit helps. The only, I don't want to say it's not a good thing, the only problem is if it takes away from, like I said, the monitoring tower or something like that. Just something else to look at, it would be a great thing. I did a lot of spraying out in Kansas last year where they had lighting on, and the biggest thing was they had them all in a straight line, and we can work with those when they're in a straight line. But when they're just, and I know what they're going to say one-to-one is a straight line, but not when you are sitting here and you have got one here and over here (Indicating). The biggest thing I saw was the straight line helped us, or helped me personally.

MR. VOGELSANG: Are you a property owner that would be involved in any of these towers as well as being an outside contractor?

MR. FLEXSENHAR: I do not have any ground

that I own in there, no. But that's one of our biggest areas that we work in.

MR. LARSON: A question about the altitude that you fly when you are crop dusting. Just checking here the tip height above the ground at its lowest point, so I'm curious what your normal altitude would be?

MR. FLEXSENHAR: You're going to -- I would say seven to ten feet above the crop is where we're going to be.

MR. LARSON: So they're saying the lowest tip height is 136 feet, so theoretically you would be under that?

MR. FLEXSENHAR: You are going to be under it until you do your turn, and when you are doing your turn you are going to go from three foot to five hundred to a thousand, so you are going to be turning right into them.

MR. LARSON: Okay, thank you.

CHAIRMAN TOEVS: Are you on my list?

AUDIENCE: No. Can I ask a question or make a statement?

CHAIRMAN TOEVS: No.

AUDIENCE: I can't ask a question?

CHAIRMAN TOEVS: No, you can't.

MR. HOLLY: That is what I was talking about. The meeting has to proceed in an orderly fashion. We recognize each person that is signed up to speak. One at a time everyone will have an opportunity to speak, but the rules of order require that we can't randomly recognize individual persons and let the hearing go in a give and take between parties that are speaking. It has to be run in an organized fashion.

CHAIRMAN TOEVS: Okay, any other questions?

MS. HOEFT: I can understand where you're coming from, but in the ordinary, every day spraying where I live they're constantly avoiding something. I can't see why this is such a big deal.

MR. FLEXSENHAR: Well, the big thing I guess would be if you have a stationary tower or a stationary wire you know where it's going to be every time. It's not sitting there with spinning blades. It's hard to explain, but when you get up there it mesmerizes you because there is blades just spinning from every which way and it's taking

away from our concentration compared to where you have a solid tower or a solid wire or a solid tree line that's not moving.

MS. HOEFT: I was sitting there this last summer, this guy avoided my house, the trees, dropped down, came up over the irrigator, came up over power lines, went back down. I mean, that's obstacles, kid. So I can see where you are coming from, but I can also see that, to me, it's just part of the job.

MR. LARSON: Do you dust crops in this area now?

MR. FLEXSENHAR: Yes, sir. Manito, Lincoln is our biggest area that we run out of.

MR. LARSON: I mean in this specific area?

MR. FLEXSENHAR: Yes, sir. I sprayed I don't know how many thousands of acres in there this year, me and 22 other airplanes. And that was just with our operation, there was another gentleman out of Manito and I don't know how many other operations, but there is airplanes everywhere, Astoria. It's hard to say how many. Every time you looked up there was a plane.

CHAIRMAN TOEVS: Go ahead, Monica.

MS. CONNETT: Forgive my ignorance of the subject. I understand you have these, where I live I don't live in town per se, but we have very large high line wires, the big ones, the towers. I understand the stationary part of it. Do these turbines, in your experience have they created some wind rush or gusts or -- as you're doing these, going down and coming back up is there different wind power or pressure?

MR. FLEXSENHAR: I have never experienced that, but I have also never been close enough. I don't know how close you have to get to a blade if there would be or not. I don't want to get that close.

MS. CONNETT: Thank you.

CHAIRMAN TOEVS: Anymore questions? You are excused.

Okay, Chuck Holzworth.

(Witness sworn.)

CHAIRMAN TOEVS: Give us your name and address, please.

MR. HOLZWORTH: My name is Chuck Holzworth. I live out in Virden, Illinois. My address is PO Box 407. I run an aerial application

business out of Lincoln.

I run my aerial application business out of Lincoln, Kilbourne and Virden. And right off the bat I would like to start off with answering this lady's question.

The reason for those towers is you got a 12 thousand pound airplane, you can pull over a wire or a house, but when you get up to the height of those turbines, it won't go over them, so you have got to go around them, or you go around if there is a pole. That's the reason -- that's the biggest concern. If that answered your question any better.

The other thing is, aerial application can be done in maybe ten percent of the fields inside these wind farms. I don't know where the information came that you can operate an airplane inside these wind farms, but none of my airplanes will go in them. There are a few cases where there is a field here and there we can get to, but it ain't worth somebody's life to get in there and try and do that.

The other thing is with the commodity prices, if you have got a wind farm you have a

field that we can't spray. This mostly is for the farmers here I guess, we get soybean rust at some point, we can't get that field sprayed, that amounts to about 72 thousand dollars in losses, opposed to that 55 hundred dollars you are going to get for that wind turbine. Just a little bit of economics there.

I don't really have much tonight other than that, but I will take questions.

MR. LARSON: Are you suggesting that the only way to treat these fields in that particular case is aerial, because they suggested that there are other methods possibly?

MR. HOLZWORTH: You can use helicopters. Helicopters are mainly, for what they cost and what they cost to operate is really not viable in this part of the world. If you have a fresh market farm where all your acres is real close, they use a lot of helicopters. It's not like that here in Illinois. You can do it with a ground rig. If anything ever happened like a wide spread outbreak, soybean rust, anything with corn, if the ground was wet, you can't run the ground rig, and so that leaves the airplane to do it. We work 9 to 11 people out of there.

STATE OF ILLINOIS

COUNTY OF LIVINGSTON

A PUBLIC HEARING BEFORE THE LIVINGSTON COUNTY ZONING BOARD OF APPEALS RELATIVE TO AN APPLICATION FOR SPECIAL USE PERMIT UNDER THE LIVINGSTON COUNTY ZONING ORDINANCE, ANNEX 1

APPLICANT: HEARTLAND WIND, LLC

STREATOR-CAYUGA RIDGE SOUTH WIND ENERGY PROJECT

CASE NO. SU-5-07

Volume 3

Pontiac Township High School Auditorium

Wednesday, April 30, 2008

7:00 p.m.

Livingston County Zoning Board of Appeals

Steve Walters, Chairman
Mike Cornale
Rich Kiefer
Don Thorp
John Vitzthum
Howard Zimmerman

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Cropduster Testimony On Wind Farms

"Can Your Field Be Sprayed?"



MR. PETERSEN: My name is Scott Petersen. I'm the owner of Pontiac Flying Service. My address is 15755 East 2000 North, Pontiac, Illinois. Just a couple comments, Steve. Nothing to be sworn. Three items right quick.

First one being directed to the Applicant. I own the crop dusting service here at the Pontiac Municipal Airport. One thing that comes to mind is

with a company as large as yours, with the assets that you have backing it, when you put up meteorological test towers, the FAA requires that anything greater than 200 feet be lit. And I believe that you guys put your towers up at 196 feet. They are poorly marked. They were not brought to our attention.

And so my concern going forward is down the road if this wind development continues, I would ask that you would take some of the assets that you have backing you, that you would light the towers, that they be painted in an orange and white contrasting color so that they are more easily identified, and also that orange marker bulbs be placed on all the guy wires, and I would like to see the size of them increase.

And I don't think anybody has any idea how hard that they are to see when we're traveling around low level at 150 or 160 mile an hour. They are very, very hard to see even when you know the approximate location of them. It's even worse when one pops up and there's been no notification and we find it when we're right close to it. That's all I have for you guys.

To the Board, there's quite a few private airstrips within the county that are owned by landowners that fly. Part of these airstrips we utilize during our summer season to support the agricultural community. My concern is that we could lose part of these resources with the placement of these wind turbines around private airstrips.

I would just ask that you take it into consideration when you allow placement up close to somebody that has an existing airstrip. I don't have a problem if somebody tries to build one after the wind turbines are up. But the guys that are already there and have had those strips, you need to protect them no different than you would protect any other airport. An individual owner of an airplane's life is not worth any less because he has a grass strip of his own.

And finally, just to the audience in general, just to put a couple of rumors to rest, once these wind towers go up, if you have property that is located within a grouping of or within close proximity to, we will not, we will not risk our lives to go in there and spray your crops.

Now I know it's been brought to my attention here the last few weeks that a lot of people have said, yeah, once they put them up, we'll call him, and he'll come anyway. I'm here to tell you that I'm not coming. So if you utilize the airplane in the past, great. If you don't, you don't like it, that's fine, too. I can live with that. But I just want to go on the record so everybody is crystal clear on this point. I will not come when you are in need of somebody to save your crop. That's all I have. Thank you.

MR. LUCKMAN: Mr. Petersen, it occurs to me that much of what you have said in addition to a physician, if you will, stating of a view was from experience testimonial in nature.

MR. PETERSEN: Would you like to swear me at this time? Sure.

MR. LUCKMAN: I'm going to ask the Chairman to go ahead and swear you. As we look back on it retrospectively, it's going to be a question of whether what you have stated has been the truth, the whole truth, and so on.

MR. PETERSEN: Sure.

(WHEREUPON THE WITNESS WAS SWORN TO TELL THE TRUTH.)

MR. PETERSEN: Any other questions?

CHAIRMAN WALTERS: We may have some from board members.

MR. CORNALE: Mike Cornale. I seem to ask all the questions. I'm not sure why. We spoke about or you referred to some grass strips that were in the county, and I understand there are several. Are there any directly in the current wind farm or would be adversely affected, landing zone, takeoff zone, thresholds on each end, or side setbacks that would be affected by this current farm?

MR. PETERSEN: There's one that we have the invitation to use if we need it. The other one I don't think is suitable, but it does fall within. It's not in the southern grouping, but it would be in the northern grouping of turbines on the other side.

MR. CORNALE: Is there anything directly in this current field now, regardless of whether you have an invitation or it exists, they have went through the zoning process to have an airstrip on

their property, and I certainly don't think we as a board would want to not allow them to use their airstrip from what they intended it to be used for?

MR. PETERSEN: Right now, I know of nothing. I know there's a test tower that has gone up recently over near one of the airstrips near Kempton that is in very close proximity to that runway over there.

MR. CORNALE: Just so that I understand, as you spoke about aerial application, it would be possible for a farmer or a landowner to be a non-participating; i.e., non-participating in the wind farm project, but be adversely affected by the ability not to have aerial applications because their property is situated amongst the farm?

MR. PETERSEN: Well, amongst or directly across from where it's going to make it dangerous for us to treat that field effectively. They could be tossed out through no fault of their own. We're just not going to go in there. Like I said, within a grouping, we're not going inside that grouping. And if the pilot deems it is unsafe, it's unsafe. And I've had people come up and say, well, would you do it for twice the application fee? No, I

won't. If it's dangerous, it's dangerous. For my occupation, and I'm just speaking for me, we're not going in there.

MR. CORNALE: What would be a safety threshold that you might say would be a safe distance for, say, a non-participating landowner to have that the area could still be serviceable?

MR. PETERSEN: If you're, I'm going to say, one mile off the end of -- if you are flying in a north-south direction and there's a tower on the north side that's greater than one mile, we can do that. If it's closer than one mile, no. If we are flying parallel next to it, I've worked up within probably less than a quarter of a mile, but I had nothing on the ends of the field as far as what I had to pull up over.

MR. CORNALE: Fair enough.

MR. PETERSEN: Anybody else?

CHAIRMAN WALTERS: That's my question. Applicant, any questions?

MR. MASSIE: No questions.

CHAIRMAN WALTERS: Okay. Thank you, Scott.

Horizon Energy's Railsplitter Zoning Hearing
Logan County, Illinois 6-28-08

Testimony from Residents Living Near Horizon's Twin Groves Wind Farm in Ellsworth

FROM THE AUDIENCE: Mr. Chairman, we are the Knittels and our name was mentioned a lot here tonight. We would like a chance to talk.

MR. PORTER: These are the witnesses that are not available Tuesday.

MR. KNITTEL: Again, we have no bone to pick. We're not being hired by anybody. We have nothing to--. Other than we would just like to say, since our name was mentioned so much -- we didn't want our name to be mentioned so much, but since it was mentioned so much, we would just like to make a little statement. My wife has something to say. I can't be here --

CHAIRMAN PRO TEM THOMPSON: That's fine.

MR. KNITTEL: I can't be here Tuesday, so if you can make it another day --

CHAIRMAN PRO TEM THOMPSON: Just a moment. We are working this out as we go along here.

MR. KNITTEL: Okay.

(Discussion out of the hearing of the court reporter.)

CHAIRMAN PRO TEM THOMPSON: We are not doing the closing statements tonight. We'll go ahead and take comments from the public. The public are not attorneys and they don't cross-examine, okay? So as far as asking questions of Mr. Whitlock, that's not possible. You can ask questions or make statements to the Board, okay, but you can't cross-examine as such. That's for attorneys. Okay. So I guess we are not going to do closing statements tonight and instead we're going to open it up to public comment. And let's see. We'll do this --

MR. PORTER: Mr. Chairman, could we possibly allow the witness to speak and not have to be called back?

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CHAIRMAN PRO TEM THOMPSON: Yes, I guess that would be fine. If the Knittels would like to come forward and make their statement this evening, then we'll try to take others that absolutely cannot be here at the meeting next -- next week.

MS. KNITTEL: Good evening. I'm Nancy Knittel and I have --

MR. MILES: Are the witnesses going to be sworn? Are the witnesses going to be sworn?

CHAIRMAN PRO TEM THOMPSON: We haven't sworn in the other members of the public, so no.

MS. KNITTEL: I'm Nancy Knittel. This is my husband Ed. We're everyday people. I'm a schoolteacher at Gibson City Middle School. I teach math. And we've been married for 30 -- almost 37 years. And we had a dream and we kept books of a dream home what we wanted to build. And we have three children who are grown, educated. And as we looked at this, we found a piece of property south of Saybrook, Illinois; 25 acres, 16 wooded, 9 cleared. And that was our dream, our dream spot.

We're old enough to know we need to do our homework and we need to check things out and, before we bought the property, we went to find out information. We knew that Twin Groves, the wind farm, was coming. Ed made several visits to talk to Bill Whitlock, and I went on one occasion to look at the maps and to view it. And during those times, we were told that we would see one wind generator to the southwest and perhaps above the tree line. Because woods are to the north and go down both sides of the property, with the house sitting in that cleared area, was our -- our hope. Well, we would have never purchased the property had we known. We didn't have to purchase the property. We were looking. We saw the property and we went to find out and we were told that, and we were told we'd never hear those generators because of the density of the woods and the leaves on the trees. We're thoroughly disappointed, and I just really hope that you'll listen.

So many things have happened that we were totally unaware of, and it has not come to pass in a good way. We went ahead, trusted, believed. We bought the property, based on -- on what we were told, and drilled a well in 2005. It took us a while. Last summer, as the home was built, up went a wind generator. The woods are to the back. And as the summer went on, up went a wind generator. Up went another. So there are three to the north of our property. In this picturesque setting are three wind generators. And we could see them also to the west. I can see the red flashing lights, and the whole visibility of them was extremely upsetting.

So I wrote a letter November of 2007 to Bill and to -- I sent a copy of that letter to the home office in Texas. I received no reply. This went on and I made several contacts. I called, left messages. In five months, I tried to contact them twelve times. We've had like two -- two responses. And -- and either somebody doesn't show up-- It -- it has been extremely stressful, extremely stressful, making contact. And in talking to Bill, one -- one of our conversations was ended. We were not moving forward with any of this.

We saw the turbines, we heard the turbines. As I get ready for school in the morning, as time went on, brushing my teeth, I could hear them in the house. We have the blade flicker on our fireplace through the windows in our home. We have it in the yard from the front part that's all cleared. We hear them. We hear them. We have a pool placed there and I'll go back in the house. We're devastated with what's transpired. We have a lot of windows because we love the outdoors. We've always tried to live in the country. And I love to garden. I run. Nature's my thing. And even the bathtub is positioned with windows. And what do we see but flashing lights? We were never told about red flashing lights. We were never told about blade flicker. We were never told about noise we could hear outside or inside. And it's totally devastating. We're working trying to-- I don't know where we're going to end up with this, but I hope -- I truly hope that you understand that there's so much that's not made aware, that you're not aware of, and -- and that it happens and then it's too late. And I really ask you to consider this deeply.

I followed the news in the newspaper and saw what was happening to you folks and -- you can ask Ed -- over and over again I said, if anything, I don't want this to happen to somebody else. It's not -- it's not right. I know we were falsely misguided. Falsely misguided. And we had no reason--. And when I saw the article in the paper, I picked up the phone and -- and called Mr. Porter and said, you know, I'm willing to help. And that's why I'm here, because it's important. And it's important -- it's important to the people's lives. We're everyday people, in and out, and I can add that I've kept this confidential. I am a confidential person. I have not spoken--. I'm in the community. I teach school. We go to church. And I've heard lots of comments that have been so negative. And it's been so difficult because I tried to honor and respect the company and work with them, truly, and have held it confidential until tonight and -- and I can't -- I can't do it for the sake of those that are unaware of what happens. And so that's why I'm here. Ed?

MR. KNITTEL: Well -- and, you know, there are people that have said things. We have some personal friends who, because we haven't wanted -- we don't bad-mouth the company, we haven't said anything to anybody else -- they have said, hey, earplugs work well at night. If you can't sleep because of the wind generators, just get earplugs. We can't sleep at

night, we wear earplugs. Well, if people have to wear earplugs to sleep at night, that's a serious situation. And they haven't talked to Horizon. They don't talk to anybody about it other than us. And we didn't tell them, hey, they need to go complain. That's their issues. So you need to be really careful.

And, again, we did go to the wind farm and we did go look at the wind farm up there. And until it's on your property, sitting behind your property and making noise on your property, it's -- it's a whole different thing.

MS. KNITTEL: And, well, due to elevations and -- and the proximity and where they are, if you--. We did go up there and were told that we'd see one to the southwest and we wouldn't hear them and we wouldn't see the other ones. Then you believe that. You believe that. And due to the elevations, they're above the trees. They're there.

MR. KNITTEL: And you don't hear them with the leaves on the trees. But when you think about the rest of the time, eight months of the year when the leaves or not on there --

MS. KNITTEL: We haven't been through the seasons yet to know. We moved in April 5th of this year. And on the windows, the blades flicker on the fireplace and it's just constant. You see that. As well as then to the south we see it. The generators to the east, we see on the west of the property and vice versa. It's -- it's--. I don't know what. I mean, this has been sickening for us.

MR. KNITTEL: Thank you.

MR. LASKO: Mr. Chairman, could I ask the Board to ask the Knittels to tell you how much money they told Horizon they needed for landscaping.

MR. KNITTEL: Sure, that's no problem. Horizon came to us and said -- we met in our dining room -- and said, hey, we're going to help you out here. We're going to be good neighbors. We're going to reestablish the good neighbor policy. Go see three or four landscapers and -- we're not going to build you the Black Forest, but we'll take care of your problem. And so that's what we did. We went in, got landscapers. We tried--. We planted trees. And they were expensive trees, because we're trying to block the wind generators. These trees are 5- to $600.00 apiece. Add those up and it adds up to -- it was $386,000.00. And that's exactly. I don't mind saying that.

MR. LASKO: $386,000.00?

MR. KNITTEL: Yes.

MR. LASKO: Thank you. I just thought the Board should know that. Thank you.

MR. KNITTEL: That's fine.

CHAIRMAN PRO TEM THOMPSON: Thank you.

MR. PORTER: Mr. Knittel, how much is the property?

MR. KNITTEL: How much is the property? How much it's worth?

MR. PORTER: Right.

MR. KNITTEL: Well, we --

MR. PORTER: Before the turbines.

MR. KNITTEL: Before the turbines?

MR. PORTER: Yeah.

MR. KNITTEL: We had $750,000.00 in the property.

MR. PORTER: All right.

MR. KNITTEL: We are not landscaping just around the house. We are trying to landscape the front of the property, up the sides of the property. We are trying to stop the noise. They said just give us a number. They-- You know, that's what they did and that's what we did.

MR. MILES: How many acres do you have?

MR. KNITTEL: 25. We tried to landscape 10 acres of property with large trees. So if it was wrong, we were wrong. Sorry.

MR. PORTER: Thank you, Ed.

(Applause.)

Horizon Energy's Railsplitter Zoning Hearing
Logan County, Illinois 6-28-08

Testimony from Residents Living Near Horizon's Twin Groves Wind Farm in Ellsworth

MS. TAYLOR: My name is Rene Taylor and I'm from Ellsworth, Illinois. I want to thank you for allowing me to speak this evening.

I live with my husband and children on a four-acre homestead in rural Ellsworth. Our property is located near three turbines, one of which is a little over 1,500 feet from the north wall of our home in the Twin Groves Wind Farm. In addition to living near turbines, one of the two electric substations is located 870 feet from our east property line.

We purchased our property in 2004. About two or three weeks before closing, the previous owner of our property contacted us to inform us he had received a letter inviting him to an open house for a wind farm that was coming to the area. He felt my husband and I might want to attend instead since we were going to be purchasing the property.

We did attend the presentation. And though neither of us had heard of a wind farm before, we felt the project would be great for our area. In fact, we were actually excited that we might be able to view one or two turbines from our property. We had both seen turbines while traveling and thought they were cool to watch.

The following year, we received notice from McLean County that the zoning hearings for the wind farm would be held in early July 2005. We were a bit concerned because the notice said Horizon was asking for a variance on the height of the turbines, and at the time we believed it was a 2- to 300-foot limit on the height of the turbines. They would also be requesting a variance that would allow turbines to be closer to several residences than the current zoning allowed. At this point, we wanted to know exactly where the turbines would be in relation to our property and what other structures might be constructed near us.

We contacted a representative of the wind developer in late June of 2005 to try and get an idea of what would be around us so we could decide if we were going to raise any objections at the hearings. The representative told us there would be one turbine about 1,500 feet from the wall of our home and that we would be able to see several others on the ridge north and east of our property. I asked if there would be any turbines in the fields just west of our property and he said no. I then asked about the location of the electric substation and told him we did not want to live by that. I was told the substation would be located a couple miles east of us, closer to the village of Arrowsmith. We were relieved and decided to attend all the hearings anyway.

There were very few objections raised at the McLean County hearings. One that stuck with me was a couple who had grave concerns about shadow flicker across their property. They went to great lengths to build a scale model of their home and the turbine that would be closest to them, and, using a flashlight, tried to show the Board members what the possible effect would be on their property. I remember sitting there thinking how ridiculous this was. Trees and poles cast shadows all the time. I remember thinking these people are crazy. The special use permits were approved and we went back to everyday life.

In March of 2006, we received another notice from McLean County for a hearing on a request to move the electric substation to Section 12 of Dotson Township. Our property is located in Section 12. Again we were concerned. We were totally unfamiliar with zoning laws and had no idea that if you received a notice it's because your property is within close proximity to the area that will be affected by a zoning change.

We attended this hearing as well, and this time I asked several questions about the change. I asked Mr. Whitlock how close property line to property line the substation would be from our property. He answered that it would be about a half mile from our property. I also asked what kind of noise we could expect from the substation. Because we would likely have some noise from the turbines near us and now we'd have to deal with the substation, too. We were told it would be unlikely that we would be able to hear the substation.

With the information the developer had presented, we decided to raise no further objections to the proposed change. We also reviewed all the documents that were passed from Board member to Board member. And when they were at the end of the table, my husband and I reviewed all the documents. The Village of Ellsworth is about a half mile from our property, so we felt confident we could live with the change. The location change was approved by the Zoning Board.

Within a day or two of zoning approval, we noticed workers staking out an area near our home. It was very close to us and--. This area was not a half a mile from us, so my husband and I took a measuring wheel and rolled off the distance from our east property line to the west line area that was being developed. The measurement was about 870 feet, not the half mile we nad been told. At this point we no longer felt comfortable with anything the wind developer had told us.

We contacted the County to see if we could object to the zoning change and we were told no; that we'd have to wait for the County Board to vote on the matter and we could then file for an administrative review of the change. It was at this time that we began to look for information from others who had negative experiences with wind developments.

We were really surprised with the number of

complaints we were finding and we were honestly having a hard time believing some of the stories were true. Whenever possible, we would contact people listed in the stories to see if the information was true. While some could not be verified, the vast majority we contacted were telling us their stories were true.

We filed an administrative review of the Zoning Board decision to move the substation and, at the advice of our attorney, several other issues, including nuisance levels. Most of our counts were dismissed at the circuit level and, after 17 months of litigation, we voluntarily dismissed the last count due to lack of funds to continue.

I would also like to let you know that we were offered a settlement by Horizon of $25,000.00. And we declined to take the settlement because it stated that we could not object to any further wind developments, nor could we aid others in objecting to wind developments.

Living with turbines has caused us to change many things in our lives. We often have to close windows during nice weather to avoid turbine noise in the home. This forces us to use air conditioning at times we would prefer not to. While we retain the use of our property, much of the time we are no longer able to enjoy it. We do what we need to do outside and go back inside to avoid the constant sounds from the turbines and the station.

This past winter, we experienced many days when we considered turbine noise excessive. On one occasion we borrowed a sound meter to measure the sound level. Now, we're aware that these meters are not extremely precise and we also know that we are not experts at taking sound readings, but the readings we were getting at the wall of our home were between 87 and 90 decibels. We have found the sound from the turbines to be the loudest at night, and they

cause us the most difficulty when the wind is from the south at 20 miles an hour or higher at the surface. When the winds are above 25 miles an hour, we no longer hear the swish or thump of the turbine blades, but hear a loud roar like a train running across the back of our property. These sounds can clearly be heard inside our home, though not as loud as outside.

The noise issue has been most difficult for our 10-year-old son. He has been diagnosed with high functioning autism and is very sensitive to sound. As times he seems to fixate on the sound, oftentimes noise the rest of us can't even hear, and becomes fitful and hard to deal with. For lack of anything else to call it, he has uncontrollable tantrums and nothing we do, except taking him out of the area when it's bad, helps. Every member of our family has experienced difficulty sleeping, headaches, irritability, pressure in our ears and fatigue since the turbines closest to us began operation last May. A year ago May. We feel some of these symptoms are likely due to a lack of sleep and we do not experience them all the time. Symptoms do seem to recur at the same time we are experiencing noise from the turbines.

While wind energy conversion systems are permitted by special use in your county, this Board still has the ability to recommend additional conditions be met before issuing these permits. I beg you, please, listen to the people of your county and understand that some of them could be more profoundly affected than others. Thank you.

(Applause.)

MR. LASKO: Mr. Chairman, I would just request similarly that Miss Taylor tell you how much money she demanded from Horizon, before the turbines, when she filed her lawsuit.

MS. TAYLOR: Do you know what it is? Because I don't know.

MR. LASKO: I do know what it is, but I don't want to --

(Discussion between Mr. Lasko and Ms. Taylor out of the hearing of the court reporter.)

MS. TAYLOR: I would be happy to share that information, Horizon had contacted our attorney and asked us to prepare some type of statement of what we would like for a settlement. At that time we were asking to be relocated out of the area, and we did ask for about $750,000.00.

MR. LASKO: Miss Taylor, would you also tell the Board how much you paid for your house that you wanted to be relocated from?

MS. TAYLOR: Yes. We paid $185,000.00. The $750,000.00 that we were asking for, our attorney told us to ask double what we thought we would get. I'm sure that's common practice.

CHAIRMAN PRO TEM THOMPSON: Okay. Thank you, Miss Taylor

Horizon Energy

Railsplitter Zoning Hearing

Logan County, Illinois

7-1-08

Public Testimony from Luke Taylor

Easement Agreements

"Mr Whitlock testified under oath that it had no confidentiality provisions in it. And then it was read to him and he acknowledged that it did have a confidentiality provision....noise will be an issue when...they are requesting that...land-owners grant them a sound easement."

Property Values

"....If the applicant (Horizon) is correct and there's not going to be any negative impact on property value, then...there's going to be almost no impact to this company....if they're wrong...then there'll be signature negative financial impact on...people that live here.

And who should bear that?...."

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MR. TAYLOR: Hi. I'm Luke Taylor. I reside at 25266 Boynton Road in Delavan and that's located, of course, in Tazewell County. I was involved as an opponent in the Tazewell County Zoning Board of Appeals hearings. And as I'm sure everybody knows, the Tazewell County Zoning Board of Appeals has approved it subject to certain -- certain conditions. They did impose certain conditions regarding shadow flicker and things of that nature.

I just want to talk briefly about -- really briefly about the issue of noise. There's been some suggestion here that, you know, people have been out and -- and visited some of these other farms, wind farms, and didn't hear much noise. Being out there one particular day, especially a windy day, may not be the -- make you the best judge of that. The windier it is, as experts on both sides have testified, the less likely you're going to hear it because of the innate noise of the wind. It will cover up some of the noise of the turbines. But we know that the Illinois Pollution Control Board has set these maximum decibel levels and we know that looking at it in the best case scenario for Horizon that their predictions are that, at a minimum, these maximum allowable decibel levels at nighttime will be met. They'll hit 41 decibels at -- at the 1,000 hertz level at night. There's even some -- there's been plenty of testimony about that. And I won't belabor it, but there's been plenty of testimony and suggestion and predictions that they will even exceed those amounts.

Another indicator I would submit to you that sound will be an issue, should the Board grant these conditional use permits, is in one of the documents that didn't make it into any of the Applications that was eventually presented to the Board, I believe, at the last meeting, which is the wind farm neighbor or easement agreement. The one -- probably easier to help you recall -- the one that Mr. Whitlock testified under oath had no confidentiality provisions in it. And then it was read to him and he acknowledged that it did have a confidentiality provision. But an issue, I would think, of acknowledgment from the company, from the Applicant, that noise will be an issue is what they are requesting by way of an agreement here with neighbors, that these nonparticipating neighbors or landowners grant them a sound easement. And just to quote a short portion of this sound easement: Owner grants grantee an easement right and entitlement on, over, across and under owner's property for any sound level audible or otherwise in excess of 50 decibels. We know that at least at the 1,000 hertz level, 50 decibels is well in excess of the maximum level as set out by the Illinois Pollution Control Board. So I guess you'd ask yourself why would this company want to pay people $1,000.00 a year, with ever increasing yearly amounts, if noise isn't going to be an issue, when in return they're asking for an easement; these nonparticipating neighbors or landowners saying, hey, we give up, we give to you an easement, we give to you a right to do whatever you want to -- whatever it said -- on, over, etc., across our property at any sound level in excess of 50 decibels. You know, clearly there's going to be an issue with sound. And that's really all I want to say about -- about the sound issue.

Almost everyone that's testified or everyone that's testified and everybody that's made public comment is -- is biased. And I'm probably biased too. But everyone who testified and made statements, almost all of them that are pro wind farm are folks that are going to financially benefit from it. You know, Keith Hanning is a wonderful advocate for the wind farms about how it's going to produce energy and that's where we get energy in the future, but I suspect if it weren't for the fact that he was going to receive two wind turbines on his property, and a substation, that he might not be such -- such a vocal proponent. I mean, I don't know that. Maybe he showed up in Woodford County, McLean County and argued pro wind farm, but I doubt it. And that's not to pick on him. I'll tell you right now, if there weren't going to be -- for Tazewell County, when I was involved in that, if it were not going to be two turbines at 2,000 feet from my house, I probably wouldn't have taken the time, energy and money to go argue and fight against that. And if it would have been happening two or three or four miles away from me, I would have said, oh, man, that's too bad for my neighbors, but, man, look at those neat looking windmills.

But the situation here has to do with the property value. And I'll speed things up a little bit. All you've heard is testimony after testimony after testimony, evidenced by Horizon, by the Applicant, that there will be no diminution in property values. There'll be none. And I'm not going to argue -- I'm not going to say I want you folks not to grant these conditional use permits. I don't want to be a part of that right now. This is Logan County and it's really none of my business what you do here. But I was really shocked and disappointed when Tazewell County didn't make this a condition of -- of the permits that -- that they're granting because it just didn't make any sense to me. Because if -- if the Applicant is correct and there's not going to be any negative impact on property value, then

there's not going to be -- there's going to be almost no impact to this company. On the other hand, if they're wrong and the opponents' witnesses are in the ballpark of being correct, then there'll be signature negative financial impact on your folks, our folks, you know, people that live here.

And who should bear that? And that's been talked about. Who should bear that? You know, the company should bear it and I would suggest to you that a very fair and workable solution to this has been presented. And -- and will it cost the company money? There's been suggestions that, yes, there will be appraisals and there will be expenses there, but the way it's done with this suggested way -- I mean, think about practically what would happen if you instituted this requirement. What would happen is somebody would be the first one to raise their hands and say, hey, my property values have been negatively affected. You come to them and say let's get moving on this. You get your appraisal, we'll get our appraisal, and something would happen. Either the company would be right or the landowner would be right. Either there would be a provable diminution in value or there wouldn't be. And if there's not, then I'd submit to you that other people aren't going to waste their time and energy going to the empty well and saying, hey, well, maybe my property values have been negatively impacted. It's probably going to happen once or twice if they're right. And they've sworn to you that they're right. You may have to pony up some appraisal money a couple of times if they're right. If they're wrong, then they'll have to do it more than that, but that's only fair. It's a $200 million project. If they earn 3 percent -- 3 percent profit on a $200 million project, that's $6 million a year at 3 percent. If they weren't confident that they were going to earn 3 percent a year on this project, wouldn't they throw it in an E-Trade certificate of deposit that paid you 4 percent? It's probably a silly example, it's just a slight point that I'm trying to make here.

And -- and perhaps the reason why none of the proponents have come down here and said we think there should be windmills, we think the project should go forward, but, hey, these are our neighbors and why don't we go ahead and protect their property values -- and I suspect they don't just dislike all these people. I don't think that's it. I think they're worried that if these people are successful and you folks put these kind of conditions on that company, they may go away. They may go to some other county and these folks won't make their money off their turbines. But that's not going to happen. They've sunk so much money into this -- it's a $200 million project -- that isn't going to make that big of a deal.

And, lastly, thank you for your patience. Two things real quick. The County is going to make a couple hundred thousand dollars, at least, simply in the issuance of building permits. Just for the issuance of this paper for granting these building permits at 20 -- $20 a foot, 400 feet, however many, 20 -- 28 turbines here. There's plenty of money that's going to be made for everybody. Everybody. These people aren't asking to make money off the thing, too. They're just trying to break even. They're just trying to leave with what they came here with.

Shoot. There's one last thing, but--. It escapes me right now. But, like I said, I'm not asking you not to -- to grant it today. That's not my business. But I really hope you'll seriously consider making it a condition, the property value assurance policy. Thank you for your time.

(Applause.)

Excerpts - Logan County ZBA Hearing - 2008

Greg Zak, Horizon Noise Expert:
"…my partner ran the actual data."

Richard Porter, Attorney:
"You would agree the report as it presently stands does indeed show a violation of the Illinois Pollution Control Board regulations, wouldn't you?"

Zak: "I would not call it a violation. I would call it a slight exceedance."

Luke Taylor: "And just so I had understood you correctly, you didn't actually run any data. Is that right?"

Zak: "…my partner did run that data."

Taylor: "Does she have any under-grad degrees in science or engineering…?"

Zak: "No she doesn't."

Glenn Fogler: "A 50-decibel sound level in many octave bands is in excess of what is allowed by the Illinois Pollution Control Board. Mr. Zak, Horizon's sound expert, has testified that the Illinois Pollution Control Board's sound level limits will not be violated. Why does Horizon seek a sound easement for something their expert says will never occur?"

Rick Porter Closing Remarks

"…the Zak report…never mentions that his data attached in the appendix to the report actually showed several exceedences of the Illinois Pollution Control Board regulations."

"…I knew to look at the underlying data because it's happened before where Zak…has failed to mention the fact that his own data showed exceedences. After we pointed that out to you, it became clear in the Tazewell hearings that not only did Zak fail to tell you about those exceedances, the Applicant apparently was collusive with him in that decision to hide that from you because a meeting was held…"

"…Zak's model…is a completely unsophisticated model that's been around for 50 years. And there are a variety of models that he could have used, but, of course, would have shown clear violations, so he didn't."

"…We've only got one project in the area that Horizon has ever completed, just one, and we've got people already complaining about it, willing to come and invest their time for free and tell you about it."

"…Mr. McCann…did an extensive study of the area-that he concluded there's a 25-percent reduction in property values based primarily upon his study at Mendota Hills, because that's the one that's up and running."

"What happens-and don't fall for this trick-is the turbine company will take you and set you underneath one of these and you won't hear much. That isn't where the sound is. We presented an expert, Mr. James, who will tell you that 1,000 feet away is where the sound is bad. The sound is a real issue."

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Wind Energy Production: Legal Issues and Related Liability Concerns for Landowners in Iowa and Across the Nation

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Updated January 22, 2009
- by Roger McEowen*

Overview

Farmers have long used wind energy. Beginning in the 1800's, farmers installed several million windmills across the Midwest and Plains to pump water and generate power for lights and radios. Today, farmers, ranchers, and other rural landowners in suitable areas are utilizing wind energy in a different manner. But, where did the current emphasis on wind generation of electricity come from? There were early attempts dating back to the 1970s and 1980s, but it wasn't until the late 1980s and early 1990s, that Enron (an energy company based in Houston, TX) lobbied the Congress with a friendly "renewable energy" project, and packaged it with their "electricity deregulation" lobbying and political efforts. Their efforts were successful in getting laws passed at both the federal and state levels that would permit them to tie into the grid, require utilities to buy unreliable and unpredictable electricity (i.e., electricity generated by wind) under Renewable Portfolio Standards,[1] allow them to sell "renewable energy certificates" separate and apart from the electricity, and utilize a newly created production tax credit and take advantage of a special accelerated depreciation rule.

By leasing out or granting easements over a portion of their land to wind energy developers for the installation of high-tech wind turbines, rural landowners hope to diversify overall income and provide additional stability to the variability of farm income. However, wind farming presents numerous legal issues that landowners must carefully consider before entering into an agreement with a wind development company.

The Potential for Wind Energy Development Nationally

Wind farms are clusters of wind turbines that generate electricity. They tend to be located in areas with reliable and favorable wind speeds that are near electric power transmission lines and, in some instances, large cities.[2] Private companies are developing most of the wind farms in the U.S., typically by obtaining easements or leases from private landowners and assigning the rights obtained to power marketers, electric utilities, and, in some instances, directly to specific companies or government agencies. Presently, wind generates only about one percent of the power utilized in the U.S., but it is believed that by 2020, six percent of the nation's power will be generated by wind.[3]

Because wind turbines require large areas of land with strong, steady winds, certain parts of the country have the potential to be a significant player in the future development of wind farming.

Iowa's Growing Influence on Wind Energy Development

Currently, Iowa is the third largest producer of wind energy in the United States, ranking behind only Texas and California.[4] According to Iowa State University's Iowa Energy Center, the potential for wind energy is the highest in northwest and north central Iowa, with average wind speeds of 15.7-17.9 mph.[5] In 1996, the Iowa legislature approved the creation of the Alternative Energy Revolving Loan Program (AERLP), a program designed to promote the development of wind energy production across the state.[6] Since its creation, the AERLP has provided nearly $10.5 million of financing for renewable energy production, including financing of ten independent owners of wind turbines across Iowa.

Many state-wide producer-supported organizations, such as the Iowa Farm Bureau Federation (IFBF) support wind farming in Iowa. The IFBF estimates that Iowa alone has the potential to produce up to 4.8 times its own annual electrical consumption through wind power.[7] Wind turbine construction facilities in Iowa are being formed and creating jobs for Iowans, including residents in communities such as Newton and Fort Madison.[8] In addition, the Iowa Economic Development Board offers incentives such as forgivable loans and state tax credits and sales tax refunds to those companies seeking to invest in wind energy production in Iowa.[9]

Government Incentives for Wind Energy Production

Federal. Both the federal government and numerous states have provided incentives to encourage wind energy development. The federal Renewable Energy Production Tax Credit provides an income tax credit per kilowatt-hour for the production of electricity from a qualified wind energy facility placed in service after December 31, 1993, and before January 1, 2010.[10] The credit is presently 2.1 cents per kilowatt-hour and is adjusted annually for inflation. The credit applies to each kilowatt-hour of electricity produced from wind that is sold to unrelated parties during the first 10 years after a wind energy facility is placed in service.[11] Likewise, the Renewable Energy Production Incentive Program provides financial incentive payments for electricity produced and sold by new qualifying renewable energy generation facilities. For depreciation purposes, renewable energy systems placed in service after 1986 are classified as 5-year property utilizing the double-declining balance method.[12]

Companies that own "wind farms" must have substantial taxable income from other sources to take advantage of these two tax provisions.[13]

State. At the state level, some states provide reductions or exemptions for state or local property, sales or other taxes applicable to "renewable energy property."[14] and companies developing large-scale wind farms are typically given state income tax breaks.[15] In some instances wind farm developers, in an attempt to curry favor with state and local officials and obtain positive public relations, make voluntary payments in lieu of taxes to offset part of the revenue lost by state and local governments as a result of the exemptions. However, the payments are not likely, in most instances, to adequately cover the costs that will be incurred because of the wind-farm development – such as for road construction and repair, as well as police and fire protection.[16]

Iowa tax incentives. Wind energy, including electricity generated by wind turbines, qualifies as an alternative and renewable energy source in the state of Iowa for purposes of the Iowa Renewable Energy Tax Credit.[17] To qualify as an eligible wind energy conversion facility for the purpose of taking advantage of the credit, the facility must be located in Iowa, with at least 51% owned by an Iowa resident or authorized farming corporation, limited liability corporation, trust, family farm corporation, family trust, an electric cooperative association, or school district.[18] The credit is 1.0 cent per kilowatt hour for energy sold by eligible wind energy producing facilities.[19] The maximum total to be applied toward personal income tax, business income tax, or a financial institution's tax is for 450 megawatts. To qualify for the

credit, the wind-generating facility must be approved by the Iowa Utilities Board.[20]

To further incentivize wind energy development, Iowa offers a special property tax valuation for "wind energy conversion property"- defined as the property with windmills, wind turbines, towers and electrical equipment and substations.[21] To qualify for this special valuation, a city council or county board of supervisors must approve the application by ordinance, to be enacted, not less than 30 days after a public hearing is held.[22] Qualifying wind energy conversion property, first assessed on or after January 1, 1994, shall be valued for property taxes for the first year at zero percent of the net acquisition cost.[23] For subsequent years, the rate increases by five percentage points each year of the net acquisition costs.

The Iowa Department of Revenue has issued a policy letter to explain that the sales price of a crane that is purchased for use in installing wind energy conversion property is exempt from sales and use tax.[24] However, the purchase of equipment used to construct roads for use in the construction of wind energy conversion property is not exempt.[25] The sales price from the sale of wind energy conversion property along with the sale of *materials* used to manufacture, install or construct wind energy conversion property is exempt from sales and use tax.[26] "Wind energy conversion property" means any device, including, but not limited to, a wind charger, windmill, wind turbine, tower and electrical equipment, pad mount transformers, power lines, and substation, which converts wind energy to a form of usable energy. So, IDOR has taken the position that a crane used to erect towers and raise nacelles and their contents and rotor blades to a proper height qualifies as "materials" used to install wind energy conversion property. IDOR specifically noted that "materials" commonly refers to "tools or apparatus for a particular task.[27]" However, a road used to get the "materials" to the site does not qualify as "wind energy conversion property.[28]" Thus, the equipment that is purchased for use in constructing these roads does not qualify for the tax exemption.[29]

Iowa does impose a "replacement generation tax" of $.06 per kilowatt hour of electricity produced in the state, in place of a property tax on energy generation facilities.[30] However, the state exempts wind energy facilities and methane gas conversion facilities from this tax.[31] Further, a city or county in Iowa is allowed to pass an ordinance for wind energy equipment to be given a special property tax valuation rate, beginning at zero percent of the net cost of acquiring the equipment and increasing by 5% annually (the maximum rate is 30%).[32] Additionally, the increase in value to a wind energy property is exempt from state property tax, creating a unique opportunity for tax payers.

Most recently, the Iowa legislature, on May 9, 2008, passed legislation allowing Iowa banks to qualify for tax credits for investment in wind energy facilities.[33] The bill extends, until 2012, the deadline for wind energy facilities to start producing energy to qualify for tax credits.[34] Additionally, the bill allows an unlimited credit transfer, allowing wind energy tax credits to be used for sales taxes.[35]

Other states. Several states with substantial wind energy potential are supporting state tax credits and energy policy designed to incentivize the development of wind energy facilities and more efficient energy transmission. On May 6, 2008, the South Dakota legislature passed a bill providing tax incentives for the construction of wind energy facilities and energy transmission equipment with a capacity of less than 5,000 kilowatts of nameplate capacity.[36] Earlier in the year, the South Dakota Governor signed H.B. 1320 into law. The legislation exempts power-generating wind farms from most state and local taxes, but subjects them to an alternative annual tax that is based on the number of kilowatts a wind farm can produce. Also, the bill specifies that any company owning or leasing a wind farm is subject to retail sales and service taxes. But, wind energy facilities and energy transmission equipment is exempt for other state, county, municipal and district taxes.

This legislation was spurred by the stunning growth of the wind power industry in the United States. In 2006, nearly $4 billion was invested in

new wind projects in 34 states, increasing the total wind power capacity in the U.S. by 45 percent.[37] Despite this growth, only one percent of the nation's total energy supply is derived from wind energy.[38]

States are developing wind energy tax policy in response to efforts on the federal level. As mentioned above, I.R.C. §45 allows an income tax credit for wind energy production for utility-scale wind turbines at two cents per kilowatt-hour of produced electricity, causing the cost of production to fall dramatically.[39] The federal tax credit is vitally important to the growth of the industry, as lulls in U.S. wind development in the past ten years correspond with Congress' failure to renew the tax credit legislation periodically.[40] The current credit legislation will expire at the end of 2009.

Because of the non-permanency of wind energy tax policy at the federal level, states are beefing up their wind energy tax incentives to attract wind developers. Altogether, 34 states have tax incentives for wind development, including property tax breaks, sales tax exemption on wind energy equipment purchases, corporate and financing incentives.[41] The state of California was the first to offer a state investment tax credit for wind energy development and the legislature has recently adopted a solar and wind energy credit, providing personal and corporate income tax credits for the purchasing and installation of renewable energy systems.[42] Similarly, Minnesota has set a lofty goal of generating at least a quarter of its energy needs from renewable energy, most likely wind energy production.[43] In 2002, the state exempted all wind energy systems from state property tax, instead taxing the actual wind energy produced at variable rates, depending on the megawatts per system.[44]

Texas, the national leader in wind energy production, takes a more complicated approach to wind energy tax policy, largely due to the deregulation of the Texas electric industry in 1999. Texas allows a deduction from state franchise tax for renewable energy sources and several property tax incentives.[45] A unique provision is the allowance of local property tax abatements for wind projects in the state.[46] These abatements exempt all or part of the increase in real or tangible personal property from up to ten years.[47] Local governments are the sole grantors of these abatements used to create local "reinvestment" zones and foster job creation and economic development.[48]

The Mechanics of Wind Turbines

The typical wind turbine sits atop a tower that ranges from 170 to 320 feet high. The blade diameter is 75 to 100 feet with a weight between 8,000 and 10,000 pounds. The cost to install is approximately $1 million per megawatt of installed capacity, with the typical turbine having an installed capacity of 750 kilowatts to 1.5 megawatts. A 1.5 megawatt turbine can generally produce enough energy to power 400-500 homes annually. A section of land can house anywhere from six to twelve turbines. The turbines are very sophisticated machines with computerized controls. A turbine's generator output increases as wind speed increases, with maximum power typically generated with wind speeds of 30-35 mph. The turbines are usually programmed with cut-out wind speed of between 55 and 65 mph.

Liability Concerns- When Will Civil Damages Be Awarded to a Landowner?

There are several legal liability issues that may arise from the construction, maintenance, and energy production from wind turbines on agricultural land. Typically, a landowner is required to enter into written contractual agreements before a wind turbine is constructed on the land. It is important to keep in mind that tort liability may be assessed in cases where harm results as a result of a party's negligence with respect to the construction or maintenance of wind turbines. A rural landowner must be careful to specify in any contract that he is not liable for the negligence of others with respect to wind turbines. A farmer may further protect himself from negligence liability by taking reasonable care in the operation of the wind turbines and having liability insurance in place to cover all unexpected claims. Generally, if a farmer is not in charge of the maintenance or

operation of the wind turbine, he will be held to a lower standard of care. This does not mean, however, that a farmer or landowner will be immune from liability in a negligence suit.

Nuisance is another common tort in the realm of wind energy production, where a wind farm may interfere with another person's use or enjoyment of his or her property. To be held liable for a private nuisance, the interference must be substantial and unreasonable. It is very rare that a private nuisance claim holds leads to a finding of damages. A public nuisance is an "unreasonable interference with a right that is common to the general public", meaning that it interferes with "public health, safety, comfort, or convenience or is illegal."

Criminal Liability for Fraudulent Conduct

While most liability disputes relating to wind energy projects are handled in civil court according to contract or property law, criminal violations are possible. For example, in September 2007, the pioneer of Minnesota's wind energy development initiative was charged with participating in fraudulent conduct in the Federal District Court in Minnesota.[49] Allegedly, the wind developer overstated the amount of power being produced by wind generators in operation for 2003 and 2004, amounting to nearly $388,000 in overcharges assessed to the energy purchasing company.[50] The amount of wind energy produced in the state of Minnesota significantly increased from 25 megawatts in 1994, to almost 900 megawatts in 2007, making Minnesota the fourth largest wind energy producer in the nation.[51] The wind developer, owner of a family-owned company with hundreds of community and private investors across southwestern Minnesota, vehemently denied the criminal charges, stating that the last thing he would want to do is defraud his purchasers.[52] However, a 2005 search warrant uncovered evidence of the overstatement in billing. A contributing factor in the Federal charges was the additional billing of nearly $176,000, in 2003 and 2004, to the Minnesota Commerce Department for state wind energy incentive payments.[53] In late 2008, the developer was sentenced to 21 months in federal prison.

Valuation Issues

The placement of wind turbines on farmland will impact valuation for federal estate tax purposes upon the owner's death. For federal estate tax purposes, the key valuation date is as of the date of the decedent's death. Thus, a long-term wind energy agreement signed shortly before death likely has little impact on the date of death value of the property included in the decedent's estate. Because the agreement will have an initial development/prospecting phase that runs for several years before the primary phase of the easement, there remains uncertainty (as of the date of death) if death occurs within the prospecting phase as to whether wind generation will *ever* occur on the premises. Thus, there should be no valuation enhancement.

However, if death occurs after turbines have been installed and have become operational, IRS could argue for a valuation enhancement. But, there may be offsetting factors. At the present time, anecdotal data indicates that wind turbines have a depressing effect on nearby land values and are a drag on the ag real estate market. Most recent anecdotal data from Illinois indicates that assessed value on farmland is dropping approximately 22-30 percent on farmland that is near land where wind turbines have been placed. Also, the increased risk of getting sued for nuisance has a dampening effect on value. Likewise, the annual payments, to an extent, are replacement income for the property rights that have been given up in getting the turbines in the first place. Many of the agreements are quite restrictive in terms of potential development of the property, farming activities, placement of buildings, etc. A willing buyer would take all of those factors into consideration when determining what price to pay for the property (IRS test).

Thus, to arrive at the proper valuation of an existing contract, the present value of the contract would have to be discounted in order to derive a value for the stream of payments. That

result could then be offset by the factors mentioned above.

At the present time, IRS has not issued any guidance on the matter.

Recent National Case Law and Developments

Nuisance. There has been an increase across the nation in the filing of nuisance-type cases involving the construction and placement of wind farms. For example, in a 2007 case,[54] a large-scale wind farm with 200 turbines was proposed to be constructed in close proximity to a residential development. The homeowners sued to permanently enjoin the construction and operation of the wind farm, citing possible noise, aesthetical impact on the viewshed, flicker and strobe effect of light reflecting from the turbine blades, potential danger from broken blades, ice throws and reduced property values. The court held that the wind farm could constitute a nuisance and that the plaintiffs' claims were sufficient to prospectively enjoin a nuisance. The court also noted that even though the State Public Service Commission had approved the facility, such approval did not abrogate the common law of nuisance.

In March 2008, a landowner in Missouri sued the county commission which approved the construction of a large-scale wind farm adjacent to his property. The landowner also claimed that he was physically attacked by a county commissioner for his public opposition to the siting of the wind turbines. In addition, the landowner claimed that the wind turbines were a nuisance, because his land was completely surrounded by the turbines, the turbines caused a "powerful strobe light effect," were loud and contributed to the loss of equity and marketability of his home and the loss of view and quiet enjoyment of his property. The Federal District Court for the Western District of Missouri dismissed the case, but noted that the plaintiff could amend his complaint to replace the county commission with a private party as the defendant.[55]

On April 18, 2008, the Federal Aviation Administration (FAA) was ordered to reconsider its decision to allow the construction of a wind farm near the site of the new Las Vegas Airport.[56] The evidence presented indicated that the turbines would interfere with the airport's radar systems. The Federal district court determined that the FAA's determination was arbitrary and capricious.[57]

In late August 2008, the Texas Court of Appeals upheld a trial court ruling that dismissed a nuisance lawsuit filed by property owners that complained about the "aesthetical impact" of a large-scale, 421-turbine wind farm.[58] The plaintiffs asserted that the jury was entitled to consider the farm's "visual impact" along with descriptions of the wind turbines blinking lights, flickering shadows and noise. However, the court noted that the common-law doctrine of nuisance in Texas had never recognized a nuisance claim based on aesthetical impact. The court, while sympathetic to the plaintiffs' claims, refused to expand nuisance law to cover actions for aesthetical impact that causes emotional injury, determining that such an extension was beyond the purview of an intermediate appellate court.[59]

Zoning. Zoning issues can also arise with respect to wind-farm development. Recently, the Supreme Court of New York approved setback requirements for wind turbine placement away from residences, public roads, and properties that did not contain wind turbines.[60] The county agency's approval of minimum setback requirements was not a de facto unconstitutional taking within the scope of the New York Constitution.[61] Since the agency gave reasons for its determination, including environmental concerns, the surrounding property owners were able to distance themselves from the turbine facilities.[62] In a different case, the New York Supreme Court upheld the grant of a conditional use permit for the construction of a wind farm.[63] In the case, the court held that the local zoning board's determination that the wind farm constituted a public utility for zoning law purposes were entitled to deference and were not shown to be unreasonable or not rationally based. The court noted that the zoning board considered various

environmental impact studies that the wind farm had submitted and held public hearings.

Property Values. In November 2007, a local Vermont Board of Civil Authority (BCA) ruled that a wind turbine reduced the value of adjacent property by 10 percent for real property tax purposes.[64] The evidence showed that the wind turbine was within 300 feet of the petitioner's home, and the petitioner claimed that the turbine's noise, blinking light, glare from the blades, and resulting vibrations decreased the home's value.[65] Before reaching their decision, the BCA sent a committee of three persons to visit the petitioner's property to evaluate the situation.[66] The committee reported back that the turbine produced constant sound and flashing lights from its turning blades, and recommended an eight percent reduction in valuation of the petitioner's property.[67]

Contractual Issues. In a recent New York case, the plaintiff bought the defendant's farm (including the residence) and sought to have the sale contract rescinded based on the seller's alleged fraud and misrepresentations for not disclosing that plans were in the works for the construction of large wind turbines on an adjacent parcel.[68] The plaintiffs submitted the affidavit of a neighbor of the defendant who detailed two conversations with the defendant that occurred months before the defendant put his farm on the market during which the wind farm development was discussed.[69] The defendant, at that time, stated that the presence of commercial wind turbines on the adjacent tract would "force" him to sell his farm.[70] When the plaintiff sought to rescind the contract, the defendant claimed he had no duty to the plaintiff and that the doctrine of caveat emptor ("buyer beware") was a complete defense to the action.[71] The court denied summary judgment for the seller and allowed the case to go to trial.[72]

The Public Trust. The Public Trust doctrine holds that certain resources are preserved for public use, and that the government is required to maintain those resources for the public's reasonable use. The Public Trust Doctrine was involved in a recent case brought against an owner/operator of a large-scale wind farm.[73] Under the facts of the case, an environmental group claimed that wind turbines at the Altamont Pass Wind Resource Area in Alameda and Contra Costa counties had killed tens of thousands of raptors and other birds since the 1982. The Alameda County Board of Supervisors was in the process of considering applications to extend and consolidate existing 20-year permits to operate the wind turbines when the plaintiffs sued. The plaintiff claimed that the operation of the wind farm violated state and federal law, including the public trust doctrine – a doctrine which holds that certain resources are preserved for public use, and that the government is required to maintain those resources for the public's reasonable use. But, the trial court dismissed all claims except for the alleged public trust violation for lack of standing.

The appellate court affirmed, noting that the case was filed against the wrong party.[74] The plaintiffs sued the owners and operators of 5,000 wind turbine generators at the Altamont Pass wind farm. However, the court emphasized that wildlife, including birds, is considered a public trust resource, and that private parties can sue to enforce the public trust. But, such an action (when brought by a "beneficiary") must be brought against the "trustee" of the public trust – namely, the government agencies (such as the state and federal fish and game departments) charged with the responsibility to implement and preserve the "trust." Only the trustee has the sole right to sue the owners and operators of the wind turbines for violation of the public trust. A "beneficiary" cannot sue the party that is believed to be harming trust property. In any event, the court noted that the public agencies responsible for protecting the public trust (such as the Department of Fish and Game) had done so.

So, the court would not let the case go forward without the expertise of the government agencies responsible for protecting the trust resources. The proper means to challenge the adequacy of the agencies' measures was by petition for a writ of mandate after exhaustion of administrative remedies.[75]

Recent Legal Developments in Iowa With Respect to Wind Energy

Several school districts in Iowa have taken an interest in wind-energy production. In 2003, when a school district began generating wind power from a donated wind turbine, they claimed to have an agreement with the city to sell the electricity.[76] Relying on the agreement, the school constructed a new wind turbine.[77] The city brought suit, claiming that any contract entered into between the school and the city was void, because the municipality lacked authority to make such an agreement.[78] The Iowa Supreme Court cautioned that the school was on notice that the city had no authority to enter into an agreement to purchase the electricity generated by its turbines.[79] The school was left without any recourse in this dispute. Presently, several other school districts across the state have become interested in wind-energy production as a possible revenue-raiser. It remains to be seen what the courts will allow.

In 2003, when a utility customer erected a wind turbine on his land and attempted to connect it with the electric service being provided to him by his electric company, the Iowa Supreme Court determined the proper hierarchy of authority in this area.[80] The issue was whether the Iowa Code sections relating to alternative energy providers, such as wind turbines, applied to an electric company, regulated by The Federal Public Utility Regulatory Policies Act (PURPA).[81] The court found that since the electric utility was not subject to the Iowa Code, federal law prevailed here.[82]

In a related context, Iowa Courts have recently addressed the issue of adjacent landowners' rights to input in the construction of cell phone towers. In this case, the plaintiff, a landowner, challenged the construction of a cell phone tower built across the road from his home, on the basis that he was not given adequate notice of the hearing held regarding the issuance of a permit for the tower's construction.[83] The Iowa Court of Appeals ruled that the landowner was only entitled to notice by publication at least seven days before the time set for public hearing.[84]

The court noted that Iowa law requires that notice of a pending application for a conditional use permit must be reasonable under the circumstances.[85] So, rural landowners objecting to the construction of cell towers or wind turbines must be diligent in determining the time and place of public hearings.

Net metering. The Iowa Court of Appeals has rendered the latest court opinion in a legal battle over net metering that has been going on in Iowa for about 10 years. Iowa's net metering rule was a creation of the Iowa Utilities Board in 1983 and allows customers with alternative energy generation systems to sell electricity to their investor-owned utilities on a netted basis against their metered retail usage.[86] In this case, the plaintiffs bought wind-powered generators from another plaintiff and tried to reduce their energy expenses by producing their own power and selling any excess energy to the defendant- a non-regulated utility. But, the Iowa net metering rules do not apply to electric cooperatives because they are not regulated by the Iowa Utilities Board (IUB). The plaintiffs sued in federal court, but the case was dismissed for lack of subject matter jurisdiction. The plaintiffs then took the matter to the Federal Energy Regulatory Commission (FERC) on the basis that their wind energy system was a qualifying facility (QF) under the Public Utility Regulatory Policies Act (PURPA) and also filed an action in state district court.

In 2005, the Iowa Supreme Court reversed its previous ruling and concluded that net metering was not required by either Iowa or federal law. The court noted that the issue of net metering carried with it great policy concerns, and that FERC was the appropriate tribunal to decide whether net metering fit within the requirements of PURPA. Specifically, the Court held that PURPA did not require net metering by non-regulated utilities. Shortly after the Iowa Supreme Court issued its ruling, FERC found that even though PURPA did not explicitly require net metering, the defendant had to offer net metering to the plaintiffs.

Later in 2005, the President signed into law the Energy Policy Act of 2005 (Act). While the Act

does not mandate federal net metering and interconnection standards, it does direct non-regulated utilities to consider whether to adopt net metering within three years of enactment of the Act. In early 2006, upon reconsideration of its 2005 order, FERC reversed itself in light of the Act vesting discretion in the defendant to determine whether net metering should be offered to customers. The plaintiffs sought enforcement of FERC's 2005 ruling, but the trial court refused.

On further review, the Iowa Court of Appeals affirmed. The court held that the trial court's ruling was consistent with the Act which entrusted the decision to offer net metering to the defendant and not FERC.[87]

Federal Farm Program Payment Eligibility

When negotiating a wind energy easement, it is important for rural landowners to understand the impact such an agreement may have on their eligibility for federal farm program payments. Farmers should consult their local Farm Service Agency before entering into these agreements for a more detailed explanation of the program rules and whether they will lose benefits or suffer serious financial penalties.

For those farmers considering wind energy easements and participating in the Direct and Counter-cyclical Payment Program, authorized by the 2002 Farm Bill, there is a prohibition on making nonagricultural use of acreage enrolled in the program. Farmers will need to consider if there will be a penalty for withdrawing acreage from the program for the purpose wind energy.

Tax Reporting Issues

When an agreement is entered into with a wind energy company, the landowner will commonly have three types of payments:

1. The payment for the company's acquisition of an easement or a lease over a part of the landowner's property;
2. Crop damage payments; and
3. Annual payments associated with turbines or the amount of production from the turbines.

Easement payments. The sale of an easement is treated as the sale of an asset.[88] But, if the taxpayer retains more than naked legal title to the property affected by the easement, the consideration received is treated as a return of capital.[89] As a result, the proceeds are applied as a reduction of the taxpayer's basis in the property, with any excess treated as capital gain.[90]

The Treasury Regulations provide the following as a general rule:

> When a part of a larger property is sold, the cost or other basis of the entire property shall be equitably apportioned among the several parts, and the gain realized or loss sustained on the part of the entire property sold is the difference between the selling price and the cost or other basis allocated to such part. The sale of each part is treated as a separate transaction and gain or loss shall be computed separately on each part. Thus, gain or loss shall be determined at the time of sale of each part and not deferred until the entire property has been disposed of.[91]

The Treasury Regulation, therefore, presents two tax issues associated with allocating the landowner's income tax basis in the property:

- The allocation of basis between the portion of the property that is subject to the easement and the balance of the property that is not subject to the easement;[92] and
- The allocation of basis between the rights created by the easement and the balance of the rights in the property.

Based on the Regulation, one thing is clear – a taxpayer cannot compare the entire basis in the property from which an easement is acquired with the sale price of the easement. For example, in *Iske v. Comr.*,[93] the taxpayer sold

easements during condemnation proceedings and did not include the compensation in gross income on the tax return for that year because, as the taxpayer argued, he did not receive a taxable gain on the sale of the easements. But, the court disagreed with the taxpayer's position. The court reasoned that Treas. Reg. §1.61-6(a) required the taxpayer to apportion his basis in the property between the land sold and the land retained. The taxpayer could not use his entire basis in the two parcels involved to offset the amount he received for the easements.

> **Example:** Garrulous Energy Company paid $4,000 for an easement along the eastern boundary of Marcia Megawatt's farm for the construction of an access road to the location on Marcia's farm where a wind turbine will be erected. The easement covers approximately five acres of Marcia's 160-acre farm. Marcia has an income tax basis of $750 per acre in her farmland. For purposes of reporting gain from the $4,000 easement payment, Marcia would be able to offset the $4,000 payment by the $3,750 income tax basis that is allocable to the five acres that the easement impacts ($750 per acre basis x 5 acres). Thus, Marcia must only report $250 of gain from the sale of the easement.[94]

If the easement impacts the taxpayer's entire property (which is uncommon), the amount received for the easement reduces the taxpayer's basis in the entire property for purposes of computing taxable gain.

> **Example:** Larry Landowner sells multiple easements to Tumescent Wind Corporation for access to a major wind turbine project on Larry's farm. The easements cover 50 acres and bisect Larry's property. Tumescent constructed fences on each side of every easement and installed gates in the fences so that Larry could move his livestock through the easements. For purposes of reporting gain from the sale of the easements, Larry should be able to reduce the basis in all of his ranchland by the amount he received for the easements. That's the result if Larry can establish that the easements impacted Larry's use of all of his property, rather than just the 50 acres covered by the easements.[95]

Income tax basis must also be allocated between the rights that the taxpayer retains and the easement rights that are sold. For purposes of this basis allocation, the general rule is that the allocation of basis in the property must be allocated between the interest sold and the interest retained in the proportions that their respective fair market values bear to the fair market value of the entire property.[96] But, if it is not possible to allocate basis of the entire property between the interest that is sold and the interest that is retained, then the amount received for the easement can be used to reduce the basis in the entire property affected.[97]

An important issue to resolve is the actual amount of a client's property that is impacted by a wind farm project. The first place to start is to examine the terms of the particular easement. Many easements will prohibit the landowner from building anything else on the property that would interfere with the maintenance of the windmill or block the wind that drives the windmill. In that case, the landowner has a reasonable argument that the easement impacts *all* of the landowner's property. If there is sufficient basis in the land to absorb the easement payment, the landowner will not have any gain to report.

> **Example:** Tom owns an 80-acre tract of farmland with no improvements. It is entirely pastureland, and Tom paid $40,000 for the tract in 1983. Tom has been approached by a wind energy company to construct three wind turbines on his property. The company is willing to pay Tom $20,000 for an easement. The easement terms prevent Tom from building anything on this property that would obstruct the company's access to the wind turbines or that would block the wind to the turbines. Tom should be able to reduce

the basis in his entire tract by the amount of the easement payment. That would result in his basis being $20,000, and Tom would not have any gain to report.

> **Note:** If the wind energy company were to pay Tom an additional amount for the right to construct additional wind turbines on his property in a future year, Tom would again reduce his remaining basis in his tract by the amount of the payment. To the extent the payment exceeds Tom's basis in his property, Tom would have a taxable gain that would be reported on Form 4797, Part 1 (where it is netted with other I.R.C. §1231 gains and losses).

There is caselaw supporting the argument that an easement can impact *all* of a taxpayer's property and, hence, allows the taxpayer's entire basis in the property to be applied against the easement payment.

- *Bledsoe v. United States*[98] - the landowner sold nine perpetual easements to the U.S. Army Corps of Engineers to allow road access to a dam. Although the easements covered only 47.3 acres, the court allowed the landowner to reduce the basis of the entire property because the easements restricted his use of the property. The easements varied in width from 100 to 400 feet and bisected his ranch. The easement holder then constructed a fence along the road on both sides and built gates in the fences so that the taxpayer could move his cattle across the easements. The court noted that the easements were not sales (that's contrary to the general rule) and that the taxpayer was entitled to apply the easement proceeds against the basis in the property.

- *Inja Land Com., Ltd. v. Comr.*[99] - the City of Los Angeles paid the landowner $50,000 for an easement that allowed the city to flood the land when it diverted water into a river that flowed through the land. The easement did not cover the entire tract, but because it affected the use of the entire tract, the court allowed the payment for the easement to reduce the basis of the entire tract.

Crop damage payments. Payments that are made to a landowner (or a tenant) for damage to crops are reported as payments received for sale of the crop. Thus, the landowner reports the payment on line 4 of the landowner's Schedule F (Form 1040) as crop proceeds.

Lease payments. In addition to the payment for the easement, landowners commonly receive annual lease payments. Because these payments are not for land used in agricultural production, they are not subject to self-employment tax regardless of the landowner's participation in the activity.[100] That means that the annual income from the lease payment should be reported on Schedule E (Form 1040). It is unlikely that the landowner would have any deductible rental expenses.

Legal Issues for Landowners to Consider in Negotiating Wind Energy Easements

A wind energy agreement should never be negotiated without first having the agreement reviewed by legal counsel. Wind energy agreements are long-term agreements that will impact the land subject to the agreement for many years, likely beyond the lifetime of the landowner who executes the agreement. The following is a list of questions that landowners should ask when analyzing any wind energy agreement:

Scope Questions:

- How much of the land will be subject to the agreement?

- How long will the land subject to the agreement be affected?

- Based on the property rights that are given up, are the proposed payments adequate for the present time and for the life of the agreement? (Note: The answer to this question requires an understanding of the

mechanics and economics of wind energy production.)

Payment Questions:

- If the agreement offers an up-front lump-sum payment, is the payment representative of a fair amount of the rights involved?

- What are the tax consequences of wind energy payments that will be paid under the agreement? (Note: The answer to this question depends on tax changes at the federal and state levels – an area which is in an almost constant state of flux.)

- Are payments under the agreement based on revenues generated by the wind turbines? Can the landowner get information as to how the owner's revenue will be calculated?

  What are the developer's rights with respect to the land?

- Does the developer want to develop the land or simply use a portion of the surface for a term of years?

- Does the agreement guarantee that a set number of wind energy turbines will be constructed on the land by a specific date and, if not, is the developer willing to guarantee a minimum amount of payments?

- Is the developer able to sell or transfer without the landowner's consent any of the land use rights obtained under the agreement? If so, will the original developer remain liable if the new developer or holder of the easement right does not pay the landowner or otherwise defaults?

- What events trigger the developer's right to terminate the contract? Can the developer terminate the contract at any time without cause? If so, how are payments due under the agreement to be handled?

What are the landowner's rights?

- What termination rights does the landowner have? How does the landowner exercise those rights?

  Note: Wind energy agreements often contain termination clauses designed to minimize the risk of termination to the developer so as to aid the developer in receiving financing. Accordingly, wind energy agreements typically prevent a landowner from terminating (or taking action against the wind energy company) an agreement due to noise, flicker, vibrations, air turbulence, electromagnetic interference with global positioning systems, and other effects caused by the wind turbines.

- If the agreement is terminated, whether by consent of the parties or otherwise, what happens to the wind energy structures and located facilities erected on the property? What is the developer required to remove? How soon must structures be removed? Who pays for their removal?

When a wind energy agreement is being negotiated, certain issues are critical to the creation of an equitable agreement. Unfortunately, a common problem with many wind energy agreements is that once they are proposed and submitted to a landowner, the company wanting to execute an agreement tends to refuse to negotiate changes to the terms of the agreement. The company's ability to refuse to negotiate terms of the proposed agreement will depend largely on whether a landowner has meaningful options and competent legal representation.[101] Key provisions to a wind energy agreement that require careful attention by legal counsel for landowners contemplating a wind farm include the following:

- Is the proposed contract a lease or an easement? If a lease is involved, it should be long enough for the developer to recoup its investment (probably at least 20 years). Does the developer have a right of renewal? If so, does the landowner have the right to

renegotiate any of the lease terms? Any lease should not be perpetual- a violation of the rule against perpetuities might be involved (at least in those states that have retained the rule).

- If an easement is involved, does the easement include turbine sites, substations, air space, buffer areas, vegetation restrictions, building restrictions, transmissions, and associated rights of way?

- Is a sale of the land contemplated? If so, how is the selling price computed? Any sale price should consist of the fair market value of the land plus the wind energy value.

- What is the amount of compensation to be paid? Take care to ensure that the definition of "gross revenue" is done properly. Is it defined as the sale of electrons or the sale of green credits, or is it calculated in some other manner?

- Is the revenue to be a flat amount annually, an annual payment per tower, a percentage of gross proceeds, a payment of a certain amount of kilowatt hours generated annually, or an amount based on the selling price of megawatts per year, whichever amount is greater?

- Is an inflationary factor built into the contract payment provisions? To protect the landowner's interest, there should be.

- Does the agreement cover land that will not be needed for the wind farm and related structures? From the landowner's perspective, there shouldn't be such coverage.

- An up-front lump-sum payment has tax consequences- make sure they are understood.

- What are the intentions of the developer concerning the use of the land? That makes understanding the use provisions of the agreement of primary importance. The construction clause should limit the construction of wind energy structures to not more than 3 or 4 years with adequate compensation paid to the landowner for restricting the use of the land during that time.

- Can the developer assign the agreement? If so, a clause should be inserted that ensures the original developer's liability if the assignee defaults under the terms of the agreement. (Note: Developers want the ability to assign the agreement and subordination language.)

- Is the landowner willing to consent to a mortgagee of the developer? If so, a clause should be included that limits the landowner's obligations to the mortgagee.

- Consider including an indemnification clause that indemnifies the landowner for any liability incurred as a result of permissive activities (such as crop tenants, custom harvesters, and subsurface tenants) on the property subject to the wind energy agreement.

- What are the landowner's rights concerning usage of the property?

- Consider the use of a clause that requires the landowner to be treated as favorably as neighbors (consider how to define "neighbor") executing similar agreements.

- Include a clause requiring the removal of all improvements the developer makes upon termination (whether voluntary or otherwise) of the agreement. Relatedly, for developments in the Flint Hills (eastern Kansas), include a provision specifying which party gets the rock that gets excavated to build the wind energy structures.
- Require the agreement to be recorded (not just a "memorandum of agreement") to eliminate the necessity of having to locate a copy of the lease in the event of sale or mortgage of the property.

- Never agree to confidentiality clauses concerning the terms and conditions of the

agreement.

- Have the contract reviewed by the landowner's insurance agent for analysis of any additional risks created by the wind energy project.

- Will the agreement violate any USDA land-use restrictions if the subject land is enrolled in a USDA program? If such a possibility exists, consider including in the agreement a clause requiring the developer to indemnify the landowner for any lost government payments or the imposition of any penalties.

- Evaluate the agreement with an eye toward the risk faced by the landowner. This includes environmental concerns, issues that could be raised by neighbors (i.e., nuisance-related concerns), and potential violation of applicable zoning and set-back requirements.

State-Level Policy Issues

The growth of wind energy industry and development of agricultural real estate for large-scale wind farms raises a question as to whether state legislatures should enact statutory provisions addressing landowners' concerns and provider uniformity as to certain lease/easement provisions. Potential areas to be addressed could include: (1) whether there should be a maximum length of easement terms before renegotiation occurs; the number of turbines that can be erected in a township; and a mechanism for determining the value of landowners' wind rights; (2) whether there should be a statewide decommissioning fund to assure payment of costs for removal of obsolete facilities; (3) whether there should be a fund capturing some of the value of harvesting wind to be shared with the public; (4) whether there should be minimum standards required of all easement agreements for such things as reimbursement for crop loss, compaction, road and line easements; (5) whether developers should be allowed to sale easements to other persons or entities without a landowner's consent; (6) whether a landowner should be able to void an easement agreement for non-development within a certain period of time; (7) whether counties should be required to adopt a permitting process to insure that developers operate publicly; (8) whether a landowner should be able to cancel an easement/lease if the final location of a turbine unreasonably interferes with the landowner's intended use of the land; (9) whether standard terms for indemnification, insurance, payment of taxes and similar items should be statutorily provided.

Conclusion

From a landowner's perspective, many wind energy leases and/or easements are inadequate, unfair and offer limited economic benefits when compared to the revenues generated (and tax subsidies received) by large-scale wind energy developers. The most common shortcomings of such agreements include: (1) contractual terms extending too long into the future; (2) contractual language that binds landowners to unilateral amendments; (3) inadequate compensation clauses (and compensation clauses that are difficult to understand); (4) provisions that are the result of unequal bargaining power. While some landowners are reporting better experiences in recent months - better contract terms and compensation levels - that may be the result of greater competition among wind energy developers, greater education on the part of landowners and lawyers, and increased oversight by state regulators (the vast majority of wind energy developers are not subject to the regulatory rules that most utilities are subject to).

Clearly, wind farming has the potential to provide significant economic benefits for rural landowners. However, substantial peril exists that landowners who don't carefully evaluate proposed agreements with developers can be taken advantage of significantly. Landowners should have any proposed agreement evaluated by legal counsel and attempt to negotiate any unfavorable terms. Failure to do so could result in many years of dissatisfaction for landowners.

*Leonard Dolezal Professor in Agricultural Law, Iowa State University, Ames, Iowa, and Director of the ISU Center for Agricultural Law and Taxation, Member of the IA, KS, and NE Bars.

[1] A renewable portfolio standard is a mandate that requires a certain amount a state's energy needs to be met by "renewable" technologies regardless of the cost of producing such energy.

[2] The leading states in wind energy production are California, Texas, Iowa and Minnesota. The top five states for wind energy potential are North Dakota, Texas, Kansas, South Dakota and Montana.

[3] According to the Wind Energy Association, wind *could* produce over 10 billion kilowatts annually. That is three times the amount of power used presently in the United States. But, wind turbines generate electricity only about 40 percent of the time and can change output almost constantly which can create problems for modern electric grids that cannot vary in voltages by more than a few percentage points.

[4] See http://www.energy.iastate.edu/renewable/wind http://www.energy.iastate.edu/renewable/wind (Iowa Energy Center, Renewable Energy and Energy Efficiency).

[5] *Id.*

[6] Iowa Code §476.46 ($5.9 million were funneled toward Iowa's investor-owned utilities to be managed by the Iowa Energy Center.)

[7] http://www.iowafarmbureau.com/windassessments

[8] http://domesticfuel.com/2008/02/18/wind-energy-bringing-more-jobs-to-iowa/

[9] *Id.*

[10] I.R.C. §45(d).

[11] As an illustration of the tax benefit to a wind-farm owner of the provision, consider the following: A company proposes to construct a 150 MW "wind farm" in Iowa. Assuming a 40 percent capacity factor, the amount of the tax credit (in 2008) would be $11,037,600 – (150,000 kW x 8,760 hours x .40 x $.021). The federal tax credit is a direct reduction of tax liability on a dollar-for-dollar basis.

[12] The five-year 200 percent double-declining balance method can be used for capital costs of facilities using wind to produce electricity for sale. Nearly all other electric generating facilities must use 20-year depreciation. Accordingly, MidAmerican Energy should be able to deduct from taxable income its entire $386 million capital investment in its 360 megawatt (MW) "wind farm" in Iowa during the period from 2004-2010. Assuming marginal tax rates of 35 percent for federal and 12 percent for Iowa corporate income tax, the depreciation deductions would reduce tax liability by $181 million during the period from 2004-2010. That is in addition to the roughly $300 million in tax benefits over 20 years from the project due to the Federal Production Tax Credit ($175 to $195 million) and forgiveness of Iowa property tax ($130 million).

[13] This is one reason why small "wind farm" development companies often sell off their project to larger companies or find ways to "sell" the tax benefits.

[14] These states include, for example, New York, West Virginia, Wisconsin, Minnesota, South Dakota and Kansas. See, e.g., Kan. Stat. Ann. §79-201.

[15] The generous federal accelerated depreciation deduction allowed for wind farms (see note 10 supra and accompanying text) provides a large state tax benefit also in those states that follow the federal rule. For example, in Kansas, corporate income is taxed at the basic rate of 4 percent with a 3.35 percent surtax on income above $50,000. The beginning point in determining Kansas taxable income is the federal taxable income of the corporation. Thus, the accelerated depreciation provision at the federal level reduces the taxable income basis used before applying Kansas' 7.35 percent marginal income tax rate. This benefit is even greater in states with higher corporate income tax rates such as Iowa, with a 12 percent rate. Minnesota and Nebraska also have relatively high tax rates on businesses.

[16] Typically, such payments are offered only in the early years of a project to help gain public and political support for the necessary approvals to construct the wind-farm.

[17] Iowa Code § 469.31 (2008).

[18] Iowa Code §476C.1(2008) (at least one owner for each two must have one-half megawatts of nameplate generating capacity or the energy production capacity equivalent for hydrogen fuel or heat for a commercial purpose of the otherwise eligible renewable energy facility.)

[19] *Id.*

[20] *Id.*

[21] Iowa Code § 427B.26. The provision is limited by Iowa Code §476B.4, which disallows wind-energy production tax credit for kilowatt-hours of electricity produced on "wind-energy conversion property." In addition, no tax credits are allowed if the electricity is sold to a related person.)

[22] *Id.*

[23] *Id.*

[24] IDOR Policy Letter, 2008-08300008 (Jan. 30, 2008).

[25] *Id.*

[26] IOWA CODE § 423.3(54) (2008).

[27] IDOR Policy Letter, 2008-08300008 (Jan. 30, 2008).

[28] *Id.*
[29] *Id.*
[30] Billy Hamilton, *Blowin' in the Wind—Wind Energy and Tax Policy,* 48 State Tax Notes, 421 (May 5, 2008).
[31] *Id.*
[32] *Id.*
[33] Jack Hunt, *Iowa Governor Approves Wind Energy Tax Credits Bill,* 2008 State Tax Analysts State Tax Today, *2008 STT 91-7 (May 9, 2008).*
[34] *Id.*
[35] *Id.*
[36] South Dakota Final HB 1320, 2008 STT 88-35 (May 6, 2008).
[37] Billy Hamilton, *Blowin' in the Wind—Wind Energy and Tax Policy,* 48 State Tax Notes, 421 (May 5, 2008).
[38] *Id.*
[39] *Id.*
[40] *Id.*
[41] *Id.*
[42] *Id.*
[43] Billy Hamilton, *Blowin' in the Wind—Wind Energy and Tax Policy,* 48 State Tax Notes, 421 (May 5, 2008).
[44] *Id.* However, wind energy systems generating under 250 kilowatts are exempt from production tax in Minnesota.
[45] *Id.*
[46] *Id.*
[47] *Id.*
[48] *Id.*
[49] *Wind Energy Pioneer Facing Federal Fraud Charges*, THE BISMARCK TRIBUNE, North Dakota News Section, Sept. 23, 2007, *available at* http://www.bismarcktribune.com/articles/2007/09/23/news/state/139817.txt.
[50] *Id.*
[51] *Id.*
[52] *Id.*
[53] *Id.*
[54] Burch v. Nedpower Mount Storm, LLC, 320 W. Va. 443, 647 S.E.2d 879 (2007).
[55] Porter v. Gentry County Commission, No. 08-6029-CV-SJ-FJG, 2008 U.S. Dist. LEXIS 58800 (W.D. Mo. Aug. 4, 2008).
[56] Clark County v. Federal Aviation Administration, 522 F.3d 437 (D.C. Cir. Apr. 2008).
[57] *Id.*
[58] Rankin, *et al.* v. FPL Energy, LLC, *et al.*, No. 11-07-00074, 2008 Tex. App. LEXIS 6398 (Tex. Ct. App. Aug. 21, 2008).
[59] *Id.* Thus, the court seems to have indicated that an appeal to the state Supreme Court would be in order
[60] Advocates for Prattsburgh, Inc., v. Stueben County Industrial Development Agency, 48 A.D.3d 1157, 851 N.Y.S.2d 759 (2008).
[61] *Id.*
[62] *Id.*
[63] In re West Beekmantown Neighborhood Association, Inc., *et al.* v. Zoning Board, No. 503704, 2008 N.Y. App. Div. LEXIS 6261 (N.Y. Sup. Ct. Jul. 24, 2008).
[64] Orleans County Vermont, Town of Derby, Board of Civil Authority Ruling, November 2007.
[65] *Id.*
[66] *Id.*
[67] *Id.*
[68] Boyle, *et al.* v. McGlynn, *et al.*, 814 N.Y.S.2d 312 (2006).
[69] *Id.*
[70] *Id.*
[71] *Id.*
[72] *Id.*
[73] Center for Biological Diversity, Inc. v. FPL Group, Inc., et al., No. A116362, 2008 Cal. App. LEXIS 1441 (Cal. Ct. App. Sept. 18, 2008).
[74] *Id.*
[75] *Id.*
[76] City of Akron v. Akron-Westfield Community School District, 659 N.W.2d 223 (Iowa 2003).
[77] *Id.*
[78] *Id.*
[79] *Id.*
[80] Office of Consumer Advocate v. Iowa Utilities Board, 656 N.W. 2d 101 (Iowa 2003).
[81] *Id.*
[82] *Id.*
[83] McClure v. Verizon Wireless, No. 7-394/06-0244, 2007 Iowa App. LEXIS 1061 (Iowa Ct. App., Oct. 12, 2007).
[84] *Id.*
[85] *Id.*
[86] The rule (Iowa Admin. Code §199-15.11(5)) applies to all customer classes. There is no mention of a limit on either the size of a net metering system or on total enrollment. The rule requires that utilities purchase customers' net excess generation at avoided cost- the utility's incremental cost for capacity or energy (or both) that, but for the acquisition of energy or capacity from another source, the utility would have to incur.
[87] Windway Technologies, Inc., *et al.* v. Midland Power Cooperative, No. 6-836/06-0276, 2007 Iowa App. LEXIS 284 (Iowa Ct. App. Mar. 14, 2007). The plaintiffs appealed the court's denial of their motion for a new trial and motion to recuse. The court noted that the appeal failed to comply with the Iowa Rules of Appellate Procedure and should be

dismissed. The court stated that the fact that the plaintiffs weren't represented by legal counsel did not excuse them from following the rules. In addition, the court stated that it would not perform the plaintiffs' research and advocacy for them. However, the court declined to award attorney fees to the energy company. Windway Technologies, Inc., *et al.* v. Midland Power Cooperative, No. 8-434/07-1222, 2008 Iowa App. LEXIS 445 (Iowa Ct. App. Jul. 16, 2008).

[88] Generally, if the grant of an easement deprives the taxpayer of practically all of the beneficial interest in the land, except for the retention of mere legal title, the transaction is considered to be a sale of the land that the easement covers. In such cases, gain or loss is computed in the same manner as in the case of a sale of the land itself under I.R.C. §§1221 or 1231. See Rev. Rul. 54-575, 1954-2 C.B. 145.

[89] *See, e.g.,* Conway v. United States, 73-1 U.S.T.C. ¶9,318 (W.D. Ky. 1973).

[90] See Rev. Rul. 59-121, 1959-1 C.B. 212; Wineberg v. Comr., 326 F.2d 157 (9th Cir. 1963)(under Kentucky law, warranty deed conveying right-of-way constituted conveyance of an easement and not fee simple title to real estate; under facts of case, interest conveyed was easement because title would revert to taxpayer upon abandonment and because no grantee could relinquish fee simple title by abandonment; taxpayers also reserved mineral rights and right of ingress and egress across easement; accordingly, taxpayer entitled to apply easement grant proceeds to reduction of basis in remaining tracts of land).

[91] Treas. Reg. §1.61-6(a).

[92] If the easement affects only a specific portion of the tract, only the basis allocable to the affected portion is reduced by the price received from the easement. Rev. Rul. 68-291, C.B. 1968-1, 351.

[93] T.C. Memo. 1980-61.

[94]The gain would be I.R.C. §1231 gain. For further guidance on the calculation technique utilized in the example, see Rev. Rul. 68-291, 1968-1 C.B. 351.

[95] *See, e.g.,* Bledsoe v. United States, 67-2 U.S.T.C. ¶9,581 (N.D. Okla. 1967); Conway v. United States, 73-1 U.S.T.C. ¶9318 (W.D. Ky. 1973).

[96] Rev. Rul. 77-413, 1977-2 C.B. 298.

[97] Rev. Rul. 77-414, 1977-2 C.B. 299.

[98] 67-2 U.S.T.C. §9,581 (N.D. Okla. 1967).

[99] 9 T.C. 727 (1947).

[100] I.R.C. §1402(a)(1).

[101] Of particular concern is a provision in many wind energy agreements under which the landowner agrees to indemnify and reimburse the developer if a third party on the property with the landowner's permission damages the wind farm structures. For example, if a landowner contracts with a custom cutter to harvest crops on the premises that is also subject to a wind energy lease, and the custom cutter's activities set the field on fire, causing damage to the wind farm structures, the landowner, under such an indemnification provision, is liable for the resulting damage. Another concern is that with some wind energy agreements, the landowner executes the contract with a shell corporation created solely for liability purposes.

Noise Measurements - Twin Groves Wind Farm - 4-23-07

Schertz 11 of 55

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Bruel & Kjaer Type 2236
Precision Integrating Sound Level Meter Made in Denmark
Fulfills: IEC 651-1979 Type 1
IEC 804-1985 Type 1
ANSI S1.4-1983 Type S1
ANSI S1.43-199x Type 1 (Draft 9/9)
F LEQ (5-6 hrs batteries) (F Max L - Maximum Peak Level)

Wind Data: Predicted Winds 10-20/25 mph
Actual Winds at 6:15 p.m. **West at 14 mph** (Bloomington)
West/Northwest at 9 mph (Peoria)

41.5 DBA 9:40 p.m. Corner of Route 9 and Ellsworth Road (tractor in field ¼ mile to S)
35.5 DBA Road 1060 - turbine noise
39.2 DBA 975 N
47.6 DBA Route 36 just south of a turbine running
48.9 DBA 950N, 3100 E - near 3 turbines running, one light out
41.7 DBA 10:10 p.m. House # 66, For Sale by Zavitz - turbine only sound

On Route 36

44.8 DBA 1000N, 150E (Route 36) 3 with no lites (now on 150E driving N)
42.3 DBA 3150E, 1025N gravel roads
36.9 DBA 3025E @ T-intersection 1 running to W. gravel
35.6 DBA 1050N, 3025E 1 no lite
34.6 DBA 2850E, 1050N - 2 running nearby, in NW corner of entire project
28 DBA Intersection of 28 and 17, just North of Ellsworth
29.6 DBA Gravel set aside just N of intersection above - under 2 mills not running
30.3 DBA 1500N,2850E, 1 mile N of Route 9 10:40 p.m.
62.9 DBA 1400N, 2850E, corner of Route 9 and Ellsworth Road (car - 65 mph?)
26.9 DBA 1400N, 2850E, corner of Route 9 and Ellsworth Road (no car) 10:45 p.m.
24.8 DBA Route 9, 2700 (red sign), mills to S not running
24.4 DBA 1400 (Route 9), 2500E, mill to S not running end readings 10:55 p.m.

Total: 18 Noise Readings in Ninety Minute Time Frame

Conclusion: Addition of Wind Turbines to Rural Night Setting at Twin Groves Wind Farm raises nighttime noise levels from 24.4 DBA to a range between 40-49 decibels.

Source: Kim Schertz, POB 347, Hudson, IL 61748 309-726-1168 kdschertz@verizon.net

Wind vs. Nuclear Energy: Wind Power Deemed Far More Dangerous
by Eric Leech, New York, NY on 02.22.09

Sheriff 12 of 55

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Photo via: The Russians are Here

How much more dangerous? Well according to one author from The New American, while we have been urged to believe that renewable energy in the form of wind and solar could likely become a portion of the saving grace to the worlds energy crisis. In reality, if we knew the information I am about to share with you, "they'd be laughed out of town."

According to one viewpoint of reports offering the comparison between wind versus nuclear energy, there has not been one single injury to a nuclear plant worker in all its 104 power plants and 40 years of service in the United States... not one! The Wind Turbine Industry on the other hand, has quite a treacherous track record as you can see by the summary below:

Summary of Wind Turbine Incidents (December 2008):

- *41 Worker Fatalities, 16 Public-* Includes falling from turbine towers and transporting turbines on the highway.
- *39 Incidents of Blade Failure-* Failed blades have been known to travel over a quarter mile, killing any unfortunate bystanders within its path of destruction.
- *110 Incidents of Fire-* When a wind turbine fire occurs, local fire departments can do little but watch due to the 30-story height of these turbine units. The falling debris are then carried across the distance and cause new fires.
- *60 Incidents of Structural Failure-* As turbines become more prevalent, these breakages will become more common in public areas, thereby causing more deaths and dismemberment's from falling debris.
- *24 incidents of "hurling ice"-* Ice forms on these giant blades and is reportedly hurled at deathly speeds in all directions. Author reports that some 880 ice incidents of this nature have occurred over Germany's 13-years of harnessing wind power.

Future of Solar Power Incidents

In addition to these recent reports, the author points out that with the push for solar roof panels, we can expect to see hundreds more deaths occurring in the future as amateur installers take to the roofs. This includes the accident prone nature of performing regular maintenance on these solar cells by homeowners.

Thanks to the spin-myster's creating such headlines, the desperation of the nuclear advocates is becoming more and more obvious. We must be on the right track then!

Source: The New American: Wind vs. Nuclear Power: Which Is Safer?

We attended this hearing as well, and this time I asked several questions about the change. I asked how close property line to property line the substation would be from our property. The developer's representative answered that it would be about a ½ mile from our property. I also asked what kind of noise we could expect from the substation because we would likely have some noise from the turbines near us and now we'd have to deal with the substation too. We were told that it would be unlikely that we would be able to hear the substation.

With the information the developer had presented, we decided to raise no further objections to the purposed change. The village of Ellsworth is about ½ mile from our property, so we felt confident we could live with the change. The location change was approved by the zoning board.

Within a day or two of zoning approval, we noticed workers staking out an area near our home. It was very clear to us that this area was not ½ mile from us, so my husband and I took a measuring wheel and rolled off the distance from our east property line to the west line of the area that was being staked out. The measurement was about 870 feet, not the ½ mile we had been told.

At this point we no longer felt comfortable with anything the wind developer had told us. We contacted the county to see if we could object to the zoning change and we were told no, that we would have to wait for the County Board to vote on the matter and we could then file for an administrative review of the change.

Living with turbines has caused us to change many things in our lives. We often have to close windows during nice weather to avoid turbine noise in our home. This forces us to use air conditioning at times we would prefer not to. While we retain the use of our property, much of the time we are no longer able to enjoy it. We do what we need to do outside and hurry back inside, confined to our house to avoid the constant sounds from the turbines and substation. Even inside our home, we often still hear and feel the turbines.

This past winter, (which was our first winter), we experienced many days when we consider turbine noise excessive. On one occasion, we borrowed a Radio Shack sound meter to measure the sound level. Now we are aware that these sound meters are not extremely precise and we also know that we are not experts at taking sound readings, but the readings we were getting at the wall of our home were between 85 and 90 decibels.

We have found the sound from the turbines to be loudest at night and they cause us the most difficulty when the wind is from the south at 20mph or higher at the surface. We have experienced many occasions at night when no wind was blowing at the surface and the turbines noise was excessive because there were no surface winds to help mask the sound. When the winds are above 25mph, we no longer hear the swish or thump of the turbine blades, but hear a loud roar like a train running across the back of our property. These sounds can clearly be heard inside our home, though not as loud.

The noise issue has been most difficult for our 10 year old son. He has been diagnosed with high functioning Autism and is very sensitive to sound. At times he seems to fixate on the sound, often times noise the rest of us can't hear, and becomes fitful and hard to deal with. For lack of anything else to call it, he has uncontrollable tantrums and nothing we do, except taking him out of the area when it's bad, helps. As parents, we do everything humanly possible to ensure the safety of our children. You have no idea how heart wrenching it is to watch your child sitting on the floor with hands over their ears crying, saying "It hurts mom, can't you hear it, make it stop", and know there's nothing you can do!

Every member of our family has experienced difficulty sleeping, headaches, irritability, pressure in our ears and fatigue since the turbines closest to us began operation last May. Some in our family have also experienced heart palpitations. My youngest daughter tells me it feels like a hamster running inside her chest. My fourteen year old daughter has become very withdrawn, sullen and is very negative about everything. This is totally out of character for her as she was always happy and positive. We feel some of these symptoms are likely due to a lack of sleep and we do not experience them all the time.

As I stated earlier, the noise is most common at night and occurs often between 11pm and 4am. We are often awaken by the noise and find it very difficult, if not impossible, to go back to sleep. Our youngest children have begun to have nightmares that also wake them. Many of these symptoms do seem to occur at the same time we are experiencing noise from the turbines, but some do occur even when the turbines are fairly quiet.

Thank you again for allowing me to submit testimony. Please listen to the people of your Town and understand that some of them could be more profoundly affected than others.

Notes: Rene Taylor

Title: Rene Taylor testimony before Union, WI planning commission

Author: Lisa

exhibit 13 of 55

Date: May 28, 2008 8:02:35 PM or Wed, 28 May 2008 20:02:35

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Summary: Horizon Wind Twin Grove wind energy facility, McLean County IL

Body:

Rene Taylor of Ellsworth, IL details the story of how she and her family came to live within the footprint of a large wind energy installation and the impacts of the turbines on her family's health and general welfare. Ms. Taylor lives within 1500 feet of Horizon Wind's Twin Grove wind facility which at this writing consists of 240 utility-scale turbines.

Thank you for allowing me to submit testimony this evening. I live with my husband and children on a 4-acre homestead in rural Ellsworth, Illinois. Our property is located near three turbines, one of which is about 1500 feet from the North wall of our home, in the Twin Groves Wind Farm. In addition to living near turbines, one of the project's two electric substations is located about 870 feet from our East property line, and about 1000 feet from the east wall of our home.

We purchased our property in 2004. About two or three weeks before closing, the previous owner of our property contacted us to inform us he had received a letter inviting him to an open house for a wind farm that was coming to the area. He thought my husband and I might want to attend instead, since we were going to be purchasing the property.

We did attend the presentation, and though neither of us had heard of a Wind Farm before, we felt the project would be great for our area. We were told modern turbines made very little noise and it was very unlikely we would be able to hear them at all, especially above the noise of the wind. We were also told that shadow flicker would not be a problem and that it might occur for a few days a couple times a year when the sun was behind a turbine, but most homes would not be affected. We were actually excited that we might be able to view one or two turbines from our property. We had both seen turbines while traveling and thought they were kind of cool to watch.

The following year we received notice from McLean County that the zoning hearings for the wind farm would be held in early July, 2005. We were a bit concerned because the notice said Horizon was requesting a variance on the height of the turbines, at that time I believe there was a 200 or 300 foot limit, and also a variance that would allow turbines to be closer to several residences than the current zoning allowed.

At this point, we wanted to know exactly where the turbines would be in relation to our property and what other structures might be constructed near us. We contacted a representative of the wind developer in late June, 2005, to try and get an idea what would be around us so we could decide if we were going to raise any objections at the hearing. The representative told us there would be one turbine about 1500 feet from the wall of our home and that we would be able to see several others on the ridge north and east of our property. I asked if there would be any turbines in the field just west of our property and he said no. I then asked about the location of the electric substation and told him we did not want to live by that. I was told the substation would be located a couple miles east of us closer to the village of Arrowsmith. We were relieved but decided to attend all the hearings.

We did receive a neighbor agreement by mail to sign. Our family chose not to sign the agreement. The title of the agreement was "Memorandum of Wind Farm Neighbor Easement Agreement", and it stated, "Owner understands and accepts that operation of Generating Units may have some impacts on the Wind Farm's neighbors, including the Owners property." It went on to state that "Grantee wishes to obtain Effects, Sound and Shadow easements from landowners who are neighbors of the Wind Farm for the benefit of the Wind Farm and as an opportunity to provide Owner certain economic benefits to accrue from operation of the Wind Farm." The very things they had told us would not be a problem they were now asking us to accept by way of an easement in exchange for a small annual payment.

In March of 2006, we received another notice from McLean County for a hearing on a request to move the electric substation to section 12 of Dawson Township. Our property is located in Section 12. Again, we were concerned. We were totally unfamiliar with zoning laws and had no idea that if you receive a notice it's because your property is within close proximity to the area that will be affected by a zoning change.

1-18-07 McLean County ZBA - Cross of Ken Davis - White Construction

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Pg. 543- 573

Exhibit 14 of 55

Pg. 544

"The G.E. 1.5 megawatt turbines is on an 80 meter three section tower. They require or the construction requires the following approximate quantities:

Earthwork - plus or minus 2,000 yards per turbine
Concrete - up to 350 yards per turbine
Re-steel, 23 tons per turbine what is anticipated in this area
Gravel or stone - from 2,000-2,500 tons per turbine
Craftsmen - 150 plus or minus
Man-hours for each turbine will run in the neighborhood of 2,000 Man-hours.

Steel - "The base section is 75' long and weights 128,000 lbs.
The midsection is 82 feet long. It weighs 81,000 lbs.
The top section is 98 feet long - 65,000 lbs.
You add that up, that's 137 tons of steel

Nacelle - 127,000 lbs on this particular GE unit - 64 tons +/-
Blades - 123 ft. approximately 6.5 tons apiece

"Currently White Construction has 5 wind farms under construction and 8 wind contracts under review from OK to PA. We also have a subsidiary co. in Toronto under the name of H.B. White-Canada."

"In IL, White Construction and Michel's group are the EPC constractors for the GSG wind farm near Sublette or PawPaw or Mendota area. White erected 33 wind turbines at the Crescent Ridge wind farm a couple years ago. We also have a small portion of the Twin Groves wind farm as we have been unloading or performing unloading acitivities for Lone Star trucking at the rail siting terminals."

"Perhaps we have overlooked one more decommission use for a wind turbine. It could be used as a grainery holding 18,000 bushel or corn and beans." Pg. 547

Chairman Rudolph – "I think you mentioned 6 wind turbine supplier companies. Where are they located? Are they in this country or are they all overseas?"

Davis – "The suppliers or the product?"

Rudolph – "I'm talking about actually the manufacturers of the turbines."

Davis – "Well, GE for the most part is here in the states. Vestas, they're across the continent. Clipper is an American machine at this time. It's a derivative. It's grown to that point. I'm not sure about Mitsubishi and where they are manufactured. I do know that most of the parts come in through the port of Houston: the bonus turbines likewise. The Gamesa units are both from across the way and also out of the State of PA. The State of PA has taken on an economic development pattern to encourage Gamesa to develop manufacturing facilities within their state, and they have done so. Suzlon units, it's an Indian company, and there again, they're coming through the port at Houston to the best of my knowledge." Pg. 549

Gary Lambert – "Do you have a commitment to only use legal residents in the US?"

Davis – "No, we do not, but we do have a national wind agreement throughout the continental US."

Rudolph – "I have to ask, what does that mean?"

Davis – "I think the gentlemen is referring to the fact of minority labor out of the south coming up here and building our wind farms. White Construction has been a union construction co. for over 57 yrs, and we pull most, if not all, of our craft people from the local union jurisdictions. The only thing we bring in from outside is our staff, our management staff, anywhere from seven to fifteen people. We cannot control the craftsmen that are sent to us by the union halls. We don't care what nationality they are. We pay them all the same, and we expect them all to work the same." Pg. 553

Bob Quandt - "You mentioned blade length of 123 ft was 6.5 tons. I believe that's the 77-meter diameter blade, although Mr. Link had mentioned the possibility of using the 82 ½ meter blade. Would you be familiar with approximate weight of that blade as compared to the 77?"

Davis - "I think it's about another 1,000-1,500 pounds."

Quandt - "Okay. As opposed to 6.5 tones each, it would be on the order of 7.5 tons?"

Davis - "Seven and a half tons; not more than seven and a half."

Paige Procter - "Would you care to estimate in today's dollars what it would take to remove what you just described a while ago in terms of steel and concrete?"

Davis - "I have previously given those numbers and the number I gave out was $25,000 to remove the first five feet of concrete. It did not include the dis-erection of the turbine or the blades nor then tower because we believe the value of that equipment far exceeds the cost to take down."

Kevin Moore - "One of the previous gentlemen asked you about the decommissioning cost. Have you ever taken down a tower?"

Davis - "No sir. Do you know of anyone in the US that's taken down a tower?"

Moore - "If I answer that, would that be testifying?"

Davis - "Well, you seem to think I'm disqualified to take down a tower. My point is, to my knowledge, no one has taken one down in the US."

Moore - "Okay. That was kind of part of my point. If no one has taken one down, how do we know how much they cost? So you come up with a figure of $25,000 to take down I believe you said five feet below grade exclusive of taking down the tower, the nacelle, and the

blades. Do you have a figure that includes taking down the tower, the nacelle and the blades?"

Davis - "No, but how I do that is on a man-hour basis. I am in the business of estimating these projects, and if I'm capable of understanding how much it cost to put it up the first time, it's a pretty good bet it's going to take as much to take down."

Moore - "But you didn't include that in your $25,000 figure?"

Davis - "Absolutely not, no."

Moore - "So you say you would just figure it out on a man-hour basis, so can you tell us how many man-hours it takes to set the tower, set the nacelle and the blades?"

Davis - "It's proprietary information with my company, and I'm not an officer. At this time, I'm not at liberty to give you that answer."

Moore - "I'm just trying to get an idea of how much it actually costs to take the whole thing down, not just take the concrete out of the ground, because obviously..."

Chair Randolph - "Ask another question then about that."

Moore - "Okay. Let's see, taking down the tower and the nacelle and the blades would require bringing the big crance back to the site, is that correct?"

Davis - "That's correct."

Moore - "And how much does that crane weigh?"

Davis - "Well, we use 4 different series of cranes, so we'd have the ability to change the crane from a 450-ton crane to a 600-ton crane. Obviously, we try to use the smallest crane needed for the work intended. In this particular case, the 450-ton range should take care of that, so that crane weighs about, I don't know, half a million lbs."

Moore – "450 tones: I can do that math. Are there any of those cranes available locally in central IL or would you have to bring that crane in from upstate or from the Chicago area or something? Does your company own those cranes or do you lease them?"

Davis – "One question at a time. We have currently 7 of those cranes working today, yesterday. We own 2 of the very large cranes, and we own most of the smaller cranes that go along with that, so we are re-renting a couple of cranes on a couple of our projects. Why are we re-renting? It cost money to break those cranes. Our cranes are up here at GSG in Sublette, and we really don't want to take them to OK so we will go to OK and find the large crane availability out there and try to work out a deal locally; the same way in PA."

Moore – "Your company has no contract to participate in the decommissioning of the White Oak project, is that correct?"

Davis – "That is correct. We have no contract either to build it."

Moore – "Oh, okay. That's interesting. I guess I'm still trying to get my head around the decommissioning of those towers, and I'm wondering are these 450-ton cranes available locally for the decommissioning or is that something that would have to come in from a great distance?"

Davis – "You're speaking of something that'll happen in 20 years in advance. I'm sorry, I can't testify to that."

Rudolph – "I don't think it's relevant, Mr. Moore, that last questioning about 20 years down. None of us has a crystal ball. I wish I did. I'd use it right now."

Moore – "In that $25,000 decommissioning cost that you proposed, did that include bringing the crane back to the site?"

Davis – "Absolutely not. That is the removal of the first five feet of the turbine foundation from six inches about ground down four and a half feet, roughly a 16-foot diameter cylinder."

Moore – "Okay. So just the foundation, not the tower, not the nacelle, not the blades, and not the crane. Thank you very much."

Rhonda Baer – "You said $25,000 to take out the first five feet of concrete, but Mr. Link stated last night or the night before that in McLean County, they were going to take out down to eight feet, so do you have an estimate for what that would cost?"

Davis – "Mr. Link must have a better bid."

Baer – "So no estimate on what that would cost. So $25,000 for five feet is not in your opinion going to be adequate to take out the eight foot?"

Davis – "I did not say that; you did."

Baer – "I'm asking you if that would –"

Davis – "No. I'm not going to address that because I don't believe that's a probability at this time."

Baer – "So are you saying it doesn't cost any more to take out three more feet?"

Davis – "No. I'm saying I don't know whether we're going to take out one or a hundred and it would make a difference."

Baer – "If they were taking out 100 at eight feet down, would it be your opinion that the cost would probably be higher?"

Davis – "The possibility exists, yes, because that's 20 years down the road."

William Fleming – "I'm interested in the decommissioning of the concrete in the ground, I guess about 40 feet across roughly….how do you make the concrete lump, with expoxy or reinforced steel, so that way, you leave – in 20 yrs, there's still something potentially left, or it is all going to be chalked down?"

Davis - "I'll clarify that we do not used epoxy steel for wind turbine foundation….We use a Grade 60 bar, okay, which is better than most bars that have been used in the last 20 years. Once the concrete gets covered up with soil around it, it will not degrade in my opinion, and I'm not a professional civil engineer, but in my opinion, it will not degrade to the point where it loses structural capability."

Fleming - "Well, I've had experience contrary."

Roder - "Objection."

Nick Goloff - "How deep is the foundation? There's a sonar that's going to be out into the ground; is that true?"

Davis - "Most of the foundations today are octagon in shape, and they'll go down seven to eleven feet, depending upon the structural engineering analysis of the soil that we're building upon….basically, we will excavate the hole. We will roll that sub-base, and it has to pass or fail an engineering test….we lay down what we call a mud slat which is anywhere from 2-4" of neat or clean concrete, 2,500 PSI range. Then the basic foundation…will range from 4,000-5,000 PSI concrete above that point, and we have, it's not patented yet, but we have a forming system where we're forming and pouring the whole pedestal in one pour."

Goloff - "And so we have high strength concrete, and if you were to say this is varied….how long would you estimate that it is going to last? Are we talking about a thousand years, 10,000 years, or 20 years?"

Davis - "My knowledge, and I'll refer to the bridge building business, I've been taking out bridges for 30 yrs, and some of the bridges have been 74-100 yrs old and the concrete is still, even though back then concrete wasn't the quality that we have here, but still, the concrete is fairly tough."

Summary of "Development of Obstruction Lighting Standards for Wind Turbine Farms – DOT/FAA/AR-TN05/50 11-05

Site of Experimental Lighting Study conducted by

Interagency Agreement 6-13-01 between US. Department of Energy (DOE) and Federal Aviation Administration (FAA)

Preliminary recommendations established from early flight evaluations of farms in 2002 were then applied to the lighting plan of a recently constructed wind turbine farm in Lawton, OK.

Blue Canyon Wind Farm north of Wichita Mountains in the Slick Hills Range
15 miles NW of Lawton, OK

45 Vestas 1.8 MW V80 turbines owned by Zilkha and Kirmart Corp.

... "It was determined that the tasks involved in developing guidelines for warning pilots should focus on identifying a hazardous area that should be avoided versus identifying each obstruction individually." Pg. 3

"It was evident early in the planning...that it would be impossible to develop criteria that would spell out...the manner in which each and every wind turbine farm configuration should be obstruction lighted. At best guidelines could be provided that would allow a person, familiar with a specific installation, to design a lighting layout that would efficiently provide the necessary warning." Pg. 3

"Just after the initial flight tests were concluded, the administrators of a large wind turbine farm under construction approached the FAA and volunteered to be a test site. The site, known as Blue Canyon Wind Farm, developed their proposed lighting plan by following the preliminary obstruction lighting recommendations." Pg. 4

"A test site was established in Lawton, OK, to validate the new lighting concept. Research personnel conducted repeated evaluation flights of the test site, and confirmed that the proposed lighting concept provided approaching aircraft amply warning that the wind turbine farm was a single, very large obstruction that should be avoided." Pg. v/vi Executive Summary

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Flight evaluations were done on four sites:
(other nearby sites were added)

Green Mountain PA – 8 turbines on 2 parallel ridgelines

Clear Lake (Cerro Gordo) IA – 55 turbines, 187' to hub, 2 square miles total area

(Top of Iowa, Clear Lake, IA – 89 turbines, 240' to hub, reverse C (5x2.5 miles)

Texas

King Mountain – 14 turbines 299' AGL (9 sq miles linear)
McCamey – 107 turbines 244' (3x8 miles linear)
Woodward Mountain – 242 turbines 242' 10 miles linear along ridgelines

Southwest Mesa – 100+ turbines
Big Spring – 46 turbines – 267' (2.5x2 miles linear)

California

Oak Creek – Tehachapi – 30 turbines 200' hub (2 linear arrays of 10 & 20 – 1 mile apart "Numerous others smaller wind turbine units, both operational and abandoned, were located within the same area but, being unlighted, did not significantly affect the evaluation." Pg. 14

"It was obvious that the terrain characteristics, with the turbine arrays below and along high ridgelines on either side of Tehachapi Pass, would make the nighttime flight session somewhat difficult." Pg. 14

Totally unlighted turbines belonging to Enron
A ridgeline set of 15 turbines
50 turbine S. of Tehachapi Pass ridgeline

Cameron Ridge – 10 turbines in linear

Validation at Blue Canyon Wind Farm – on ridgelines rising 1000 ft above surrounding flat terrain – 45 turbines – linear arrays, 345' AGL (including blade)

"Obstruction lights are located at each end of the strings, so long as the separation between the obstruction lights is no greater than ½ miles. If the separation exceeds that maximum allowable distance, additional obstruction lights are spaced within the string to maintain the required ½ mile separation." Pg. 18

... "Severe thunderstorm activity with violent turbulence made flight evaluation impossible. Instead, day and nighttime observations could only be made from ground and hilltop levels." Pg. 19

Observations from the ground – quotes from the official trip report that contained a consensus of attending personnel opinions:

- Daytime – no Obstruction Lighting

"Non-synchronous lighting did not accomplish the objective of outlining or warning of the presence of dangerous projections (i.e. 345 foot high wind turbines) above the surface of the ridgeline." Pg. 20

Nighttime Synchronized Mode – 8-10-04

"The fact that observations were being made from the ground, rather than from an aircraft, did not appear to be critical." Pg. 20

Second Evaluation

"After experiencing the disappointment of not being able to conduct the essential flight evaluation in August 2004, steps were taken to set up a subsequent evaluation as soon thereafter as possible. In addition, it was determined that participation by a representative of the FAA sponsoring Air Traffic Organization, ATA-400, was essential and that the final validation effort should not be conducted without an ATA-400 representative attending as an observer." Pg. 20

FAA project team traveled to Lawton in December of 2004 to attempt another flight evaluation to finally validate the previously arrived at conclusions and recommendations....also attending and observing were:

Bruce Beard, FAA sponsor's representative, Air Traffic, ATA-400

Scott Larwood, CA Dep't of Energy rep.

Willum Verkert, Orga Aviation and Lighting (Lighting Eqpt Manufacturer)

Concluding remarks

"Not all wind turbine units...need to be lighted. Definition of the periphery of the installation is essential..." pg. 24

"should have unlighted separations of not more than ½ if the integrity of the group appearance is to be maintained...this is especially critical if the arrangement of objects is essentially linear, as is the case with most wind turbine groups." Pg.24

"...if installation consists of a number of widespread, obviously separated areas of 1 mile from each other, it is not necessary that all such areas flash synchronously." Pg. 24

Appendix A – Guidelines

"In the event a situation arises where these guidelines do not provide satisfactory safety coverage, a more conservative approach should be taken with additional lights added.....Aviation safety should always be the primary objective." A-1

"Situations that may require additional lighting consideration:

- Proximity to airports
- Proximity to known visual flight rule routes
- Extreme terrain where the turbines vary greatly in their relative vertical position to each other
- Proximity to areas of known flight activity, such as frequent agricultural activity

Situations that may permit less lighting considerations:

- Extreme terrain where flight activity would be impossible to conduct in a safe manner, such as the face of a steep mountain or a very deep valley

It is important to identify the layout of the turbine farm first, as it provides the proper approach to be taken when identifying which turbines need to be lit. It is also at this time that any special consideration to the site's location in proximity to airports of known corridors, as well as any special terrain considerations, be identified and addressed." A-2

"The key to developing a well-balanced lighting plan is to have all the light fixtures within the turbine farm flash at the same time, thus delineating the farm as one large obstruction and navigation between the turbines should be discouraged." A-2

"The very basis of the proposed lighting standards is centered on the synchronous flashing of the perimeter lighting."

"Daytime lighting requirements are not necessary so long as their omission would not create any known safety deficiencies....

It was determined that painting or marking wind turbines with the typical checkerboard paint scheme is not a viable safety enhancement, as the turbines themselves provide a high level of warning with their solid construction and attention-getting rotation and movement." A-3

Cluster Lighting guidelines –

"if the distance across the cluster is greater than 1 miles, it may be appropriate to place a few lit turbines...throughout the center of the cluster. This will prevent pilots from believing they may be able to climb over the outer perimeter and descend down into the center of the cluster. Again, use discretion when placing these lights to maintain a well-balanced, safe lighting configuration." A-3

Special Instances –

"...it has been documented that one or two turbines may be positioned at locations that really do not lend themselves to linear, cluster or grid layouts. In this event, the following guidelines should be followed. If the turbine protudes from the general limits of the turbine farm, the turbine should automatically receive a lighting fixture. If another turbine is collocated with the first turbine, it does not require any lighting as long as it is within 500' from the lit turbines and not positioned on the outboard side of the lit turbines. If these requirements cannot bemet, both turbines...would need to be illuminated." A-4

Special Notes –

"When conducting a review of the lighting plan...personnel are encouraged to focus on what the proposed lighting configuration will look like from an aircraft approaching the area at the same height as the turbines. If, at any time, it is thought that a pilot might be encouraged to fly into a gap in the lighting configuration, it is better to reconsider light fixture placement." A-4

"Personnel are encouraged to abandon the typical aerial approach to selecting turbines to be lit, the lighting fixtures are placed according to their appearance from the prospective of an overflying aircraft. It is important to remember that these lighting guidelines were prepared for the low flying aircraft that will be flying at approximately the same elevation as the wind turbines, not over them. Careful attention needs to be made to protect the perimeter of the farm." A-4

"The guidelines provided in this document were developed based on research that covered turbines around 400 feet in height. Caution should be exercised when adapting these lighting guidelines to wind turbine farms containing structures over 500 feet in height." A-5/A-6

Crop-duster ranks thinning

9-13-07

Tough to recruit potential pilots

By Justin Juozapavicius
ASSOCIATED PRESS



WEBBERS FALLS, Okla. — Paul Gould is a pilot in a career that could be flying into the sunset.

His dad was a crop-duster; he didn't want the same for his son.

But Paul loved the work too much. Still does, but worries at 49 who will take over when his heart gets weak or eyesight fuzzy.

With the culture of the American family farm changing, and the next generation of crop-dusters reluctant to stay in a profession their fathers inherited from their grandfathers, the industry is at a crossroads.

Crop-dusting, a job that is so much a part of Americana, is graying. The average pilot age is about 60 and more than three-fourths of operators have 16-70 years of experience, according to a survey by the Environmental Protection Agency. Ten to 15 years ago, there were around 4,000 crop-dusting pilots. Today, the figure's declined by 20 percent.

"I'm one of the younger ones," Gould said, summing up the crisis.

As the decades-old industry takes stock of how it skipped a generation, it must compete for recruits with the commercial airlines, where the pay and hours are better.

Technology has become a foe, too. Million-dollar planes can fly farther and haul more chemicals, but have priced some mom-and-pops out of the business, some pilots say.

Genetically modified crops, such as worm-resistant corn, are also cutting into business in several states.

And there's crop-dusting's reputation as one of the most dangerous jobs in the U.S. because pilots must fly so low to the ground and navigate trees, power lines and other hazards.

"Right up there with rodeo bull-rider," said Glenda Gould, the other half of Paul's operation.

Four-thirty a.m. and Paul's out of bed.

Fast, but not like it used to be, when a seven-day work week didn't ache as much and the jobs weren't so big.

Minutes later, he's behind the controls of the 1980 Piper Brave, the yellow beauty nicknamed 'the dump truck.'

Then, the ritual: swooping insanely low to the ground, spraying, pulling up over acres of shoulder-high corn. An aerial ballet at 130 mph that still makes his wife cringe to watch it.

There's been a crop-dusting business in Webbers Falls, an eastern Oklahoma town of 720, since 1949, and Gould's is the only operation for 100 miles.

But it's not a question of the work. It's how long can he — and hundreds like him in the business — hold out until the next wave comes up. Five years? Ten?

He figures he can fly well into his 60s, maybe even 70, if he has to.

Fast, but not like it used to be.

These days, "you've got to look twice before you get in the business," warns Jim Criswell, a professor in the department of entomology and plant pathology at Oklahoma State University.

To most Americans, their image of crop dusting is Cary Grant fleeing a low-flying plane in Alfred Hitchcock's "North by Northwest," but this dirty, sweaty line of work began as an experiment 86 years ago in Ohio. Trying to get rid of pesky moth larvae, a two-seat plane called a Jenny dropped insecticide

SEE RANKS / PAGE C 1

NAAA TOWER SAFETY GUIDELINES: A Summary (www.agaviation.org)

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* Do NOT place towers on prime agricultural land
* If you put a tower on prime agricultural land:
  - Tell the farmer the land will no longer be able be sprayed by air.
  - Notify landowners and farmers within at least one-half mile.
  - Towers should be freestanding without guy wires.
  - Towers should be lit and well marked so they are clearly visible to aerial applicators
  - Towers should be constructed in a linear pattern, not a disordered, clustered pattern that makes the area completely inaccessible by air.
  - Towers with guy wires should be marked with two visible warning spheres on each guy wire, highly visible sleeves on the lower end of the cables that extend at least 8 feet above the height of the highest crop that may be grown there, and properly lit.

RANKS

FROM C1

made with lead over the affected area. The environmental impact of using such toxins would not be realized until much later.

The industry flourished after World War II, as returning veterans found work during America's agricultural boom of the 1940s and 1950s. Surplus military planes were enlisted to do the jobs.

By the 1980s, most powdered chemicals were replaced with liquids, and the term "crop-duster" fell out of fashion, replaced by "aerial applicator." GPS systems in plane cockpits substituted for a pilot's guesswork.

Today, the greatest deterrent for a young pilot wanting to break into the business is how hard it is to get insured. You need 250 hours of flight time to get a commercial pilot's license, and up to 1,000 hours before a company insures you.

Enough claims can break a small business, since there's only a handful of companies in the U.S. that write policies for crop-dusters.

So pilots in training must start out with the tedious work on the ground — cleaning and loading planes — and work their way up into the air.

"That's probably where we've fallen down as much as anything, we have probably raised the entrance barriers high," said pilot Rod Thomas, who co-owns a helicopter spray business in Gooding, Idaho, and has more than 30 years in the business. "It's a tough industry to get into. Equipment is expensive, insurance is expensive."

Once the newbies break in, keeping them in proves even tougher.

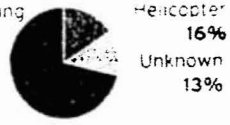
Gaylon Stamps took the reins of his dad's spray business in Panhandle, Texas, 32 years ago, and trained his son in hopes he would take over for him. But he decided to go to work for Southwest Airlines after notching 1,000 hours of flight time.

"My son thought he wouldn't get nearly as sweaty in the cockpit of a 737," Stamps said.

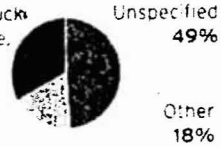
Crop dusting risk

The rate of agriculture-related pilot deaths in 2001 was three times the rate for pilots in other industries, according to the Centers for Disease Control and Prevention.

Type of aircraft in fatal agriculture-related crashes, 1992-2001



Cause of fatal agriculture-related plane crashes, 1992-

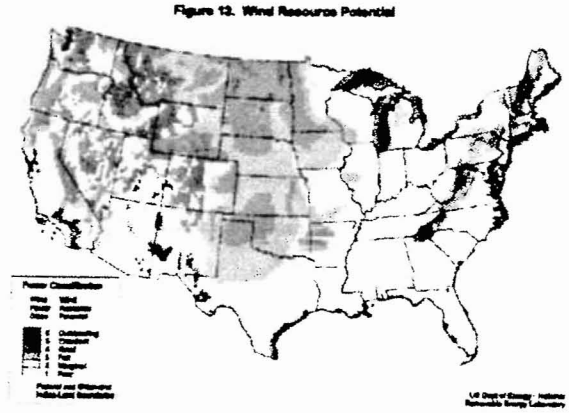


SOURCE CDC AP

9-13-01

Wind Resource Potential
Illinois: Marginal

Figure 13. Wind Resource Potential



6 - Red	Outstanding
5 - Purple	Excellent
4 - Pink	Good
3 - Orange	Fair
2 - Beige	Marginal
1 - White	Poor

Source: US Dept. of Energy
National Renewable Energy Lab

House Energy & Commerce Committee - Subcommittee on Energy & Air Quality Hearing on, "Unlocking America's Energy Resources: Next Generation" 5-18-06
Written Testimony of Victor Abate
VP, Renewable Energy, GE Energy



Associated Press/BRANDI SIMONS

Above: Paul Gould, owner of Agra Tech Inc. in Webbers Falls, Okla., sprays a soybean field with water last month using one

Safety

CONTINUED FROM PAGE 1A

As stated, the blade is easily visible from the access road, and, visiting Davis' property, one can see that the blade quite simply fell from the sky, blown over the treetops until gravity took over. The blade wedged itself into the trees on the way down, wrapping around about a dozen trees before part of it finally hit the ground. On a neighboring property, a second piece of turbine blade, the opposite half of the one that landed on Davis' property, sits almost wholly intact, braced up against the trees at the edge of the land. Each piece looks to be almost the entire length of a turbine blade. While not holding a tape measure to be sure, anyone visiting the site can see exactly where the blade pieces sheared off of the main frame, leaving only a few feet of fiberglass left near the hub of the turbine.

In response to this discovery, this publication wasted no time in contacting both Gamesa Energy and Babcock & Brown, the company that has begun the process of purchasing Allegheny Ridge Wind Farm from Gamesa. Within two hours of the initial request on Monday, Hunter Armistead, head of Babcock & Brown's North American Renewables, was in contact with this paper. Armistead was thankful for the chance to comment on the matter. First, Armistead explained that Babcock & Brown will be the long-term owners of Allegheny Ridge Wind Farm after the construction is completed and Gamesa can demonstrate that the farm is wholly operational (likely in mid-April).

However, with the matter brought to the company's attention through our contact and an additional report provided early Monday to the company about quality-control issues at the manufacturing plant, Armistead made assurances that his company was very focused on the matter, noting that an investigation into the matter has already begun and that Babcock & Brown has notified Gamesa of their concerns.

In turn, Gamesa Energy issued the following statement on Tuesday morning:

"During the past few days pieces of various sizes from windmill blades fell at the Allegheny Ridge Wind Farm, located at Cambria and Blair counties. The pieces fell close to the windmills during the recent severe storm. The event that happened at the Allegheny Ridge Wind Farm, which is now in the start up and trial period stage, is extremely rare, and is the first time that Gamesa has seen this occur with this product. The blades for the windmills at Allegheny Ridge Wind Farm were locally manufactured at Gamesa's plant in Ebensburg. They were also transported and erected by local contractors according to the standard procedures that are now being reviewed to identify the root cause. Gamesa's *number one* priority is to assure the safe operations of our windmills. Immediate steps include inspections of all windmills, stopping any that show early signs of damage, and correcting all blades identified with such issues. Gamesa regrets the inconvenience this has caused and is taking immediate action to make sure that, first and foremost, we are protecting the safety and welfare of all of our neighbors in the community. Gamesa is a qualified windmill production company who has manufactured and installed over 33,500 blades (as of Dec. 2006) for wind energy farms throughout the world."

Additionally, Ellen Lutz, Development Director for Gamesa Energy Atlantic, spoke with this publication, also thanking us for the opportunity to respond. Beyond the official statement, Lutz added that she would be visiting the site herself this week, and that inspectors have begun looking at all areas of production, from the plant to the farm itself.

While this publication has done much to promote the development of wind farms in our area, keeping our residents informed is our priority. As such, look for updates on this issue as more information becomes available, as Gamesa has offered a full report on the matter once the cause of this problem has been discovered.



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Vol. 109 No. 12 USPS 326-480 Cresson, Pa. Thursday, March 22, 2007 Newsstand Price 50¢ 48 Pages

Wind turbine blade safety questioned after damages

By Justin Eger
of Mainline Newspapers

It's no secret that, over the course of the past year or so, residents with property on top of Lilly Mountain and along the surrounding ridges had been courted by Gamesa, the wind turbine manufacturing and development company. In the process of developing what we now know as the Allegheny Ridge Wind Farm, Gamesa offered landowners the chance to sign over leases to their land in exchange for direct payment. However, some residents declined all the overtures made by Gamesa, more interested in keeping their land undeveloped than the prospect of payment now.

Lilly resident Jim Davis was one of those residents. As an owner of some acreage on Lilly Mountain, he was approached throughout the development process to lease his land to Gamesa. Davis and his family declined for a number of reasons, and while he would still be neighbor to the wind turbines, he didn't think he would have to worry about them on his own property.

So imagine Davis' surprise when, upon inspecting his property over the weekend, he found the fiberglass sheath of a turbine blade wedged into the trees several hundred feet beyond his property line. Initially, Davis explained he thought a plane had gone down, such was the size of the fragment wedged into the trees, easily seen from the access road near the turbine. Upon closer inspection, he discovered that the fiberglass wedged into his trees was actually part of the wind turbine, specifically part of one of the three turbine blades.

SEE SAFETY, PAGE 14A

Ontario, one of the only provinces with any regulations governing wind farms, requires a noise-impact assessment for areas up to 1,000 metres from the wind turbine.

In Pincher Creek, Alta., home of one of the largest wind farms in Canada, turbines must be set back at a distance four times their height.

In Lower West Pubnico, it's only twice the height of the turbines.

Noise standards also differ, and none exist to regulate levels of low-frequency sound.

A report by a Halifax audio specialist measured the loudest sounds on d'Entremont's property from the Lower West Pubnico wind farm at 50.32 decibels -- roughly the intensity of a human voice nearby -- below the recommended level of 55 decibels.

But Demond concedes previous tests could not rule out any effects from low-frequency noise.

"To be totally fair, what he concluded is that he didn't have the equipment necessary to go to those sub-frequency levels to unequivocally walk away with a concrete answer," says Demond.

That reveals a fundamental problem with the way wind farm noise is measured, making it almost impossible to know whether wind farms are causing health problems, audio experts say.

Gordon Whitehead, an audiologist who retired last month from a 21-year career at Dalhousie University in Halifax, insists low-frequency noise can affect the health of some people.

He says such inaudible vibrations -- the same kind of vibrations that music fans can feel in their bodies at a loud rock concert -- can lead to symptoms including loss of balance and blurred vision.

"There's a lot of research out of the U.S. about killing large animals by hitting them with very large, very loud low-frequency sound -- literally stopping the heart," says Whitehead.

"A wind farm doesn't produce sounds loud enough to do that, but the point is if you're in a situation where the land around you is very dense, then some people who are very sensitive to that are going to pick that up."

Whitehead says noise regulations only deal with sounds that humans can hear, so tests rarely focus on the low-frequency sounds in question.

"I'm in favour of wind farms, but in analysing them you have to make certain that you're not creating a problem -- and I don't know if they are."

The complaints from the d'Entremont family have prompted the federal Natural Resources Department to order new noise testing, which will measure the low-frequency sound in Lower West Pubnico.

"I think there is some debate about whether there is impact from low-frequency noise," says Denis Zborowski, manager of the federal Wind Power Production Incentive program. "Normally it isn't covered because it's not audible."

Zborowski says without Canadian standards, the new study, expected to be released this summer, will rely on international standards and current research to draw conclusions.

Michael Sharpe, another Dalhousie University audiologist, says even if someone isn't affected directly by low-frequency noise, the constant swoosh of the blades, even at allowable levels, can have psychological effects.

"If the sound is audible and it annoys you, then it can seem louder," says Sharpe, who compares it to a dripping tap that can keep someone awake at night.

"As your stress level increases, your awareness of the annoying sound increases as well. As we know, elevated stress levels for a prolonged period of time can have a negative health effect."

Web link: http://www.hamiltonspectator.com/NASApp/cs/ContentServer?pagename=hamilton/Layout/Article_Type1&c=Article&cid=1147470613483&call_pageid=1020420665036&col=1112101662670"

Family says turbine vibrations made them ill enough to move

The large house in Lower West Pubnico is now empty and abandoned, d'Entremont says, because inaudible sound from the 17-turbine wind farm made his family sick.

May 13, 2006 by James Keller in The Hamilton Spectator

Giant wind turbines spin next to Daniel d'Entremont's home in a tiny rural community in southwestern Nova Scotia.

The large house in Lower West Pubnico is now empty and abandoned, d'Entremont says, because inaudible sound from the 17-turbine wind farm made his family sick.

"The noise is unbearable," he says from Abrams River, the nearby community he recently relocated to with his wife and four of his six children.

"It's like a surround sound -- you can't avoid it, you can't ignore it. It just comes right into your head."

D'Entremont blames the turbines for sending low-frequency sound into his old house, located about 400 metres from the nearest turbine.

He says his family couldn't sleep, his children were constantly tired and suffering headaches, and nobody in the house could concentrate.

The d'Entremont family's complaints touch on a little-known -- and little-studied -- debate over whether inaudible sounds from wind farms can cause health problems for residents living nearby.

While the operator of the wind farm brushes off the family's claims, experts say vibrations from the turbines embedded deep into the ground have the potential to affect the health of some.

And new sound testing commissioned by the federal government hopes to offer more insight into what, if anything, is happening at d'Entremont's home.

The Lower West Pubnico wind farm was fully operational in May 2005, and it wasn't long before d'Entremont's family starting feeling ill.

D'Entremont says complaints to politicians and to the wind farm's owner were largely ignored, but several area naturopaths told him to relocate.

He finally moved in February after receiving the same advice from a U.S. pediatrician who has studied the effects of wind turbines on children.

"Around wind turbines, it appears there are always some people who are very disturbed by them," Dr. Nina Pierpont says from her office in Malone, N.Y.

"It's not everybody, so it creates a lot of controversy.

"When the exposure is inside a house, occurring 24 hours a day, even if the sound intensity is less, there is potential to produce serious pathology."

Charles Demond, president of Pubnico Point Wind Farm Inc., says Pierpont has never visited the site.

He says the wind farm was built according to local zoning bylaws, which determine how close turbines can be to houses, and that sound tests concluded the noise levels weren't harmful.

"Here's someone claiming that his world is changing, but those comments don't add up," says Demond. "The sound testing indicated that the noise level from that wind farm is not outside any guidelines."

Ottawa and several provinces across Canada have started to promote and foster wind energy projects.

Last year's federal budget quadrupled the Wind Power Production Incentive, which provides funding for wind farms, and the plan is to invest at least $920 million in promoting wind power over the next 15 years.

But the growth is occurring in a largely unregulated environment.

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Energy Consumption of Wind Facilities

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Large wind turbines require a large amount of energy to operate. Other electricity plants generally use their own electricity, and the difference between the amount they generate and the amount delivered to the grid is readily determined. Wind plants, however, use electricity from the grid, which does not appear to be accounted for in their output figures. At the facility in Searsburg, Vermont, it is not metered and is completely unknown . The manufacturers of large turbines -- for example, Vestas, GE, and NEG Micon -- do not include electricity consumption in the specifications they provide.

Among the wind turbine functions that use electricity are the following:*

- yaw mechanism (to keep the blade assembly perpendicular to the wind; also to untwist the electrical cables in the tower when necessary) -- the nacelle (turbine housing) and blades together weigh 92 tons on a GE 1.5-MW turbine
- blade-pitch control (to keep the rotors spinning at a regular rate)
- lights, controllers, communication, sensors, metering, data collection, etc.
- heating the blades -- this may require 10%-20% of the turbine's nominal (rated) power
- heating and dehumidifying the nacelle -- according to Danish manufacturer Vestas, "power consumption for heating and dehumidification of the nacelle must be expected during periods with increased humidity, low temperatures and low wind speeds"
- oil heater and pump and cooler in gearbox
- hydraulic brake (to lock the blades in very high wind)
- thyristors (to graduate the connection and disconnection between generator and grid) -- 1%-2% of the energy passing through is lost
- magnetizing the stator - the induction generators used in most large grid-connected turbines require a "large" amount of continuous electricity to actively power the magnetic coils around the asynchronous "cage rotor" that encloses the generator shaft. The stator may use power equal to 10% of the turbine's rated capacity, in slower winds possibly more

using the generator as a motor (to help the blades start to turn when the wind speed is low or, as many suspect, to maintain the illusion that the facility is producing electricity when it is not,† particularly during important site tours) -- at times the grid-magnetized stator must work to help keep the 40-ton blade assembly spinning, along with the gears that increase the blade rpm some 50 times for the generator, not just at cut-in (or for show in even less wind) but at least some of the way up towards the full rated wind speed

There are instances when a turbine consumes more than 50% of its rated capacity in its own operation. The industry doesn't publicize any data; incoming power is not normally recorded.

Engineers share an assumption that wind turbines don't use a significant amount of power compared to their output and thus it is not worth noting, much less metering. Such an assumption could be based on the experience decades ago with small DC-generating turbines, simply carried over to AC generators that continue to metastasize. However errant such an assumption might now be, it stands as long as no one questions it.

The actual amount of consumption could seriously diminish any significant amount of energy.

The electricity used by WTG's is not metered or accounted for in any way, and consequently is not paid for by the WTG operators.

information was obtained from these sources:

Swedish report on hydrogen and wind power, as printed in Yes2wind.

the Danish Wind Industry Association's

industry spec sheets.

An observer in Toronto, Ontario, points out that the blades of the turbines installed at the Pickering nuclear plant and Exhibition Place turn 90% of the time, even when there is no wind and when the blades are not properly pitched -- in a region acknowledged to have low wind resources.

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New York State Supreme Court judge nullifies Town of Hamlin wind energy law

January 5, 2009

The Wind Energy Law adopted in April 2008 by the Monroe County Town of Hamlin has been "set aside and annulled" by the Hon. David Michael Barry, Justice of New York State's Supreme Court, in an "Order and Judgment" granted on January 5, 2009. The court's decision concludes that the Hamlin Town Board violated the requirements of the State Environmental Quality Review Act (SEQRA) when it neither took a "hard look" at the relevant areas of environmental concern, nor set forth a "reasoned elaboration" for its determination that the wind energy law would not have a significant impact on the environment.

The wind law nullified by the court would have allowed construction of 400-foot-tall wind turbines within 600 feet of property lines and public roads and 1,200 feet of residences. In adopting the local law, the Hamlin Town Board chose to ignore the recommendations of the town's Wind Tower Committee for 1,500-foot setbacks from roads and property lines, and 2,640-foot [half-mile] setbacks from residents. The Town Board also disregarded the WTC's recommended noise standards intended to protect the health and wellbeing of nearby residents.

The judicial proceeding was brought in State Supreme Court, Monroe County by the "Hamlin Preservation Group" [HPG], an association of town residents and landowners determined to protect Hamlin's rural character and natural environment, and thirty-nine (39) Town of Hamlin residents. Of special concern to the Hamlin residents was the town board's failure to take the required "hard look" at potential adverse impacts on human health associated with industrial wind farms prior to establishing minimum setback requirements and noise standards in the challenged wind law.

Attorney Arthur J. Giacalone expressed HPG's response to the decision:

The members of the Hamlin Preservation Group are thrilled with the court's ruling, and grateful to Justice Barry for holding the Hamlin Town Board to the tough standards mandated by the State's environmental review law. If a town chooses to allow, rather than prohibit, industrial-scale wind development, it must, at a minimum, protect its residents' health, maintain the town's rural character, and preserve property values by establishing meaningful setback requirements and noise standards. The court's ruling will help to ensure those protections.

For further information, please contact Arthur J. Giacalone, at 7160687-1902.

Web link: http://cohoctonwindwatch.org/"

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HEALTH AND SAFETY CONCERNS ABOUT WIND TURBINES

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IMPACT OF WIND TURBINES ON PEOPLE

WIND FARM LOG (ENGLAND) http://www.windaction.org/documents/14202
ITALIAN WIND FARM DIARY http://www.windaction.org/documents/13434
OUR WIND FARM STORY (NEW YORK) http://www.windaction.org/documents/524

IMPORTANCE OF SET-BACKS

WIND SITING REFORM POLICY http://www.windaction.org/documents/13188
Nina Pierpont, MD, PhD, HEALTH. HAZARD, AND QUALITY OF LIFE NEAR WIND POWER INSTALLATIONS: HOW CLOSE IS TOO CLOSE? http://www.ninapierpont.com/?s=wind
Barbara J. Frey, BA, MA and Peter J. Hadden, BSc, FRICS, NOISE RADIATION FROM WIN TURBINES INSTALLED NEAR HOMES: EFFECTS ON HEALTH (Abstract) http://www.windturbinenoisehealthhumanrights.com
Nina Pierpont, MD, PhD, HEALTH EFFECTS OF WIND TURBINE NOISE http://www.ninapierpont.com

VIBROACOUSTIC DISEASE

N. A. A. Castelo Branco, A. Araujo, J. Joanaz de Melo and M. Alves-Pereira, VIBRO-ACOUSTIC DISEASE IN A TEN YEAR OLD MALE
Professor Mariana Alves-Pereira and Nuno A. A. Castelo Branco, M. D., IN-HOME WIND TURBINE NOISE IS CONDUCIVE TO VIBROACOUSTIC DISEASE http://www.ninapierpont.com/?s=wind&p=2
VIBROACOUSTIC DISEASE AND WIND TURBINES http://www.ninapierpont.com/?s=wind&p=2
Professor Mariana Alves-Pereira and Nuno A. A. Castelo Branco, M. D. INDUSTRIAL WIND TURBINES, INFRASOUND AND VIBRO-ACOUSTIC DISEASE (VAD) (Press Release) http://www.wind-watch.org/news/2007/06/09/industrial-wind-turbines-infrasound-and-vibro-%C2%ADacoustic-disease-vad/
J. P. Michaud, VIBROACOUSTIC DISEASE NOT A FABRICATION http://www.wind-watch.org/news/2007/07/04/vibroacoustic-disease-not-a-fabrication/

HIGH WINDS

General Electric, DOCUMENTS EXTREME WIND SPEED: RISK AND MITIGATION http://www.windaction.org/documents/13914
(Please note the conclusion: "At this Time, GE has no modeling capability in place that can predict the impact made to a wind plant if an extreme wind event occurs.")

FOR MUCH MORE INFORMATION, SEARCH

www.windaction.org; www.wind-watch.org; www.ninapierpont.com

Bradley's take on wind power

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(Posted December 16, 2007)

Robert Bradley, in his seminal policy paper entitled ***Renewable Energy Not Cheap, Not "Green"***, discusses the Department of Energy's 1976 study which estimated wind power could supply nearly 20% of the U.S. electricity by 1995. By 1996, wind represented 1/10th of 1 percent share with clear signs the market was in decline. In 1997 Enron entered the picture with its purchase of Zond, one of the largest developers of wind generation. This, coupled with new state and federal restructuring initiatives that funneled billions into new subsidies for wind and other renewables, resuscitated the near-dead market.

Yet, the inherent flaws of wind energy that made it economically unviable in the 1990's still exist today. Bradley wrote "because wind power's high up-front capital costs and erratic opportunity to convert wind to electricity more than cancel out the fact that there is no energy cost for naturally blowing wind. Low capacity factors, and still lower dependable on-peak capacity factors, are a source of wind power's cost problem." Much of Bradley's paper applies today and it's well worth reading.

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Let the production tax credit expire permanently

(Posted August 5, 2008)

http://www.windaction.org/faqs/17230

The wind industry's lobbying of Congress to extend the Production Tax Credit (PTC) reached a fevered-pitch last week when the Federal government took no action on the PTC before recessing for August break. Ralph Cavanagh, director of the Natural Resources Defense Council's energy program called Congress' inaction a "criminally irresponsible failure", Sierra Club e-mailed marching orders to willing soldiers calling on them to demand their "do-nothing" representatives do something, and print media did its best to dutifully deliver the daily message: *without the production tax credit, giant corporations now on the verge of unleashing an economic and environmental boom will go elsewhere, and our most desperate regions of the country will remain desperate.*

After decades of receiving significant subsidies from ratepayers and taxpayers, and recent assertions by the American Wind Energy Association that wind is "no longer an alternative energy source, it's mainstream", the industry's cries portend something else: that wind energy is uneconomical and cannot survive without government intervention. The Federal cost to extend the production tax credit for a single year is $7 billion, the most expensive item in the energy bill debated last Spring. According to the U.S. Energy Information Administration (EIA) subsidies for wind dwarf most fuel types at $23.37 MWh. Yet, what do we get for this "investment"?

A) An intermittent, unreliable (but very sexy) energy resource that does not deliver electricity during the very time of day and year when we need it the most.

B) A resource built hundreds of miles from load centers requiring up to a trillion dollars in public dollars to string transmission lines through undeveloped rich habitat, and

C) The requirement that up to 90% of the electricity from wind be matched with redundant generation to ensure reliability when the winds die down.

Last week, Massachusetts Secretary of Energy Ian Bowles said "Renewable plants have an enormous subsidy under the renewable (energy) portfolio laws. If they still can't compete, they probably shouldn't be built."

Windaction.org couldn't agree more. It's time for our Federal representatives who support the production tax credit to hear from those who understand the economics behind "big wind". Contact your representatives today, and tell them "enough is enough".

December 28, 2008 by Emily McFaul in Daily Messenger

Naples: Don't get too close with those windmills

The Town Board says wind turbines planned for neighboring Prattsburgh come too close to the Naples town line.

Board members agreed this month to send a letter asking the state Public Service Commission to intervene and order a developer to move the towers further from town line.

"I think the board has made clear, we're not against wind turbines, but we are against the improper siting of towers," Supervisor Frank Duserick said.

This is not the first letter of protest the town has issued regarding the location of towers in neighboring townships. In July, the town appealed to the state Attorney General's Office, arguing that Naples landowners' property rights and safety are threatened by the placement of the towers. While a date has yet to be set, the Attorney General's Office has expressed interest in meeting with the town.

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At issue are turbines planned for Knapp Hill in Prattsburgh, part of the Ecogen project. Five turbines are scheduled to go up in the area, with the closest only 489 feet from Naples landowner John Servo's property line. Servo is president of the group Advocates for Prattsburgh, which has opposed this project.
Technically, the setbacks meet project guidelines established for Ecogen through an environmental study headed up by the Steuben County Industrial Development Agency. But both Servo and the Naples Town Board say the setbacks are not enough.

The neighboring town of Cohocton passed a zoning law prohibiting the placement of turbines closer than 1,500 feet from a residence, a step that Duserick points out to the PSC as precedent that another town has acknowledged the undesirability of building within that range.

By placing turbines less than 500 feet from the Naples property line, Duserick and Servo argue that the project is creating "reverse zoning" that effectively limits Naples landowners from full use of their property for safety reasons.

"The safety zone is 1,500 feet," Duserick later said. "There should be a 1,500 feet setback, and actually it's not enough. That's for the smaller turbines."

At a hearing last month, the Steuben County IDA outlined Ecogen's new plans to install larger 2.3-megawatt turbines instead of the originally planned 1.5-megawatt model, but Naples received no advance notice of the hearing.

The increase in the turbine size means that only 36 towers will be placed instead of the 53 originally planned, but the towers will be 26 feet taller to generate the increased output. Ecogen project manager Thomas Hagner said contrary to what some project critics have suggested, no new environmental study is required.

And despite the number of towers being scaled back, with the site earmarked a prime wind resource, the Knapp Hill towers are still planned. Technically, Ecogen is within its rights to do so, said Hagner.

"The turbines meet the permitting requirements of the government agency with jurisdiction on this issue," he said.

For Duserick, frustration goes back to initial planning phases for the wind project, when the IDA notified the village but not the town of the impending development, leaving the town out of the loop in the environmental review process.

"It's inappropriate and unethical to place towers so close to the town line without even talking to (us)," said Duserick. "I clearly question the ethics of what's happening in Steuben County."

In the letter to the PSC, the town also asks for setbacks of five miles from designated historic sites in Naples like the Memorial Town Hall, in order to protect the town's scenic views and tourism trade.

The environmental review process for wind developments evaluates the visual impacts of turbines for a radius of 5 miles; for the Ecogen project, the determination recorded in the environmental impact statement is that there would not be "significant adverse impact for distant views (greater than approximately 2 miles)."

But there is some precedent in the PSC limiting turbines from being built in sites where they could be visually and economically detrimental.

Last year, the PSC required Jordanville Wind to eliminate 19 of the 68 turbines planned for its Herkimer County project, since they would be visible from the Glimmerglass Historic District. Though the district fell outside of the 5-mile radius, the PSC acknowledged the district as a "nationally significant" historic resource, and a key factor in a regional economic plan developed around heritage-based tourism. http://www.mpnnow.com/news/x1369589139/Naples-Don-t-get-too-close-with-those-windmills"

Horse Creek wind farm: Noise report cover-up

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Posted October 7, 2008)

PPM Energy's Horse Creek Wind Farm proposal, now suspended while NY State officials evaluate the potential high bat mortality from the turbines, is the center of a sobering debate concerning preconstruction sound study reports. The proposed project consists of sixty-two industrial wind turbines spanning the towns of Clayton and Orleans in upstate New York. Over 1000 residents reside within the project's proposed footprint.

In January 2007, shortly after the Town of Clayton adopted its Wind Energy Facilities Ordinance (Local Law 1) governing placement of turbines in the town, PPM released its Noise Analysis report on the project prepared by Global engineering giant CH2M HILL. The report's summary states: "The facilities steady state noise levels are predicted to comply with the Town of Clayton's Wind Energy Facilities Ordinance limit of 50 dBA at offsite residences." It further adds "the facilities noise level may exceed the existing levels by 6 dBA at lower wind speeds but maintains compliance with the Town of Clayton's Wind Energy Facilities Ordinance limit of 50 dBA". New York State guidelines suggest that sound level increases over existing background should not exceed 6 dBA.

Serious and substantial complaints filed by Clayton residents regarding possible excessive and harmful noise impacts from the turbines prompted the Planning Board to hire acoustic engineering firm Cavanaugh Tocci Associates (CTA) of Sudbury MA to evaluate the CH2M HILL report. CTA was specifically requested to "re-evaluate noise impact per NYSDEC guidelines and Town of Clayton Local Law 1 2007 Wind Energy Facilities".

The completed CTA report was received by Clayton officials, Town Supervisor Justin Taylor and Planning Board Chairman Roland Baril, on or around February 15, 2008 but never released to other Planning Board members or the public. Apparently, CTA's report was deemed "too complicated" for review. Three Freedom of Information requests were filed with the town, including one from the local newspaper, and all were denied. Clayton Supervisor Mr. Taylor announced through the Town's engineering consultants Bernier & Carr Associates that CTA's report was sent back with the request that an executive summary be provided to help explain CTA's findings. CTA complied and delivered a 2-page summary on August 25. This summary was again held by Taylor and Baril.

During the Oct 1 regular meeting of the Clayton Planning Board, Planning Board Chairman Baril informed the attending residents as well as the Planning Board that it was the recommendation of Bernier & Carr Associates that CTA's report again be refused as too technical for public review and that CTA's executive summary would be the ONLY document released to other Board members. Taxpayers were welcome to a copy of the summary via a Freedom of Information request submitted to the Clayton Town Clerk.

According to the CTA executive summary, there are serious problems with the methodology employed by CH2M HILL in conducting its noise analysis whereby estimated background sound levels were overestimated. CTA also makes clear that participating property owners, those who've entered into lease agreements with PPM, should update their real estate deeds to reflect noise easements. CTA is clear that noise emanating from the turbines, even if compliant with Clayton's Local Law 1, will affect future property owners who might occupy a dwelling.

The problem of Wind Turbine noise is becoming more pronounced as turbines are built close to where people live. Windaction.org is tracking noise issues in numerous locations including Mars Hill, ME, Lowville, NY, Brownsville, WI, McLean County, IL, and Blair County and Meyersdale, PA, in the UK and Canada. In each of these cases, the question of noise was either never raised prior to the towers being erected or the residents were informed there would be no issue. It's remarkable the lengths PPM and some Clayton officials are going to just to avoid the question. Denying a problem exists in the face of growing evidence is unproductive and will ultimately harm the wind industry and its proponents.

Update: At Clayton's town board meeting on Oct 8, Supervisor Justin Taylor announced the CTA report would now be released to the public.

Turbine risks and accountability

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Exhibit 25 of 55

(Posted November 18, 2008)

Late last year, Massachusetts Technology Collaborative (MTC), the state's development agency for renewable energy, to Mark Richey Woodworking and Design, Inc. of Newburyport MA, for the construction of a single 600KW (292-foot) industrial-scale wind turbine to be sited adjacent to the business.

Months later, in April 2008, the Town of Newburyport to allow wind turbines up to 400-feet tall with minimum setbacks of 150 feet from abutting property lines and 300-feet from residential zoning districts. The Richey turbine proposal was submitted to the town shortly thereafter and a special permit was approved in August paving the way for the turbine to be erected. The location of the turbine is 319-feet from the public pedestrian rail trail, 350-feet from heavily-traveled U.S. Route 1, and 800-feet from the nearest residence.

During the town's review hearing on the project, the developer addressed the risk of ice-shed as follows: "[the turbine] was a long way from the rail trail and if the ice did shed it would be directly below on the Richey property."

Wind turbine manufacturers disagree. According to GE Energy's Wind Application Engineering Group "wind energy production in cold climate provides the following formula for calculating a safe distance: 1.5 * (hub height + rotor diameter)". Based on this formula, the proposed turbine could fling ice 560-feet away, well into the area of the rail trail and traffic on Route 1. This at the Searsburg, Vermont wind facility provides some insight into the problem. (Note: the turbines at Searsburg are 100-feet shorter than that planned for Newburyport).

Blade failure is another safety factor. Scott Larwood, who researched the history of turbine setbacks in California and the probabilities of rotor and blade failures, told Windaction.org that turbines slightly larger than the Richey tower should have a "safe" setback of 300 meters (987-feet). Turbine manufacturer, Vestas, writes in its for the V90 3.0MW turbine that a "radius of 400m (1300 ft) from the turbine" is necessary to ensure safety.

Blade failures, fire, and turbine collapse do happen and turbine debris can fly considerable distances beyond the setbacks established in the Newburyport ordinance.

When Windaction.org confronted MTC on this issue, public information officer Emily Dahl replied: "Massachusetts Renewable Energy Trust's goal is to support the installation of renewable energy projects and expansion of the clean energy industry in Massachusetts for a cleaner environment and stronger economy. The Trust evaluates projects at a high level and seeks to support projects that have a high likelihood of success and are deemed suitable by the communities in which they are located. The Trust is not a permitting agency; rather, permitting decisions for wind turbines are in the hands of each community."

Windaction.org has found a consistent pattern across the U.S. of small communities approving wind turbine proposals with little consideration, or apparent understanding, of the serious safety risks of erecting towers near public areas, rights-of-way, and residences. Windaction.org is particularly critical of MTC for its public advocacy in seeding projects like the Newburyport wind turbine while shirking responsibility for informing the communities of these risks.

(Note: The distances referenced in this editorial pertain to the risks of flying debris from operating turbines. Setbacks to mitigate for turbine noise, shadow flicker and visual impacts are not considered.)

http://www.windaction.org/faqs/18868

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A property owner speaks out

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Schertz 25 B of 55

swindle

(Posted July 1, 2008)

Logan County, IL is conducting public hearings on the 67-turbine Rail Splitter wind facility proposed by Horizon Wind. During hearings last week, public testimony was presented by Ed and Nancy Knittle, a couple now living within the view shed of Horizon's massive 240-turbine Twin Grove site in neighboring McLean County.

Prior to building their new home, the Knittle's testified they were assured by Horizon (then Zilkha Renewable Energy) the turbines "wouldn't be a disturbance" and that no more than one turbine would be visible from their home.

Based on these assurances, the Knittles signed an easement agreement with the developer, purchased a house lot, and built their new home. The agreement offered the Knittles $1000 per year and in exchange, Horizon secured permission to create "audio, visual, view, light, vibration, air turbulence, wake, electromagnetic, ice or other weather created hazards or other effect of any kind whatsoever resulting directly or indirectly" from the turbines over the Knittle's property. A confidentiality clause prohibited disclosure of the terms of the agreement.

At the hearing last week, the Knittles spoke out. "We can hear turbines while brushing our teeth. And we see flickering lights on our fireplace. It's extremely upsetting. ...They [Horizon] never told us about blade flicker or red flashing lights ... it's devastating. ...We were falsely misguided. I tried to honor and respect the company and keep this confidential, but I just can't do it anymore."



damaged by lightening_UK.jpg_1_(2)

http://www.windaction.org/faqs/16612

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DOE's 20% "Vision Thing"

http://www.windaction.org/faqs/15945

(Posted May 20, 2008)

Last week, the U.S. Department of Energy released a report announcing wind power can provide up to 20 percent of the nation's total electricity needs by 2030. Based on projected increases in electricity demand, the report states wind power would reach 300,000 megawatts by 2030, a 290,000 MW increase over that installed in the U.S. by the end 2006. To achieve these numbers, over 7,000 industrial wind turbines would need to be erected across the country every year for the next 23 years. The report labels the 20% vision "ambitious", but "feasible".

The report also openly acknowledges a fundamental limitation of wind. Section 4.1.6 states "Wind is an *energy* resource, not a *capacity* resource." Simply put, wind is not a resource they expect to be available on demand or to meet system peak loads. The report goes on to state "Wind power cannot replace the need for many 'capacity resources' ... that are available to be used when needed to meet peak load." It then adds that "if wind has some capacity value for reliability planning purposes, that should be viewed as a bonus, but not a necessity." This admission alone should lead some to question whether any large penetration of wind in the grid system is even worth considering.

Before DOE embarks on a mission to promote its 20% in 2030 vision, Windaction.org calls on the Agency to explain to the public how many additional megawatts of reliable (non-wind) generation will be needed to meet demand at those times of day and times of year when the wind is not blowing.

Dangers of windmills outweigh benefits

December 13, 2008 in Watertown Daily Times

I am all for alternative energy sources as long as they will enhance our lives and the life of our planet. Admittedly, those "windmills" sound like a great idea: free wind, energy for the community, an economic boon in these troubled times, especially for farmers who have suffered much over recent years.

The Concerned Residents of Hammond has looked at the research, interviewed experts, heard testimonials, watched the videos and learned the **true dangers** that are beneath the surface.

Landowners will benefit, yes. They will receive money for each 500-foot tower they allow on their property. Yes, that's 500 feet. **The community, however, will not benefit. No reduction in energy bills, no income, no electricity.**

What the citizens of this town will get is a **long list of negative impacts**, which the companies will not disclose prior to leasing. Before the towers are even in operation, properties will suffer major damage from tons of equipment being dragged through fields and woodlands. Drilling may cause damage to wells, septic systems and foundations.

Once running (and they don't always run), noise from the turbines, flicker effect and low-level vibrations have been shown to have detrimental effects on sleep and health, particularly to those most at risk: the elderly, those with pre-existing medical conditions such as migraines or high blood pressure, and kids with learning disabilities.

If the turbines catch fire (and they do), the local fire department is not equipped to battle a 500-foot spinning flame-thrower. Communities that have already succumbed to the companies have seen **property values plummet.** Not to mention that our **beautiful fields, plateaus and river views will be marred forever.** The list goes on. Just log on to any number of Web sites for documentation and you'll get the idea.

Perhaps the most insidious damage has only just begun. In this small, close-knit community, **divisiveness** has already taken hold. **Many residents fear that their neighbors will sign leases without realizing how it may affect the rest of the township.** Friends, relatives and neighbors are taking sides. Citizens are **losing faith in a local governing board that seems to have taken the dive without checking the dangers first.** Fortunately, CROH has been there to help us evaluate the pros and cons of this expensive, life-altering process. We need to work together to protect our way of life, our lovely area and our future.

Web link: Brooke Stark"

http://www.windaction.org/opinions/19153?theme=print

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Sept 2007

Who pays for the infrastructure?

(Posted September 4, 2007)

In the rush to legislate renewable energy mandates, state legislators failed to consider needed infrastructure. Onshore wind plants are typically built hundreds of miles from load centers in areas with **little or no transmission**. Now states are scrambling to socialize the cost of transmission, a cost normally borne by the generators. Burdening ratepayers with this is contrary to the rules and recommendations held by utility commissioners as recently as a few years ago. Comments to FERC by the New England Conference of Public Utilities Commissioners and the Vermont Department of Public Service ( ) make the point this way:

"If a generator is not required to pay for transmission upgrades and the cost is instead to be socialized across all load, then generators will choose their location based on other factors, such as where land is cheaper or emissions permitting is easier, rather than where good transmission planning or market economics would dictate. On the other hand, if the cost of transmission associated with locating in these other areas were borne by the generators themselves, these economic tradeoffs would be internalized and economic location would be more likely to occur. As currently proposed, the costs are not borne by generators, which could lead to uneconomic grid expansion."

Further skewing the economics, in the case of wind, 70% of the costly transmission line's capacity will be un-utilized

* There is no disclosure of the considerable low frequency content of the wind turbine sound, in fact, there are often claims to the contrary.

* They fail to warn that the home construction techniques used for modern wood frame homes result in walls and roofs that cannot block out a wind turbine's low frequencies.

* They do not disclose that the International Standards Organization (ISO) in ISO 1996-1971 recommends 25 dBA as the maximum night-time limit for rural communities. Sound levels of 40 dBA and above are only appropriate in suburban communities during the day and urban communities during day and night. There are no communities where 45 dBA is considered acceptable at night.

* Making statements outside their area of competence, wind industry advocates, without medical qualifications, label complaints of health effects as "psychosomatic" in a pejorative manner that implies the complaints can be discounted because they are not "really medical" conditions. Such a response cannot be considered to be based in fact.

So how do these model ordinances pass the muster and get approved?

The "stakeholders" involved were largely wind energy proponents, environmentalists, and landowners who might see turbines on their land. A significant group of stakeholders, the residents of targeted communities, likely had no idea such meetings were happening. If these model ordinances were to be reconsidered, it's a certainty that many people would step up and make their thoughts known.

Windaction.org strongly encourages States to revisit their guidelines and model ordinances now that we have experience with the effects of turbines built close to where people live. But in a next go around, the guidelines must be grounded in science and empirical evidence and not on data provided by the very people financially and ideologically vested in the outcome. While everyone is interested in seeing renewable energy get built, no one has the right to harm the health, safety, and welfare of others.

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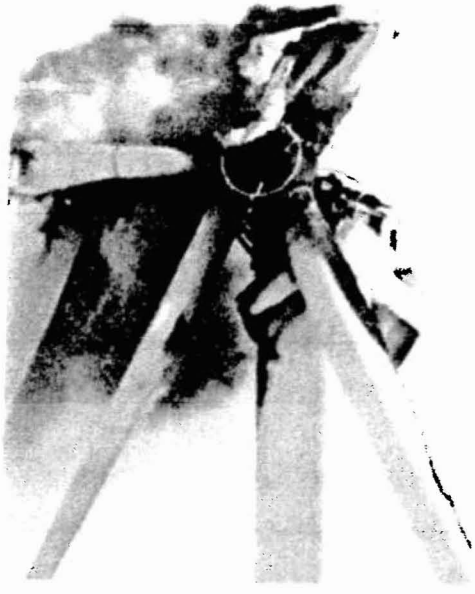
WindAction Editorial

http://www.windaction.org/faqs/19061



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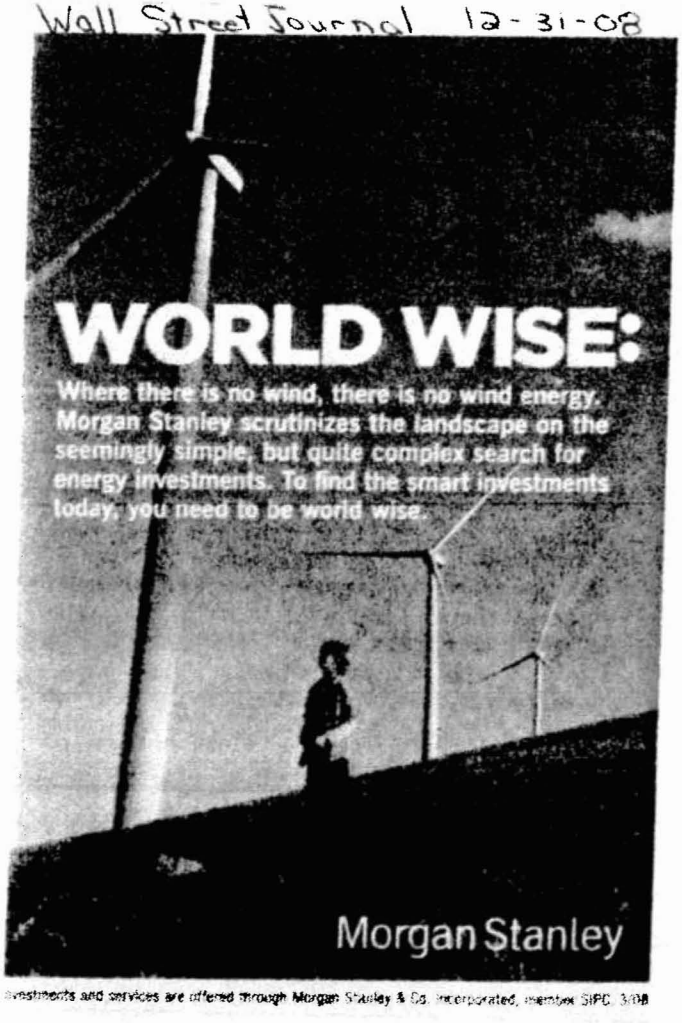

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The lie behind wind energy model ordinances



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(Posted December 4, 2008)

In the last ten years, wind industry representatives have successfully laid the groundwork for expedited project review and approval in many States in the US. Reaching out to legislators and State agency directors, the industry argued that existing laws governing siting of electric power plants were unduly onerous when applied to wind facilities. After all, operating wind turbines do not produce air emissions or use/discharge water, the basis for these stricter laws.

To allay concerns over shortened review periods, developers proactively worked with environmentalists and large landowners to help establish guidelines governing the siting of wind plants. The guidelines, or model ordinances, were then presented to State officials with assurances that if developers adhered to them, projects would be safe for residents living near the turbines and less impacting on the natural environment. Although the guidelines did not carry the weight of law, they also helped provide continuity for wind projects subject to local review at the town or county level.

In theory, this proactive teamwork could have worked. But all is not "green" roses.

Wind energy developers count on the fact that few people have "experienced" a wind energy facility and thus cannot imagine the enormity of the towers even from one-mile away. At the same time, these developers know that turbines operate at a noise level that far exceeds the background noise of the rural zones in which they're erected.

We need only look at a few of the 'guidelines' in place to understand how consistent these model ordinances are from state to state and in all cases skewed in favor of wind.

In Michigan, the State Task Force working under the Department of Labor and Economic Growth, recommended in its "Siting Guidelines for Wind Energy Systems" that noise limits be set at 55 dBA or L90 + 5 dBA, whichever is higher. The setback distance from the property is the height of the tower including the blade in the vertical position, which for most turbines today would be about 400-feet.

In Wisconsin, the State Task Force recommended 50 dBA for noise levels and tower setbacks of 1000-feet from the wall of a residence. And in Pennsylvania, the model ordinance, which carried the Gamesa stamp of approval, set noise limits at 55 dBA outside the home and setbacks of 1.1x the height of the turbine as measured at the wall of an occupied building.

In a recent questionnaire submitted to wind developers by Union Township in Wisconsin, the respondents defended these specifications with statements like:

> "Turbines are sited to have maximum sound level of 45dBA, well below levels causing physical harm. Medical books on sound indicate sound levels above 80-90dBA cause physical (health) effects. The possible effects to a person's health due to "annoyance" are impossible to study in a scientific way, as these are often mostly psychosomatic, and are not caused by wind turbines as much as the individuals' obsession with a new item in their environment."



ligtningstrike2_

Community noise experts Kamperman and James took issue with this and published a formal response to the questionnaire, highlighting major deficiencies in the wind developers' statements, including:

* The tone and context of the statement implies that 45 dBA is fully compatible with the quiet rural community setting.

* No acknowledgement is made of the dramatic change this will be for the noise environment of nearby families.

* No mention is made of how the wind facility, once in operation, will raise evening and nighttime background sound levels from the existing background levels of 20 to 30 dBA to 45 dBA.

Scott is a young man and his farm is meticulously kept. It was his father's and grandfather's before him and after hundreds of thousands of dollars in expenses to try and remedy the problems caused by the huge turbines, he's calling it quits and may be moved out by spring. His wife is pregnant with their third child, and though they've gone through every imaginable test to insure the baby's health, they're still afraid. He says with the equipment he's installed, he knows when it's bad, and when it is, they leave the home for a week, maybe two...however long it takes to get back to tolerable levels. Scott says he doesn't care about how the turbines look or sound. He just wants to be able to live on his family farm. But until the current problems are corrected, he's decided the threat to his family's health and to his herd is too great, not to mention the loss in production that has threatened his economic stability.

Bob Bittner, an old-time and rather dedicated opponent who we recently haven't heard much from, was not at home when we visited his lovely farm house in Illinois...also once his father's, now surrounded with 10 turbines, all within 4000 ft of his home, and with one only 1300 ft away. His neighbors told Sandy and I that they believe he spent over $250,000 in court battles and ended up signing a deal with the developers that said he would quit interfering in exchange for not being sued for all the lost income the company incurred over the 3 or 4 years of legal wrangling he brought.

I left a note in his door, and when I got home there was an e-mail from him for the first time in a very long while saying that since the turbines went up, he and his wife Sharon, for their peace of mind, bought a cabin several miles away to escape the noise, lights and shadows...People everywhere are being driven from their homes.

In the 63 turbine Mendota Hills wind farm, it's like the twilight zone. There is no life. Almost every home within the boundaries of the project is kept to look as if someone lives there...but on close inspection it's clear that few do. All the lawns are mowed perfectly...but flowers are rare and not one vegetable garden could be found. Every house seems to have a chair or two outside in the front yards creating the appearance that people actually relax in them, but up close they're dirty and unused. Every window and door is closed, with drapes and shades drawn at eye level. There's cars and trucks with what look to be current license plates parked outside of garages or with barn doors open so you can readily see them. We didn't check for cobwebs in the mailboxes, but we wish we had, because in hindsight we're sure they were there. Even dogs were kept on leashes in many of the side yards...SIDE yards, not back yards animals that are probably being visited once or twice a day to be taken care of.

It was so disconcerting that we felt the need to drive outside the area to compare environments. Maybe everyone in Illinois stayed inside on beautiful fall afternoons with their houses locked up tight. However that wasn't what we found. Several miles away were signs of life...and living and enjoyment of the outdoors. I know this all sounds crazy, but to prove it to ourselves, we went back to the wind farm area after dark... thinking, well MAYBE everyone was at work. But inside many of these houses, just one light burned, shining through greasy grimy windows in spots where curtains were left

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Documents

Great Lakes Wind Farm Journey

September 27, 2005 by Sue Sliwinski

Summary:
Sue Sliwinski took a 9 day, 3000 mile trip visiting 7 wind farms across several states. Here's her report.

On September 18th, 2005, Sandra Swanson and I set out on a journey to visit all the wind 'farms' in the Great Lakes region. After traveling over 3000 miles, we had acquainted ourselves with the towns and neighbors of 6 completed projects, and found one site under (opposed) construction. Every one was unique, all had problems, and all were controversial.

We took many still shots, reams of video, copious notes, and conducted numerous interviews. What's happening to these people and to their otherwise natural surroundings is a crime. Impacts that are regularly denied by wind developers were confirmed to be fact again and again in wind farm after wind farm. Lovely rural communities are being turned into industrial freak shows. In some places people have just accepted their fate and they live with it, not understanding how empowered they could be if they just got noisy enough about the problems. Julie Thiry told us she's learned how to go outside in her garden, and block everything from her mind so as not to be disturbed and frustrated. She said once, on a quiet day (because the turbines weren't moving) she heard what sounded like gunshots. She had been blocking everything like she taught herself to do and suddenly realized the 'gunshot' noises were coming from the nearest turbine, probably contracting as the sun went down, as you can often hear them do at Wethersfield, NY. Julie and her husband Bart tried to sell their home for over two years, but gave up when they were told they'd have to drop the price well below its appraised value. Their family's plight is highlighted in a TIME magazine article that came out just this October.

Scott Srnka from Lincoln Township, Wisconsin is enduring such awful conditions it's hard to believe they're true. Even I have steered clear from his information in the past for fear of being accused of using scare-tactics. But a visit to his farm reveals the guy is rock-solid, and when you meet him and his beautiful family you come away shocked and saddened. Neighbors who have known Scott all his life say he's an honorable man and that his troubles are real...it's the one's of us who hear long-distance that doubt the truthfulness about the decline of his dairy herd and his family's health problems due to severe stray voltage that did not exist before the wind turbines were erected across the road.

Apparently, farmers often experience some levels of stray voltage. But the extenuating circumstances on Scott's farm include a combination of surface rock, no substation for the turbines, and the nearness of the massive machines. He and one other dairy farm are being severely impacted, but the other one, right next door, won't admit it because they own the leases on 14 turbines and don't want to jeopardize that easy money.

Ripley farmer regrets wind turbine leases

Dave Colling regrets having leased some of his farm near Ripley to a wind energy developer.

Colling is part of a group of neighbours who signed a three-year lease in return for a fixed amount of money a year, plus a percentage of the profits once the project is underway.

"If I knew then what I know now, I never would have signed up," said Colling, whose farm will have wind turbines as part of the second stage of development near Ripley. The first phase of 38 turbines developed by Suncor came online last year.

"We are entering a whole new era of technology and we don't know any of its effects," Colling told about 150 people at a meeting on Wednesday in Feversham put on by a group called Preserve Grey Highlands.

The recently created group made up of former Osprey township residents is holding public information meetings to raise awareness about the potential adverse health concerns, quality of life changes and the turbines effect on property values.

Lorrie Gillis, the group's spokesperson, said members are also questioning the economic feasibility of turbines, which "don't save anything on carbon emissions," nor have they led to the closure of any coal burning generating plants.

The group is circulating a petition to be sent to the provincial government and Grey Highlands council calling for a moratorium on further construction of wind turbines in the province until there is a full independent assessment.

"We don't want them here until they are better studied and the truth is known, good bad or indifferent. The more research I do, the more red flags go up. We need to do a whole lot more study on them... we'd like to know they are a viable energy option," said Gillis.

The local group has joined forces with Wind Concerns Ontario - a coalition of 24 rural groups opposing projects in their own municipalities.

Gillis said research by her group has found adverse impacts to residents' health, local wildlife and the environment.

Colling, who tests homes and farms for the presence of stray voltage, related his experience testing the some homes in the Ripley near new turbines. He found that the lines carrying electricity from the turbines to the transmission lines were located too close to the lines leading to the homes and created much higher than normal levels of electricity in the homes. This was causing residents to display the symptoms of electrical hypersensitivity - dizziness, ringing in the ears, fatigue, headache, feeling of pins and needles and a burning sensation.

"It was like being in a microwave oven on high frequency," said Colling, who noted that once Hydro One buried the cables in the ground, the symptoms disappeared.

Colling urged anyone thinking of signing up with a wind development company to find out as much as possible.

"Educate yourself. Listen to the people you trust," he said. http://www.windaction.org/news/18768?theme=print

Other speakers included Ed Long, the head of Blue Highlands Citizens, who said wind developers plan to build 600 turbines between Feversham and Shelburne.

Bill Palmer, a critic of the Kingsbridge wind farm project in the former Ashfield Township, said wind energy does little to supplement power needs during peak demand, since wind is highest at night when the demand for electricity is lowest and then it drops off during the day when demands soar.

He also said the setbacks from buildings and property lines of 400 metres need to be expanded.

Rob Wilton, who lives in a remote area east of Dundalk, said if a proposed wind farm project goes through as planned, he will have six 400-foot turbines within a 1.6-kilometre radius of his house.

"None of the company consultants has come around to tell me they are putting these things up," said Wilton, who doesn't think he can sell his property now.

He's not opposed to wind energy, he just wants to keep his sense of isolation.

"One of the reasons I bought this property is because it's so desolate. I spend most of time outside. I can understand green power and renewable energy, cutting back on greenhouse gases. I just don't want so many of the them just so close to my house. Two, maybe three, but six to me, that's unreasonable."

November 13, 2008 by Don Crosby in The Kincardine News

slightly open to reveal the condition of the glass, and showing no movement inside whatsoever.

Neighbors of the various projects elsewhere told us about connectors that were not supposed to be used, but were, and have since blown holes...small craters... in roads and fields. We were told how drivers, gawking at the turbines, have driven off the roads repeatedly in certain places where now large signs have been placed to try and keep their attention where it belongs. The stories we heard often echoed each other.

There are many children involved. Some, such as in Lincoln township, have grown up knowing nothing but life under wind turbines that have been on line now for 6 or 7 years. People have been bought off where they're causing a fuss, and where they're not, they can't even get five dollars to pay for a curtain to block the shadows. In the newest of the wind developments, 33 turbines on-line since only this past August, a family's teenage daughter totaled her car with two passengers inside when she drove head on into a piece of heavy wind equipment in the middle of the road on a foggy day?and then they had to fight to get reimbursed so the vehicle could be replaced!! Another says that her little kids are terrified by the new noises outside their bedroom window and can't fall asleep, especially when conditions are bad, like on rainy nights. Their nearest turbine is 1000 feet away. Another older women says, through tears, that the town she loves and where she was born and raised and where her family farm still exists...has been ruined. Story after story after story.....

Lights, shadows, noise, TV and phone interruption, gawkers, accidents, lightening strikes, lost views and plummeting property values...and more...all in video, still shots and interviews. We felt sick at the end of every day...like we had to get away and take a break from the twirling blades and the surreal atmosphere and our sadness for all these families.

In my own town of Sardinia NY, we have fought wind development and won, at least for the time being. It felt good to get home and step out of the car into the tranquil, 'normal' environment that still exists there, and hopefully will for years to come. Now Sandy and I must package all this information, so as not to let a smidgen go to waste, because these families living in these inconceivable conditions deserve no less.
(Imagine what these places looked like before...)

Crescent Ridge Wind Farm, Illinois September 05

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Towers: Challenging Obstacles To The Aerial Application Industry

NAAA Working To Make Towers More Visible Through National Competition And Legislation

One of the most dangerous obstacles for an ag pilot is a tower, such as a wind turbine tower, cell phone tower or meteorological testing tower. The National Agricultural Aviation Association (NAAA) has been working hard to make towers more visible for ag pilots and to develop policies that prevent ag pilots from the perils of towers and their ability to access ag land.

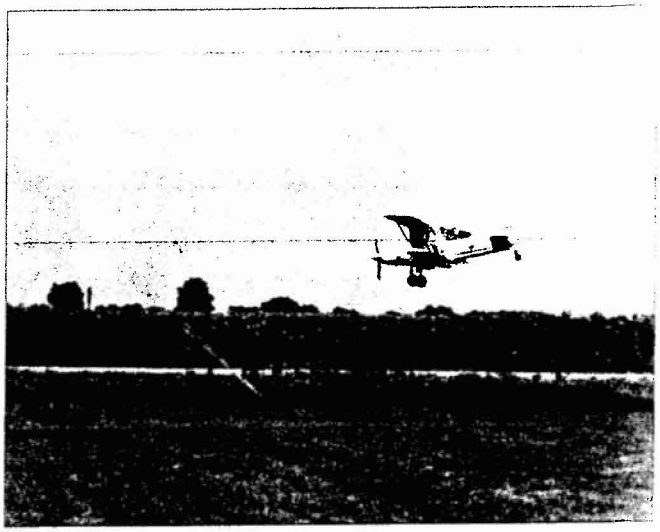
Background

The past decade has seen an increasing number of communication towers constructed as a result of an escalating demand for mobile phones and digital television networks. A statistic often used by the U.S. Fish and Wildlife Service states that there are more than 85,000 communication towers in the United States and they are being constructed at a rate of about 7,000 each year.

But growing at an even greater rate are towers to generate wind-powered energy. According to the American Wind Energy Association (AWEA), the U.S. wind energy industry installed 3,188 wind towers in 2007, expanding the nation's total wind power generating capacity by 45 percent in a single calendar year. American wind farms will generate an estimated 48 billion kilowatt-hours (kWh) of wind energy in 2008, just over 1 percent of the U.S. electricity supply, powering the equivalent of over 4.5 million homes. Currently there are wind towers in 34 states and they could provide 20 percent of the electricity in some areas of the country by 2010. That poses a real concern to the aerial application industry, not just in terms of safety, but also in terms of accessing farmer's fields to treat their crops, since many prime wind-energy development areas are located in rural, agriculturally rich areas.

The obvious concerns that the aerial application industry has with towers being constructed in rural areas is related to safety. A single fatal accident in the industry is one too many, and in the past decade there have been 8 fatal accidents involving collisions with towers and an additional 18 fatalities involving collisions with power lines. That means that over 26 percent of the fatal accidents reported over the last ten years have involved collisions with wires or towers. With an expected boom in wind-energy tower construction in rural areas and power lines to deliver the electricity to the consumer, aerial applicators will be even more at risk. Also, there is the concern that with wind-energy towers peppered across America's ag land, it will be extremely difficult to access a farmer's land by aircraft to treat it.

According to the AWEA, new 1.8 megawatt wind-energy towers that are being constructed today have rotor disk diameters of over 260 feet, which is larger than the wingspan of a Boeing 747. When installed on a tower base, the top of the tri-blade disk is over 400 feet above the ground. The spacing of the towers is two-to-three rotor diameters apart, or a few thousand feet. There is no single pattern relative to the formation of a cluster of wind towers. Logic dictates that the best layout of a cluster of wind towers for an aerial applicator—other than the towers not existing—is for them to be placed in a linear fashion, but this is not necessarily the layout favored by wind farm designers. Areas with a larger cluster of wind towers are determined based on a variety of factors, such as proximity to roads so that they can be serviced easily, acceptability of the location by the landowner, and sufficient air movement to move the turbines and generate the electricity. The location is doubly hazardous because the wind farm must be located near large transmission lines to distribute the electricity generated. In addition, operators should remember that each wind farm will usually have at least one meteorological tower to sense and record wind patterns and possibly control the orientation of the farm's rotating turbine blades. These smaller towers are usually around 300 feet in height and are marked and lighted but are still much easier to miss in your area scan when compared to the larger towers with the rotating blades.



An Ag Cat sprays a field that is near towers. You can see the guy wire in the left portion Of the photo. Photo courtesy of Craig Bair, Bair Ag Flight Inc.

The good news for aerial applicators is that at a height of over 200 feet, they fall into Federal Aviation Administration (FAA) rules requiring them to be lit. Also, new wind-energy towers constructed today are freestanding with no guy wires. Guy wires are difficult for aerial applicators to see and can sheer off an ag plane's wing. The bad news is that the developers are asking the FAA for permission to light only the outer perimeter towers in the cluster.

One way a potential wind-energy tower location is analyzed to determine if air movement is sufficient is to erect a meteorological testing tower.

These testing towers can also jeopardize the safety of aerial applicators. These towers may be more dangerous than the wind turbine towers because they have no rotors, making them less visible. Furthermore, these towers use guy wires, which ag pilots have a hard time seeing, to anchor them in place. Meteorological testing towers are also typically below 200 feet in height and thereby exempted from marking and lighting requirements if not near a public airport. The good news is that they are not permanent; they stay in place for a few seasons to generate an appropriate amount of data to determine whether a site is suitable for the larger wind-energy towers. The bad news is that they go up quickly and, as just mentioned, can be difficult to see. Moreover, some counties don't require permits for towers that are not erected on cement, and a majority of temporary meteorological testing towers are not erected on cement.

Towers not only affect the aerial application industry; they also kill birds. According to the U.S. Fish and Wildlife Service, there are millions of birds that are killed each year in the U.S. after being attracted by the lights on communication towers and colliding with the tower's structure or guy wires during night migration. Most incidents happen in poor weather with low cloud cover during the spring or fall. At least 231 species have been affected.

NAAA and Members Working to Bring More Awareness

NAAA has been actively pursuing ways to ensure that tower construction neither jeopardizes the safety of aerial applicators, nor makes prime agricultural land inaccessible to aerial application. The Association has met with congressional offices to garner support for national legislation to make the 1.8-cent per kilowatt-hour tax credit for wind-generators conditional upon not developing them on prime ag land. This approach has not been met with much support as a result of a diversified and powerful coalition of wind-energy advocates consisting of the AWEA, some environmental groups and the American Farm Bureau Federation. In general, the Federal government has limited jurisdiction over where towers, generators or transmission wires are placed, unless it is on Federal land or near public airports. State, county and local governments are the primary entities that determine the location or zoning of towers, generators and transmission lines.

Another legislative approach NAAA is taking related to towers is to urge Congress to authorize the FAA to conduct a study on the effects wind energy towers have on aviation sites. Legislation authorizing such a study was introduced by Congressman Neugebauer (R-TX) in the House of Representatives and was included in that legislative body's version of the FAA Reauthorization bill that passed last year. The Neugebauer amendment calls on the FAA Administrator to lead a study with the appropriate leaders of the Armed Services, the Department of Defense, the Department of Homeland Security and the Department of Energy pertaining to the safe height and distance that wind turbines may be installed in relation to aviation sites.

NAAA is currently urging the Senate to adopt the Neugebauer language when it takes up FAA Reauthorization language and to expand the study to include both aviation sites and operations. Unfortunately, because of partisan bickering this presidential election year, it appears that the FAA Reauthorization legislation will be postponed until 2009.

The language also directs the FAA to investigate the feasibility of developing a publicly searchable, Internet-based tool that would enable stakeholders such as industry, land owners and airspace users to know in advance whether the site on which they wish to build wind turbines would have a negative impact on aviation.

Scott Schertz, NAAREF President, 2005 NAAA President and operator of Schertz Aerial Service in Hudson, IL has reported that he has communicated with several wind energy companies that are securing land for the purpose of constructing wind farms. Some companies are willing to work with applicators, and others don't want to be bothered. The cooperative companies have verbally agreed to stop the blade rotation while the spraying is conducted in fields; but until construction begins and the towers start working, you don't know for sure whether or not the company will hold up its verbal agreement. Schertz added, "It is very important to contact and work with these companies in order to have the opportunity to provide your input into the operation of the wind farms."

Operators have also been able to influence the marking and lighting of some towers that are not required to be lighted by FAA regulations. In an interview filmed for the 07-08 PAASS Program, Reid Potter of Lakeland Dusters Aviation in Corcoran, Calif. observed, "If we find a tower that isn't lighted and we think it should be, I call the owner and ask why it is not lighted. The usual reply is that it is not required to be lit. I tell them that we frequently work in the area and would like to see a light on it for our safety. If they are reluctant to take action, I say that if someone is injured by this tower not being lit, I assume that they will be responsible for the damages. That usually gets action and we will end up with lights on that tower."

Guy Wire Design Competition

The NAAA Safety and Federal Aviation Regulations Committee has taken a proactive approach to help solve the problem and work to save the lives of ag pilots. Many companies have stated to NAAA members that they don't place guy wire markings on their towers and electric poles because of the expense of the marking, as well as the labor cost to have them installed. The NAAA Committee has announced that they have developed a competition, which includes a $1,000.00 prize, to the best guy wire marker system. See the box on page 18 for further details.

Updates - 2009

- **Towers now exceed 400'**
- **FAA requires only night-time lighting on perimeter of farm**
- **Approximately 1/3 are lighted**
- **No hazard markings**
- **No daytime lighting**
- **Met. towers are under 200' and require no marking**

The following are some important points to think about and discuss with farmer and land owners when towers may be erected in your area:

- It is important to communicate with the wind energy companies and any other companies who are proposing towers in your area. If you don't communicate the issue of erecting towers on farmland, they don't know that there is an issue.
- Besides speaking with the wind energy or other tower companies, you should also have a conversation with the farmers and land owners in your area about these same issues. You should state that there are issues with spraying a field where there are towers. If an ag pilot can't get in to spray the fields, how will that affect their crops?
- It has also been stated that the presence of a wind farm can negatively affect the value of the farmland. The farmer may not have thought about all the issues that may be involved with towers on their land.
  - The appraised value of the farmland could be less due to the fact that there is a contractual obligation on the property to lease to a tower company.
  - Because of towers on the property, the land is not available to use for developmental purposes.
- Make sure the farmer or land owner is well informed of his contract with the company that will be erecting towers on their land.
  - Will the farmer have any say in where the towers are erected?
  - When the contract expires or if the tower is decommissioned:
    - Will the tower be removed at the expense of the entity that did the erection?
    - Will the concrete base be removed from the ground and if so, to what depth? And again, at who's expense?
    - Is the farmer or land owner to be paid a monthly fee or are they to be paid a royalty based on electricity produced and is any payment received if the tower is not in operation for maintenance or any other reason?

Soybean Applications Increasing with Rising Prices

"Treating soybean fields by air offers farmers several advantages...the advantage of air is that if it's wet, we can go, and with our speed we can get more covered in a day."

David Glover of Glover Aviation in Tillar, AK

"We get pretty good coverage on the canopy (with insecticides) due to the fact that as the aircraft goes across the field, all the air that's disturbed makes the bean leaves flip upside down. Ground rigs just can't get that kind of coverage. Ground rigs are also going to have a bigger droplet size, like raindrops, so the droplets hit the top of the leaves and run off. The drops don't get to the bottom of the leaves where the aphids congregate."

Mike Bartholomew, company pilot
Bart's Flying Services in Storm Lake, IA

Aerial application benefits soybean growers because the planes don't touch the crop canopy, as a ground rig would, which means that diseases, such as ASR (Asian Soybean Rust), would not be spread to other fields.

Also, an airplane...can accomplish three times the amount of work in a day than ground equipment or any other form of application. This means less fuel used, less air pollution and no soil compaction.

Source: "Soybean Applications Increasing with Rising Prices" by Mary Lou Jay - National Agricultural Aviation Association July/August 2008

Science News Online
Week of Oct. 16, 2004; Vol. 166, No. 16

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Change in the Weather? Wind farms might affect local climates

Sid Perkins

Large groups of power-generating windmills could have a small but detectable influence on a region's climate, new analyses suggest.

Windmills once were quaint several-story-high mechanisms that pumped water or ground grain. They've since evolved into sky-scraping behemoths that can each generate electrical power for more than 100 homes.

Some modern turbines are 72 meters tall and have rotor blades that are about 25 m long, says S. Baidya Roy of Duke University in Durham, N.C. Future windmills may reach higher than 100 m, and their rotor blades may measure 50 m long, he notes.

All such turbines disrupt natural airflow to extract energy from wind. To investigate potential effects of a wind farm that includes thousands of windmills, Roy and his colleagues used a detailed climate model based on wind speeds, temperatures, and ground-level evaporation in north-central Oklahoma during a 2-week period in July 1995. In their scenario, the researchers considered a 100-by-100 array of windmills spaced 1 kilometer apart.



WEATHER MAKERS. Large-scale wind farms can increase wind speed, temperature, and evaporation at ground level, a new analysis suggests.
PhotoDisc

The simulation suggests that during the day, while sun-induced convection handily mixes the lower layers of the atmosphere, such a wind farm wouldn't have important climatic effects.

In predawn hours, however, when the atmosphere typically is less turbulent, a large windmill array could influence the local climate. For example, at 3 a.m., the average wind speed at ground level was 3.5 meters per second (m/s) in the absence of windmills. Adding the wind farm would increase the average wind speed to 5 m/s. Also, the 10,000 windmills would increase the temperature across the area by about 2°C for several hours.

Averaged over an entire day, the wind speed at ground level would go up about 0.6 m/s and the temperature would jump 0.7°C.

Turbulence caused by the rotating blades would shunt some of the high-speed winds typically found 100 m off the ground down to Earth's surface, says Roy. Those surface winds would boost evaporation of soil moisture by as much as 0.3 millimeter per day.

The researchers describe their simulation in the Oct. 16 *Journal of Geophysical Research (Atmospheres)*.

The findings may stimulate scientists to validate the analysis with real-world tests, says Neil Kelley, a meteorologist at the National Renewable Energy Laboratory in Golden. Colo. In general, says Kelley, the simulation agrees with atmospheric data he gathered at a wind farm in California.

Answers to Huge Wind-Farm Problems Are Blowin' In The Wind

CHAMPAIGN, Ill. — While harnessing more energy from the wind could help satisfy growing demands for electricity and reduce emissions of global-warming gases, turbulence from proposed wind farms could adversely affect the growth of crops in the surrounding countryside.



Click photo to enlarge

Photo by L. Brian Stauffer

Somnath Baidya Roy, a professor of atmospheric sciences, says careful planning and testing can minimize harmful impacts of large wind farms.

Solutions to this, and other problems presented by wind farms – containing huge wind turbines, each standing taller than a 60-story building and having blades more than 300 feet long – can be found blowin' in the wind, a University of Illinois researcher says.

"By identifying better siting criteria, determining the optimum spacing between turbines, and designing more efficient rotors, we can minimize the harmful impacts of large wind farms," said Somnath Baidya Roy, a professor of atmospheric sciences at the U. of I. "Through careful planning and testing, we can avoid some of the worst pitfalls altogether."

In recent years, wind-power technology has progressed from small, isolated windmills to large wind farms that contain vast arrays of giant turbines plugged into existing power-distribution networks. A wind farm in northwest Iowa, for example, has more than 600 wind turbines, and provides power to more than 140,000 homes.

"If wind is to be a major player in global electrical production, however, we have to think in terms of even larger scales– of say, thousands of turbines per wind farm," Baidya Roy said. "Such a wind farm could replace ten coal-fired power plants, but with so many turbines, turbulence could generate huge problems."

By disrupting airflow to nearby turbines, turbulence can significantly reduce the efficiency of a wind farm. But turbulence produced by turbine rotors also can have a strong impact on local ground temperature and moisture content.

"Turbulence creates stronger mixing of heat and moisture, which causes the land surface to become warmer and drier," Baidya Roy said. "This change in local hydrometeorological conditions can affect the growth of crops within the wind farm."

One way to reduce the impact of turbulence is to better integrate the wind-energy generation process into the natural kinetic energy cycle. In this cycle, solar energy heats Earth's surface and is converted into the kinetic energy of a moving air mass. Some of the wind's kinetic energy is lost as friction, as it passes over and around obstructions such as trees, houses and mountains. At a wind farm, some of the wind's kinetic energy is harvested and changed into mechanical energy by turning a turbine, and then into electrical energy that flows into power lines.

The first step in reducing the effects of turbulence on local hydrometeorological conditions is to identify regions around the world where wind energy is high and frictional dissipation also is high, Baidya Roy said. "Building wind farms in regions where there is already a lot of kinetic energy dissipation would help to minimize the intrusion to the natural kinetic energy cycle."

Although the tops of mountain ranges are regions with high winds and high surface friction, constructing wind farms on summits would be impractical or economically unfeasible. Researchers must therefore search for regions better suited for integration with the kinetic energy cycle.

Using the IRA25 dataset, a comprehensive collection of 25 years of data from surface meteorological stations, radiosondes and satellites, Baidya Roy is mapping the wind's frictional dissipation around the world. He is able to estimate how much wind is available at selected sites, and how much of the wind's kinetic energy is dissipated as friction at the surface.

His results show that eastern and central Africa, western Australia, eastern China, southern Argentina and Chile, northern Amazonia, the northeastern United States, and Greenland are ideal locations for siting low-impact wind farms. In these regions, a wind farm with 100 large wind turbines spaced about 1 kilometer apart can produce more than 10 megawatts of electricity.

In related work, Baidya Roy also is studying ways to reduce the effects of rotor-generated turbulence on nearby wind turbines. As wind passes through a turbine, some of the energy creates a disruption much like that created by a moving boat. This disruption can affect the efficiency of a wind farm.

Using models, Baidya Roy is simulating the effects of different turbine spacing and patterns, and different rotor designs, on turbulence. The simulations show that reducing rotor-generated turbulence not only reduces the hydrometeorological impacts, but also increases power production by harnessing energy that was otherwise lost to turbulence.

"These studies suggest that while large wind farms can affect local hydrometeorology, there are smart engineering solutions that can significantly reduce those impacts."

Baidya Roy will describe his work and present early findings at the American Geophysical Union meeting in San Francisco, Dec. 15-19.

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Can large wind farms affect local meteorology?

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[1] The RAMS model was used to explore the possible impacts of a large wind farm in the Great Plains region on the local meteorology over synoptic timescales under typical summertime conditions. A wind turbine was approximated as a sink of energy and source of turbulence. The wind farm was created by assuming an array of such turbines. Results show that the wind farm significantly slows down the wind at the turbine hub-height level. Additionally, turbulence generated by rotors create eddies that can enhance vertical mixing of momentum, heat, and scalars, usually leading to a warming and drying of the surface air and reduced surface sensible heat flux. This effect is most intense in the early morning hours when the boundary layer is stably stratified and the hub-height level wind speed is the strongest due to the nocturnal low-level jet. The impact on evapotranspiration is small. *INDEX TERMS:* 3307 Meteorology and Atmospheric Dynamics: Boundary layer processes; 3329 Meteorology and Atmospheric Dynamics: Mesoscale meteorology; 3379 Meteorology and Atmospheric Dynamics: Turbulence; 1630 Global Change: Impact phenomena; *KEYWORDS:* wind power, wind farm, renewable energy, environmental impact, climate, weather

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1. Introduction

[2] The growing energy demand of the expanding global economy is being adequately met by fossil fuels. However, the long-term future of these sources is in doubt because they are not renewable. Additionally, concerns have also been raised regarding the greenhouse gases and aerosols emitted by fossil fuel-based power plants [*Intergovernmental Panel on Climate Change* (*IPCC*), 2001]. These issues are being addressed by developing cleaner and more efficient technologies for generating electricity. Parallel efforts are also on to switch to renewable and less polluting sources, amongst which wind power is one of the more popular choices. The potential for wind power generation, in terms of the spatial extent of high-wind regimes on Earth, is quite large [*Grubb and Meyer*, 1993; *Office of Energy Efficiency and Renewable Energy* (*EERE*), 2002]. While windmills have been used by humans since antiquity, isolated windmills are probably not sufficient to economically harness this enormous potential. Large-scale wind farms, connected to existing electricity grids for efficient distribution, are required for this purpose. Small operational wind farms already exist in many different countries. Several environmental concerns associated with such wind farms, viz., noise and visual pollution and interference in avian flight paths, have been identified and actively addressed [*National Wind Coordinating Committee*, 1997; *American Wind Energy Association*, 2002].

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[3] However, not much effort has been made to assess the impact of wind farms on the local meteorology. The rate at which wind farms extract energy from the atmosphere ($\sim$1 Wm^{-2}), while small compared to the kinetic and potential energy stored in the atmosphere, is comparable to time-tendency terms, e.g., rate of conversion of energy from one form to another, frictional dissipation rate, etc., in the atmospheric energy balance equation [*Peixoto and Oort*, 1992]. This indicates that it is possible for wind farms to influence atmospheric and surface processes.

[4] In this paper we use an atmospheric numerical model to study the impacts of a large virtual wind farm in the Great Plains region on the local meteorology over synoptic timescales under typical sunumertime conditions. Prognostic [*Ivanova and Nadyozhina*, 2000] and diagnostic [*Magnusson*, 1999; *Leclerc et al.*, 1999] models have been used to study the effect of wind turbines and wind farms on aspects of atmospheric dynamics. They show that wind turbines and farms significantly affect hub-height level wind speed and turbulence. This is the first paper to use a coupled land-atmosphere mesoscale model to explore if such wind farms can also influence atmospheric thermodynamics and surface fluxes of heat and moisture.

2. Numerical Experiment

2.1. Atmospheric Model

[5] We use the Regional Atmospheric Modeling System (RAMS) [*Pielke et al.*, 1992; *Cotton et al.*, 2003] to simulate the effects of a hypothetical wind farm in Oklahoma. This

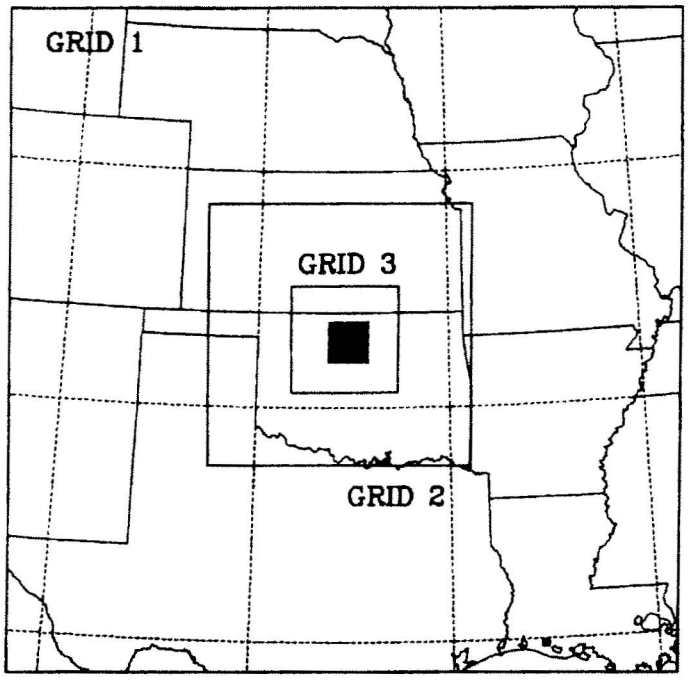

Figure 1. Model domain showing the three grids. The shaded area in the center of grid 3 denotes the wind farm.

region is rich in wind resources [*Archer and Jacobson*, 2003] and current plans recommend full exploitation of this potential [*EERE*, 2002].

[6] RAMS solves the full three-dimensional, compressible, nonhydrostatic dynamic equations, a thermodynamic equation and a set of microphysics equations. We close the system with the Mellor-Yamada level 2.5 scheme [*Mellor and Yamada*, 1982] that explicitly solves for turbulent kinetic energy (TKE) while other second-order moments are parameterized. The domain consists of 3 nested grids (Figure 1): grid 1: 1568 km × 1568 km, 32 km spacing; grid 2: 616 km × 616 km, 8 km spacing; and grid 3: 250 km × 250 km; 2 km spacing. The vertical grid is nonuniform, with higher resolution near the surface (15 levels in the lowest 2 km) to better resolve the planetary boundary layer (PBL) processes. The National Centers for Environmental Prediction/National Center for Atmospheric Research (NCEP/NCAR) reanalysis data [*Kalnay et al.*, 1996] are used as initial and dynamic lateral boundary conditions. The land-surface boundary conditions are provided by the Land Ecosystem-Atmosphere Feedback 2 (LEAF-2) model [*Walko et al.*, 2000].

[7] The model is run for 15 days: 1 July, 1200 UTC (0600 local time (LT)) through 16 July 1995. This is a meteorologically interesting period involving strong precipitation events early (1–3 and 5 July) followed by a dry spell. This enables us to investigate the impacts of wind farms under both wet and dry synoptic conditions. *Weaver and Avissar* [2001], using a setup similar to ours, have demonstrated that RAMS is capable of accurately simulating the dynamic and the thermodynamic behavior of the diurnal PBL of this region during this period.

2.2. Virtual Wind Farm

[8] It is computationally impossible to run a climate model at resolutions high enough to resolve turbine rotors. So, we adopt a subgrid parameterization approach where we consider the spatially aggregated impact of several rotors on the resolved variables. Within this framework, wind farms can be approximated by increasing the surface roughness length [*Ivanova and Nadyozhina*, 2000; *Malyshev et al.*, 2003]. However, in the absence of extensive field measurements, it is difficult to choose the appropriate roughness length value. Field estimates of surface roughness can be obtained from existing small wind farms but these values might not be directly applicable for large wind farms. *Malyshev et al.* [2003] have attempted to overcome this problem by explicitly specifying a surface drag and then calculating the corresponding roughness length by assuming neutral stability conditions.

[9] Here, we use an alternative approach which is intuitive, based on available observations and involves simple, reasonable assumptions. Since a turbine extracts energy from the atmosphere and creates some turbulence in its wake, we assume a rotor to be an elevated, massless sink of resolved kinetic energy (RKE) and source of TKE. A major advantage of this approach is that it allows us to simulate the flow both above and below the rotor, which is not possible with a surface drag approach.

[10] We assume a virtual wind farm consisting of a 100 × 100 array of wind turbines spaced 1 km apart. Each turbine is 100 m tall (hub height) with 50m long rotor blades (100 m rotor diameter). These dimensions are larger than current models but within the near-term projections for the future [*EERE*, 2002]. For example, the Top of Iowa Wind Farm in Worth County, Iowa, consists of turbines that are 72 m tall with 52 m rotor diameter (www.midwest-renewable.com).

[11] The coefficient of performance (C_p) of a rotor is the fraction of available kinetic energy that it can draw from the flow. The Betz limit or the maximum possible value of C_p is 16/27 [*Frandsen*, 1992]. C_p is a function of wind speed [*Cavallo et al.*, 1993] but the C_p of modern commercial turbines can reach a significant fraction of the Betz limit and remain constant over a wide range of wind speeds. Rotor-generated TKE is also a weak function of wind speed. Observations from a wind farm in San Gorgonio, California, show that the TKE in the interior is 5–7 m^2s^{-2} more than that upwind of the farm over a wide range of wind speeds (Figure 2). This wind farm is relatively small: 41 rows of 23 m tall towers with 8.5 m long rotor blades, placed approximately 120 m apart. *Taylor* [1983] has reported similar values.

[12] Armed with these observations, we design an experiment consisting of a control simulation and two scenarios: (1) scenario 1, where a turbine is just a sink of energy and (2) scenario 2, where a turbine acts as both an energy sink and a source of turbulence.

[13] The energy involved in the additional turbulence created in scenario 2 comes from the mean flow to satisfy the energy conservation law. We assume a constant C_p of 0.4. We also assume that at wind speeds lower than 1 ms^{-1}, the rotors stop operating. This behavior is typical of all commercial turbines.

[14] The aforementioned approximations are implemented in the atmospheric model according to the following procedure. The second atmospheric layer in the model, extending from 50 m to 150 m altitudes, is 100 m thick. Within that layer we assume a cylinder with diameter = 100 m (diameter

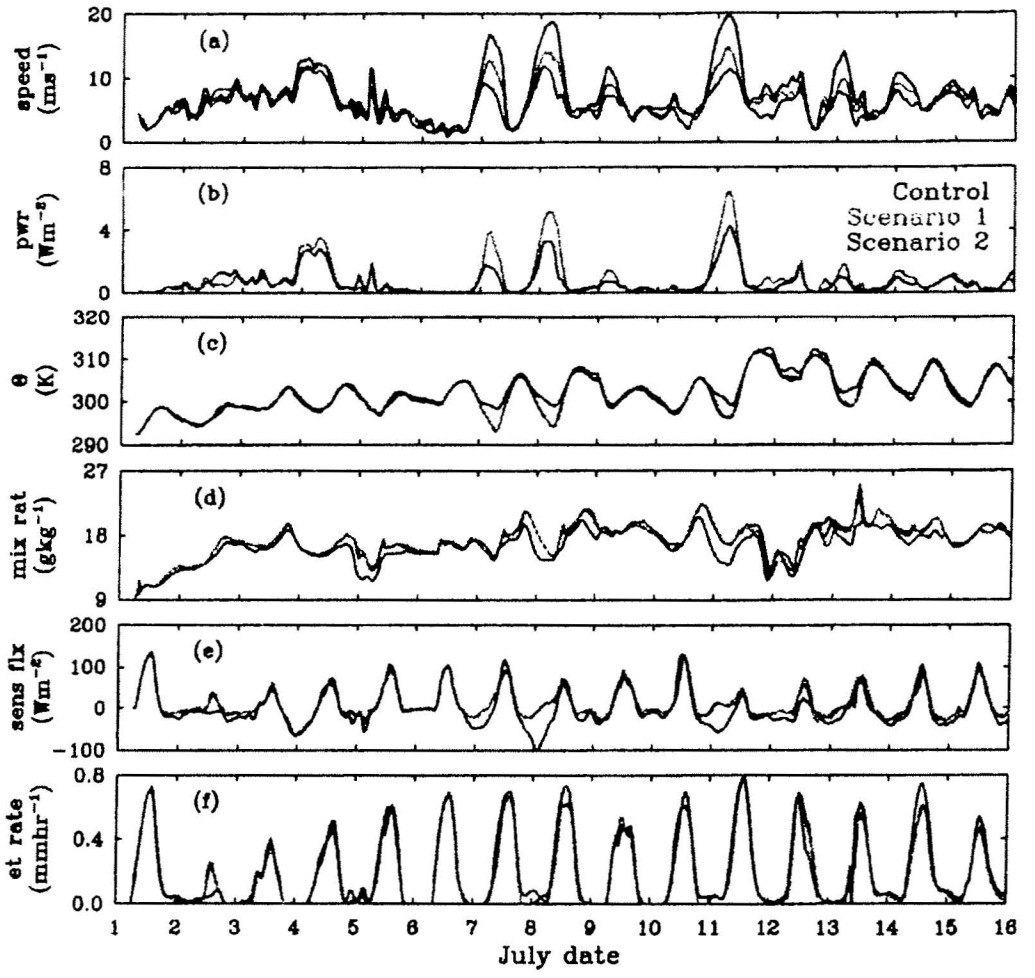

Figure 3. Time series of (a) hub-height horizontal wind speed, (b) power extracted, (c) surface air θ, (d) total water mixing ratio, (e) surface sensible heat flux, and (f) surface evapotranspiration rate over the wind farm.

[23] We attempt to explain this pattern by looking at the mean θ profile over the wind farm at 1200 UT (0600 LT) outputs for each day (Figure 4b). The boundary layer at this time generally exhibits a strong stable stratification i.e., $\partial\theta/\partial z \gg 0$. Increased vertical mixing by the additional eddies generated in scenario 2 bring high-θ air down and low-θ air up, leading to a warming near the surface and a cooling above the hub height. Obviously this effect is

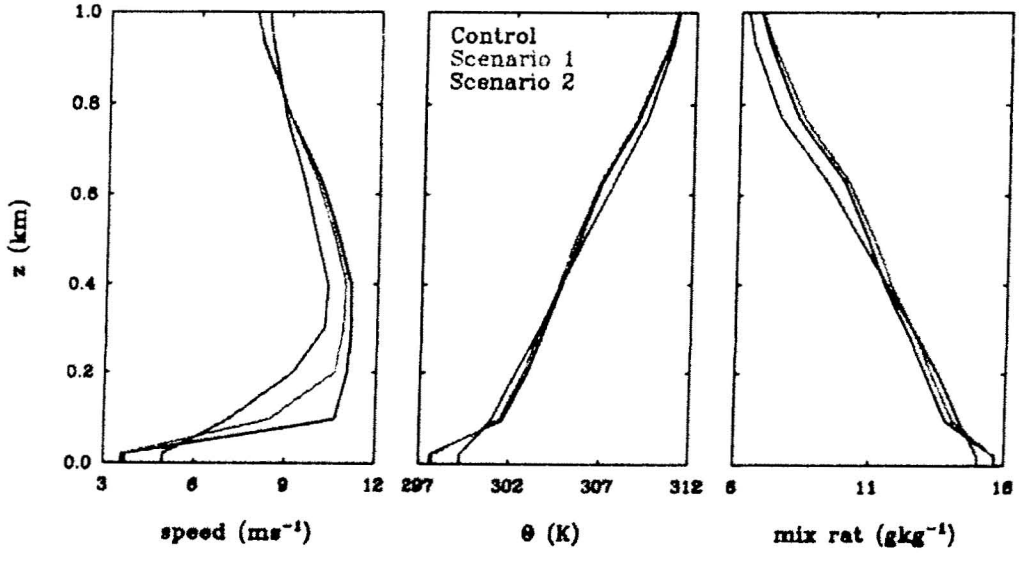

Figure 4. Mean vertical profile of horizontal wind speed at 0900 UT (0300 LT), θ and total water mixing ratio at 1200 UT (0600 LT) over the wind farm.

Table 1. Mean Surface Meteorology

	Control	Scenario 1	Scenario 2
Wind speed, ms^{-1}	3.8	3.7	4.4
Temperature, C	25.8	25.9	26.5
Total water mixing ratio, g kg^{-1}	17.3	17.3	16.6
Sensible heat flux, Wm^{-2}	10.2	11.0	−1.8
Evapotranspiration rate, mm d^{-1}	4.4	4.3	4.7

negligible during daytime when the atmosphere is usually well mixed ($\partial\theta/\partial z \sim 0$). Occasionally, during the daytime, when the atmosphere is very unstable (i.e., $\partial\theta/\partial z \ll 0$), the turbulent eddies mix cold air down and warm air up, producing a cooler surface.

[24] Similar to that for θ, the control and scenario 1 patterns for the near-surface total water mixing ratio (R_t) are almost the same (Figure 3d). Scenario 2 produces a drying near the surface and the effect is most prominent in the early morning hours (1200 UT (0600 LT)). Stronger mixing in scenario 2 brings dry air down and moist air up, leading to a drying near the surface and moistening aloft (Figure 4c).

3.3. Impact of Wind Farms on Surface Fluxes

[25] While the control and scenario 1 produce almost identical surface flux patterns, scenario 2 is different. The most prominent feature is the significant reduction (tens of Wm^{-2}) in the sensible heat flux (Figure 3e) in the early morning hours. At that time the soil is colder than the atmosphere (negative land-atmosphere thermal gradient) and hence the surface sensible heat flux is negative. The increase in near-surface θ due to rotor-generated turbulence makes this gradient more negative, resulting in more sensible heat being transferred from the atmosphere to the ground. Similarly, the drying of the near-surface air by turbulent eddies in scenario 2 cause the positive land-atmosphere moisture gradient to go up further, thereby increasing evapotranspiration (Figure 3f). However, the departures are small, never more than 0.2 $mmhr^{-1}$.

3.4. Mean Effects of Wind Farms on Surface Meteorology

[26] The mean impact of wind farms (Table 1), averaged over the entire simulation period, reinforces the observations made in the previous subsections. The surface conditions within the wind farm in scenario 1 are almost identical to that in the control. However, in scenario 2 the surface air experiences moderate warming and drying, as well as an increase in wind speed.

[27] While the differences in evapotranspiration rate is negligible, the impact on the surface sensible heat flux in scenario 2 is strong enough to force a reversal of direction. The soil is cool and wet due to the convective storms that occurred during the first few days of the simulation period and hence, the mean land-atmosphere thermal gradient is negative but small. The increase in surface air temperature reverses this gradient leading to a mean negative sensible heat flux.

3.5. Sensitivity of Model Design to Vertical Resolution

[28] A basic requirement of our subgrid parameterization approach is that each hypothetical cylinder be completely contained within a grid cell. We ensure this by making the thickness of the second atmospheric layer equal to the diameter of the rotors (100 m). This vertical resolution is coarser than that typically used in mesoscale simulations but it does not trigger any numerical instability in our experiments. To test the sensitivity of our model setup to this resolution, we repeat the simulations for 1 day, starting at 1800 UT (1200 LT) 10 July, by doubling the vertical resolutions below 250 m. The hub-height level wind speed was the strongest that night. The low- and high-resolution simulations do not show any difference, implying that the chosen vertical grid is adequate for these experiments.

4. Summary and Discussions

[29] This study used a new parameterization to numerically simulate the impacts of a hypothetical wind farm in the Great Plains region on the local meteorology. Results show that wind farms significantly slow down the wind at the turbine hub-height level. Additionally, turbulence generated in the wake of the rotors can enhance vertical mixing that significantly affects the vertical distribution of temperature and humidity as well as surface sensible and latent heat fluxes. The impact is strongest in the early hours of the day primarily due to the strong hub-height level winds associated with the nocturnal low-level jet. Also, the nocturnal boundary layer is stable with large vertical gradients of momentum, humidity and temperature. Under this situation the effect of enhanced vertical mixing is likely to be larger than that in a well-mixed diurnal boundary layer.

[30] A wide range of typical summertime synoptic atmospheric boundary conditions are used in this study and hence, our conclusions regarding the interactions between wind farms and atmospheric flow are generally robust. However, the surface flux signals are probably valid only for relatively wet and cool soil conditions. More work with other types of land surface boundary conditions is required to test the robustness of the surface flux signals.

[31] This study takes into account only localized processes with timescales of the order of days. Processes with longer timescales are important for land-atmosphere interactions. Since high-resolution mesoscale models are computationally expensive, a coarse resolution general circulation model (GCM) can be used to investigate this issue. This will also let us explore the seasonality of the impacts of wind farms on local meteorology.

[32] Observations show that turbine C_p and rotor-generated turbulence are weak functions of the background wind speed. For simplicity, we assume them to be constants. The sensitivity of our model to these assumptions needs to be tested. Parallel to these modeling exercises, it is imperative that field observations be collected at different wind farms to improve the calibration of our rotor parameterization. Another issue of importance is the relevance of the size of the wind farm. It needs to be seen if the environmental impacts are constant or scale up or down, as the wind farms get larger or smaller.

[33] This is a preliminary study meant to highlight this issue as an interesting problem that requires detailed investigation. The results however can have significant implications for wind power engineering. The findings suggest that reducing rotor-generated turbulence will not only reduce the meteorological impacts of wind farms but also increase the

efficiency. This work also demonstrates that mesoscale modeling can be a source of valuable information with many potential applications including environmental impact assessment, site selection and array design for wind farms.

[34] **Acknowledgments.** We wish to thank N. D. Kelly, National Wind Technology Center, NREL, Golden, CO, and R. H. Williams and D. Denkenberger, Princeton Environmental Institute, Princeton University, Princeton, NJ, for very helpful comments and suggestions. N. D. Kelley also provided the TKE data from San Gorgonio.

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"Large-scale wind farms can increase wind speed, temperature and evaporation..."

*** large windmill array could influence the local climate....**
*** increases average ground wind speed to 5 m/s (from 3.5 meters per second)**
*** increases the ground temperature about 2 degrees C for several hours**
*** wind speed at ground level would go up about .6 m/s and temperature would jump .7 degrees C (averaged over an entire day)**
*** turbulence would shunt high speed winds found 100 m off the ground down to earth's surface**
*** surface winds would boost evaporation of soil moisture by as much as .3 millimeter per day."**

Source: Science News Online – week of October 16, 2004: Vol. 166, No. 16
"Change in Weather? Wind Farms Might Affect Local Climates" by Sid Perkins http://www.sciencenews.org

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....turbulence from proposed wind farms could adversely affect the growth of crops...

...If wind is to be a major player in global electrical production, we have to think in terms of...thousands of turbines per wind farm...with so many turbines...turbulence could generate huge problems....

...turbulence creates stronger mixing of heat and moisture, which causes the land surface to become warmer and drier....this change...can affect the growth of crops...

Source: "Answers to Huge Wind-Farm Problems are Blowin' In The Wind" 12-15-08 James. E Kloeppel News Bureau, University of Illinois at Urbana-Champaign, news.illinois.edu/NEWS/08/1215windfarm.html

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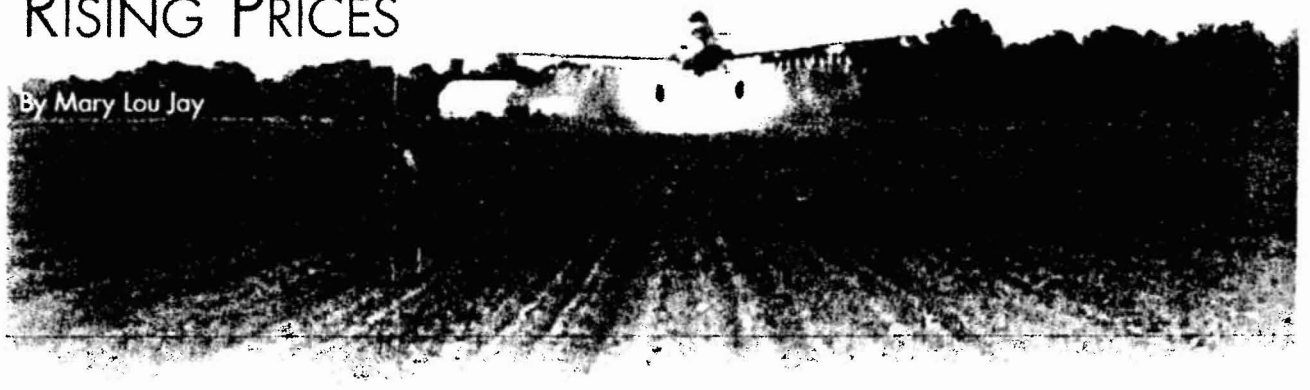
Soybean Applications Increasing With Rising Prices

By Mary Lou Jay



A pilot sprays a soybean field. Photo courtesy of David Glover.

The U.S. Department of Agriculture calls soybeans the most important grain legume crop grown in the United States. It's easy to see why. The oil from the versatile plant is used domestically for food products such as salad dressings and margarine; the meal is an important source of high protein animal feed; and the plant can be used for biodiesel fuel. The soybean even helps our balance of trade. U.S. growers exported $8.8 billion of soybeans in 2006.

Agricultural aviation has played a role in soybean production almost since the crop was introduced in the U.S. in the 1920s. With prices for the crop relatively low, however, farmers usually called aerial applicators only when there was a specific threat to the beans from pests or disease. But the steep increases in prices and the spread of Asian Soybean Rust (ASR) and new pests have led to an increased demand for aerial applications.

Spraying Reduces Rust Risk

ASR is a fungus that can reduce soybean yields by as much as 80 percent. It was found in Japan more than 100 years ago and over the years gradually spread via spores to Asia, Africa, Europe and South America. ASR made its first appearance in the continental U.S. in 2004, with reports of infected fields in nine states. By 2007, 19 states were reporting some problems with the rust.

Aerial applicators are seeing an increasing demand for their services as farmers take preventive measures.

"We do a lot of preemptive strikes on soybean rust," says David Glover of Glover Aviation in Tillar, AK. "The growers just put on Quadris®, a fungicide produced by Syngenta Crop Protection, or Headline®, a fungicide produced by BASF, as a preventative measure.

"We have found Asian Soybean Rust in the county, but it has always been a little late getting here," he continues. "But every year it seems to be getting here a little sooner. It's something that we can't predict. Last year, we had one field in the county with damage due to soybean rust, but they keep finding spores here and they keep warning us that we could have a problem."

Aerial applicators in other parts of the country report similar increases in fungicide applications on soybeans over the last few years.

Higher Prices And Better Yields

Soybeans jumped from $4 or $5 a bushel a year ago to an average of $12.62 on May 9, 2008, so spraying the crop to increase yields makes good economic sense. Chuck Holzwarth of Holzwarth Flying Service in Virden, IL reports that 70 to 80 percent of the soybeans he has treated show yield increases, sometimes as high as 10 to 15 bushels an acre.

"We're using more fungicides today than we ever have before," Holzwarth says. While it would have previously taken a five or six bushel increase to make aerial applications cost effective, now farmers can cover the costs with just an extra bushel or two.

Barry Jo Wilson of Wil-Co Flying Service in DeWitt, AK has seen a change in his customer base. "We do a lot of seed beans here, and the seed companies spray for all diseases, like frog eye and leaf spotter, not just soybean rust," he says. "They also found that they can get an eight to 15 bushel increase by spraying with fungicides. So now farmers who are just growing regular beans are having us spray them, too."

For many years, corn was the mainstay crop for Bart's Flying Service in Storm Lake, IA, but in the last five to eight years, soybeans have taken prominence. "Today they are probably three-quarters of our business," says company pilot Mike Bartholomew. The appearance of new pests, such as bean leaf beetles, spider mites and aphids has triggered this increase, he says.

Glover sprayed 25,000 acres of soybeans last year, and expects to do as much or even double as many this year.

"Soybeans have always been a stepchild, a filler crop in this area, but with the prices they're getting now, farmers will treat them more like a crop than they have before," he says.

"We've got the micro-managers who will treat their soybeans religiously, regardless. But then you have the farmers who previously treated only after they got an infestation. Those are the growers that I think we will be picking up this year."

Glover says farmers are planting more acres in soybeans. "For 20 or 30 years we have done mostly cotton and rice with a small amount of soybeans," he explains. "But this year my seed growers say we will have a 40 percent cut in cotton and an eight percent cut in corn, and some of this land is rolling into soybeans."

That's not a positive change, however. "Soybean applications don't measure up to cotton applications. We'll treat cotton six to 10 times a season, while soybeans will be as few as one and as many as three times," Glover says.

Summer Applications

Farmers plant soybeans from late April through early June. Most pretreatment of soy fields is done by ground rig, but Glover starts his soybean spraying in April with burn downs of a few thousand acres using Roundup® and 2,4-D on Roundup®-ready beans. Bartholomew also does ground preparation work if the spring is an exceptionally wet one and ground rigs can't get in.

Aerial fungicide applications sometimes continue into July, and insecticides are done in August through early September.

"Generally, one type of application is usually sufficient for each type of treatment. Farmers tend to time them a little differently, although sometimes they will combine fungicide with insecticide. A lot depends on the weather we have and how it hits. If the bugs start chewing early, we may have to go in with a second application to control re-infestation," says Bartholomew.

Glover says the micromanagers in his area will usually spray three times, twice with fungicide alone and once with a fungicide and a pyrethroid. "This year we will have a lot of soybeans behind wheat, which means that we will have some late soybeans," he comments. "Those are usually treated more heavily. At that time of year, they are more likely to have rust or fungus and they'll get more treatments for worms or other pests, such as grasshoppers."

"Our soybean treatments have really been a mixed bag; every one of these guys seems to treat things a little differently," Glover adds. Some of last year's mixes were glyphosate, Headline®, Quadris® and CoRoN®, Quadris® and Karate®, methyl parathion for stinkbugs, and Orthene™, Intrepid and Tracer for cabbage loopers.

"Depending on the conditions, the main problem we have in soybeans in Central Illinois is spider mites, soybean aphids and bean leaf beetles," said Holzwarth.

Quilt® and Headline® are the most popular fungicides with Holzwarth's customers, although some farmers use Stratego®. Fungicides generally get just one aerial application. "If we ever do get soybean rust, there are fields that might require more than one application but that depends on the time of year and what stage the plant is in," Holzwarth says.

Stinkbugs and worms create most of the insecticide work for Wilson in southeast Arkansas. "The stinkbug has become a big problem because it gives the soybeans green bean syndrome. Once the stinkbugs sting a plant, the bean's stems stay green and they don't drop their leaves very well," Wilson says. He primarily uses methyl parathion, some pyrethroids and Orthene™.

In Iowa, Bartholomew generally sprays Headline® as the fungicide and Lorsban®, Warrior® and Asana® as insecticides. If the fall weather is unusually warm, and no frost occurs to kill off the soy plants, Bartholomew will also do some burn down of the soybean fields as a pre-harvest aid.

Calibration And Spraying

Treating soybean fields by air offers farmers several advantages.

"The advantage of air is that if it's wet we can go, and with our speed we can get more covered in a day," says Glover. "And in our area, if it's hot, and they're irrigating a lot, they won't want to drive over the irrigation pipe."

"There is some competition from ground rigs, but when bean prices get this high, the farmers don't want ground rigs rolling over them," Holzwarth adds.

Bart's Flying Services uses two Piper Braves, an Ag Cat and an Air Tractor 401 in treating soybeans. "They provide a more even application than ground rigs," says Bartholomew.

"We get pretty good coverage on the canopy [with insecticides] due to the fact that as the aircraft goes across the field, all the air that's disturbed makes the bean leaves flip upside down," says Bartholomew. "Ground rigs just can't get that kind of coverage. Ground rigs are also going to have a bigger droplet size, like raindrops, so the droplets hit the top of the leaves and run off. The drops don't get to the bottom of the leaves where the aphids congregate."

Aerial application benefits soybean growers because the planes don't touch the crop canopy, as a ground rig would, which means that diseases, such as ASR, would not be spread to other fields. Also, an airplane or helicopter can accomplish three times the amount of work in a day than ground equipment or any other form of application. This means less fuel used, less air pollution and no soil compaction.

Control of droplet size is critical in spraying soybeans. "When we do a fungicide application, we make sure that we can put out a droplet size of between 250 and 300 microns," says Holzwarth. He takes his airplanes—Air Tractor turbo props—to Operation S.A.F.E. fly-ins each spring to ensure that they are set up correctly for the work.

Wilson flies an Air Tractor 602 and two Thrush 510 aircraft. "We pattern test our airplanes so we have got our droplet size down and we know what nozzle settings to run," he says.

Glover, who flies Air Tractor 502s, uses a CP-09 nozzle with the deflector set for the largest amount of medium sized droplets when applying the glyphosate. "They help keep our drift down. We also use a small amount of Control® in every load of glyphosate Roundup® when we apply."

Outlook: More Application Ahead

Soybean prices are expected to remain high, and that's likely to mean more work for aerial applicators. But some pilots question how long this boom can last. "This season I'm optimistic, but it's anyone's guess as to what may happen," says Glover. "Many of our growers booked beans at the $8.00 per bushel range, but input costs, such as the 60 percent rise in glyphosate prices, are rapidly catching them. The growers that booked later with higher prices will have more to spend with aerial applicators, but who and how much we'll just have to wait and see."

Holzwarth remains optimistic about the future with soybeans. "With the way the population in the world grows every year, and with every acre that we lose to urban sprawl, every acre of ground has to produce more and more," he says. "With the soybean rust threat and with the commodity prices, we have a good market right now. I just don't see our work getting any slower or our industry getting any smaller."

Soybean Applications Increasing with Rising Prices

"Treating soybean fields by air offers farmers several advantages...the advantage of air is that if it's wet, we can go, and with our speed we can get more covered in a day."
David Glover of Glover Aviation in Tillar, AK

"We get pretty good coverage on the canopy (with insecticides) due to the fact that as the aircraft goes across the field, all the air that's disturbed makes the bean leaves flip upside down. Ground rigs just can't get that kind of coverage. Ground rigs are also going to have a bigger droplet size, like raindrops, so the droplets hit the top of the leaves and run off. The drops don't get to the bottom of the leaves where the aphids congregate."

Mike Bartholomew, company pilot for Bart's Flying Services in Storm Lake, IA

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Source: "Soybean Applications Increasing with Rising Prices" by Mary Lou Jay - National Agricultural Aviation Association July/August 2008

NAAA
NATIONAL AGRICULTURAL AVIATION ASSOCIATION

Towers: A Growing Obstacle for Ag Aviation

Taken from July/August 2005 *Agricultural Aviation* Magazine

During the past decade, 7% of all agricultural aviation fatal accidents were caused by collisions with towers. Every collision with a tower during this reporting period resulted in a fatality. The most recent fatality was this past May in the Texas Panhandle. In addition to being more aware of off-target movement of applied materials and urban encroachment, the modern aerial applicator must also be on the lookout for towers that are constantly sprouting into existence on arable land. The past decade has seen an increasing number of towers constructed as a result of an escalating demand for mobile phones and digital television networks.

There are more than 85,000 communication towers in the U.S and they are being constructed at a rate of about 7,000 each year. But expected to grow at an even greater rate are towers to be constructed to generate wind-powered energy. By the end of this year wind is expected to generate enough electricity to supply just shy of one percent of the country's needs. This percentage has doubled since 1999 and, according to the American Wind Energy Association (AWAE), could provide 20 percent of the electricity in some areas of the country by 2010. That poses a real concern to the aerial application industry, not just in terms of safety, but also in terms of accessing farmer's fields to treat their crops, since many prime wind-energy development areas are located in rural, agriculturally rich areas.

Why Wind is in

There are many economic variables of why wind-generated power is attractive today. One reason is that the price of other fuel sources, such as natural gas and oil, are increasing to the level where wind-powered energy can compete. The cost of wind generated electricity, on the other hand has dropped by about two-thirds since the mid-1980's as a result of more efficient turbines and better access to the power grid. Furthermore, the federal government has enacted a production tax credit that has breathed a fresh breath of air into the wind-power industry. This amounts to a 1.8 cent per kilowatt-hour tax credit for wind-generators. This tax credit expires this year; however, Congress is currently considering an all-encompassing piece of energy legislation that would reauthorize the wind-power tax credit for another ten years. According to wind energy representatives, without this tax credit, wind energy could not compete.

Another factor driving the demand for wind-energy is that eighteen states, including the District of Columbia, have established what are known as renewable portfolio standards (RPS), which require utilities to supply minimum amounts of electricity from green sources such as wind and sunlight. For example, Illinois Governor Rod Blagojevich is proposing an RPS for the state that mandates 6% of all energy generated in the state come from wind.

All these factors are resulting in wind-energy becoming a multibillion-dollar business dominated by some major global corporations. For example, General Electric makes high tech wind energy turbines, as does Siemens AG—the $91.3 billion German industrial conglomerate. Even John Deere is involved. It has a subsidiary that finances the development of wind energy towers and maintains the wind energy turbines.

Wind and Agriculture

With the demand for wind-energy, towers—equipped with the rotating turbines that generate the electricity—are sprouting up throughout the country. Many locations that look promising for harnessing the wind for power are in prime agricultural areas. These areas, as outlined by the U.S. Department of Energy (DOE), include eastern Montana, North Dakota, South Dakota, north-central Nebraska, western and southern Minnesota, western Michigan, west-central Illinois, western and northern Iowa, south Kansas and the Oklahoma and Texas panhandles (click on this link to see the map - http://www.nrel.gov/wind/images/wherewind800.jpg).

The DOE estimates that wind energy over the next 20 years will create $60 billion in capital investment in rural America, provide $1.2 billion in new income for farmers and rural landowners and create 80,000 new jobs. This is attractive to farmers because they can lease out their land to wind-energy companies where the towers are placed and receive between $2,000-3,500 a year while st being able to farm between the towers. Because this will help out a struggling farm economy, both the American Farm Bureau Federation and the American Corn Growers Association are supportive of wind energy and of the 1.8 cent per kilowatt-hour tax-credit associated with it.

Towers and Aerial Application

The obvious concerns that the aerial application industry has with towers being constructed in rural areas is related to safety. One fatal accident in the industry is one too many and in the past decade there have been 7 fatal accidents involving collisions with towers—31 when considering collisions with both tower and wires. With an expected boom in wind-energy tower construction in rural areas, aerial applicators will be even more at risk. Also, there is the concern tha with wind-energy towers peppered across America's ag land, it will be extremel difficult, if not impossible, to access a farmer's land by plane to treat it.

According to the AWAE, new wind-energy towers that are being constructed today are close to 300 feet in height. The good news for aerial applicators is tha at this height they fall into Federal Aviation Administration (FAA) rules requiring them to be lit. Also, new wind-energy towers constructed today are freestandin with no guy wires. Guy wires are difficult for aerial applicators to see and can sheer off an ag plane's wing. The towers, when equipped with their tri-blades ir place on the rotor, are roughly the same width as the wingspan of a Boeing 74 aircraft. The spacing of the towers is two to three rotor diameters apart, or a fe thousand feet. According to Sam Enfield, with PPM Atlantic Renewable and president of the AWAE, typically wind-energy towers are placed on ridges when there is more air movement. Wind-energy towers must be placed near transmission lines, otherwise they are not profitable. There is no single pattern relative to the formation of a cluster of wind towers. Logic dictates that the bes layout of a cluster of wind towers for an aerial applicator, other than the towers not existing, is that they be placed in a linear fashion. Areas with a larger clust of wind towers are determined based on a variety of factors, such as, proximity to roads so that they can be serviced easily; acceptability of the location by the landowner; and sufficient air movement to move the turbines and generate the electricity.

One way a potential wind-energy tower location is analyzed to determine if air movement is sufficient is to erect a meteorological testing tower. These are the testing towers that can also jeopardize the safety of aerial applicators. These towers have much smaller rotors making them less visible. Furthermore, these towers use guy wires to anchor them in place which ag pilots have a hard time seeing. Meteorological testing towers are also typically below 200 feet in height and thereby exempted from lighting requirements if not near a public airport. The good news is they are not permanent; they stay in place for a few seasons to generate an appropriate amount of data to determine whether a site is suitable for the larger wind-energy towers. The bad news is that they go up quickly and as just mentioned, can be difficult to see. Moreover some counties don't require permits for towers that are not erected on cement and some meteorological testing towers are not erected on cement.

NAAA and Regional AAA Action Pertaining to Tower Construction
NAAA has been actively pursuing ways to ensure that tower construction does not jeopardize the safety of aerial applicators, nor make prime agricultural land inaccessible to aerial application. The Association has met with congressional offices to garner support for national legislation to make the 1.8-cent per kilowatt-hour tax credit for wind-generators conditional upon not developing them on prime ag land. This approach has not been met with much support as a result of a diversified and powerful coalition of wind-energy advocates consisting of the American Wind Energy Association, corporate interests (John Deere, GE, Siemens AG), some environmental groups and the American Farm Bureau Federation. In general the federal government has limited jurisdiction over where towers, generators or transmission wires are placed, unless it is over federal land or public airports. States and local governments are the primary entities that determine the location, or zoning of towers, generators and transmission lines.

There have been moderately successful efforts at the state level to address rampant tower construction to protect aerial applicators. The Wisconsin Agricultural Aviation Association adopted a document that it intends to share with Wisconsin farmers that states farms with towers on its land will not be treated via aerial application.

In 2003, the Texas Agricultural Aviation Association (TAAA) worked diligently to pass state legislation requiring an entity proposing to build a communication tower above 100 feet to contact the TAAA and that such towers with guy wires be marked if in or within 100 feet of a cultivated field.

Last year the Louisiana Agricultural Aviation Association was successful in enacting legislation that would require a person to construct a communication facility between 100 and 200 feet to notify the Association at least 30 days before beginning construction.

A secondary approach NAAA has taken on this issue is to ask for the wind-energy advocates to educate their constituencies about potential liability issues and possible repercussions to agriculture if wind-energy towers prevent crop protection application services from accessing farmland. To date, this approach has been met with some success. In recent communications between NAAA and the American Farm Bureau Federation, the Farm Bureau expressed how the spreading of towers could be a real problem to their farmer constituency and indicated a realization that the costs of a farmer's crop not being treated could far exceed the revenues a farmer would receive from leasing his land for the placement of a wind-energy tower. The Farm Bureau has indicated that they will work with NAAA on an educational campaign to inform farmers about the repercussions tower construction may have in aerially treating their crops.

NAAA has also met with the American Wind Energy Association (AWEA). The AWAE also expressed its intent on working with the aerial application industry on the safety issues related to wind energy development in rural areas.

At the end of this article, are tower safety guidelines NAAA has developed for entities thinking about erecting wind-energy towers in agricultural areas to follow, such as informing aerial applicators before going ahead with construction, constructing the towers without guy wires, and ensuring that towers are constructed in a linear pattern, not a disordered pattern that would make an area completely inaccessible by air.

Future steps the NAAA plans to take on the wind-energy issue includes working with the U.S. Department of Energy and prompt the Agency to update its brochures that promote the development of wind-energy in rural areas to include language that informs rural inhabitants of the safety and access concerns wind towers pose to aerial application. Similarly, NAAA is meeting with organizations interested in promoting rural wind energy to ensure that they do the same.

Local Involvement on Towers
Former Speaker of the House of Representatives Tip O'Neil once said "all politics are local." This is certainly the case when it comes to fighting the placement of towers in prime agricultural land, especially since in most cases it is either the state or local governments that determine if a tower will be placed. Last year Barb Steier, a Faribault County Commissioner in Minnesota and wife of Tim Steier an aerial applicator in that state, wrote an article in this magazine (see July/August 2004 issue) about the zoning process for towers. She made a sound suggestion to the aerial application community on how to curb the construction of towers by suggesting to "get active in your county planning and zoning. Read through your county's tower ordinance and get active in the permit applications and hearings. You are a taxpayer and deserve to be heard." This process helped the Steier's in converting a planned 250-foot guy wire cell phone tower with no markings into a 185 foot galvanized monopole with lights. The squeaky wheel got the grease. Another good idea is to meet with your farmers now and share with them the aerial application industry's concerns with towers so that they will think long and hard about building one on their land.

Another famous quote to keep in mind when taking on towers, is one adapted from Shakespeare's play The Tempest—"politics make strange bedfellows." NAAA is not the only special interest group that has a real concern with rampant tower construction. Other interested groups include wildlife groups, fisherman and certain homeowner groups that don't want their pristine vistas distorted. In May, the American Bird Conservancy filed suit in federal court against the Federal Communications Commission for violating the Endangered Species Act by not requiring mitigation techniques to avoid bird deaths with licensing communications towers. A major cause of fatalities for migrating birds every year is collisions with towers. The U.S. Fish and Wildlife Service estimates that at least 5 million birds and possibly as many as 50 million birds are killed annually in collisions with communications towers in the U.S. Fifty-two of these 230 species killed are endangered or in decline. In Cape Cod, Massachusetts groups are fighting what they call visual pollution from 130 wind-energy towers, each taller than the Statue of Liberty, sought for Nantucket Sound. Furthermore, fishermen in the area fear loss of prime fishing grounds from the proposed offshore project.

It might be a worthwhile effort to coalesce with these other special interests groups to oppose or restrict rampant tower construction. This could result in one of those situations where the end justifies the means, but when you are talking about ag pilots lives it certainly is worth it.

NAAA Tower Safety Guidelines

- Petitions for constructing towers should be provided to the local government zoning authority and the state or regional agricultural aviation association no later than 30 days before tower construction permits are considered for approval.

- Towers should not be erected on prime agricultural land or inhibit aerial applicators' access to prime agricultural land.

- If a proposed tower is to be constructed on prime agricultural land or in the vicinity of such land in such a way that may inhibit an aerial applicator's access, person(s) that own and/or farm such land should be made aware by the entity responsible for that tower that the proposed tower may result in the land no longer being accessible to aerial applicators and in the event of a pest outbreak or plant disease, a crop on such land may be put in jeopardy of not being treated. Landowners and or farmers within at least a one-half mile radius of a proposed tower should be notified by the sponsoring entity of the tower.

- In the event that a proposed tower is constructed on prime agricultural land or in the vicinity of such land, towers should be freestanding without guy wires. Furthermore, towers should be lit and well marked so they are clearly visible to aerial applicators.

- In the event that a number of proposed towers are to be constructed on prime agricultural land or in the vicinity of such land, the towers should be constructed in a linear pattern, not a disordered, clustered pattern that would make an area completely inaccessible by air.

- Towers erected with guy wires should be marked with two visible warning spheres on each guy wire, highly visible sleeves on the lower end of the cables that extend at least 8 feet above the height of the highest crop that may be grown there, and properly lit.

The Illinois Agricultural Aviation Association (IAAA) has been disappointed in the lack of candor by some wind generator proponents with regard to farmers' potential loss of an aerial application option. We believe it is critical that a truthful picture be presented so that an informed decision can be reached. In June, 2005, the following Resolution was passed by the IAAA Board of Directors.

ILLINOIS AGRICULTURAL AVIATION ASSOCIATION RESOLUTION

WHEREAS, we acknowledge the need for affordable electric power and the efficient distribution of that power to the point of its consumption, and

WHEREAS, we acknowledge the environmental benefits of wind generated electrical power, and

WHEREAS, we understand the financial considerations involved when decisions are made to place wind turbines on otherwise productive farm ground, and

WHEREAS, wind turbine generator farms create uniquely hazardous and unacceptable dangers to pilots flying agricultural aircraft in a ground environment,

WE HEREBY RESOLVE that, in the interest of pilot safety, we will refuse to make an aerial application of any product inside a grouping of wind generators, or to farm land immediately adjacent to a grouping of wind generators, should that proximity be considered hazardous by the pilot of the agricultural aircraft.

Approved by unanimous vote of the Board of Directors of the Illinois Agricultural Aviation Association.

Submitted by: Rick Reed, IAAA President
and owner/operator of Reed's Fly-On Farming

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What Aerial Applicators Have To Say

"There is one up by Bradford....last year I was up there, there was four turbines on each side of the field. I was focused on the turbines themselves and I was going through the field – one of their monitoring towers was in there and I never saw it because I was focused on the spinning blade and everything else. And – it's just – I came back and I told the farmer, "Never again."

Brandon Flexsenhar, 2009 VP, IAAA

"Aerial application can be done in maybe ten percent of the fields inside those wind farms. I don't know where the information came that you can operate an airplane inside these wind farms, but none of my airplanes will go in there. There are a few cases where there is a field here and there we can get to, but it ain't worth somebody's life to get in there and try and do that."

Chuck Holzwarth, 2008 IAAA President andOwner/Operator Holzwarth Flying Service

"The Illinois Agricultural Aviation Association (IAAA) has been disappointed in the lack of candor by some wind generator proponents with regard to farmers' potential loss of an aerial application option. We believe it is critical that a truthful picture be presented so that an informed decision can be reached."

Rick Reed, 2005 IAAA President and Owner/Operator of Reed's Fly-On Farming

"....Once these wind towers go up, if you have property that is located within a grouping of or within close proximity to, we will not risk our lives to go in there and spray your crops. Now I know it's been brought to my attention here the last few weeks that a lot of people have said, yeah, once they put them up, we'll call him, and he'll come anyway. I'm here to tell you that I'm not coming.....I will not come when you are in need of somebody to save your crop."

Scott Peterson, Owner/Operator Peterson Flying Service and Operator of Pontiac Airport

"They are a real safety hazard, and it is very intimidating to work around them...any time a wind tower is involved....we do enforce the (50%) surcharge. On my work order, if it is within a mile and it obstructs our operations, there is a surcharge."

Scott Schertz, 2008 NAAREF President, 2005 NAAA President and Owner/Operator of Schertz Aerial Service

"Whether you have a turbine on the ground or you don't but have turbines all around your ground, it may or may not ever be able to be sprayed with an airplane again."

Chuck Holzwarth, 2008 IAAA President and Onwer/Operator of Holzwarth Flying Service

".... A little cooperation from the wind power companies would certainly help and I would say I've had very little."

Scott Schertz, 2008 NAAREF President, 2005 NAAA President and Owner/Operator of Schertz Aerial Service

NATIONAL AGRICULTURAL AVIATION ASSOCIATION

The Importance of Aerial Application in Combating Asian Soybean Rust

Background & Talking Points

Background

This past year, Asian soybean rust blew into the United States via one of the several hurricanes late in the year. Officials believe spores of the disease may have been carried here from South America. As of December 1, 2004, soybean rust has appeared in Alabama, Arkansas, Florida, Georgia, Louisiana, Mississippi, Missouri, South Carolina and Tennessee.

According to the American Soybean Association (ASA), as soybean plants mature and set pods, infection may progress rapidly under certain environmental conditions (such as moisture, high humidity and moderate temperatures) and cause high rates of infection in the middle and upper leaves of the plant. Clouds of spores may be observed within and above canopies of highly infected fields. Fields with high infection rates may begin to look yellow or brown.

According to the U.S. Department of Agriculture (USDA) soybean rust is a fungus, which is spread primarily by windborne spores capable of being transported over long distances. If there are winds, or someone is simply walking through a rust-infested field, spores will be released and carried through the air.

Although the disease is devastating to soybean crops, there is no threat to the food supply. Soybean rust is the type of disease that needs to be caught within the first few days to avoid a reduction in soybean crops. The rust can reduce soybean yields by as much as 80% in an individual field.

During the crop year 2001-2002, the rust arrived in Brazil. According to Alan McCracken, an independent consultant in the area of aircraft application of agrochemicals "It has caused serious crop losses, in the area of 3.5 million tons of soybeans during the year 2002-2003. The economic loss was estimated at $1.2 billion and some experts suggest that during the recent crop year, the production loss was over 4.5 million tons and this loss may have been as high as $2 billion." Aerial application is a vitally important means to control and combat soybean rust.

http://www.agaviation.org/combatingrust.htm

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Talking Points About the Importance of Aerial Application to Control Soybean Rust

- In Brazil, aerial application has been demonstrated to be the most effective means of soybean rust control due to the timeliness of application. Aerial application costs are lower per acre than ground rigs and there is no contamination of non infested areas since the aircraft never comes into contact with the soybean plant, unlike ground equipment which can trigger the release of spores when driving through a rust-infested field.

- Aerial application platforms are well suited to combat soybean rust because of their speed, ability to work under wet field conditions, and because aerial applications do not compact the soil or disturb the crop.

- Aerial applicators are already proficient at applying fungicides; many applicators already apply them effectively to other crops, such as rice, corn, sugar beets, and wheat.

- U.S. aerial applicators are available to effectively protect soybeans in the event of a soybean rust breakout. Aerial applicators are mobile and can go to where they are needed. For example, during the late spring/early summer, pilots from northern states are available to assist aerial applicators in southern states because the North has a later growing season and, conversely, in the late summer pilots from the south are available to assist aerial applicators in northern states.

- U.S. ag pilots and operators are responding by expanding their licenses in other states where outbreaks of soybean rust might be expected, so that they might be available in the event of a large demand for applications to treat soybean rust.

- In order to ensure ag pilots are available to treat a severe soybean rust outbreak, NAAA posts a pilot/operator database on its website under the membership section of its website at www.agaviation.org. Pilots can submit forms if they are looking for work and operators can post job listings that they have work available.

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Aerial Application Tips for "Rust" Control

Dr. Dennis R. Gardisser, Professor & Associate Department Head - Extension Engineer - Biological & Agricultural Engineering
University of Arkansas, Department of Agriculture

Any spray platform should be able to make efficient and efficacious applications for rust control. Aerial application platforms (helicopters and fixed wing) are well suited because of their speed - for timely applications, ability to work under wet field conditions, and aircraft do not compact the soil or disturb the crop. The following is a set of guidelines that should make aerial applications most productive.

1. All applications must be made uniformly over the entire crop.
- Make sure the aircraft is utilizing the optimum swath width.
- Avoid misses around obstructions.
- Dress headlands to get those areas around trees and power lines.
- Do not plant areas that cannot be effectively treated by aircraft. Work with your applicator to determine where these areas are -- plow them up if necessary to avoid hot spots.

2. Utilize the optimum application height.
- Most turbine aircraft need to be operated with the spray boom 10-12 feet above the crop canopy - and the very large (660 to 800 gallon capacity) aircraft even higher.
- Both, lower and higher, release heights may reduce pattern uniformity and increase drift potential.

3. Don't spray during the heat of the day if possible. As the more and more energy is absorbed into the canopy, it becomes more difficult to pass the smaller droplets through the strong micro-inversion layer that forms at the top of the crop.

4. Utilize nozzles that control droplet spectrums well. Choose nozzles that make as few droplets as possible below 200µ (microns).

http://www.agaviation.org/sprayingrusttips.htm

5. Years of work in heavy canopies indicate the droplet spectrums should be targeted in the 285-335 VMD (volumetric median diameter - where ½ of the spray volume is that size or larger and ½ of the spray volume is that size or smaller) range.
- Droplet spectrum may be the most important aspect of these applications and should be carefully adjusted with nozzle selection, operating pressure and mounting configuration.
- Small changes in droplet diameter make big changes in droplet volume! (Example: It takes (1.6) 300µ droplets to equal (1) 350µ droplet and (2.4) 300µ droplets to equal (1) 400µ.)
- There are excellent aerial models available to help determine the expected droplet spectrum http://apmru.usda.gov/downloads/downloads.htm

6. Data from South America indicates that aerial applications with 2 GPA - water carrier (250µ VMD) and ½ GPA - oil carrier (150µ) have worked very well. Researchers from S. America also caution that ground applications may spread spores and are difficult to utilize when field conditions are wet and susceptible to disease development.

7. Almost all applications may be enhanced with wind, particularly application crosswinds, - to help mix the material down into the lower portions of the canopy.

8. Aircraft speed changes the droplet spectrum.
- The optimum droplet spectrum can generally be developed by selecting the appropriate setup configuration.
- Turbine powered, faster aircraft, generally have more uniform patterns.
- It may be more difficult for faster aircraft to work around some obstructions.

9. Total spray volume per acre will be somewhat dependent on crop canopy structure. Three GPA is suggested as a minimum an optimum being in the 5-7 GPA range. There is generally a lot of disagreement on this issue, with a lot of opinions leaning toward more water. Canopy penetration and deposition studies just haven't indicated a strong need for more diluent volume.

10. The use of adjuvants and surfactants may be very beneficial as spreaders and stickers. Care should be taken to avoid major droplet spectrum changes when these products are being utilized.

11. If multiple applications are made, utilize different travel lanes or go in the opposite direction to move droplets into the canopy at different angles.

Building Renovations Are Better than Windmills

Experts from the Green Party are taking the problem very seriously: "We are in a veritable crisis situation, and that means we must reconsider and alter things we once took for granted," writes one contributor, adding that it's important to re-examine "whether we have set the right priorities."

Another expert begins his e-mail with a general clarification: "Dear People, I'm not fundamentally against the EEG. I only emphasize this because Manfred has repeatedly and erroneously described me as an opponent of the EEG." But here comes the big "but": "When reduction of CO2 emissions is more cheaply achieved through insulating a building than using a wind turbine, that is where we should concentrate our support." When it comes to climate change, everything else is secondary to reducing CO2 emissions.

Indeed, when it comes to climage change, investments in wind and solar energy are not very efficient. Preventing one ton of CO2 emissions requires a relatively large amount of money. Other measures, especially building renovations, cost much less -- and have the same effect.

The e-mail exchange ends with a conciliatory "What do you think?" But it is quickly followed by a bitter PS: "Do the Greens think that this problem (of climate change) will solve itself if we just screw solar panels onto our rooftops?"

Environmental Groups Admit to the Problem

The German Renewable Energy Federation is clearly not thrilled about the debate. The lobbying group's official line is: "By implementing renewable energy, there will by a reduction in 2008 of 120 million tons of CO2." When pressed, however, representatives of the federation will admit that this only applies to Germany. But the reality is that the freely traded CO2 certificates can be sold and used abroad.

Likewise, one federation employee openly said that there is "a certain degree of inconsistency" between the EEG and emissions trading.

But does it really have to be like this? Is it really so impossible to reconcile both of these instruments for protecting the climate?

In theoretical terms, of course it's possible. To do so, however, currently existing laws designed to prevent CO2 emissions would have to be reconciled. In real terms, for example, that means that every time a new wind turbine is built, the state would be forced to take certificates off the market. It is only in this way that you can achieve real positive effects on the climate.

Politicians Buckle to Business

There were discussions about such a system under Chancellor Gerhard Schröder, who governed in a coalition with the Green Party. At the time, Minister of the Environment Jürgen Tritten wanted to exclude the amounts of energy covered by the EEG from the calculations used in the carbon-trading scheme. Instead, the industry-friendly regulations currently in effect were pushed through. Major energy corporations, which had claimed as many CO2 certificates as they possibly could, lobbied heavily.

So why has nothing changed? According to experts, one reason has to do with technical problems. In the course of an ongoing trading period, they claim, adjusting the volume of CO2 certificates is no easy task.

Still, an SPD insider provides yet another explanation: "Politicians just have to resign themselves to certain things." As he sees it, if the state went back to the companies and took away the certificates they had been allotted, the result would be an uproar. "What do you think the companies would say to us?" he asks. "As a politician, there are certain storms that you simply can't weather."

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Wind turbines in Europe do nothing for emissions-reduction goals

February 10, 2009 by Anselm Waldermann in Spiegel Online

Despite Europe's boom in solar and wind energy, CO2 emissions haven't been reduced by even a single gram. Now, even the Green Party is taking a new look at the issue -- as shown in e-mails obtained by SPIEGEL ONLINE.

Germany's renewable energy companies are a tremendous success story. Roughly 15 percent of the country's electricity comes from solar, wind or biomass facilities, almost 250,000 jobs have been created and the net worth of the business is €35 billion per year.

But there's a catch: The climate hasn't in fact profited from these developments. As astonishing as it may sound, the new wind turbines and solar cells haven't prohibited the emission of even a single gram of CO2.

Even more surprising, the European Union's own climate change policies, touted as the most progressive in the world, are to blame. The EU-wide emissions trading system determines the total amount of CO2 that can be emitted by power companies and industries. And this amount doesn't change -- no matter how many wind turbines are erected.

Experts have known about this situation for some time, but it still isn't widely known to the public. Even Germany's government officials mention it only under their breath. No one wants to discuss the political ramifications.

It's a sensitive subject: Germany is recognized worldwide as a leader in all things related to renewable energy. The environmental energy sector doesn't want this image to be tarnished. Under no circumstances does Berlin want the Renewable Energy Law (EEG) -- which mandates the prices at which energy companies have to buy green power -- to fall into disrepute.

At the same time, big energy companies have an interest in maintaining the status quo. As a result, no one is pushing for change. Everyone involved is remaining silent.

Not an Instrument against Climate Change

In truth, however, even the Green Party has recognized the problem, as evidenced by an e-mail exchange last year between party energy experts and obtained by SPIEGEL ONLINE. One wrote the following message to a colleague: "Dear Daniel, sorry, but the EEG won't do anything for the climate anyway." Ever since the introduction of the emissions trading system, the Renewable Energy Law had become "an instrument of structural change, but not an instrument to combat climate change."

That means: wind turbines and solar energy plants are revolutionizing Germany's mix of power sources, creating jobs and making the country more independent from imports. But they aren't helping in the fight against climate change.

In the worst case scenario, sustainable energy plants might even have a detrimental effect on the climate. As more wind turbines go online, coal plants will be able to reduce their output. This in itself is desirable -- but the problem is that the total number of available CO2 emission certificates remains the same. In other words, there will suddenly be more certificates per kilowatt of coal energy. That means the price per ton of CO2 emitted will fall.

That is exactly what happened in recent trading. A certificate to emit a ton of CO2 cost almost nothing. As a result, there was very little incentive for big energy companies to invest in climate friendly technologies.

On the contrary. Germany was able to sell unused certificates across Europe -- to coal companies in countries like Poland or Slovakia, for example. Thanks to Germany's wind turbines, these companies were then able to emit more greenhouse gases than originally planned. Given the often lower efficiency of Eastern European power plants, this is anything but environmentally beneficial.

This phenomenon is especially apparent whenever the sustainable energy industry grows more quickly than anticipated -- as in recent years when growth in the renewable energy branch quickly rendered the EU Commission's CO2 plans obsolete.

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Bureau County bans company's turbines after blade breaks

Bureau County officials want to try and ensure that a wind turbine failure like what was experienced on a farm southwest of Wyanet last month doesn't happen again. The Bureau County Board this week voted not to allow future wind farm developments to use the S88 type turbines produced by India-based Suzlon Energy. "I am personally making the motion (to exclude Suzlon) due to the uncertainty of their turbines," ESDA and zoning committee Chairman Bill Bennett.

November 12, 2008 by Karen Newby in Journal Star

Bureau County officials want to try and ensure that a wind turbine failure like what was experienced on a farm southwest of Wyanet last month doesn't happen again.

The Bureau County Board this week voted not to allow future wind farm developments to use the S88 type turbines produced by India-based Suzlon Energy.

"I am personally making the motion (to exclude Suzlon) due to the uncertainty of their turbines," ESDA and zoning committee Chairman Bill Bennett told the board at its meeting Monday. Bennett later amended his motion to the S88 model.

The request comes after a 140-foot fiberglass blade weighing 6 1/2 tons broke off at the stem where the blade connects to the turbine and crashed to the ground Oct. 22 on farmland leased by AgriWind LLC, which operates a small-scale wind farm composed of four 3.1 megawatt turbines. The turbines apparently had a defect, and Suzlon officials said the blades on all four turbines were scheduled to be replaced.

In voting on the request, the Bureau County Board was most concerned about the most recent wind farm development, Walnut Ridge Farm LLC. That project, a subsidiary of Chicago-based Midwest Wind Energy, consists of 131 turbines in the Bureau Valley School District and another 19 in the Ohio School District.

Board member Jim Lilley questioned if the board should limit what a developer could use in building a wind farm, saying the exclusion might be a detriment. State's Attorney Pat Herrmann said the board was responsible for the safety of the public and could exclude Suzlon-manufactured turbines if it wanted.

ESDA manager Chris Donarski said Suzlon was retrofitting the S88 models with the V3 third-generation blades.

"These blades were tested for one year and are stronger than the V2 blades," he said.

Web link: http://www.pjstar.com/news/x81180400/Bureau-County-bans-companys-turbines-after-blade-breaks"

Absentee Ownership –

"55% of the land in the U.S. is owned by people who do not farm it....Central Illinois has a much higher percentage – approaching 75% absentee ownership."

Source: Heartland Ag Group Ltd. "What's Driving Illinois Farmland Values" as of Midyear 2007

Inside Agriculture
Wednesday, February 11, 2009

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This Inside Agriculture for a Wednesday.

Good Day, I'm Alan Jarand at the Illinois Farm Bureau.

What with new money becoming available for renewable energy sources a number of environmental and alternative energy groups are starting to argue amongst themselves over who should get the money. In fact some environmental groups are now coming out in opposition to ethanol. They're saying ethanol isn't all that much cleaner than gasoline when you consider the fact that we have to fertilize it and grow it. And they also say with corn we can't produce enough ethanol to make a huge difference. And they say that solar and wind energy are cleaner and more environmentally friendly. Well on that last point they are right. Solar and wind is cleaner. It's totally emission free and ethanol while we would maintain is a much better fuel than gasoline certainly isn't without it's minor problems. But here's the catch: Wind energy and solar energy produce electricity. When we talk about an energy crisis in this country the problem really isn't electricity. We've got enough coal to make electricity for thousands of years. Now there may be some environmental concerns about using some forms of coal but the supply is not the problem. The problem with energy is liquid fuel, petroleum. Much of that comes from the Middle East or Venezuela and when we're talking about energy independence electricity won't get us independent. Liquid fuels are what we need and right now for an alternative to gasoline and diesel the only options we have are biofuels. We can't make that with a solar panel.

That's Inside Agriculture.
I'm Alan Jarand

The turbine pictured here stands 328' tall. The next generation of turbines may very well tower over 500 feet tall.



Blades: How Fast is Too Fast?

A blade tip speed of 16.9 rpm is 188 miles per hour!

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PLANNING & DEVELOPMENT

Doctor calls for health studies on windmill farms

January 31, 2009 by John Miner in London Free Press

When London surgeon Robert McMurtry decided to build a house, he wanted to go green - geothermal heating, solar panels for hot water and a wind turbine for electricity.

But when he started reading about wind turbines, the former dean of medicine at the University of Western Ontario said he had a change of heart.

"I thought, 'Holy Toledo, there are some issues here.' "

Dozens of wind turbines have already been built or proposed in Southwestern Ontario, as Queen's Park tries to wean Ontario off dirty coal-fired electricity plants and reduce its reliance on nuclear power.

McMurtry is calling for health studies into the wind turbine farms popping up across Ontario with backing by the provincial government. With towers nearly 100 metres tall, and blades half that long, the turbines can be an imposing sight, even from afar.

"At minimum, they should be doing a survey of people around wind farms and getting a sense of how many people are complaining of problems," he said.

"If there is enough evidence, they should mount a formal epidemiological study," McMurtry said.

In the U.S. and Western Europe especially, where wind farms are more advanced than in Canada, complaints abound about the low-frequency sound the giant windmills generate.

In Canada, Ontario is one of the only provinces with any regulations governing wind farms, requiring a noise-impact assessment for areas up to 1,000 metres from the wind turbine.

McMurtry is concerned about the health complaints he's heard from people living near wind farms, including sleep disturbance from the noise of the giant turbine blades.

"Once you have sleep disturbance for a few days, you aren't going to be feeling well," he said.

Last week, the province announced it's backing six new wind farm projects, including three in Chatham-Kent, that are expected to create 558 jobs.

Total investment in the new farms is expected to reach $1.32 billion.

McMurtry, who has taken his concerns to Ontario Energy Minister George Smitherman, said it's going to be an uphill battle to convince people to look hard at the health implications because turbines have become closely associated with green energy.

"It has got an iconic, symbolic status that really carries a lot of weight and there is a very powerful, worldwide lobby group behind it," he said.

McMurtry said turbines smaller than the ones being installed may be better than the monsters now going up.

"Harness the wind safely. Let's look at other alternatives. There are better, smarter options," he added.

Monica Elmes, of the Chatham-Kent Wind Action Group, an organization opposed to the wind farms, said the turbines will be an unreliable, intermittent source of electricity and a waste of taxpayers' money.

"All Ontario residents are truly the losers in this scam," Elmes said in an e-mail.

Web link: http://lfpress.ca/newsstand/News/2009/02/01/8228966.html"

Wind turbines can't pay for themselves

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There is and has been much discussion and controversy about wind turbines in Boone County as well as many other areas. I would like to paint a word picture of my views of the situation.

In my opinion, there are two groups that are strongly in favor of wind turbines. They are venture capitalists and environmentalists.

The venture capitalists are enthusiastic about making money, with someone else paying the majority of the freight. I say this because the 400-foot wind turbines that are being constructed today cost $2 million. A turbine would have to last almost 50 years to pay for itself and then start creating a profit. However, since the investors only pay one-quarter of the cost, they eventually make a profit, again at someone else's expense. Speaking of turbine life expectance, the largest wind turbine farm in this country, 1,600 turbines, was built in the mid-'80s near San Francisco. It did not last 25 years and today sits abandoned. It is not the only wind farm that has been abandoned, it is just the largest.

Also, consider the fact that they only run 30 percent of the time - how short would be their lifetime if they ran anywhere near 100 percent of the time? If you question the 30 percent figure, think of anytime you have been down Interstate 39 or in Southern California, near Palm Springs, and wondered why there are so many not running.

And then about the environmentalists, who love the idea of wind turbines. Their first thought is, "Oh, the wind is free." Is it really free if it costs $2 million per turbine to harvest it?

Then if you quote engineers and scientists saying that the rhythmic thumping of the sound, a pattern found at a distance from the turbines of up to nine-tenths of a mile, but not immediately under or among the turbines, can be sufficient to prevent or interrupt sleep and even cause migraine headaches for some people. Ignoring that fact, environmentalists tend to think only "the wind is free and turbines do not pollute."

Or explain to them that in 2003, before the 2006 and 2007 drop on real-estate property, in the Township of Lincoln, Wis., everything within one mile of turbines was selling at 78 percent of assessed valuation, but in the same area before turbines, property had been selling for 104 percent of assessed valuation. In England the property devaluation has been concluded to be 30 percent and in Denmark similar results. Anyone who questions wind turbines devaluating neighboring property should ask Realtors, not wind turbine people. Realtors have nothing to gain by giving a wrong answer. Ignoring that fact, environmentalists tend to think only "the wind is free and turbines do not pollute."

And isn't it strange that many of the Boone County Board members who live south of Illinois 173 seem so willing to gamble on property values of landowners north of Illinois 173 - ignoring the many petitioners who expressed their negative feelings toward wind turbines?

Also, one can tell environmentalists that wind turbines are pretty devastating to the farmland at or near the site of the turbines. The towers, turbines and blades combined weigh more than 300 tons, thus substantial roadways with a solid base must be built between the main roads or near the turbines. Just imagine the weight of the heavy crane for erection, the heavy trucks hauling the more than 300 tons of equipment and the many mixer trucks for the base platform. The concrete base upon which each turbine sits is 30 feet by 50 feet. At the last Belvidere meeting, it was stated that it need only be 8 feet deep. However, I was told that the bases in Lee County, where the turbines are only 200 feet tall, are 15 feet deep so it would seem that if the turbines are twice as tall and weigh twice as much then the base should be twice as deep. That's a lot of concrete, but the base must outweigh the tower and turbine so as not to tip over. Ignoring that fact, environmentalists tend to think only "the wind is free and turbines do not pollute."

And one last thing, wind turbines do not save on imported oil. Except for the small amount generated by wind turbines and water power, 98 percent of the electricity in this country is generated with coal and nuclear energy. Again, ignoring that fact, environmentalists tend to think only "the wind is free and turbines do not pollute."

Now someone thinks that oil is used to generate electricity because it is used to mine coal & transport it to the power plants. Well, how about the oil used for making the steel towers & manufacturing the blades & turbines & transporting them to the construction site & finally the erection.

Realistically speaking, if the setback requirement is great enough that it does not have a negative effect upon people and does not devaluate neighbors' property, and in so doing, prevents some areas from erecting wind turbines, is that really serious? After all, the wind is not really free when the cost to harvest it is so extreme. Also, if only part of the money that the government has donated, and will donate in the future, to venture capitalists in the turbine business was used for scientific research to create clean-burning coal we would then eliminate that pollution.

Furthermore, if turbines can never generate enough electricity to pay for themselves, and if government pays the majority of their cost, then they are an additional drain on the nation's economy - and if they are only 30 percent efficient - and if they are detrimental to the health of people living at even a much greater distance than 1,000 feet, then why, oh why, is Boone County even considering reducing the setback from 2,000 to 1,000 feet? 7-08-08 Don Ellingston, Rockford Register Star

Web link: http://www.rrstar.com/opinions/columnists/x1768841...

Title: Those pesky turbine contracts: Important questions

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Exhibit 43 of 55

Author: Lisa

Date: July 31, 2008 8:00:00 PM or Thu, 31 July 2008 20:00:00

Summary: Nancy Murphy

Body:

As I prepared for this month's column, my initial thought was to present brief quotations from industrial wind turbine contracts that had crossed my desk. I quickly discovered that approach would be woefully inadequate and insufficient. Just reading quotes and clauses from these contracts would not fully convey the underlying risks to landowners who choose to enter into such legal relationships with wind developers. I researched further and discovered a wealth of information from qualified legal experts experienced in wind contracts.

The following has been excerpted, with permission, from a document developed by Roger McEowen PhD, Director of the Iowa State University Center for Agricultural Law & Taxation (CALT).

Legal Issues for Landowners

A wind energy agreement should never be negotiated without first having the agreement reviewed by legal counsel. Wind energy agreements are long-term agreements that will impact the land subject to the agreement for many years, likely beyond the lifetime of the landowner who executes the agreement. The following is a list of questions that landowners should ask when analyzing any wind energy agreement:

1. How much of the land will be subject to the agreement?

2. How long will the land subject to the agreement be affected?

3. Based on the property rights that are given up, are the proposed payments adequate for the present time and for the life of the agreement? (Note: The answer to this question requires an understanding of the mechanics and economics of wind energy production.)

4. If the agreement offers an up-front lump-sum payment, is the payment representative of a fair amount for the rights involved?

5. What are the tax consequences of the wind energy payments that will be paid under the agreement? (Note: The answer to this question depends on tax changes at the federal and state levels; the area is in an almost constant state of flux.)

6. Does the developer want to develop the land or simply use a portion of the surface for a term of years?

7. Does the agreement guarantee that a set number of wind energy turbines will be constructed on the land by a specific date and, if not, is the developer willing to guarantee a minimum amount of payments?

8. Are payments under the agreement based on revenues generated by the wind turbines? Can the landowner get information as to how the owner's revenue will be calculated?

9. Is the developer able to sell or transfer without the landowner's consent any of the land use rights obtained under the agreement? If so, will the original developer remain liable if the new developer or holder of the easement right does not pay the landowner or otherwise defaults?

10. What events trigger the developer's right to terminate the contract? Can the developer terminate the contract at any time without cause? If so, how are payments due under the agreement to be handled?

11. What termination rights does the landowner have? How does the landowner exercise those rights?

12. If the agreement is terminated, whether by agreement of the parties or otherwise, what happens to the wind energy structures and located facilities erected on the property? What is the developer required to remove? How soon must structures be removed? Who pays for their removal?

When a wind energy agreement is being negotiated, certain issues are critical to the creation of an equitable agreement. Unfortunately, a common problem with many wind energy agreements is that once they are proposed and submitted to a landowner, the company wanting to execute an agreement tends to refuse to negotiate changes to the terms of the agree¬ment. The company's ability to refuse to negotiate terms of the proposed agreement will depend largely on whether a landowner has meaningful options and competent legal representation.

1. Is the proposed contract a lease or an easement? If a lease is involved, it should be long enough for the developer to recoup its investment (probably at least 20 years). Does the developer have a right of renewal? If so, does the landowner have the right to renegotiate any of the lease terms? Any lease should not be perpetual — a violation of the rule against perpetuities might be involved (at least in those states that have retained the rule).

2. If an easement is involved, does the easement include turbine sites, substations, air space, buffer areas, vegetation restrictions, building restrictions, transmissions, and associated rights of way?

3. Is a sale of the land contemplated? If so, how is the selling price computed? Any sale price should consist of the fair market value of the land plus the wind energy value.

4. What is the amount of compensation to be paid? Take care to ensure that the definition of "gross revenue" is done properly. Is it defined as the sale of electrons or the sale of green credits, or is it calculated in some other manner?

5. Is the revenue to be a flat amount annually, an annual payment per tower, a percentage of gross proceeds, a payment of a certain amount of kilowatt hours generated annually, or an amount based on the selling price of megawatts per year, whichever amount is greater?

6. Is an inflationary factor built into the contract payment provisions? To protect the landowner's interest, there should be.

7. Does the agreement cover land that will not be needed for the wind farm and related structures? From the landowner's perspective, there shouldn't be such coverage.

8. An up-front lump-sum payment has tax consequences — make sure they are understood.

9. What are the intentions of the developer concerning the use of the land? That makes understanding the use provisions of the agreement of primary importance. The construction clause should limit the construction of wind energy structures to not more than 3 or 4 years with adequate compensation paid to the landowner for restricting the use of the land during that time.

10. Can the developer assign the agreement? If so, a clause should be inserted that ensures the original developer's liability if the assignee defaults under the terms of the agreement. (Note: Developers want the ability to assign the agreement and subordination language.)

11. Is the landowner willing to consent to a mortgagee of the developer? If so, a clause should be included that limits the landowner's obligations to the mortgagee.

12. Consider including an indemnification clause that indemnifies the landowner for any liability incurred as a result of permissive activities (such as crop tenants, custom harvesters, and subsurface tenants) on the property subject to the wind energy agreement.

13. What are the landowner's rights concerning usage of the property?

14. Consider the use of a clause that requires the landowner to be treated as favorably as neighbors (consider how to define "neighbor") executing similar agreements.

15. Include a clause requiring the removal of all improvements the developer makes upon termination (whether voluntary or otherwise) of the agreement. Relatedly, for developments in the Flint Hills, include a provision specifying which party gets the rock that gets excavated to build the wind energy structures.

16. Require the agreement to be recorded (not just a memorandum of the agreement) to eliminate the necessity of having to locate a copy of the lease in the event of sale or mortgage of the property.

17. Never agree to confidentiality clauses concerning the terms and conditions of the agreement.

18. Have the contract reviewed by the landowner's insurance agent for analysis of any additional risks created by the wind energy project.

19. Will the agreement violate any USDA land-use restrictions if the subject land is enrolled in a USDA program? If such a possibility exists, consider including in the agreement a clause requiring the developer to indemnify the landowner for any lost government payments or the imposition of any penalties.

20. Evaluate the agreement with an eye toward the risk faced by the landowner. That includes environmental concerns, issues that could be raised by neighbors (i.e., nuisance-related concerns), and potential violation of applicable zon¬ing and set-back requirements.

Clearly, wind farming has the potential to provide significant economic benefits for rural landowners. However, substantial peril exists that landowners who don't carefully evaluate proposed agreements with developers can be taken advantage of significantly. Landowners should have any proposed agreement evaluated by legal counsel and attempt to negotiate any unfavorable terms. Failure to do so could result in many years of dissatisfaction for landowners.

MORAL: NEVER SIGN YOUR NAME ONTO THE PASSENGER LIST OF A ONE WAY PRISON SHIP.

PLEASE NOTE: I emphatically reiterate what all of my sources caution their readers, that the information provided is not legal advice and cannot substitute for a knowledgeable attorney who can review the details of particular agreements, and consider the impact of relevant federal, state, and local laws. All of their cautions apply equally to this column.

List of Sources for the current column:

http://www.calt.iastate.edu/

http://www.calt.iastate.edu/rogerbio.htm

http://www.ofa.on.ca/policyissues/issues/Wind%20Power%20Lease%20Suggestions.pdf (Author unknown)

http://www.kansasenergy.org/KEC/LeasingGuidelines(KEC).pdf
Kansas Energy Council

http://www.house-energy.com/Wind/Wind-Legal.htm
House Energy

http://www.flaginc.org/topics/pubs/index.php#FGWE
Farmers Legal Action Group

Enron's Role in Wind Energy

"....where did the current emphasis on wind generation of electricity come from? ...it wasn't until the late 1980s & early 1990s, that Enron (an energy company based in Houston, TX) lobbied the Congress with a friendly "renewable energy" project, & packaged it with their "electricity deregulation" lobbying & political efforts. Their efforts were successful in getting laws passed at both the federal & state levels that would permit them to tie into the grid, require utilities to buy unreliable & unpredictable electricity i.e., electricity generated by wind) under Renewable Portfolio Standards, allow them to sell "renewable energy certificates" separate & apart from the electricity, & utilize a newly created production tax credit and take advantage of a special accelerated depreciation rule..."

Source: Iowa State University Center for Agricultural Law and Taxation www.calt.iastate.edu "Wind Energy Production: Legal Issues and Related Liability Concerns for Landowners in Iowa and Across the Nation" 1-22-09 by Roger McEowen

Wind farm resident

October 2, 2008 in Hays Daily News

Do you live inside an industrial wind farm? I do. I live within the Forward-Invenergy project. It is a tremendous invasion of our life style and a horrible happening to our area. My wife, our 13-year-old son and I have experienced headaches, nausea, light headedness, lack of sleep because we hear them in all rooms of our house, ringing, crackling and buzzing in the ears, anger, anxiety and generally being tense due to the constant sound like that of a jet flying over or like the thumping of your heart if you listened in a stethoscope or like the sound of a Chinook helicopter.

I have memory and motivation problems that I did not have in the past. A friend has shadow flicker that is like a person turning the light switch on and off which takes 42 minutes to cross his house. I have five turbines within three-quarters of a mile of my house. One is 1,560 feet and another 2,480 feet. At times, I hear them equally and often inside our house. Would a city planner allow an industrial park in a residential area? I don't think so yet our government agencies are allowing industrial wind turbines close to homes. If you do believe in global warming think of the carbon foot print caused by the energy used to build the access roads, widening of local roads, 250 worker vehicles going to and from the job and all the driving between turbines daily, cranes and excavation equipment fuel, farmland destroyed or taken out of use, energy to crush all the aggregate for the roads, 300 to 500 cubic yards of concrete in the tower base, 55,000-plus pounds of rebar in the base, approximate 395,000 pounds of steel above the base (the tower) and many things I have not accounted for. Also consider the terrible inefficiency (28 percent to 30 percent) of the turbines generating capability. Would you buy a furnace for you home that is 30 percent efficient? If we really need industrial wind turbines where people live they need to be at least 1 mile from homes, 1,000 feet from property lines and not more than 35 decibels of sound from a residence or other public buildings.

I was naive when talk of wind turbines came to our area. I trusted the elected officials of the town and county and the state's public service commission. That was a terrible mistake. If you allow large industrial limits closer than the set backs I mentioned above you will regret it. It will divide your community.

Web link: Gerry Meyer"

http://www.windaction.org/opinions/18241?theme=print

Location, Location, Location- An investigation into wind farms and noise by The Noise Association

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Schirtz 44 of 55
CHAMPAIGN COUNTY

June, 2006 by John Stewart, UK Noise Association

Summary:

Noise - 'unwanted sound' – can ruin people's well-being and environment
"Peace and quiet is the single most important factor people have in mind when buying a home – with one in five prospective homebuyers rating it as the most important consideration when choosing where they will buy." Alliance and Leicester Survey, 3/6/02

The Noise Association, which published this report, is the research arm of the UK Noise Association. Both organisations are based at 2nd Floor, Broken Wharf House, 2 Broken Wharf, London EC4V 3DT, tel 020 7329 0774, email info@ukna.org.uk www.ukna.org.uk

Editor's Note: The complete report is available in the attached pdf file 'Noise Association'. A smaller, edited version that excludes two pages of photos (pages 7 & 11) is also available. Selected Extracts from this report appear below.

Overall Conclusions

1. Wind Farm noise, in common with noise generally, affects different people in different ways, but the evidence suggests there is rarely a problem for people living more than 1-1.5 miles from a turbine.

Sky High

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CHAMPAIGN COUNTY P & Z DEPARTMENT

Wind Towers May Limit Aerial Applications

Exhibit 450 of 55

By Tom C. Doran, AgriNews Publications Vol. 31-No.33 10-24-08
www.agrinews-pubs.com

Bloomington, IL – Wind farms are becoming a major contributor in the quest toward more renewable energy, but growers need to be aware of potential agricultural production limitations these towers could create.

The construction of wind turbines has not only benefited the national energy picture, but also provided additional income to landowners.

However, 300-foot or taller turbines also are creating some unforeseen challenges and misconceptions among growers who utilize aerial application.

Due to safety concerns, agricultural aerial applicators are not able to fly into some areas with wind turbines, and are forced to add a surcharge in other areas with towers due to the additional costs of liability insurance and fuel.

State and national aerial applicator organizations are urging wind farm developers to work with them toward improving safety.

"We're not opposed to wind energy towers. We're just concerned about their placement," said Andrew Moore, executive Director of the National Agricultural Applicators Association.

"You can't argue against clean energy, but if you can take into account the well being of other people and what kind of criteria they need to do their job, such as in our industry, the placement of these things is important."

Jean Payne, president of the Illinois Fertilizer and Chemical Association, concurred this is not an anti-wind message.

"It's just when farmers go in and negotiate these contracts (with wind companies) they really need to understand that if aerial application is something important to them, then they should use that as a negotiation tool because they're going to be paying more for it if they can get it at all," Payne said.

As the usage of fungicides and insectide become more of a mainstay of crop production and provides a potential for yield increases, giving up a five to 10 bushel an acre boost needs to be factored in when negotiating for a wind tower on one's land, according to Payne.

"Obviously in the last few years there has been a lot of emphasis on the whole fungicide aspect and, yes, it is an important tool. Sometimes insecticides or herbicides are very important tools as well as getting fertilizer on by air," said Scott Schertz of Schertz Aerial Service in Hudson.

"Overall, it is important for farmers to have a platform available to protect their crops when they can't get into the fields practically because the crops are too wet or other situations."

"It is an important tool for agriculture that is well established, that has been a normal part of the existing farm practice in this area.

"They are a real safety hazard, and it is very intimidating to work around them. It is additional fuel and additional planning time to do some of what is around them and even next to them."

Chuck Holzwarth, who operates a flying service at Virden, said "If there's a field we can do, we'll do it."

"But I'm absolutely not going to send me or one of my pilots into a field with a bunch of towers around it and get killed," he stressed. "That's the bottom line."

Landowners with a tower may not only be impacted in terms of aerial spraying, but also their neighbors who may not have a turbine.

"Whether you have a turbine on the ground or you don't but have turbines all around your ground, it may or may not ever be able to be sprayed with an airplane again," Holzwarth said.

"It depends on the location of the neighboring obstructions, and if they impact our operations even if we can do it, they are still going to get a surcharge for it," Schertz said. "Any time a wind tower is involved, and it is an obstruction around our normal routine, we do enforce the surcharge. On my work order, if it is within a mile and it obstructs our operations, there is a surcharge.

"Obviously, if there is a field where a wind tower is strictly beside and we don't have to go crossways at all, for instance, I don't charge for it.

"But if you have a situation where the field is clear but you've got them all the way around it, that's a huge issue."

Holzwarth said that wind energy companies "tell farmer's they've talked to professionals about aerial application and the professionals tell them this and that. I don't know who they're calling professionals, but it's not anybody who is sitting in an airplane."

"I will admit I am biased. I question if it is in the long term interest of the landowners to get involved with those items," Schertz said.

"But strictly from the aerial application side, a little cooperation from the wind power companies would certainly help and I would say I've had very little.

"The placement is a huge issue on how difficult it is to work around them, and obviously they have their own interest and they are not very concerned about other stake-holder interest in safety."

Schertz noted that his business has been impacted by wind farms already constructed in central Illinois.

A small amount of the impact has been felt in areas where Schertz can no longer spray due to turbines in those fields.

"Another part of the impact has been some people have not asked us to spray because of that. I really think that has probably been a bigger impact," Schertz said.

"I'm not saying that maybe they knew already that is was too much of a mess and there wasn't any point of asking, but I have noticed a decrease in market share in areas where there are a lot of them."

Schertz was asked if the downdraft of the blade rotation causes concern for pilots.

"Yes it is an impact. It isn't necessarily what I would call a downdraft, but it does disrupt the airflow and obviously an airplane operating in that air.

"So if it is to the point basically that they're able to extract energy out of the air, they're disturbing the air. The more power they pull out, the more it disturbs it, and it is rough around them when you're into that situation.

"Yes, that is another factor. I mean they are not static obstacles. They impact air and they're variable. It adds a lot of complexity to the operation."

HEALTH AND SAFETY CONCERNS ABOUT WIND TURBINES
IMPACT OF WIND TURBINES ON PEOPLE

WIND FARM LOG (ENGLAND) http://www.windaction.org/documents/14202
ITALIAN WIND FARM DIARY http://www.windaction.org/documents/13434
OUR WIND FARM STORY (NEW YORK) http://www.windaction.org/documents/524

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IMPORTANCE OF SET-BACKS

Scherth 460 f-55

WIND SITING REFORM POLICY http://www.windaction.org/documents/13188
Nina Pierpont, MD, PhD, HEALTH. HAZARD, AND QUALITY OF LIFE NEAR WIND POWER INSTALLATIONS: HOW CLOSE IS TOO CLOSE?
http://www.ninapierpont.com/?s=wind
Barbara J. Frey, BA, MA and Peter J. Hadden, BSc, FRICS, NOISE RADIATION FROM WIND TURBINES INSTALLED NEAR HOMES: EFFECTS ON HEALTH (Abstract)
http://www.windturbinenoisehealthhumanrights.com
Nina Pierpont, MD, PhD, HEALTH EFFECTS OF WIND TURBINE NOISE
http://www.ninapierpont.com

VIBROACOUSTIC DISEASE

N. A. A. Castelo Branco, A. Araujo, J. Joanaz de Melo and M. Alves-Pereira, VIBRO-ACOUSTIC DISEASE IN A TEN YEAR OLD MALE
Professor Mariana Alves-Pereira and Nuno A. A. Castelo Branco, M. D., IN-HOME WIND TURBINE NOISE IS CONDUCIVE TO VIBROACOUSTIC DISEASE
http://www.ninapierpont.com/?s=wind&p=2
VIBROACOUSTIC DISEASE AND WIND TURBINES
http://www.ninapierpont.com/?s=wind&p=2
Professor Mariana Alves-Pereira and Nuno A. A. Castelo Branco, M. D. INDUSTRIAL WIND TURBINES, INFRASOUND AND VIBRO-ACOUSTIC DISEASE (VAD)
(Press Release) http://www.wind-watch.org/news/2007/06/09/industrial-wind-turbines-infrasound-and-vibro-%C2%ADacoustic-disease-vad/
J. P. Michaud, VIBROACOUSTIC DISEASE NOT A FABRICATION
http://www.wind-watch.org/news/2007/07/04/vibroacoustic-disease-not-a-fabrication/

HIGH WINDS

General Electric, DOCUMENTS EXTREME WIND SPEED: RISK AND MITIGATION
http://www.windaction.org/documents/13914
(*Conclusion: "At this Time, GE has no modeling capability in place that can predict the impact made to a wind plant if an extreme wind event occurs."*)

FOR MUCH MORE INFORMATION, SEARCH
www.windaction.org; www.wind-watch.org; www.ninapierpont.com

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INTERNET

FOR THE COMPLAINT FILED IN PENNSYLVANIA AGAINST WIND FARM, SEE
http://www.windaction.org/documents/15637

FOR VIDEOS AND SOUND RECORDINGS OF WIND TURBINES, GO TO
http://www.wind-watch.org/video-germanfire.php

FOR ACCIDENT SUMMARY, SEE Caithness Wind Turbine Accident Summary,
http://www.caithnesswindfarms.co.uk/page4.htm
At the end of the file is a link to the detailed accident chart upon which the summary is based.

FOR THE EXPLODING TURBINE IN DENMARK, GO TO
http://www.groovygreen.com/groove/?p=2712

For a different video of the exploding turbine go to
http://www.youtube.com/watch?v=CqEccgR0q-o&feature=related

FOR OTHER RELEVANT VIDEOS AND TO SEE A SPECTACULAR PHOTOGRAPH OF A TURBINE FIRE, GO TO
http://www.iberica2000.org/Es/Articulo.asp?Id=3729
and
http://www.iberica2000.org/Es/Articulo.asp?Id=1228

PHOTOGRAPHS OF FIRES AND BLADE THROW IN EUROPE (German site, with great pictures and a link at the start to translate text - just copy and paste text into the translation window - the translation is pretty rough, but you will get the idea. Also the dates are given day/month/year. The best photos are for 9.6.2004 - Wulfshagen/Tüttendorf im Kreis Rendsburg-Eckernförde / Schleswig-Holstein The red circle show falling burning debris
http://members.aol.com/fswemedien/ZZUnfalldatei.htm

EXCELLENT INFORMATIVE WISCONSIN SITES
http://www.windcows.com
http://betterplan.squarespace.com

LETTERS FROM MARS HILL

fletcher Letter	http://www.windaction.org/documents/15112
Boyd Letter	http://www.windaction.org/documents/15114
Harris Letter	http://www.windaction.org/documents/15116
Burtchell Letter	http://www.windaction.org/documents/15405
Cowperthwaite Letter	http://www.windaction.org/documents/15406

"a high flying jet over our home that didn't leave the area"
"noise can even be heard over the motor of my lawnmower at times"
"hearing protectors . . . . block out the sounds of birds, wind, tree in the wind, brook babble, but not the relentless pounding of the turbines."

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Woman tells a tale of turbine torment

February 11, 2009 by Heather Kendall in Barry's Bay This Week

Exhibit 48.1 55

Retired pharmacist speaks to Killaloe, Hagarty and Richards about the effects industrial wind turbines had on her health

When Carmen Krogh talks about the health effects of wind turbines, she speaks from experience. She shared that experience with the councillors of Killaloe, Hagarty and Richards Township at last week's regular meeting. Extra chairs had to be pulled out of storage to handle the large crowd that came to hear her presentation to council.

Krogh has been involved with health care for more than 40 years; she is a retired pharmacist; she was the director of pharmacy at Edmonton General Hospital; when she moved to Ontario, she set up the drug information pharmacy at Ottawa General Hospital, where she researched drug therapies and advised doctors. For 15 years, she was the director of publications and editor-in-chief of the Compendium of Pharmaceuticals and Specialties (CPS); she was an acting director for Health Canada's Pesticides Agency and has sat on numerous boards and committees dedicated to health. She has also lived near wind turbines.

Her symptoms came on quickly, she said. She experienced bad headaches, dizziness, queasiness, a heart rhythm sensation and a vibration inside her body. Her health improved when she and her husband, who was not affected, left the area. She decided to research the issue.

The Canadian Wind Energy Association says there is no evidence that turbines adversely affect human health, Krogh stated, but emerging research to the contrary is building momentum. In 2006, the National Academy of Medicine in France recommended an epidemiology study be done. Epidemiology, Krogh said, is the "holy grail for public health research. It investigates adverse effects in public health and gives doctors guidance on what could be a health risk and what to do about it. It's something the medical community depends on."

Krogh referred to a study of 10 families conducted by Dr. Nina Pierpont, whose book about wind turbines and health effects is soon to be released. She studied the families before the turbines were erected and after their installation; nine of the families have moved away permanently and the other would like to but cannot afford to move. Dr. Pierpont also recommended an epidemiology study be conducted. The Wind Energy Association disagrees with Dr. Pierpont's findings, and raised questions about the scientific validity of her research (even though her book has not yet been released), Krogh said.

Krogh also brought up the findings of Dr. Robert McMurtry, who originally wanted to host a set of wind turbines on his property. After researching them, he too became concerned about the effects on human health. In November of 2008 he did a deputation to Prince Edward County and suggested the county shouldn't proceed in development until authoritative guidelines are in place - guidelines based on epidemiology specifically targeting health effects. One mayor in the county stated it didn't mean the county was against wind energy, but it would give council time to get answers to the questions that citizens should be asking.

"We're the citizens and we should be asking questions," said Krogh.

She went on to list the core symptoms people have reported: headaches, unsteady balance, nausea, sleep problems, anxiety, irritability, depression, problems with concentration and memory. Trouble with sleep is very serious, she added.

"Sleep deprivation can lead to serious medical problems," Krogh said. "According to Amnesty International, it is a tool for torture, so it's not trivial."

Though the health issues are not limited to one group, pre-existing health conditions can be made worse by the turbines; for example, more frequent and severe migraine attacks can be triggered; balance can be affected by the visual disturbance of moving blades or shadows of the blades on the ground. Some people are affected quickly and others don't develop symptoms for two or three months. The cause of the effects is low-frequency noise, which, Krogh said, affects the body's neurological system.

There are two types of noise from the turbines, she said: what you hear, which is measured in decibels, and low-frequency noise that you can't hear. She referred to one study, which concluded low-frequency noise up to three kilometres away can cause sleep disturbance, and, from 300 metres away, can cause sleep disruption and serious medical problems. A 27-year study found exposure to low-frequency noise causes the cells in the body to undergo pathological changes. A three-year study added to the long one concluded that turbines in residential areas produced an acoustic environment that can lead to Vibroacoustic Disease. Krogh said the Ministry of the Environment does not measure for low-frequency noise; its guidelines are based on decibels.

"In our haste to capture wind, there is no voice heard for public health, and when it is heard, it's routinely ridiculed," said Krogh.

As studies progress, the distance for setbacks of the turbines grows. The general setback for the turbines now is greater than 250 metres; more and more researchers say that distance should be 1.5 to 3.5 kilometres.

Krogh gave examples of "victims" of the wind turbines. One was a healthy Shelburne woman who had 11 turbines west and east of her home. Both she and her husband developed health problems - even their dog was adversely affected.

"They believed the government, they believed the wind companies," said Krogh. "Everyone said, 'Don't worry, we're not going to make the same mistakes as in Europe,' but these people are suffering."

She talked of the HIV blood scandal of the 1980s, where mounting evidence about tainted blood was ignored for a long time.

"Public health scandals happen and I'm almost on the verge of saying the wind issue will be one," Krogh said.

More researchers are calling for an epidemiology study.

"They're not saying stop this; they're saying let's harness the wind responsibly and make sure we get this right about where to put (the turbines) and how far away from people," she said. "In the meantime, we should invoke the precautionary principle."

Krogh has started a letter-writing campaign and said now is the time to voice concerns to federal, provincial and municipal governments. She urged everyone to send out letters as well.

"Maybe it needs a groundswell from the public as a whole to say that we need to look into this further," she said.

Krogh commended council for passing the resolution urging the Province of Ontario to place a moratorium on wind farms until the effects are better understood.

"I think you did a very good job with your resolution," she said. "It raises the concern higher up. It's important municipalities express concern. It's about the politics now."

Web link: http://www.barrysbaythisweek.com/ArticleDisplay.aspx?e=1430532"

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Exhibit 490 of 55
CHAMPAIGN COUNTY BOARD OF APPEALS

Protect your interests

Every Landowner should know that a wind farm lease may damage and limit the use of one's own ground.

January 30, 2009 in Hays Daily News

Every Landowner should know that a wind farm lease may damage and limit the use of one's own ground. I recently drilled a discovery well in Hodgeman County. If my original oil and gas lease would have been recorded one month later, as noted in the drilling title opinion, the wind lease would have been superior to my lease.

A subordination of the wind lease would have been required to allow development. The wind farm would have been in a position (not the landowner) to negotiate or not negotiate. This leaves a wind farm in a position to control leasing and development on the farmers ground. This control costs the wind farm pennies on the dollar for what a landowner might receive from an oil and gas lease. It also allows for leases as long as one hundred years. No wonder Boone Pickens, George Soros and others are leasing as much ground as possible throughout the most productive sedimentary basins in the USA. I would recommend that each of you take your leases to your attorneys to scrutinize and ask for a legal opinion as to whether the wind farm lease limits oil and gas or other development. What are the unintended consequences of such far reaching leases? One hundred and forty years ago, the railroads negotiated leases with the federal government to allow them the right to mine coal (for their coal burning locomotives) along the railroad routes. This seemingly benign lease is now being used to deny any ownership of minerals for thousands of landowners in the west and has metamorphosed to mean uranium, gold, silver, oil and gas, etc. This has spawned giant mineral companies that dwarf the railroads in size. If your lawyer will not give you an opinion, get another lawyer. A typical oil and gas lease is one page long. A typical wind farm lease is 20 pages long. I believe this difference is by design. Removing damaging language should be possible, if there are no ulterior motives. Under any circumstance, asking for an opinion, should allow your family protection.

Web link: Jerry Green "

No Crop Dusting?

Wind power farms are being highly touted as a renewable energy source that is clean, safe, and a responsible way to generate electricity for our nation. However, nothing comes without sacrifice and these projects are no exception. The issue is being complicated, either intentionally or otherwise, by not openly addressing the very real fact that farmers with wind generators may lose the option of aerial application of farm protection products, seed, fertilizers, etc. on their farm ground. Possibly more significant is that their neighbor farmers, who have no wind generator(s) and consequently no income from them, stand to lose that option as well.

Some proponents of wind farms tend to dismiss this possibility out of hand, with the explanation that "those guys can fly around them with no problem," or "just get a helicopter to do it." Others say that ground application can still be effectively performed so the aerial option is insignificant. Unfortunately, it is just not that simple. Sometimes weather problems and/or timeliness of application dictate an application from the air.

The fact is, it is dangerous to fly within the confines of a wind generator farm. Without going into the technical aspects, windmills can cause vertigo sensations, create unstable wind conditions, and extend high enough to seriously affect the way an aircraft can work a field. That is why even a neighboring field without a wind generator may not be a candidate for aerial application: there's no room to make a turn.

Proponents of wind farms point that the $4-5,000 paid each year to the landowner is a lot of money for a small piece of farm ground. Asian Rust has not been a factor thus far in Illinois, but the potential is huge. Match the $5,000 against a possible 80% yield loss of soybeans expected to average 60 bushels per acre. At $12/ bushel, that's $576. If it's an 80 acre field, that's $46,080 lost. Cropping decisions will be tough in the future considering you can't change your mind once the wind generator is up and operating.

Will a farmer find an aerial applicator willing to book a field in the vicinity of a wind power generator? The answer is "maybe." It will most definitely be at an increased application cost; possibly double. Helicopters are not the answer because there are only a few working the Midwest and they don't like working in the wind farms either.

The Illinois Agricultural Aviation Association (IAAA) has been disappointed in the lack of candor by some wind generator proponents with regard to farmers' potential loss of an aerial application option. We believe it is critical that a truthful picture be presented so that an informed decision can be reached. In June, 2005, the following Resolution was passed by the IAAA Board of Directors.

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ILLINOIS AGRICULTURAL AVIATION ASSOCIATION RESOLUTION

Exhibit 50 of 55

WHEREAS, we acknowledge the need for affordable electric power and the efficient distribution of that power to the point of its consumption, and

WHEREAS, we acknowledge the environmental benefits of wind generated electrical power, and

WHEREAS, we understand the financial considerations involved when decisions are made to place wind turbines on otherwise productive farm ground, and

WHEREAS, wind turbine generator farms create uniquely hazardous and unacceptable dangers to pilots flying agricultural aircraft in a ground environment,

WE HEREBY RESOLVE that, in the interest of pilot safety, we will refuse to make an aerial application of any product inside a grouping of wind generators, or to farm land immediately adjacent to a grouping of wind generators, should that proximity be considered hazardous by the pilot of the agricultural aircraft.

Approved by unanimous vote of the Board of Directors of the Illinois Agricultural Aviation Association.

Submitted by: Rick Reed, IAAA President and owner/operator of Reed's Fly-On Farming

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What Aerial Applicators Have To Say

"There is one up by Bradford....last year I was up there, there was four turbines on each side of the field. I was focused on the turbines themselves and I was going through the field – one of their monitoring towers was in there and I never saw it because I was focused on the spinning blade and everything else. And – it's just – I came back and I told the farmer, "Never again."

Brandon Flexsenhar, 2009 VP, IAAA

"Aerial application can be done in maybe ten percent of the fields inside those wind farms. I don't know where the information came that you can operate an airplane inside these wind farms, but none of my airplanes will go in there. There are a few cases where there is a field here and there we can get to, but it ain't worth somebody's life to get in there and try and do that."

Chuck Holzwarth, 2008 IAAA President andOwner/Operator Holzwarth Flying Service

"The Illinois Agricultural Aviation Association (IAAA) has been disappointed in the lack of candor by some wind generator proponents with regard to farmers' potential loss of an aerial application option. We believe it is critical that a truthful picture be presented so that an informed decision can be reached."

Rick Reed, 2005 IAAA President and Owner/Operator of Reed's Fly-On Farming

"....Once these wind towers go up, if you have property that is located within a grouping of or within close proximity to, we will not risk our lives to go in there and spray your crops. Now I know it's been brought to my attention here the last few weeks that a lot of people have said, yeah, once they put them up, we'll call him, and he'll come anyway. I'm here to tell you that I'm not coming.....I will not come when you are in need of somebody to save your crop."

Scott Peterson, Owner/Operator Peterson Flying Service and Operator of Pontiac Airport

"They are a real safety hazard, and it is very intimidating to work around them...any time a wind tower is involved....we do enforce the (50%) surcharge. On my work order, if it is within a mile and it obstructs our operations, there is a surcharge."

Scott Schertz, 2008 NAAREF President, 2005 NAAA President and Owner/Operator of Schertz Aerial Service

"Whether you have a turbine on the ground or you don't but have turbines all around your ground, it may or may not ever be able to be sprayed with an airplane again."

Chuck Holzwarth, 2008 IAAA President and Onwer/Operator of Holzwarth Flying Service

".... A little cooperation from the wind power companies would certainly help and I would say I've had very little."

Scott Schertz, 2008 NAAREF President, 2005 NAAA President and Owner/Operator of Schertz Aerial Service

Here is the breakdown of what the major energy sectors are getting in subsides from the Executive Summary
http://www.eia.doe.gov/oiaf/servicerpt/subsidy2/pdf/execsum.pdf,

of the new DOE report.

Coal is paid $.44 per mwh
Nat. Gas: $.25 per mwh
Biomass: $.89 per mwh
Nuclear: $1.59 per mwh
Hydro: $.67 per mwh
Solar: $24.34 per mwh
Landfill gas: $1.37 per mwh
Wind: $23.37 per mwh

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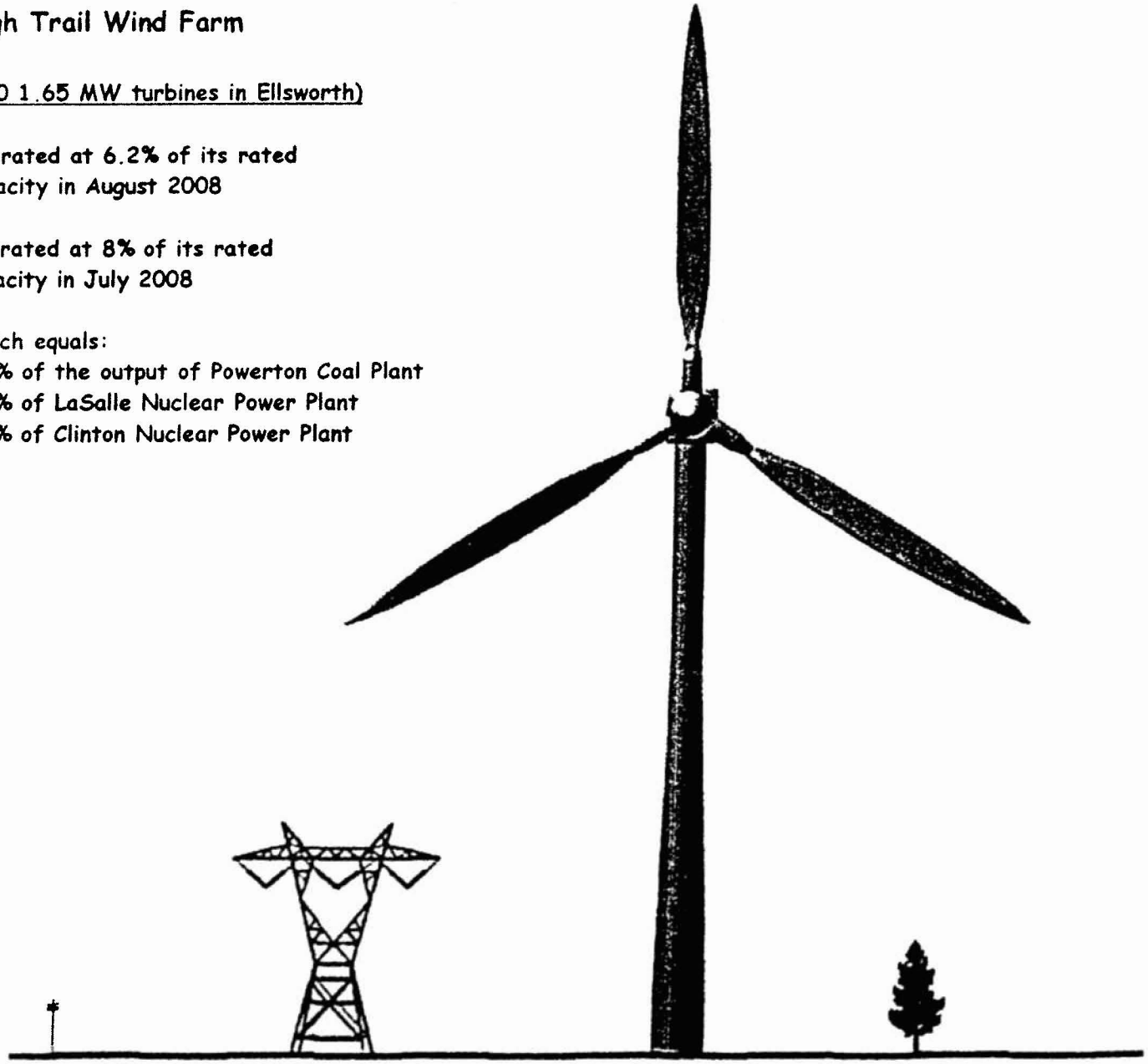
High Trail Wind Farm

(240 1.65 MW turbines in Ellsworth)

Operated at 6.2% of its rated capacity in August 2008

Operated at 8% of its rated capacity in July 2008

Which equals:
1.8% of the output of Powerton Coal Plant
1.1% of LaSalle Nuclear Power Plant
2.3% of Clinton Nuclear Power Plant



Utility Pole: 30 ft. | Transmission Tower: 125 ft. | Wind Turbine: up to 550 ft. | Forest Tree: 60 ft.

WHAT HAVE I DONE?

This compelling message appeared in an advertisement run in the October 25, 2007 issue of the Times-Journal newspaper in Wisconsin. A .pdf copy of the ad can be accessed by clicking on the below link. No name was included with the advertisement and IWA has been unable to verify the source of the ad. (windaction.org/documents/13067)

Now each morning when I awake, I pray and then ask myself, "What have I done?"

I am involved with the BlueSky/Greenfield wind turbine project in N.E. Fond du Lac County. I am also a successful farmer who cherishes his land. My father taught me how to farm, to be a steward of my fields, and by doing so, produce far better crop production. As I view this year's crops, my eyes feast on a most bountiful supply of corn and soybeans. And then my eyes focus again on the trenches and road scars leading to the turbine foundations. **What have I done?**

In 2003, the wind energy company made their first contacts with us. A $2000 "incentive" started the process of winning us over, a few of us at a time. The city salesman would throw out their nets, like fishermen trawling for fish. Their incentive "gift" lured some of us in at first. Then the salesmen would leave and let us talk with other farmers. When the corporate salesmen returned, there would be more of us ready to sign up; farmers had heard about the money to be made. Perhaps because we were successful farmers, we were the leaders and their best salesman. **What have I done?**

Sometime in 2004 or 2005, we signed $4000.00 turbine contracts allowing them to "lease" our land for their needs. Our leases favored the company, but what did we know back then? Nobody knew what we were doing. Nobody realized all the changes that would occur over which we would have no control. How often my friends and I have made into my fields, the physical changes started to impact not only me and my family, but unfortunately, my dear friends and neighbors. Later, a 4 foot deep by 2 foot wide trench started diagonally across my field. A field already divided by their road was now being divided again by the cables running to a substation. It was now making one large field into 4 smaller, irregularly shaped plots. Other turbine hosts also complained about their fields being subdivided or multi cable trenches requiring more lands. Roads were cut in using anywhere from 1000 feet to over a ½ mile of land to connect necessary locations. We soon realized that the company places roads and trenches where they will benefit the company most, not the land owner. One neighbor's access road is right next to some of his out buildings. Another right next to his fence line. **What have I done?**

At a wind company dinner presented for the farmers hosting the turbines, we were repeatedly told - nicely and indirectly - to stay away from the company work sites once they start. I watch as my friends faces showed the same concern as I had, but none of us spoke out. Months later, when I approached a crew putting in lines where they promised me they definitely would not go, a representative told me I could not be here. He insisted that I leave. The line went in. The company had the right. I had signed the lease. **What have I done?**

Grumbling started almost immediately after we agreed to a 2% yearly increase on our 30 year lease contracts. Some felt we should have held out for 10%. What farmer would lock in the price of corn over the next 5 years, yet alone lock one in at 2% yearly for 30 years? Then rumors leaked that other farmers had received higher yearly rates, so now contracts varied. The fast talking city sales folk had successfully delivered their plan. Without regard for our land, we were allowing them to come in and spoil it. All of the rocks we labored so hard to pick in our youth were replaced in a few hours by miles of roads packed hard with 10 inches of large breaker rock. Costly tiling we installed to improve drainage had now been cut into pieces by company trenching machines. **What have I done?**

Each night, a security team rides down our roads checking the foundation sites. They are checking for vandals and thieves. Once, when I had ventured with guests to show them foundation work, security stopped us and asked me, standing on my own property, what I was doing there. **What have I done?**

Now, at social functions, we can clearly see the huge division this has created among community members. Suddenly, there are strong-sided discussions & heated words between friends and, yes, between relatives about wind turbines. Perhaps this is a greater consequence than the harm caused to my land! Life is short & my friendships precious. **What have I done?**

I tried, as did some of the other farmers, to get out of our contracts, but we had signed a binding contract and a contract is a contract. If you are considering placing wind turbines on your property, I strongly recommend that you please reconsider. Study the issues. Think of all the harm versus benefits to your land and, in the future, to your children's land by allowing companies to lease your land for turbines. **WHAT HAVE I DONE?**

PLEASE DO NOT DO WHAT I HAVE DONE!

Attachment: Chilton timesWhatHaveIDone.pdf

"Big Money" Discovers the Huge Tax Breaks and Subsidies for "Wind Energy" While Taxpayers and Electric Customers Pick up the Tab

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Sched. 5 3 of 55

Glenn Schleede*

April 14, 2005

Recent Evidence of "Big Money" Interest in US Wind Energy Tax Breaks and Subsidies

1. FPL Group
2. General Electric
3. Gamesa, Spanish manufacturer of wind turbines and developer of "wind farms" in the US
4. MidAmerican Energy
5. American Bar Association
6. AES Corporation
7. PPM Energy, US subsidiary of Scottish Power
8. J.P. Morgan
9. Goldman-Sachs
10. EnXco, affiliate of EdF Energies Nouvelles (EdF - Electricite' de France Group)
11. Smaller Companies
12. "Renewable Energy" Advocates, "Law" Firms and Lobbyists

Facts about wind energy just beginning to catch up with the false and misleading information that has led to faulty government policies, tax breaks and subsidies.

1. Tax avoidance —not environmental and energy benefits— has become the primary motivation for building "wind farms".
2. Huge windmills —often taller than the US Capitol— produce very little electricity.
3. Electricity from wind turbines has less real value than electricity from reliable generating units, and they detract from electric system reliability.
4. The true cost of electricity from wind energy is much higher than wind advocates admit.
5. Claims of environmental benefits of wind energy are exaggerated.
6. "Wind farms" have significant adverse environmental, scenic and property value impacts.
7. "Wind farms" produce few local economic benefits, which are overwhelmed by the higher costs imposed on electric customers through their monthly bills.
8. Various other subsidies shift large amounts of cost from "wind farm" owners to ordinary taxpayers and electric customers.
9. The big "winners" are "wind farm" owners and a few landowners who lease their land.
10. The wind industry's claim that they deserve tax breaks and other subsidies because other energy sources have received even larger government-imposed benefits is false.

The tax breaks and subsidies that are attracting big money interests to "wind energy".

1. Federal Accelerated Depreciation.
2. Federal Production Tax Credit.
3. Reductions in "wind farm" owners' state corporate income tax liability.
4. Property, sales and other state and local tax reduction or elimination.
5. "Public benefit funds".
6. Renewable Portfolio Standards" (RPS).
7. Mandated "green energy" purchases.
8. "Voluntary" programs offering "green" electricity at a premium price.
9. Other state utility commission actions that subsidize "wind farms".
10. Industrial Development Bonds to Finance privately owned "wind farms".

Introduction

Recent events confirm that "Big Money" interests in the US and Europe have discovered the enormously generous tax breaks and subsidies that are now available in the US for producing electricity with wind turbines. These organizations are moving aggressively to build "wind farms" and to seek more subsidies.

Meanwhile, as more wind turbines are proposed in the US and other countries, ordinary citizens have learned that "wind farms" are not environmentally benign. Instead, wind energy has high economic, environmental, ecological, scenic and property value costs. Wind turbines produce only small amounts of electricity and that electricity is unreliable and low in value.

Quite likely, many members of Congress, state legislators, governors, regulators and local officials don't yet realize that they have been misled about the true benefits and costs of wind energy –or the extent of their combined generosity to the wind industry.

In the US, "wind farms" are now being built primarily for tax avoidance purposes, not because of their environmental, energy or economic benefits. The tax breaks and subsidies have more value to "wind farm" owners than the revenue from the sale of electricity they produce.

These generous tax breaks and subsidies are at the expense of ordinary taxpayers and electric customers and are hidden in their tax bills and monthly electric bills. Government officials seem unaware or uncaring about either the large transfer of wealth to "wind farm" owners from ordinary citizens —or the fact that large amounts of capital are being spent on projects that produce only small amounts of unreliable, low value electricity.

As detailed below:

- At least 10 large US and foreign companies are now working to build more "wind farms" in the US to take advantage of the exceedingly generous tax breaks and subsidies.
- Facts demonstrate that advocates have consistently overstated the environmental benefits and understated the environmental, ecological and economic costs of wind energy.
- The tax breaks and subsidies for "wind energy" already in place are providing huge benefits for a few companies but the wind industry is lobbying for even more.

Despite the facts, it's far from clear that legislators, local government officials and regulators will temper their enthusiasm for wind energy since so many have accepted as fact the false and misleading information distributed during the past decade by wind energy advocates. Also, they are well aware of wind industry lobbying power and campaign contributions.

Recent Evidence of Big Money Interest in Wind Energy Tax Breaks and Subsidies

As indicated above, a number of large US and foreign companies (apparently with income to shelter from taxation), as well as law firms and lobbyists, have become aware of the enormously generous federal, state and local tax breaks and subsidies available for wind energy in the US.

Presumably these firms are well aware that the government largess they are pursuing is at the expense of ordinary taxpayers and electric customers, but there is no reason to expect that they would work to protect the interests of either of these broad groups. Instead, their interests are in taking advantage of government measures to reduce their taxes and to increase their profits.

Most of the "Big Money" organizations are in the energy and financial industries, including one firm that recently paid a large fine relating to its work with Enron. Notably, Enron also took advantage of unwise government policies at the expense of taxpayers and consumers. Now, other big firms are taking advantage of a government-created "wind energy money machine."

The following examples illustrate the enormity of the tax breaks and subsidies and/or the extent to which big money organizations are pursuing those generous tax breaks and subsidies:

1. FPL Group apparently paid NO federal income taxes in 2002 or 2003 while reporting net income of more than $2 billion.[1] Those are the years FPL Group's subsidiary, FPL Energy (currently the largest owner of wind generating capacity in the US and sister of Florida Power & Light Co.), invested heavily in wind generation ("wind farms"). Apparently FPL Energy took more than $1.2 billion in depreciation deductions in those years.[2]

2. General Electric bought Enron Wind's wind turbine manufacturing business[3] in May 2002, with the intention of capturing a large share of the artificial market for wind turbines created by the tax breaks and subsidies in the US and other countries.

3. Gamesa, a Spanish manufacturer of wind turbines and developer of "wind farms" in several countries, in September 2002 acquired 75% of the stock of Navitas, a Minneapolis-based developer of "wind farms." Gamesa companies apparently are proposing "wind farms" in Wisconsin, Illinois, Pennsylvania, and states in the Southwest. In early 2005, Gamesa announced plans to begin manufacturing wind turbine blades in Pennsylvania.

4. MidAmerican Energy, 80.5% owned by Warren Buffet's Berkshire Hathaway,[4] has also found the huge tax breaks and subsidies available for "wind farms." Last year, MidAmerican completed roughly half of its originally planned 310.5 megawatt (MW), $323 million wind energy project in Iowa, which is being expanded to some 360 MW and $386 million.. The Omaha World Herald has reported that MidAmerican will reap roughly $300 million in tax benefits over 20 years from the project due to the federal Production Tax Credit, ($175 to $195 million) and forgiveness of Iowa property tax ($130 million).[5]

Under the federal accelerated depreciation rules applicable to wind energy, MidAmerican should be able to deduct its entire $386 million capital investment from otherwise taxable income during the 2004-2010 tax years, thus reducing its federal tax liability by about $135 million during those years.[6] Those depreciation deductions from income can carry through and reduce Iowa corporate income tax by about $46 million during the same years.[7]

5. American Bar Association, in mid-2004, established a "Renewable Energy Resources Committee."[8] During a December 15, 2004, teleconference, Ed Feo - Milbank Tweed Hadley & McCloy, LLP pointed out that 2/3 of the economic value of wind projects come from tax breaks.[9]

6. AES Corporation, on January 11, 2005, announced acquisition of SeaWest Holdings, Inc., parent company to, among others, SeaWest WindPower, Inc. which has "nearly 500MW of wind facilities throughout California, Wyoming and Oregon" and "...has site control of 1,800 MW of development sites in ten of the western United States.[10] In 2004, AES invested in US Wind Force, LLC, which is developing "wind farms" in certain mid-Atlantic states. On April 5, 2005, AES announced that it had entered into a joint venture with EHN to develop wind energy facilities in the State of New York.[11] EHN (Corporación Energía Hidroeléctrica de Navarra, S.A.) was acquired in January 2005 by ACCIONA, a conglomerate with headquarters in Madrid, Spain and a variety of operations in many countries. EHN is described by the company as one of the largest wind energy developers in the world. The company owns "wind farms" in Spain, Germany, France and the US.

7. PPM Energy, US subsidiary of Scottish Power, on January 4, 2005, announced its purchase of Atlantic Renewables and its wind development portfolio. Atlantic Renewables, an aggressive "wind farm" developer, previously, had sold off its "wind farm" projects to large organizations such as FPL Energy/FPL Group (which, as shown in 1, above, has profits that could be sheltered with federal and state tax breaks). PPM currently has 830 MW of wind generation in operation in 7 states and "...has a goal of bringing 2,300 MW of new wind power to market by 2010." [12]

8. J. P. Morgan has surfaced as the organization financing Noble Environmental Power LLC, an organization with an office in Connecticut that is seeking to build "wind farms" in New York, Connecticut and Michigan. Noble Environmental Power, LLC ("Noble") has wind projects comprising more than 1,000 MWs in active development. Noble intends to retain ownership of the wind projects it develops. Noble is seeking to bring on line one or more wind generation facilities before the end of 2005.[13]

9. Goldman Sachs announced on March 21, 2005, that it is acquiring Zilkha Renewable Energy of Houston Texas.[14] Zilkha is an "...independent wind energy development company, with a portfolio of nearly 4,000 megawatts in various stages of development in a dozen states. Goldman Sachs will acquire 100% of Zilkha's interests in the 200-megawatt Flat Rock Wind Power Project in Lewis County, New York, as well as 100% of Zilkha's interest in the 150-megawatt Blue Canyon Phase II Project in Oklahoma, both of which are expected to be completed by the end of 2005.

10. EnXco is an affiliate of EdF Energies Nouvelles, a member of the EdF (Electricite' de France) Group. EnXco develops, constructs, operates and manages wind energy projects and proposes to build "wind farms" in several US states, including Washington, Idaho, West Virginia, and Massachusetts.[15]

11. Numerous smaller companies have undertaken the "on the ground activities" to force "wind farm" projects through state and local government zoning and permitting process. Often, they sell their projects off to larger organizations with profits to shelter from taxation.

12. "Renewable" energy advocates, including wind advocates, have created a variety of profit-oriented and nonprofit organizations[16] and signed up various Washington DC-based "law" firms and lobbyists (including former White House and CIA officials) to press for continuation and expansion of lucrative tax breaks and subsidies for wind energy, including the insidious "Renewable Portfolio Standards." Additional lobbying power has come from a variety of organizations that plan to make money on trading of Renewable Energy Certificates (sometimes called "Green Tags') that have been created by several states that have established "Renewable Portfolio Standards" and renewable energy credit schemes.

Facts about wind energy are just beginning to catch up with the false and misleading information that has led to faulty government policies, tax breaks and subsidies

While government officials lavish tax breaks and subsidies on the wind industry, ordinary citizens around the world where "wind farms" have been built or are proposed are learning that the public, media and government officials have been badly misled about the costs and benefits of wind energy. As the facts are becoming known, opposition to "wind farms" is growing rapidly in US and other countries, including the UK, Germany, Denmark, Spain, Italy, France, Australia and New Zealand. Some 200 citizen-led opposition groups have emerged.

These groups face an uphill fight in getting government officials to understand, accept and act on the facts about wind energy because the wind industry and other wind advocates have, for more than a decade, distributed false or misleading information to the public, media and government officials. The U.S. Department of Energy (DOE) and its National Renewable Energy "Laboratory" (NREL) participate in distributing such information – at taxpayer expense.

There are at least 10 major reasons why "wind farms" have become controversial. These points are explained in other papers[17] and on web sites and will only be described here briefly.

1. Tax avoidance – not environmental and energy benefits – has become the prime motivation for building "wind farms." The most important and lucrative tax breaks and subsidies are listed later. Briefly, the tax breaks include federal and state accelerated depreciation, production tax credits, and reduced or forgiven property and sales taxes.

2. Huge windmills – often taller than the US Capitol -- produce very little electricity. Some 15,000 windmills are now scattered across thousands of acres of land in 30 states In the US, with total generating capacity of 6,740 megawatts (MW) as of January 5, 2004.[18] If those thousands of windmills average a generous 27% capacity factor, the total amount of electricity they would produce annually would be 15,941,448,000 kilowatt-hours.[19] That sounds like a lot of electricity, but it is equal to 41/100 of 1% of the electricity produced in the US during 2003.

3. Electricity from wind turbines has less real value than electricity from reliable generating units, and they detract from electric system reliability. Wind turbines produce electricity only when the wind is blowing within the right speed range. Today's models may begin producing some electricity at wind speeds of about 8 miles per hour (MPH), reach rated capacity around 33 MPH, and cut out around 56 MPH. Because their output is intermittent, volatile and largely unpredictable, the electricity they produce has less value than electricity from reliable ("dispatchable") generating units.

Electricity grids must be kept in balance (supply & demand, voltage, frequency), so some reliable, dispatchable generating unit(s) must be immediately available at all times – and operating at less than peak efficiency and capacity -- to "back up" the unreliable wind generation. The reliable, backup unit(s) must ramp up and down to balance the output from the wind turbines. Wind turbines detract from grid reliability and would be of no value in restoring an electric grid when there is a blackout. Further, when electricity demand increases, reliable units must be added to meet growing electricity demand even if wind capacity has been built. Wind turbines have virtually no "capacity value." Thus, electric customers pay twice; once for the wind energy and again for reliable capacity.

4. The true cost of electricity from wind is much higher than wind advocates admit. Wind energy advocates ignore key elements of the true cost of electricity from wind, including:

- The cost of tax breaks and subsidies which shift tax burden and costs from "wind farm" owners to ordinary taxpayers and electric customers.
- The cost of providing backup power to balance the intermittent and volatile output from wind turbines.
- The full, true cost of transmitting electricity from "wind farms" to electric customers and the extra burden on grid management.

5. Claims of environmental benefits of wind energy are exaggerated. The wind industry typically overstates claims of potential emission reductions that might result from displacing electricity generated by fossil-fueled generating units. They tend to ignore the fact that backup generating units must be immediately available and running at less than their peak efficiency or in spinning reserve mode, and that backup units continue to emit while in these modes. Also, the generation that may be offset may not be powered by fossil fuels. Further, under "cap and trade" programs, credits for sulfur dioxide or nitrogen oxides emissions that are displaced by wind could be sold to other emitters, with NO reduction in those emissions.

6. "Wind farms" have significant adverse impacts on environmental, ecological, scenic and property values. Citizens in various states (and other countries) where "wind farms" have been constructed have become painfully aware that – in addition to the high true cost of the electricity -- "wind farms" impair environmental, ecological, scenic and property values. Among the adverse impacts are noise, bird kills, interference with bird migration paths and animal habitat, destruction of scenic vistas and ecological rarities (such as the Flint Hills and Tallgrass Prairie in Kansas), distracting blade "flicker" and aircraft warning lights, and lowering the value of properties located near the huge structures.

7. "Wind farms" produce few local economic benefits and such benefits are overwhelmed by the higher costs imposed on electric customers through their monthly bills. DOE, the National Renewable Energy Laboratory (NREL) and the wind industry have falsely claimed that "wind farms" provide significant economic benefits in the areas and states where they are constructed.[20] They often claim benefits from the capital investment, jobs, tax revenues, lease payments to landowners, and "other" economic activities. Sometimes they claim increased tourist traffic.

In fact, as explained in detail elsewhere,[21] there are few economic benefits and these are overwhelmed by the higher true cost to electric customers and taxpayers of the electricity produced by the "wind farms."

8. Various other subsidies shift large amounts of cost from "wind farm" owners to ordinary taxpayers and electric customers. The wind industry benefits from subsidies in addition to the tax breaks mentioned above and described below. Among the other subsidies are (i) DOE funding for wind energy R&D[22] and payments to "wind farm" developers provided by state governments (such as Massachusetts, New York, Wisconsin, Minnesota and California) using funds collected from electric customers via so-called "public benefit charges."

Other subsidies are in the form of artificially created, high price "markets" for wind-generated electricity. These include guaranteed markets for electricity result from (i) insidious "renewable portfolio standards" mandated by several states that require electricity suppliers to obtain some share of their electricity from "renewable" sources, (ii) additional markets due to mandated purchases of "green electricity" by federal and state government agencies, and (iii) state programs requiring or encouraging electric utilities to offer "green" electricity at premium prices. Electric customers can elect to pay premium prices but these programs generally do not attract enough "volunteers" to pay the utilities' costs of buying the "green" electricity and administering the program. The cost not recovered from customers paying premium prices is then spread across all of the utility's customers and hidden in monthly electric bills.

9. The big "winners" are "wind farm" owners and a few landowners who lease their land. Electric customers and taxpayers are the big "losers." First, as explained in more detail below, "wind farm" owners benefit enormously from the generous tax breaks and other subsidies that shift tax burden to ordinary taxpayers. "Wind farm" owners also benefit from the revenue from the sale of electricity while shifting costs (e.g., backup generation and transmission costs) to electric customers.

Secondly, a few landowners who lease their land may be "winners" but their neighbors are the "losers." For example, landowners who lease land at the rate of $5,000 per MW of wind turbine capacity would derive income of $500,000 per year. However, if that "wind farm" achieved a 30% capacity factor and the electricity cost consumers only an extra $0.015 per kWh, the extra cost to electric customers would $3,942,000 per year[23] or nearly 8 times the income received by the few landowners. Thus, it would be cheaper for the electric customers to pay the landowners to NOT allow wind turbines to be built on their land!

10. The wind industry falsely claims that they deserve tax breaks and other subsidies because other energy sources have received even larger government-imposed benefits. Ideally, subsidies for all energy sources would be reduced significantly, but the wind argument is fundamentally flawed because it does not take into account either the existing or potential contribution of wind energy in supplying US energy requirements. When the expected contribution of wind energy toward supplying US energy requirements is taken into account, wind energy is among the most heavily subsidized of all energy sources. EIA expects wind to provide less than 1/2 of 1% of US energy requirements by 2025.

The tax breaks and subsidies that are attracting big money interests to "wind energy".

As indicated above, the tax breaks and subsidies for the wind industry are at the expense of ordinary taxpayers and electric customers whose interests are not well represented in government circles. The practical effects of the tax breaks and subsidies are to:

- Misdirect hundreds of millions of investment dollars into energy projects that produce only small amounts of low value, low quality electricity.

- Transfer substantial wealth from ordinary taxpayers and electric customers to "wind farm" owners by shifting tax burden from "wind farm" owners to ordinary tax payers, and passing along the high priced electricity from "wind farms" to electric customers.

Among those tax breaks and subsidies are the following:

1. Federal Accelerated Depreciation. One very generous subsidy available to companies with income to shelter is 5-year double declining balance accelerated depreciation (5-yr.; 200% DB) that can be used to calculate depreciation for tax purposes. This is one of the depreciation schemes permitted by the IRS under the label "MACRS," Modified Accelerated Cost Recovery System."[24] Five-year 200% DB can be used for capital costs of facilities using wind to produce electricity for sale. Nearly all other electric generating facilities[25] must use 20-year depreciation, so "wind farm" owners are receiving a tremendous benefit.

In those states that "conform" their corporate income tax to the federal system, a depreciation deduction from otherwise taxable income carries through to the corporation's state income tax returns.

Determining the exact amounts of accelerated depreciation deductions would require access to details of a corporation's taxes. However, as indicated on page 2, above, Warren Buffet's MidAmerican Energy should be able to deduct from taxable income its entire $386 million capital investment in its 360 megawatt (MW) "wind farm" in Iowa during the period from 2004-2010. Assuming marginal tax rates of 35% for federal and 12% for Iowa corporate income tax, the depreciation deductions would reduce tax liability by $181 million during the period from 2004-2010. That is in addition to the roughly $300 million in tax benefits over 20 years from the project due to the federal Production Tax Credit, ($175 to $195 million) and forgiveness of Iowa property tax ($130 million) reported by the Omaha World Herald article referred to earlier.

It's important to note that if a "wind farm" were sold to a new owner after the accelerated depreciation allowances were used, the new owner would also be able to utilize the generous accelerated depreciation benefits to "recover" its capital investment.[26]

2. Federal Production Tax Credit. The second generous federal subsidy available to "wind farm" owners is the Production Tax Credit of $0.019 per kWh of electricity generated during the first 10 years of a wind project's life. For example, at the current rate of $0.019 per kWh, owners of the proposed 150 MW Elk River "wind farm" in Butler County would receive a tax credit (i.e., a direct deduction from its federal income tax bill) of $9,986,400 per

year if the turbines produce at an average 40% capacity factor (i.e., 150,000 kW x 8760 hrs. x .40 x $0.019). The rate, originally set at $0.015 per kWh, has just been adjusted upward for inflation, reaching $0.019 per kWh, retroactive to January 1, 2005.

Organizations owning "wind farms" must have substantial taxable income from other sources to take advantage of the two federal tax shelters described above.[27] That is one reason why small "wind farm" development companies often sell off their projects to larger companies or find ways to "sell" the tax benefits.

3. Reductions in "wind farm" owners' state corporate income tax liability. Kansas taxes corporate income at a basic rate of 4% with a 3.35% "surtax" for income over $50,000. The starting point in computing Kansas taxable income is the federal taxable income of the corporation. Thus the generous federal accelerated depreciation deduction described in paragraph 2, above, reduces the taxable income basis used before applying Kansas' 7.35% marginal income tax rate. This benefit is even greater in states with higher corporate income tax rates such as Iowa, with a 12% rate.

4. Property, sales and other state and local tax reduction or elimination. Thanks to the effectiveness of wind industry lobbyists, several states provide reductions or elimination of state or local property, sales or other taxes. These include New York, West Virginia, Wisconsin, Minnesota, South Dakota, and Kansas. In some cases, "wind farm" owners make voluntary payments in lieu of taxes to offset part of the revenue lost by state and local governments as a result of the exemptions. However, such payments may not be adequate to cover the costs that will be incurred because of the facility; e.g., for road construction and repair, and police and fire protection. Often, such payments are offered only in the early years of a project to help gain public and political support for approvals needed to build the facility, whereas property taxes would continue for the life of the facility.

5. "Public benefit funds" As indicated above, several states have added an extra "tax" (often called a "public benefit charge" on electric customers' month bills to create a so-called "public benefit fund." States with such funds include Massachusetts, New York, Minnesota, Wisconsin, and California. State officials use some of these funds to make payments to owners of wind or other "renewable" energy facilities. These payments are in addition to all the federal, state and local tax breaks described above.

6. "Renewable Portfolio Standards" (RPS). Such standards, in a variety of forms, have been adopted by about 17 states. Renewable Portfolio Standards (RPS) help increase consumers' electric bills in two ways.

First, they provide artificial, guaranteed markets for high priced electricity produced from renewable energy facilities, including "wind farms" assuring the owners of these facilities that they will not have to compete with prices of electricity produced from traditional energy sources, such as coal, natural gas, oil, hydropower or nuclear energy.

Second, a RPS typically establishes some minimum percentage of electricity sales that must come from "renewable" energy sources. The company selling the electricity to end use customers (often an electric distribution utility) can either generate the electricity from "renewable" sources, buy it from some firm that generates such electricity, or, perhaps, buy "renewable energy credits" (i.e., the scheme contemplated by the KEC.) covering the amount of electricity needed to meet the percentage standard.

The higher cost of the electricity from "renewable" sources and/or the credits that the electric distribution company is forced to pay (instead of the lower cost electricity from traditional sources) is, in one way or another, passed on to electric customers in the form of higher bills for electricity - with the blessing of state public utility commissions.

The wind industry is lobbying the US Congress to create a "national" Renewable Portfolio Standard and push additional states to adopt state standards.

7. Mandated "green energy" purchases. Other artificial "markets" are created for the benefit of "wind farm" and other renewable energy producers by federal and state executive actions and, in some cases, by state statutes. In these cases, federal or state government agencies and state funded colleges are required to obtain certain portions of the energy they use from "renewable sources" even though the energy requires payment of above market prices.

8. "Voluntary" programs offering "green" electricity at a premium price. Utilities in many states now have programs where customers are permitted to volunteer to pay a higher monthly bill when the utility assures them

that the electricity they are paying extra for is generated from a "renewable" energy source. In some states these programs are required by law, in others utilities are "encouraged" to create them by state utility commissions, governors or legislators. In still other cases, such programs are created by a utility as a way to show customers, the public, media or government officials that they are "environmentally conscious" - efforts that have become known as "green washing."

Relatively few electric customers volunteer to pay the required premium price, particularly if they realize that (i) their decision to do so would be largely symbolic and/or (ii) that other actions, such as using more energy efficient e light bulbs, are much more cost effective and environmentally meaningful. As in the case of "RenewablPortfolio Standards," the extra revenue generated by the premium price is generally not sufficient to cover the higher cost of the electricity and the cost of the staff that must be maintained by a utility to administer the programs. The utility's costs that are NOT recovered through the premium price are then passed on to all of the utility's customers.

9. Other state utility commission actions that subsidize "wind farms." "Wind farms" are inefficient users of electric transmission capacity because the output from wind turbines is intermittent, volatile and largely unpredictable. The wind industry works to shift the cost of building transmission capacity from "wind farm" owners to electric customers. Some utility commissions (e.g., Minnesota) have permitted this to occur, providing an additional subsidy for "wind farms."

The wind industry is also seeking to have transmission capacity built in other states with the costs shifted to electric customers (and hidden it in their monthly bills). Special arrangements have also been made by other utility regulatory commissions and grid managers (e.g., Independent System Operators - ISOs and Regional Transmission Organizations - RTOs) that, in effect, provide additional subsidies to "wind farms."

10. Industrial Development Bonds to Finance privately owned "wind farms." A few states (e.g., New Mexico) have permitted "wind farm" owners to finance their projects using state backed bonds ("industrial development bonds"). Such bonds have interest rates that are lower than commercial financing, particularly because of their favorable tax treatment.

Conclusions

Clearly, the wind industry - with support from DOE and NREL, using tax dollars - has been very successful in misleading the public, media and government officials about the benefits and costs of "wind energy." These advocates for "wind energy" have grossly overstated the benefits and understated the costs but they have succeeded in gaining approval for tax benefits and subsidies that are proving to be enormous - and very attractive to aggressive "big money" interests.

While the facts about the adverse environmental, ecological, energy and economic impacts are becoming clear, taxpayers and consumers face a difficult task in getting government officials - executive, legislative and regulatory - to understand the facts. They face an even more difficult task in getting policies changed. Many government officials apparently do not have the staff or other capability to check the validity of information provided to them by special interest groups.[28]

Even when they learn the facts, few political leaders have the courage to eliminate bad policies when those policies are "guarded" by large, effective lobbies and large campaign contributions.

End Notes

[1] Citizens for Tax Justice, Citizens for Tax Justice, "Bush Policies Drive Surge in Corporate Tax Freeloading," September 22, 2004, 68 pp. < http://www.ctj.org/corpfed04an.pdf >.
[2] Ibid., p. 54.
[3] And several Enron-owned "wind farms."
[4] Berkshire Hathaway 2004 Annual Report, page 4. < http://www.berkshirehathaway.com/2004ar/2004ar.pdf >.
[5] Gaarder, Nancy, "The power of the wind," Omaha World Herald, March 26, 2005.
[6] Assuming deductions of $386 million deduction from taxable income and 35% marginal tax rate.
[7] Assuming deductions from taxable income of $386 million and an Iowa marginal tax of 12%.
[8] According to the ABA Committee's web site, "Our New Committee's interests spans incentives to stimulate development; measures for commoditization and value maximization of legal benefits; techniques for addressing regulatory constraint; synergies with environmental legal requirements; and focus on practical financial structuring. The Committee wants to be both a window on developments and to provide opportunities to foster new initiatives."
[9] Presentation on December 15, 2004, by Mr. Ed Feo to the Renewable Energy Resources Committee of the American Bar Association: < http://www.abanet.org/environ/committees/renewableenergy/teleconarchives/121504/ >.
[10] < http://www.seawestwindpower.com/press_room/pr/jan_11_05.html >.
[11] AES Press Release: < http://home.businesswire.com/portal/site/google/index.jsp?ndmViewId=news_view&newsId=20050405005765&newsLang=en >.
[12] < http://www.ppmenergy.com/news/rel_05.01.04.pdf >.
[13] < http://www.dps.state.ny.us/rps/03e0188_replies_to_SAPA/Noble_response_to_SAPA_A3_11-23-04.pdf >.
[14] < http://www.zilkha.com/news_single.asp?id=175 >.
[15] < http://www.enxco.com/company_profile.php >.
[16] For example, The American Council on Renewable Energy (ACORE).
[17] Schleede, Glenn R., "Facing up to the True Costs and Benefits of Wind Energy," June 24, 2004 < http://www.glebemountaingroup.org/Articles/aecifa~1.pdf >; "Misplaced State Government Faith in Wind Energy," March 1, 2005 < http://www.glebemountaingroup.org/Articles/WindKansas030105.pdf >.
[18] American Wind Energy Association, < http://www.awea.org/projects/index.html >.
[19] That is, total capacity of 6,370,000 kW of rated capacity x 8760 hours per year x .25 capacity factor.
[20] The National Renewable Energy Laboratory (NREL) recently released an economic model, called JEDI, that allegedly would permit calculating local economic impacts of a "wind farm." Analysis of the model revealed that it is deficient in many ways and grossly overstates local economic benefits and understates economic costs.
[21] Schleede, Glenn R., ., "Errors and Excesses in NREL's JEDI-WIM Model that Provides Estimates of the State or Local Economic Impact of 'Wind Farms'," April 28, 2004.
[22] These include hundreds of millions of tax dollars distributed by DOE for wind energy R&D, which funding continues even though several companies sell wind turbines commercially and those companies – at least US leader, General Electric – should be able to finance their own R&D without "corporate welfare' at taxpayer expense.
[23] That is, 100,000 kW capacity x 8760 hours per year x .30 capacity factor x $0.015 per kWh = $3,942,000.
[24] See Internal Revenue Service (IRS) Publication 946 for details.
[25] Simple cycle combustion turbines use 15-year, 150% declining balance depreciation for tax purposes.
[26] If the "wind farm" was sold by the original owner for an amount larger than the remaining undepreciated balance, if any, the original owner could be taxed on the difference at ordinary income rates.
[27] Often the desired result is achieved when doing accounting for tax purposes by consolidating the financials of parent organization, subsidiaries (including limited liability companies) and/or affiliates (e.g., shares of partnerships or joint ventures).
[28] Speeches made by some political leaders differ little from press releases issued by special interest groups. Some may even be written for the politicians by lobbyists.

Note: Additional windpower information is on the *MFS* Website here.

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Loud as the wind; Wind tower neighbors complain of noise fallout

March 7, 2009 by Erin Mills in The East Oregonian

Dan Williams has a home on a bluff above Willow Creek, about 10 miles south of the Columbia River. Two years ago, he could look out his windows, or sit on his deck, and see one of the best views in the world. Rolling hills stretched in all directions and, below, Willow Creek gently meandered between green pastures.

Now Williams is ready to pack up and move. When he looks out his window, he sees a forest of wind towers. Behind his home, about a half mile away, another six turbines sit idle. Williams fears the day they start rotating, because, often, the sound of turbines already roars through his house like a freight train at top speed.

"It's like a jet airplane that never takes off," said Sherry Eaton, another neighbor of the Willow Creek project. Eaton and her husband, Michael, are in despair over the wind project, which they say has ruined their chances for a peaceful life in the valley.

Michael Eaton suffered a brain injury in Vietnam - he was blown off of a 155 mm Howitzer - that damaged the nerve that runs from his ear to his brain. Since then, he has lived with vertigo, he said, and any kind of vibration tends to upset his sense of balance. Since the turbines started up, he said, his condition has become unbearable.

"I can take some meds to help me, but I don't think I can live on them," he said.

Noise from the towers also makes it difficult to sleep, the Eatons said.

But that's not all. The Eatons and their neighbors also fear they suffer from Wind Turbine Syndrome, a term coined by the New York scientist Nina Pierpont to describe a group of troubling symptoms, such as anxiety, sleeplessness, and memory problems, that seem to happen to those who live close to wind turbines.

The group of neighbors - the most vocal of which have been Williams, the Eatons, and Dennis and Lorrie Wade - became concerned about the wind project even before it started up. The turbines seemed too close, they felt, to fall within Oregon noise standards for wind projects.

According to an Oregon administrative rule, wind farms are allowed to generate 10 adjusted decibels (dBA) above the accepted ambient level of 26 dBA. That's a total of 36 dBA, about the same sound level as a quiet conversation.

On November 3 of last year, Michael Eaton wrote a letter to Morrow County Planning Director Carla McLane, asking her to revoke the project's conditional use permit "until the noise ordinance issue is resolved." The Willow Creek wind farm's own computer-generated model for decibel output, he wrote, clearly showed that the turbines would exceed the standard.

In turn, McLane wrote a letter asking Invenergy, the company that owns the wind project, to show evidence that Willow Creek Wind was in compliance with the noise standard.

Invenergy responded with another copy of their noise model - the turbines had not yet started - which they said showed that the decibel level at the homes on Willow Creek would be below 36 dBA.

"Regardless, Willow Creek understands that the project may need to measure ambient and facility noise...if requested by the county to further demonstrate compliance," the accompanying letter read.

Meanwhile, the turbines started spinning, and the Willow Creek neighbors began to record the noise with handheld decibel readers. Even though they had expected to hear the turbines, they said, they were still surprised at how loud they actually were. Williams, because he was only a half mile away from the project, was also bothered by the flickering that the turbine blades made on the walls of his home during sunset. Williams is also concerned about the value of his land - he's had no luck selling a few lots that sit close to the turbines.

The results of the neighbors' decibel reading seemed to confirm that the wind project was making too much noise. They got readings of 40, 50, and 60 decibel levels. They began to feel the other affects of the turbines, they said, plus vibrations that made them feel jittery.

On Jan. 7, the group met with the Morrow County Court. They presented their decibel readings and asked the court to revoke the project's conditional use permit until the issue was resolved.

Four weeks later, the planning department sent a letter to Invenergy.

"At this time Morrow County must ask Invenergy, particularly the Willow Wind project, to provide on the ground evidence that the noise standard is being met," McLane wrote. "A modified noise study by a properly licensed professional needs to be completed."

In an interview, McLane added that the county was in a tough situation; the Department of Environmental Quality is the state agency responsible for noise, but the state legislature has defunded the DEQ noise program.

"So it was left to the counties to enforce state rules," she said. "Most counties don't have the technical expertise or the necessary equipment."

As to the specific case of the Willow Creek neighbors, McLane would say very little.

"We are working to determine what our actions should be," she said.

Morrow County Judge Terry Tallman said he empathized with the neighbors' plight, but felt unsure about how to respond.

"They're citizens of Morrow County," Tallman said, "at the same time, we want to see development. We feel like we're in the middle, so to speak."

Tallman added that Invenergy was "not doing a very good job" of talking to the county about the matter.

Susan Dennison, Invenergy's communications manager, said that the company takes complaints very seriously, but she could not say when or how the noise study would be completed.

"We've talked about doing a sound study," she said. "I don't know if that's been decided."

She could not say what the company would do if the noise study revealed the turbines were too loud - the company's engineers and maintenance workers would deal with that, she said.

According to the wind project's unique tax agreement with the county, Willow Creek Wind will pay $395,296 per year to the county in taxes after its initial $25 million investment, which will be taxed in the usual manner, for the next 15 years. The company has also pledged to give the Ione school district $40,000 per year for five years.

So the wind project is good for Morrow County. That must the reason, Williams surmised, that the county has "dragged its feet" in defending the Willow Creek neighbors.

"How hard is this to do?" Williams asked. "How long are they going to drag this out before they acknowledge that they (Invenergy) are not in compliance?"

The Eatons and Williams insisted they aren't against wind towers; they're all for green energy, they said, just not so close to their homes.

"If they had just used a little foresight and moved these back a little farther...," Michael Eaton said wistfully, "but they didn't."

Web link:
http://www.eastoregonian.com/main.asp?SectionID=13&SubSectionID=48&ArticleID=89854"

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