AS APPROVED DECEMBER 3, 2009 **2** 3 MINUTES OF REGULAR MEETING CHAMPAIGN COUNTY ZONING BOARD OF APPEALS 4 1776 E. Washington Street 5 Urbana, IL 61802 6 7 DATE: October 15, 2009 **PLACE:** Lyle Shields Meeting Room 8 1776 East Washington Street 18 TIME: 7:00 p.m. Urbana, IL 61802 11 Doug Bluhm, Catherine Capel, Thomas Courson, Roger Miller, Melvin **MEMBERS PRESENT:** 12 Schroeder, Eric Thorsland, Paul Palmgren 13 14 **MEMBERS ABSENT:** None 15 16 **STAFF PRESENT:** Connie Berry, John Hall, J.R. Knight 17 18 **OTHERS PRESENT:** Ben McCall, Phillip Geil, Herb Schildt, Sherry Schildt, Birgit McCall, 19 Steve Burdin 29 22

1. Call to Order

The meeting was called to order at 7:01 p.m.

2. Roll Call and Declaration of Quorum

The roll was called and a quorum declared present.

3. Correspondence

None

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4. Approval of Minutes (July 16, 2009 and October 1, 2009)

Mr. Thorsland moved, seconded by Mr. Miller to approve the July 16, 2009 and October 1, 2009, minutes as submitted. The motion carried by voice vote.

5. **Continued Public Hearing**

Case 634-AT-08 Part B Petitioner: Zoning Administrator Request: Amend the Champaign County Zoning Ordinance as follows: 1. Add definitions for "SMALL WIND TURBINE TOWER" and "BIG WIND TURBINE TOWER," and revise the definition for "WIND FARM"; and 2. Amend subsection 4.2.1. to allow "BIG WIND TURBINE TOWER" as a principal use on lots in the AG-1 and AG-2 Zoning Districts; and 3. Amend paragraph 4.3.1E. to add new height regulations that apply to "SMALL WIND TURBINE TOWER" AND "BIG WIND TURBINE TOWER"; and 4. In Section 5.2 replace "wind turbine" with "BIG WIND TURBINE TOWER" and indicate BIG WIND TURBINE TOWER is only authorized as a second principle use on lots in certain Zoning Districts; and 5. In Section 6.1.3 add new standard conditions for "BIG WIND TURBINE

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13 14 TOWER" that are similar to the standard conditions for a WIND FARM; and 6. Add new subsection 7.7 making "SMALL WIND TURBINE TOWER" an authorized accessory use byright in all zoning districts and add requirements including but not limited to: (a) the turbine must be located more than one and one half miles from the nearest municipal zoning jurisdiction; and (b) minimum required yard that are the same as for other accessory structures in the district provided that the overall height is not more than 100 feet; and (c) an overall height limit of 200 feet provided that the separation from the nearest property line is at least the same as the overall height and authorize private waivers of the separation by adjacent neighbors; and (d) a limit of no more than two turbine towers per lot; and (e) allowable noise limits; and (f) a requirement for engineer certification; and (g) a requirement to notify the electrical power provider if interconnected to the electrical grid; and (h) a requirement that no interference with neighboring TV, radio, or cell phone reception; and (i) a requirement for the removal of inoperable wind turbines. 7. In Section 9.3.1.add fees for SMALL WIND TURBINE TOWER and BIG WIND TURBINE TOWER; and 8. In Section 9.3.3 add application fees for BIG WIND TURBINE TOWER Special Use Permit.

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Mr. Hall distributed a Supplemental Memorandum dated October 15, 2009, and a Preliminary Draft Finding of Fact and Final Determination dated October 15, 2009, to the Board for review. He said that the case was readvertised to reflect the changes indicated in Attachments A through E of the October 9, 2009, Supplemental Memorandum. He said that Attachment A indicates a revision to Section 3.0 changing the definition of WIND FARM and WIND FARM TOWER and coordinates the definition of BIG WIND TURBINE TOWER and SMALL WIND TURBINE TOWER. The revision makes it clear that a SMALL WIND TURBINE TOWER is simply a wind turbine tower which is not more than 200 feet in overall height and a BIG WIND TURBINE TOWER is a wind turbine tower which is more than 200 feet in overall height, but the energy produced has to be principally used on site by another principal use on the same property and, to a much lesser extent, may be sold to a utility. He said that anything that does not meet these two definitions will be considered, by definition, a wind farm tower. He said that staff has finally tightened up any loopholes that someone could use to skirt the wind farm requirements by claiming that their structure is a BIG WIND TURBINE TOWER. He said he does not know if there will ever be a request for a BIG WIND TURBINE TOWER but it is possible. He said that Attachment B indicates a revision to subparagraph 4.2.1C. He said that there is a general prohibition in the Zoning Ordinance which indicates that it shall be unlawful to erect or establish more than one MAIN or PRINCIPAL STRUCTURE or BUILDING per LOT or more than one PRINCIPAL USE per lot in the AG districts and by definition a BIG WIND TURBINE TOWER is not an accessory use because it is much too big and the impacts are too significant therefore it has to be authorized as a second principal use on a lot. He said that Attachment C indicates a revision to subparagraph 4.3.1E. He said that the revision makes it clear that a SMALL WIND TURBINE TOWER can go up to 200 feet in height. He said that Attachment D includes a revision to Section 5.2 indicating the insertion of BIG WIND TURBINE TOWER (1-3 BIG WIND TURBINE TOWERS) in the Table of Principal Uses and adds a footnote 17 which indicates that a BIG WIND TURBINE TOWER must be located on the same property as another principal use for the purpose of producing electrical energy that shall primarily be used onsite by that other principal use. He noted that this revision makes it part of the use description therefore it is not subject to a variance. He said that Attachment E indicates the requirements for a BIG WIND TURBINE TOWER and they remain unchanged. He said that Attachment F indicates changes to

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subsection 7.7. He said that after the last meeting it is staff's understanding that the Board was inclined to allow SMALL WIND TURBINE TOWERS to be 200 feet tall provided the necessary requirements are met. He said that a new 7.7.B.6 was added indicating the following: the above limits on maximum allowable height notwithstanding, the maximum height of a SMALL WIND TURBINE TOWER on a LOT in a subdivision shall not exceed 75% of the minimum required AVERAGE LOT WIDTH when any adjacent and bordering LOT is vacant. He said that once there are no more vacant lots in a subdivision the height could be as it is described in paragraph B. He said that 7.7.C refers to rotor diameters and for a rotor diameter greater than 24 feet staff has introduced a factor that requires greater separation. He said that at the last hearing the Board was interested in providing for larger rotor diameters and the size of the property was discussed. He said that after reviewing some of the concerns raised by the City of Champaign's staff regarding shadow flicker it occurred to him that perhaps staff was not being careful enough with shadow flicker created by the larger small wind rotors. He said that revised 7.7C.3 proposes a separation distance of 8.3 times the rotor diameter therefore a 75 feet diameter rotor would have to be 622.5 feet away from the nearest dwelling on other land. He said that he is unhappy that the increase in distance is not proportional to the increase in rotor area but if it is made proportional to rotor area the separation becomes 2,000 feet which is almost twice as much as that required for a wind farm turbine. He said that staff has no way to analyze shadow flicker although there is a tool available on the internet which generates a map but staff has not been able to get the program to work with the County's network.

Mr. Hall stated that staff relocated some items to create a better ordinance and reduce review issues in the office. He said that the text from Paragraph 7.7.F was moved to Paragraph 7.7.B.2. He said that a new item 7.7.N.1 was added to indicate the removal of climbing rungs, if possible, to a height of 12 feet, provided that the SMALL WIND TURBINE TOWER is unclimbable without the rungs. He said that Item 7.7.P was revised to indicate derelict rather than inoperable and or/not in operation. He said that Item 7.7.Q was revised to remove the extensive requirements regarding identification of possible EMI effects and replaced with new Item 7.7Q.1 indicating that all wind turbines shall comply with the FCC requirements for EMI including FCC Part 15 and new Item 7.7.Q.2 indicates that metal blades shall not be used. He said that later in the meeting he will discuss an additional change to Item 7.7.Q. included in the October 15, 2009, Supplemental Memorandum. He said that the way that the October 9th memo went out to the Board it made it clear that there should not be any significant electromagnetic interference which has a clear implication of an obligation on the County's part if there was interference. He said that he agrees with the Board's discussion at the previous hearing that this is such a difficult situation and if the County can possibly stay out of those types of disagreements the better off the County will be. He said that Item 7.7.R. requires that someone retrofitting a replacement turbine on an old tower has to insure that the tower is safe and complies with all manufacturer's safety recommendations and requirements.

Mr. Hall stated that Attachment G indicates revisions to subparagraph 9.3.1D.H. and 9.3.1.D.I regarding fees. He said that the fee for a BIG WIND TURBINE TOWER is the same as for a WIND FARM TOWER because the amount of work is almost the same. He said that when almost as much work is done for a wind farm as on one wind turbine tower it could be argued that the fee should be higher for a BIG WIND TURBINE TOWER. He said that the fees for SMALL WIND TURBINE TOWERS are a little more than twice what they are currently for just plain towers but the amount of work that is

required in approving SMALL WIND TURBINE TOWERS is two or three times as much as what is currently done. He said that a fee of \$700 for a SMALL WIND TURBINE TOWER that is 200 feet in height appears to be fairly high but in comparison to the cost of such a wind turbine the fee is reasonable. He said that the County Board established a minimum fee of \$20,000 for a WIND FARM TURBINE TOWER so that enough money was collected to pay for any consultants that were needed for review of the application and staff time. He said that a BIG WIND TURBINE TOWER is going to be a significant public hearing which will require a lot of effort and by definition there can be no more than three therefore he proposed a fee of \$3,300 per turbine and if the maximum of three turbines is proposed then the fee would be \$9,900. He said that if three turbines are proposed which do not meet the definition of small or big then the request would be considered a wind farm and the minimum fee is \$20,000. He said that, not to bias the Board, he included an attachment to the October 9, 2009, Supplemental Memorandum from the American Wind Energy Association which discusses issues with wind turbines. He said that he also included as an attachment to the October 9, 2009, Supplemental Memorandum an article from Windustry, a pro wind industry website, discussing community wind. He said that if the Board could read all of the articles available on the web regarding community wind the Board might begin to think that they are different than a wind farm but in fact all they are is a wind farm and under the County's Ordinance they would have the same effects as a wind farm.

Mr. Hall stated that after the October 9, 2009, Supplemental Memorandum went out in the mailing he received a call from an interested observer who was concerned if enough care was being taken with the big and small wind. He said that Attachment A of the October 15th Supplemental Memorandum indicates additional changes to subsection 7.7. He said that Item 7.7.B.4. indicates a height limit of up to 150 feet on any lot with less than three acres of lot area and 7.7.B.5. indicates a height limit of more than 150 feet and up to 200 feet on any lot with at least three acres of lot area and provided that the SMALL WIND TURBINE TOWER is no closer than the following minimum distances from any airport or heliport that is either available for public use and listed in the FAA Directory of the current Airman's Information Manual or that is under construction and on file with the FAA and indicated for public use: (a) no closer than 4 miles to the nearest point of the nearest runway of any airport; and (b) no closer than 5,000 feet to the nearest point of the nearest landing and takeoff area of any heliport. He said that the FAA standard is not 4 miles but is 20,000 feet and he believes that it is reasonable to round the 20,000 feet to 4 miles because standard sections of the zoning map are one mile.

Mr. Hall stated that he included as attachments to the October 15, 2009, Supplemental Memorandum the relevant FAA standards plus a printout from their online directory of airports. He said that there are four airports in Champaign County and they are as follows: U of I Willard, Frasca Field, Rantoul National Aviation Center, and Homer Airport. He said that this does not apply to RLA's or residential airports but does apply to airport and heliports and there are no heliports in Champaign County that he is aware of. He said that it does apply to any airport or heliport outside of Champaign County which is within 4 miles or the 5,000 foot mile radius in our jurisdiction.

Mr. Hall stated that renumbered paragraph 7.7.I. should be modified to indicate the following: SMALL WIND TURBINE TOWERS shall comply with all applicable regulations of the FAA. Evidence of FAA approval shall be required for any SMALL WIND TURBINE TOWER taller than 150 feet when it is within four miles of an airport.

Mr. Hall stated that also included as an attachment to the October 9, 2009, Supplemental Memorandum is a copy of the 2007 Wind Turbine Buyer's Guide. He said that he included the buyer's guide because it has rated RPM's of selected turbine units from 1,000 rpm's to 50 rpm's. He said that 50 rpm's are for the larger end units such as the Vestas V-17 with a 56 foot diameter rotor. He said that regarding the concern about shadow flicker it is his understanding that what influences shadow flicker is the diameter and height of the rotor, speed of the rotor, and sun angle. He said that the high end of small wind appears to have the same rpm ratings as wind farm turbines. He said that 75 feet is approximately onequarter as large as the rotor on a wind farm tower and 330 feet is the high end of standard wind farm towers therefore a small wind tower is much smaller. He said that it could be no more than 200 feet high which is about one-half the height of a contemporary wind farm turbine therefore in regards to the three physical things that the Board has control over, height and diameter would be much smaller than a wind farm tower but it would have the same speed. He said that he still does not know what that means in terms of shadow flicker and he does not know if the separation based on the 8.3 factor is enough separation and he has no way to analyze it. He said that he suggested in the cover memo that the Board may want to increase the factor from 8.3 to a greater number. He said that if the Board increased the 8.3 by 50% up to a factor of 12.5 a 75 foot diameter rotor would require a separation of 937 feet which is what the model ordinance requires for wind farms but is still less than the 1,200 feet that the County requires for a wind farm turbine.

Mr. Hall stated that original paragraph 7.7.I. had been stricken which discussed the installation of safety balls on guy cables. He said that the draft that went out in the mail included the original paragraph 7.7.I but after more thought he decided to strike the original paragraph. He said that the Board may decide to retain original paragraph 7.7.I. but if it is kept the Board needs to provide better guidance on where the safety balls would go. He said that Bill Fabian testified at the last hearing and raised the issue that he was unclear if guy cables on a small turbine could accommodate safety balls. He said that the attachment that went out in the mail indicated that Ecoenergy uses a combination of safety balls, high visibility flags and high visibility sleeves on their met towers. He said that a met tower does not have a turbine sitting on top of it therefore making it more difficult to see and it has more guy cables than what a small wind turbine would making it more of a hazard for aircraft.

Mr. Hall stated that renumbered paragraph 7.7.P. indicates that if the wind turbine is FCC compliant and there are no metal blades then by definition there could be no significant interference.

 Mr. Hall stated that attached to the October 15, 2009, Supplemental Memorandum are three attachments regarding net metering. He said that Eric McKeever, representative for Arends Brothers, gave good testimony at a previous public hearing as to what net metering is and some people might wonder why large diameter rotors would be needed because the net metering allowance is only up to 40 kilowatts. He said that the Endurance 35 kilowatt unit had a rotor diameter of 69 feet therefore even units below the net metering threshold require large diameters. He said that, according to Mr. McKeever's testimony, if you are not in the area served by Ameren or ComEd but are in a co-op then net metering does not apply although if you are a big energy user there maybe some incentive to get bigger than 40 kilowatts and still be small wind. He said the last attachment is a handout submitted by Eric McKeever at a public hearing.

Mr. Hall stated that the Preliminary Draft Summary of Evidence is not complete but if the Board is happy with one of the versions that is before them then the case is ready for final action. He said that the Chair of ELUC informed him that ELUC will be so busy in November that even if the Board takes final action tonight ELUC will not review it in November. He said that no requests or applications have been received for small wind turbines and perhaps that is because people are holding off until this case is finalized.

Mr. Palmgren stated the Mr. Hall previously indicated that staff would confer with the City of Champaign and the City of Urbana to see what they were going to do with wind units.

Mr. Hall stated that staff had one meeting with the City of Champaign and the City of Urbana and it is very clear that the County is going to be less restrictive than what either of those two entities will require. He said that Urbana is genuinely trying to put forth a good effort to make sure that they are as liberal as possible in their unincorporated ETJ in developing different standards but as far as he can tell Champaign is not trying to establish different standards.

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

Mr. Bluhm called Mr. Phillip Geil to testify.

Mr. Phillip Geil, who resides at 2060B CR 125E, Mahomet stated that he has a wind turbine and he believes that the current version of the ordinance is well written and he has no objections. He said that although he is agriculture and is not affected he is concerned about the size of the permit fee.

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

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

Mr. Bluhm called Mr. Herb Schildt to testify.

Mr. Herb Schildt, who resides at 398 CR 2500N, Mahomet stated that he is the Chairman of the Newcomb Township Planning Commission and noted that they only received the updated copy of the proposed ordinance a couple days prior to their last Monday meeting; therefore, it is still under review with the commission.

Mr. Schildt stated that he would now speak personally. He said that he was impressed with the information included in the packet and felt that a lot of improvements had been made. He said that there were three things that did cause concern and made him very uncomfortable and one of those things was the change for the electromagnetic interference. He said that it has been frustrating to work through this in his own mind because he does understand what Mr. Hall has said and he does not see the County being able to rationally put itself in an enforcement position but yet it could be a serious issue. He said that he does tend to agree with Mr. Hall in that the County should not enforce this issue but the new language raises a separate issue in his mind and he does not believe that it was intended. He said that if

he was to write renumbered paragraph 7.7.P. he would add the following text at the end: for the purposes of this Ordinance. He said that someone who would come in to apply for a small wind turbine would not believe that somehow they magically complied with every conceivable regulation.

Mr. Schildt stated that another issue that he has been wrestling with is the tower height and the rotor diameter and where small wind changes to big wind or medium wind. He said that when he thinks about a 200 feet tower with a 75 feet rotor he could imagine many situations where that would be good and fine without a problem but he could also imagine situations where even though it would technically meet the setbacks it could have a significant impact on property values or quality of life for adjacent landowners. He said that he has tried to determine what would be a safe rotor diameter or height and he could not confidently come up with either one. He said that the current maximum height for an antenna tower is 100 feet therefore he would say that any wind turbine up to 100 feet in height with a 24 feet or smaller rotor diameter would be "by-right" but anything over 100 feet in height and a rotor diameter of 25 feet to 75 feet would require a special use permit. He said that by requiring a special use permit the County would have the ability to judge those cases where perhaps a 200 feet tower is not appropriate and it would give adjoining landowners the opportunity to protest the request. He said that he could imagine situations where a 200 feet tower would be fine but he could also imagine situations where it is not and it would get the County out of the situation of deciding when small wind becomes big wind. He requested that the Board consider his proposal.

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

Mr. Bluhm asked if staff had any questions for Mr. Schildt.

Mr. Hall asked Mr. Schildt if he believes that anything over 100 feet in height, regardless of rotor diameter, should be a special use permit.

 Mr. Schildt stated yes. He said that the special use permit should be triggered if the height is over 100 feet or if the rotor diameter is over 24 feet or if it is over and greater than both because it is outside the norm that the ordinance currently has in terms of height. He said that he thinks of Mr. Geil's turbine and others in the area and their rotational speeds and he does not know anyone who is not fascinated by small wind therefore those folks should be enabled to put up a small wind turbine without a lot of red tape but when the turbines start getting bigger then the effects go past the property line.

Mr. Hall stated that even though the way the ordinance is written currently the height is limited by how close the neighbor's dwelling is located to the turbine.

 Mr. Schildt stated that the setbacks that are currently in the ordinance should not be altered or increased but his proposal should be in lieu of the setbacks. He said that if you are not the person who is interested in installing small wind at least you would know that it can't be any closer to you than that. He said that perhaps there is someone who has enough acreage to install a Vestas V-17 but the impacts could be great if they are close to either a park, cluster of houses, or rural specialty business. He said that a special use permit allows both sides to weigh in as the Board decides on a case by case basis and because the expense is so great he doubts that there will be a lot of these cases.

Mr. Hall stated that staff does know that there are plenty of good reasons why 100 feet is not adequate and asked Mr. Schildt if he still believes that a special use permit is necessary.

Mr. Schildt stated that if he was writing the ordinance he would write it at 100 feet. He said that he perfectly understands what Mr. McKeever and Mr. Geil discussed about the additional allowance of height but is it the neighbor's obligation to suffer a loss of quality of life so that someone else can have a little more wind. He said that the ordinance allows 100 feet already therefore there could be the expectation that a neighbor could install a 100 feet tower.

Mr. Hall stated that he assumes that Mr. Schildt is skeptical that staff could ever identify these separations that would actually be adequate.

Mr. Schildt stated that he is skeptical only because he could imagine situations in both directions. He could imagine separations that would be perfectly adequate and separations that would be inadequate. He said that the implementation of the special use permit would allow neighbors to give input and argue the case and ultimately the Board can decide who is right. He said that the special use permit process is not unreasonable when someone is putting up a structure that is that large and could affect so many people beyond the boundaries of the property line.

Mr. Hall stated that the cost of the Vestas V-17 installed is \$180,000.

Mr. Schildt stated that there are people in Newcomb Township that could probably afford such a structure.

Mr. Geil requested the opportunity to return to the witness stand.

Mr. Bluhm allowed Mr. Geil to return to the witness stand.

Mr. Geil stated that he wouldn't be concerned if the ordinance was written at 150 feet but is concerned about 100 feet because it includes the distance to the tip of the blade as well. He said that on his tower, which he could only purchase in tower sections 20 feet long, and his blade is 11 feet long he would be limited to an 80 feet tower plus the turbine on top and that is too low to be productive. He said that he should have had a 120 feet tower plus the 11 feet which would have put it up to 131 feet in total height. He said that he could not see anyone putting in one of the Vestas V-17 turbines due to the cost and if someone has that much money then they should install a solar system because it is half the price and supplies more electricity.

Mr. Bluhm asked Mr. Geil to indicate the height of his tower.

Mr. Geil stated that his tower is 100 feet with the turbine on top of that therefore he is actually 115 feet.

Mr. Hall reminded the Board that they could easily decide that there is enough justification for a special use permit for anything over 150 feet but if the Board feels that the separations of 175 feet or 200 feet

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Mr. Bluhm called Mr. Steve Burdin to testify.

Mr. Steve Burdin, who resides at 2527 CR 455E, Mahomet submitted a prepared statement as a Document of Record. Mr. Burdin stated that before he read his prepared statement he wanted to address Mr. Hall's comments regarding rpm's and how some of the smaller units go down to 50 rpm's. He said that in September, 2008, he took a tour of the Twin Groves Wind Farm and his notes indicate that the rotation of those turbines was 18 rpm's, although he is going to round it to 20 rpm's to make calculations easier. He said that there are three blades on each turbine therefore there will be 60 passes per minute, one per second and divided by three is about 20 seconds for every blade to go around.

Mr. Burdin stated that his analogy from the July 16, 2009, public hearing was not properly reproduced in regard to interference with communications. He said that the image that he tried to create was that if you hold a toothpick at arm's length how much does it block your vision of something beyond. He said that he would like to comment on the Supplemental Memorandum dated October 9, 2009. He said Attachment A. includes the definitions of small and big wind towers and the paragraphs still mention the use or primary use of the power that is generated from the turbines. He said that if he were reading this text with an eye toward putting up a turbine he would be compelled to ask a few questions. He asked how anyone would be able to determine whether the majority of power is consumed on site or if it is placed onto the grid. He said that considering the varying power demand of any landowner at different times of the day and the differing wind conditions it appears that it will be very hard to tell. He said that given the varying conditions what time period (sampling period) will be used to determine whether the "majority" is consumed instead of placed onto the grid. He asked what are the criteria that would be used for proving that that this land use should be allowed. He said that it might be easier to simply define the use of a turbine as "to generate electrical energy" because he is not sure that the County wants to regulate, through the Ordinance, as to how the electricity is to be used.

Mr. Burdin stated that he finds that the use of terms such as "to much lesser extent" as ambiguous at best in order to describe the relationship between the majority and the minority. He asked if the Ordinance is being written to be clear or to defer assessment to a later time, person or authority that's undefined at the moment. He said that Attachment F, Paragraph B.2. discusses the setback from transmission lines. He said that he would presume that this text is referring to the above ground third party electrical transmission lines and he just mentioned this in case the Board deems it useful to have this clarification. He said that in regard to Attachment F, he was glad to see that the electromagnetic noise paragraphs had been stricken. He said that it seems that it is not useful to protect, by the Ordinance, against effects whose likelihood is vanishingly, small, as in the case of electromagnetic interference with communications.

Mr., Burdin stated that Attachment I, Section vi, refers to lightning strikes. He said that the description in the second paragraph is technically accurate and, with respect to small wind, turbines are indeed not more likely to be struck by lightning due to the reasons given. He said that even considering their height, they are less susceptible to strikes than trees. He said that the protection devices mentioned in the third paragraph are slightly dated but are correct and are routinely and effectively used for transient

voltage suppression, including lightning protection.

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Mr. Burdin stated that he has had time to thing about this since the last meeting and he would ask the Board to reconsider a prohibition of homemade units. He said that it's difficult to predict where the next improvements to turbines may come from and who is to say that it wouldn't come from a home-based inventor. He said that the County should not stifle development and creativity and the ordinance should not prohibit someone from erecting a turbine on their property and possibility having it fail or fall because this could happen to commercially manufactured systems as well. He said that the function of the ordinance is to require some baseline of quality and to protect others from this activity and the proposed ordinance will accomplish this. He said that as homeowners we all have a responsibility to our neighbors and we incur liability if we cause damage to their property. He said that there is a mechanism in place in our society that takes care of this but it is not done by the County. He suggested that we leave this to the liability folks, insurance companies and attorneys, and not mandate it by the County.

Mr. Burdin stated that he would like to briefly mention tower collapse because he is in favor of reasonable setbacks. He said that it is unlikely that towers would fall like trees and to say that if a tower were to topple, pivoting at the bottom, he would not think that it's likely that it can stay structurally intact because it would probably buckle and fold. He said that towers that are guyed are constrained from falling over like this unless the guy wires fail. He said that he does not think that the towers are designed to support the weight of a turbine on one end while they're horizontal or off vertical although he is not an expert in this area but folks who know about the towers could be posed the question. He said that this information could provide guidance for setbacks, safety margins and the like.

 Mr. Burdin stated that lest any of us be bold enough to think that there's little or no chance for design improvements a couple of things should be noted. He said that modern vertical axis turbines work in light wind and are actually better in turbulent rather than low wind and they are bird friendly because they appear as a solid cylinder and the birds do not fly into them. He said that more recently a chemical engineer, who moonlights as a wind energy consultant, has recently developed a new turbine design which works down to a wind speed of two miles per hour and it is very quiet. He said that this new turbine design is being developed and marketed by a Honeywell company and he has attached references to this document.

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

Mr. Bluhm asked if staff had any questions for Mr. Burdin.

Mr. Hall stated that he would not propose any changes but he does agree with Mr. Burdin's comments regarding the definitions. He said that the intention for small and big wind is that these things that are part of a larger development. He said that the energy that is produced by these units has to go through the dwelling before it gets to the grid therefore perhaps some description of that connection would be a better way than worrying about how much energy is used on site. He asked Mr. Burdin if he could provide such a description.

Mr. Burdin stated that he could provide such a description. He said that it is reasonably basic and as the

Ordinance indicates the landowner will have to coordinate with the utility provider to make sure that the power is appropriate to be placed on the grid and an inverter and other hardware will be required. He said that he will construct the appropriate description and submit it to staff for review.

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

Mr. Schildt requested the opportunity to return to the witness stand.

Mr. Bluhm allowed Mr. Schildt to return to the witness stand.

Mr. Schildt stated that he always appreciates Mr. Burdin's expertise at the meetings. He said that Mr. Burdin is correct in that the Vestas V-80 is about 18 rpm's but this unit is one of the first turbines used on a large scale in the wind farm developments. He said that in regard to Attachment I, it is his opinion that small wind, anything less than 24 feet in diameter, will turn quickly and cause less shadow flicker. He said that lightning strikes are a real issue on turbines and those strikes regularly damage the blade tips on the turbines located in McLean County. He said that if you visit the Twin Groves Wind Farm you will hear a whistle type sound which is caused by a blade that has been damaged by lightning and requires replacement. He said that icing is not an issue on a 12 feet rotor but it is an issue on a 75 feet rotor therefore he would argue that some of the information in Attachment I is not applicable to the larger turbines and he would still argue for special use permit approval.

Mr. Geil clarified that if the unit is grid tied the electricity has to go through the homeowner's meter and their system.

Mr. Bluhm called Mr. Ben McCall to testify.

Mr. Ben McCall, who resides at 1085 CR 2200N, Champaign stated that there have been a lot of great improvements in the current draft. He said that as someone who is considering purchasing one or more small wind turbines he has two concerns. He said that the size of the fee that has been proposed is at a level that does not encourage people to install small wind turbines and this is a use that should be encouraged rather than discouraged in our society. He said that he is concerned about the limitation, under any circumstance, of only being allowed two small wind turbines on a property yet that same someone would be allowed to have three big wind turbines with a special use permit. He said that this is an issue which may need to be reconsidered due to the new developments in small wind turbines in that someone might want to have ten small units on 30 foot towers.

Mr. Hall stated that someone could request to have more than two small wind turbines located on their property through the variance process. He said that the petitioner would be required to submit a noise study to deal with the combined effects of 10 small wind turbines on one property.

Mr. McCall stated that if he desired to have three 100 foot towers he would also need to request a variance.

Mr. Hall stated yes. He said that Mr. Schildt has concerns as to whether the separation distances are

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Mr. Bluhm stated that if numerous variances are requested for more than two small turbines on any one

Mr. Bluhm informed Mr. McCall that there is a mechanism in place, the variance process, in order to request more than two small wind turbines on a property but that process is done through the Board and is not "by-right."

the Board that they may not have to worry about that in the context of multiple units until there are more

than two units on one property. He said that he does not want the Board to believe that three units can

Mr. Hall stated that each time he attends a County Board committee meeting it is impressed upon him that the County does not have the resources to encourage small wind and the County needs to recoup all of its expenses and he is fairly confident that the fees will accomplish that goal.

Mr. McCall stated that it is his understanding that the Federal government has a 30% tax credit for small wind but the State of Illinois does not have such an incentive.

Mr. Courson stated that he believes that the State of Illinois does have an incentive for small wind.

Mr. McCall stated that the State of Illinois did have one at one time but due to the budget crisis the incentive has been lost.

Mr. Thorsland stated that technology is rapidly changing and as Mr. McCall stated there may be a request for more than two small wind turbines on one property therefore perhaps a height threshold should be considered so that someone could place as many small wind turbines on one property as desired. He said that the Board should consider the durability of the Ordinance as technology changes. He said that there is a possibility that technology will produce a very small productive unit and someone may want to place more than two of those units on their land for energy production. He said that perhaps the variance process will take care of such a request but it is also possible that it will not.

Mr. Hall stated that he thought the elimination of all references to kilowatt ratings was a fantastic development.

Mr. Thorsland stated that it was a great development.

be constructed on a property and never have a problem.

Mr. Hall stated that one strength and weakness of the Ordinance is that the rotor diameter is equated to something that is very durable, height of the accessory structures based on the size of the property, and more than the 200 feet height clearly requires a special use permit each and every time.

Mr. Thorsland stated that realistically the possibility of a request for a Vestas turbine on private property is very limited in Champaign County unless it is someone who is very wealthy. He said that the County is more than likely going to see the small wind turbines and limiting to two maybe the one thing that becomes very problematic without a variance.

property then the Ordinance can be revisited and amended at that time. He said that if new technology indicates that many variances are being requested for more than two small wind turbines on 40 feet poles then perhaps the Ordinance should change because technology has changed.

Mr. Hall stated that perhaps we will find out that there is no concern regarding noise regardless of how many small wind turbines are placed on a property but until we have a way to analyze noise the Ordinance should probably stay as proposed.

Mr. Thorsland stated that after attending the ELUC meeting on Monday night it would not be beneficial to take final action at this time. He said that he is comfortable with the Ordinance as it is currently written.

Mr. Bluhm stated that it was implied that the definitions require further revision.

Mr. Hall stated that he would be happy to work with Mr. Burdin regarding the definition and remove any ambiguities. He said that Mr. Schildt's suggestion regarding 7.7.P. is a good change because he does not want people to believe that they do not need to worry about FCC regulations if they meet our Ordinance.

Mr. Bluhm requested the Board's preference regarding a requirement of a special use permit for any unit over 150 feet in total height.

Mr. Hall stated that the whole reason that the Board has reviewed this case in the last four meetings is to relieve the private sector from the 100 feet limit that is in the current Ordinance and documented proof has been received to indicate that the 100 feet height is inadequate. He said that the evidence does not support requiring a special use permit for anything over 100 feet and the evidence is much more supportive for anything up to 150 feet provided that the Board is comfortable with the primary determinant being the distance to the nearest adjacent dwelling or principal building or structure. He said that if the Board is comfortable with that then we will be the only County with such rules and this would be a tremendous freeing up of the rules even if a special use permit was required for anything over 150 feet.

Mr. Bluhm requested the Board's comments for anything over 150 feet. He said that a unit which has a height of 100-150 feet is covered under the ordinance but a unit which is within the 151-200 feet range would require a special use.

Mr. Thorsland stated that the ordinance as written addresses the taller units and the expense would be a limitation.

Mr. Courson stated that most of the small turbines would have a tilt-type base but a larger unit would require guy wires and that would require a lot of land.

Mr. Thorsland stated that he believes that it will only be on a rare occasion that the County will see a request for a private unit which is 151-200 feet in total height. He said that he also believes that

technology will reduce the required height for sufficient energy production and maintenance.

Mr. Bluhm stated that he believes that he also believes that requests for 151-200 feet private wind towers will be far and few between therefore perhaps a special use permit would be appropriate so that the request can be reviewed for placement.

Mr. Thorsland stated that a small wind turbine with a rotor diameter below 24 feet will not be placed on a 151-200 feet tower.

Mr. Hall stated that the current ordinance would allow a 75 feet diameter rotor to be placed on up to a 200 feet tower, "by-right," if it meets all of the separation requirements.

Mr. Thorsland stated that such a tower would go on a large property that could meet all of the setbacks.

Mr. Hall stated that such a tower could go on a three-acre parcel but the Board could require a five-acre parcel.

Ms. Capel stated that if her neighbor wanted to put a 200 feet tower on his five-acre lot she would like him to have to go through the special use permit process because it would be pretty close to her house. She said that it would make a significant difference at her home whereas if it were only 150 feet tall the effect would be much smaller therefore even if such a request was a rare occasion it should be reviewed and approved through the special use permit process.

Mr. Bluhm stated that some of the smaller rotors are at a 23.6 feet diameter therefore perhaps anything over a 24 foot diameter should be considered under the special use permit process.

Mr. Courson stated that his personal wind turbine is a relatively small unit and is on a 40 feet tower. He said that it is the only unit that he sees as being marketed to private homeowners other than the Whisper 100 and it is hardly worth placing on a home. He said that if someone is comparing the cost of such a unit the Skystream 3.7 could be installed for around \$10,000.

Mr. Hall asked Mr. Courson what the overall height of a Skystream 3.7 would be.

Mr. Courson stated that the overall height would be around 52 feet.

Mr. Hall stated that the permit fee for such a unit would be \$100.00

Mr. Bluhm stated that Arends Brothers indicated that they have a 100 kilowatt turbine located at their Ashmore store and they believed that they would sell some units of that type.

Mr. Hall stated that Arends Brothers has indicated that they have a residential customer interested in purchasing the 100 feet unit.

Mr. Hall asked Mr. Courson if just because the turbine is bigger does not mean that it has to be higher.

Mr. Courson stated that it depends on the wind resources at any particular location. He said that he has

lowered his personal turbine from 80 feet to 40 feet and has received much better performance from his

unit. He said that after lowering his unit he has noticed some shadow flicker but it is not bothersome.

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Mr. Courson stated that he has the Whisper 500 and it has a 15 feet diameter rotor.

Mr. Hall asked Mr. Courson to indicate the rotor diameter of his unit.

Mr. Hall asked Mr. Courson if, as a ZBA member, he believes that shadow flicker should be a concern for an adjacent neighbor.

Mr. Courson stated that if the shadow flicker came through a neighbor's window and it could be bothersome but it wouldn't be anything that curtains or blinds could not remedy.

Mr. Hall asked Mr. Courson if he believes that shadow flicker may just be part of reality in 2009 and it is something that neighbor's just deal with.

Mr. Courson stated that there is always something that a neighbor could complain about whether it is car lights, noise, etc. He said that when he is in his bedroom at night he can see car lights traveling down the road through his bedroom windows.

Mr. Bluhm stated that some of the shadow flicker is not much different than car lights occasionally shining in a window.

Mr. Courson stated that he would not mind seeing a requirement of a special use permit for any unit over 150 feet in height. He said that he does not believe that there will be a lot of units over 150 feet because of the cost and when a cost analysis is done the winds are not feasible in this area for the unit that is being installed.

Mr. Hall asked if someone wanted to install a unit that is over 150 feet and the setbacks are adequate from their own property lines should the special use permit process be imposed on that person.

Mr. Bluhm stated that it is not known what the shadow flicker will be for that unit.

Mr. Courson stated that he would assume that the noise would be less from such a unit.

Mr. Thorsland stated that the effects on other people that do not desire to have a wind turbine and do not want to look at someone else's. He said that the Board carefully tries to weigh all of the pro's and con's of another house or three houses and the effects of those homes travels a much greater distance than any shadow flicker and noise created by a wind turbine. He said that there is no recourse for a person who is on a road that is on its way to a subdivision unless it is an RRO, which has a public hearing, but if it is a "by-right" lot then it is just how it is. He said that a wind turbine stands straight up in the air and everyone can see it but a house is just another house even though the overall impact of that house over

time is probably greater than the wind turbine. He said that the probability of everyone in rural Champaign County putting up a 150 feet tower is unlikely therefore this issue should be weighed carefully. He said that perhaps a special use permit should be allowed for a unit over 150 feet because it would provide notice to adjacent landowners. He said that the Board is being very careful with the wind issue because it is a very visible item but the Ordinance needs to be consistent with other things as to the impact on the entire County.

Mr. Hall asked Mr. Courson if he is aware if the wind turbine manufacturer provides any data on shadow flicker.

Mr. Courson stated no and he hadn't heard about shadow flicker until the public hearings began. He said that the biggest thing that he has heard about is the concern about bird kills and noise. He said that his turbine is a little noisy but he has never seen a dead bird at the foot of his tower.

Mr. Hall stated that if the Board desires to require special use permits for these structures he would assume that shadow flicker and noise would be an issue and if these things are not an issue then what would be an issue so that a special use permit would be required.

Mr. Bluhm stated that he would assume that there would be a lot more criteria required if someone had a three acre parcel and all of the lots around them were also three acres and that landowner wanted to install a 150 feet tower.

Mr. Thorsland stated that if someone wanted to put up a 151 feet tower then they would need to apply for a special use permit once they went over three acres but it is a different story when it is farmer who wants to put a tower up on his 200 acres parcel.

Mr. Hall clarified that a farmer on 200 acres would fall under the agricultural exemption.

Mr. Thorsland stated that someone who dried lumber in his shed in the woods and desired to install a 200 feet tower where no one would care would also be required to go through the special use permit process. He said that maybe there is a subdivision which has ten houses within a one-quarter mile then such a unit would trigger the special use permit process but it is not triggered if there is a density that is lower.

Ms. Capel asked Mr. Hall if someone could obtain a variance for a tower that is 151-200 feet in overall height.

Mr. Hall stated yes.

Ms. Capel stated that this would be less work than a special use permit but it would give the Board the opportunity to review the placement.

Mr. Hall stated that a variance would make more sense and he does not know why the Ordinance was written so that a special use permit is required for something that is taller because the Board is well

aware that the findings for a special use permit when it is something that only the homeowner is going to use is very difficult. He said that he would argue that the standards, other than for public convenience, are the same. He said that a variance could be required for a small wind unit that is over 150 feet but a limit of 200 feet in height.

Mr. Thorsland stated that he agrees.

Mr. Hall asked the Board about rotor diameter.

Mr. Bluhm stated that perhaps the 151 feet but a limit of 200 feet should include the rotor diameter. He asked Mr. Hall what the fee would be for a variance for such a unit.

Mr. Hall stated that the fee list needs to be updated. He asked the Board to comment on the separation for rotor diameter that is greater than 24 feet and at a height of 150 feet.

Mr. Thorsland stated that the 150 feet limit would also limit the rotor size. He said that Mr. Courson has a small wind turbine unit on a small tower and at a lower height it appears to work better.

Mr. Hall asked Mr. Knight if he had anything that required more guidance from the Board.

Mr. Knight stated no.

Mr. Bluhm asked Mr. Hall what would happen if a school district who does not have enough room or land desired to put up a wind tower for their use at a different location. He asked if there would be additional costs incurred because of the Vestas V-17 and the wires that must be run to the school.

Mr. Hall stated that if the turbine is close enough that they could interconnect and clearly prove that the energy produced was only for the school then a joint lot development permit could be allowed. He said that the problem is that many times the wiring becomes cost prohibitive. He said that if there is no doubt that it is connected to the school, factory or village hall then language could be written to provide for that situation but if it is not connected to it then it is a free standing wind turbine.

Mr. Bluhm stated that more than likely it will be a village or city giving permission to construct such a unit because it will be within their ETJ.

Mr. Hall stated that probably the schools that are in the County's jurisdiction are surrounded by farmland therefore hopefully they could connect directly to the school.

Mr. Bluhm asked the Board if there were any other changes or concerns for staff.

Mr. Hall stated that the Board had made progress which will require another meeting but it is also significant in whittling out the more than 150 feet height that would require a special use permit which is really a variance.

 Mr. Bluhm asked the audience if anyone desired to sign the witness register to present testimony for Case 634-AT-08, Part B. and there was no one.

Mr. Bluhm closed the witness register.

Mr. Bluhm requested a continuance date.

Mr. Hall stated that no application has been received for Case 542 on November 12th and frankly he would rather leave as much room as possible for the case scheduled for October 29th.

Mr. Thorsland moved, seconded by Mr. Courson to continue Case 634-AT-08, Part B. to November 12, 2009. The motion carried by voice vote.

6. New Public Hearings

None

7. Staff Report

Mr. Hall stated that the wind farm developer's consultant has begun reviewing the County's application and he would imagine that this review will take through October. He said that the meetings that the Board has set aside in January are still within the six week lead time. He said that he has not placed this item on a ZBA agenda to date but he is arguing for ELUC to authorize money for a noise consultant for the first wind farm application and he does not know how much luck he is having. He said that, if as a ZBA member you feel that this review is necessary, it is important for ZBA members to discuss this issue with their County Board members. He said that he has explained to ELUC that when a wind farm application is received he cannot advise them about noise because he is not an acoustical expert which also means he cannot advise the ZBA about noise. He said that three proposals have been received and unless he is directed otherwise when a wind farm application is received he will obtain three estimates for providing the noise review but at the October ELUC meeting he may be told that this will not be necessary.

8. Other Business

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

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None

10. Adjournment

The meeting adjourned at 8:43 p.m.

Respectfully submitted

Secretary of Zoning Board of Appeals