

CASE NO. 898-S-18

SUPPLEMENTAL MEMORANDUM #4

November 21, 2018

**Brookens Administrative
Center**
1776 E. Washington
Street
Urbana, Illinois 61802

(217) 384-3708
zoningdept@co.champaign.il.us
ign.il.us
www.co.champaign.il.us/s/zoning

Petitioners: Prairie Solar 1, LLC, via agent Patrick Brown, Director of Development for BayWa r.e. Solar Projects LLC, and the participating landowners listed in Attachment A

Request: Authorize a Utility-scale PV Solar Farm with a total nameplate capacity of 150 megawatts (MW), including access roads and wiring, in the AG-1 and AG-2 Agriculture Zoning Districts, and including the following waivers of standard conditions:

Part A: A waiver for a distance of 1,175 feet between a PV Solar Farm and the CR Conservation Recreation Zoning District in lieu of the minimum required one-half mile (2,640 feet), per Section 6.1.5 B.(2)b.

Part B: A waiver for not providing a Decommissioning and Site Reclamation Plan that includes cost estimates prepared by an Illinois Licensed Professional Engineer prior to consideration of the Special Use Permit by the Board, per Section 6.1.1 A.3.

Part C: A waiver for not entering into a Roadway Upgrade and Maintenance Agreement with the relevant local highway authority prior to consideration of the Special Use Permit by the Board, per Section 6.1.5 G.

Other waivers may be necessary.

Location: In Sidney Township the following sections are included with exceptions as described in Attachment A: Sections 11, 12, 13, 14, 15, 22 and 23, Township 18 North, Range 10 East of the 3rd Principal Meridian.

**Site Area: PV Solar Farm Special Use Permit Area is approximately 1,609 acres
Fenced solar farm area is approximately 1,191 acres**

Time Schedule for Development: As soon as possible

**Prepared by: Susan Burgstrom
Senior Planner**

**John Hall
Zoning Administrator**

STATUS

P&Z Staff received six emails from Ted Hartke (see Attachment B).

Several homework items from the November 15, 2018 ZBA meeting are addressed below.

Staff proposes several revisions to special conditions, see below.

HOMEWORK ITEMS FROM NOVEMBER 15, 2018 ZBA MEETING

The following questions were asked during the November 15, 2018 ZBA meeting or asked of the petitioner by staff based on meeting discussion. Responses or notes are below each question.

1. Can the petitioner divide the 39 dBA noise level into the relevant frequency bands that are used by the IPCB (we need to identify those frequencies in our question), and the corresponding noise level at each relevant frequency band?
Note: Petitioner will respond
2. Does the petitioner believe that solar farm inverters produce tonal noise that will be subject to the “penalties” imposed by the IPCB?
Note: Petitioner will respond
3. Will the new tiling system send water towards Sidney at a higher rate?
Note: Petitioner believes this question was responded to in cross examination at the public hearing on 11/15/18.
4. What is the ability of the county to levy corrective action, fines, penalty, or have any power to shut down inverters if/when noise inverters exceed 39 dBA?
Staff response: The County has the ability, upon receipt of a complaint, to seek an independent noise evaluation and have the petitioner mitigate excessive noise if warranted. The special conditions of approval enable us to enforce this in court if necessary.
5. What is the decommissioning price? Salvage? Panel disposal/recycling costs?
Petitioner response: This will be determined when the cost estimate for the decommissioning plan is prepared prior approval of the Zoning Certification by the ELUC.
6. Is the developer or acoustician who predicted and modeled the noise levels to be 38 dBA willing to purchase homes of a neighbor or if the buzzing/humming noise constitutes a "tonal noise" violation?
**Petitioner response: The acoustician will answer the tonal issues from above.
Staff response: We do not require nor do we intend to require a petitioner to purchase a house, and regarding a tonal noise violation, the County can commission an independent noise study which would consider tonal noise and have the petitioner mitigate excessive noise if warranted.**
7. How far away the solar panels would be from the tracks adjacent to Mr. McKee’s property?
Note: Petitioner will respond
8. Are you going to drill wells to provide water to clean the panels?
Petitioner response: They will not drill any wells; they will get water from the closest water district.
9. Can these panels be put in a landfill, and can they be put in a landfill in Illinois?
Note: Staff forwarded this question to the petitioner on November 21, 2018.

SPECIAL CONDITIONS – PROPOSED REVISIONS

Staff proposes new special condition K stemming from discussion about apple tree rust that can occur from the proposed red cedar vegetative screening.

A. **The approved site plan consists of the following documents:**

- **Sheets 1 through 9 of the Site Plan received November 13, 2018.**
- **Sheets 10 through 12 of the Site Plan received October 24, 2018.**
- **Sheet L1 Landscape Plan received November 15, 2018.**

The above special condition is required to ensure that:

The constructed PV SOLAR FARM is consistent with the special use permit approval.

B. **The Zoning Administrator shall not authorize a Zoning Use Permit Application or issue a Zoning Compliance Certificate on the subject property until the lighting specifications in Paragraph 6.1.2.A. of the Zoning Ordinance have been met.**

The special condition stated above is required to ensure the following:

That exterior lighting for the proposed Special Use meets the requirements established for Special Uses in the Zoning Ordinance.

C. **The Zoning Administrator shall not issue a Zoning Compliance Certificate for the proposed PV SOLAR FARM until the petitioner has demonstrated that the proposed Special Use complies with the Illinois Accessibility Code, if necessary.**

The special condition stated above is necessary to ensure the following:

That the proposed Special Use meets applicable state requirements for accessibility.

D. **The Zoning Administrator shall not authorize a Zoning Use Permit until the petitioner submits a copy of an executed Agricultural Impact Mitigation Agreement with the Illinois Department of Agriculture per the requirements established in Paragraph 6.1.5 R. of the Zoning Ordinance.**

The special condition stated above is required to ensure the following:

That the land affected by PV SOLAR FARM is restored to its pre-construction capabilities.

E. **A signed Decommissioning and Site Reclamation Plan that has been approved by ELUC is required at the time of application for a Zoning Use Permit that complies with Section 6.1.1 A. and Section 6.1.5 Q. of the Zoning Ordinance, including a decommissioning cost estimate prepared by an Illinois Professional Engineer.**

The above special conditions are required to ensure that:

The Special Use Permit complies with Ordinance requirements and as authorized by waiver.

- F. **Roadway Upgrade and Maintenance Agreements signed by the County Highway Engineer Sidney Township Highway Commissioner, and approved by the Environment and Land Use Committee, shall be submitted at the time of application for a Zoning Use Permit.**

The above special condition is necessary to ensure the following:

To ensure full compliance with the intent of the Zoning Ordinance in a timely manner that meets the needs of the applicant.

- G. **The following submittals are required prior to the approval of any Zoning Use Permit for a PV SOLAR FARM:**
1. **Documentation of the solar module's unlimited 10-year warranty and the 25-year limited power warranty.**
 2. **A Storm Water Management Plan which conforms to the Champaign County Storm Water Management and Erosion Control Ordinance.**
 3. **Certification by an Illinois Professional Engineer that any relocation of drainage district tile conforms to the Champaign County Storm Water Management and Erosion Control Ordinance.**
 4. **A Crossing Agreement with the relevant Drainage District(s) for any solar farm construction that intrudes on any easement or right of way for drainage district ditch or tile, per 6.1.5 E.(5).**
 5. **An irrevocable letter of credit to be drawn upon a federally insured financial institution with a minimum acceptable long term corporate debt (credit) rating of the proposed financial institution shall be a rating of "A" by S&P or a rating of "A2" by Moody's within 200 miles of Urbana or reasonable anticipated travel costs shall be added to the amount of the letter of credit.**
 6. **A permanent soil erosion and sedimentation plan for the PV SOLAR FARM including any access road that conforms to the relevant Natural Resources Conservation Service guidelines and that is prepared by an Illinois Licensed Professional Engineer.**
 7. **Documentation regarding the seed to be used for the vegetative ground cover planting, per 6.1.5 F.(9).**
 8. **A Transportation Impact Analysis provided by the applicant that is mutually acceptable to the Applicant and the County Engineer and State's Attorney; or Township Highway Commissioner; or municipality where relevant, as required by 6.1.5 G. 2.**
 9. **The telephone number for the complaint hotline required by 6.1.5 S.**
 10. **Any updates to the approved Site Plan from Case 898-S-18 per the Site Plan requirements provided in Section 6.1.5 U.1.c.**

The above special condition is required to ensure that:

The PV SOLAR FARM is constructed consistent with the Special Use Permit approval and in compliance with the Ordinance requirements.

- H. **The petitioner shall install sound reduction kits from the inverter manufacturer to each of the inverters in the solar farm so that operational sound levels for the duration of the solar farm will be ~~no more~~ less than 39 dBA at all existing residences within 1,500 feet of the project site and 39dBA shall be the sound level that shall be enforced by Champaign County subject to the relevant standards of the Illinois Pollution Control Board and Illinois Environmental Protection Agency.**

The above special condition is required to ensure that:

The PV SOLAR FARM is constructed consistent with the Special Use Permit approval.

- I. **A Zoning Compliance Certificate shall be required for the PV SOLAR FARM prior to going into commercial production of energy. Approval of a Zoning Compliance Certificate shall require the following:**
1. **An as-built site plan of the PV SOLAR FARM including structures, property lines (including identification of adjoining properties), as-built separations, public access road and turnout locations, substation(s), electrical cabling from the PV SOLAR FARM to the substations(s), and layout of all structures within the geographical boundaries of any applicable setback.**
 2. **As-built documentation of all permanent soil erosion and sedimentation improvements for all PV SOLAR FARM including any access road prepared by an Illinois Licensed Professional Engineer.**
 3. **A noise study to verify that the required sound reduction kits for all inverters result in no more than 39 dBA noise level at all existing residences within 1500 feet of the project site.**
 4. **An executed interconnection agreement with the appropriate electric utility as required by Section 6.1.5 B.(3)b.**

The above special condition is required to ensure that:

The PV SOLAR FARM is constructed consistent with the special use permit approval and in compliance with the Ordinance requirements.

- J. **The Applicant or Owner or Operator of the PV SOLAR FARM shall comply with the following specific requirements that apply even after the PV SOLAR FARM goes into commercial operation:**
1. **Maintain the required visual screening in perpetuity.**
 2. **Cooperate with local Fire Protection District to develop the District's emergency response plan as required by 6.1.5 H.(2).**

3. **Cooperate fully with Champaign County and in resolving any noise complaints including reimbursing Champaign County any costs for the services of a qualified noise consultant pursuant to any proven violation of the I.P.C.B. noise regulations as required by 6.1.5 I.(4).**
4. **Maintain a current general liability policy as required by 6.1.5 O.**
5. **Submit annual summary of operation and maintenance reports to the Environment and Land Use Committee as required by 6.1.5 P.(1)a.**
6. **Maintain compliance with the approved Decommissioning and Site Reclamation Plan including financial assurances.**
7. **Submit to the Zoning Administrator copies of all complaints to the telephone hotline on a monthly basis and take all necessary actions to resolve all legitimate complaints as required by 6.1.5 S.**

The above special condition is required to ensure that:

Future requirements are clearly identified for all successors of title, lessees, any operator and/or owner of the PV SOLAR FARM.

K. Prior to the approval of the Zoning Use Permit, the petitioner will consult with and come to an agreement with all land owners and residents (both participating and non-participating in the solar farm project) whose residences are within 1,000 feet of the solar farm regarding the types of plantings to be used in the required vegetative screening to be planted along the nearest solar farm fence line to the residence.

The above special condition is required to ensure that:

Plantings to be used in the vegetative screening will not be harmful to existing vegetation in the area.

ATTACHMENTS

- A Legal Description/Participating Landowners
- B Emails from Ted Hartke received November 16, 2018 and November 19, 2018

Case 898-S-18 Subject Properties and Participating Landowners

Section 11, T18N, R10E of the 3rd P.M., Sidney Township. The Special Use Permit includes that part of Section 11 that lies south of County Highway 15 and includes the following properties owned by the following participating landowners:

- 7.11 acres owned by Frances Marguerite Winston, 3325 Stoneybrook Drive, Champaign IL 61822-5231.
- 9.18 acres owned by O'Neill Farms Inc., 3449 Lincoln Trail Road, Fithian IL 61844-0000.
- 41.00 acres owned by Carole L. Nussmeyer, 101 West Windsor Road, Apt. 3304, Urbana IL 61802-6663.

Section 12, T18N, R10E of the 3rd P.M., Sidney Township. The Special Use Permit includes that part of the Southwest Quarter of Section 12 that lies south of County Highway 15 and includes the following properties owned by the following participating landowners:

- 34.54 acres owned by Rink Agricultural & Investment Partnership LP, 24332 Stripmine Road, Wilmington IL 60481-9342.
- 32.5 acres owned by Willis Winston, 3325 Stoneybrook Drive, Champaign IL 61822-5231.

Section 13, T18N, R10E of the 3rd P.M., Sidney Township. The Special Use Permit includes the West Half of Section 13 and includes the following properties owned by the following participating landowners:

- 160 acres owned by Willis Winston, 3325 Stoneybrook Drive, Champaign IL 61822-5231.
- 160 acres owned by Rink Agricultural & Investment Partnership LP, 24332 Stripmine Road, Wilmington IL 60481-9342.

Section 14, T18N, R10E of the 3rd P.M., Sidney Township. The Special Use Permit includes the North 520 acres of Section 14 and includes the following properties owned by the following participating landowners:

- 120.00 acres owned by Frances Marguerite Winston, 3325 Stoneybrook Drive, Champaign IL 61822-5231.
- 80.00 acres owned by Eugene O'Neill, 3449 Lincoln Trail Road, Fithian IL 61844-0000.
- 160 acres owned by the United Commercial Bank Scully Trust c/o Farmland Solutions LLC, POB 169, Sherman IL 62684-0169.
- 65.00 acres owned by James Kent Krukewitt & Linda L. Krukewitt, 911 CR 2400E, Homer IL 61849-9734.
- 60.00 acres owned by the Shirley A. Esch Trustee, 2110 East Oakland Avenue, Bloomington IL 61701-5759.
- 98.00 acres owned by Jane Owens, POB 35, LeRoy IL 61752-0035.

Section 15, T18N, R10E of the 3rd P.M., Sidney Township. The Special Use Permit includes the following properties owned by the following participating landowners in the Southeast Quarter of Section 15:

- 43.00 acres owned by Shawn A. & Kara F. Walker, 407 West Diller Street, Broadlands IL 61816-9752.
- 42.50 acres owned by John Grobe c/o Busey Ag Services, 3002 West Windsor Road, Champaign IL 61822-6106.
- Part of another 42.50 acres owned by John Grobe c/o Busey Ag Services, 3002 West Windsor Road, Champaign IL 61822-6106.

Section 22, T18N, R10E of the 3rd P.M., Sidney Township. The Special Use Permit includes the following properties owned by the following participating landowners in the North Half of Section 22:

- 86.67 acres owned by the Michael L. Hastings and Vicky L. Hastings Trust, 2083 CR 1325N, St. Joseph IL 61873-9778.
- 85.19 acres owned by the Terry L. Wolf Trustee, 2761 CR 1100N, Homer IL 61849-9763.
- 84.67 acres owned by David L. Hastings, 24 Meridian Terrace, Paxton IL 60957-1849.
- 18.00 acres owned by Julian Stipp, 877 CR 2200E, Sidney IL 61877-9643.

Section 23, T18N, R10E of the 3rd P.M., Sidney Township. The Special Use Permit includes the following properties owned by the following participating landowners in the Northeast Quarter of Section 23:

- 80.00 acres owned by Jane Owens, POB 35, LeRoy IL 61752-0035.
- 76.85 acres owned by Rink Agricultural & Investment Partnership LP, 24332 Stripmine Road, Wilmington IL 60481-9342.

Susan Burgstrom

From: Ted Hartke <tedhartke@hartke.pro>
Sent: Friday, November 16, 2018 1:03 PM
To: John Hall; Susan Burgstrom
Subject: Fwd: Note from Ted Hartke

RECEIVED

NOV 16 2018

CHAMPAIGN CO. P & Z DEPARTMENT

Dear John and Susan,

Please distribute this email to the Champaign County ZBA and ELUC committee members.

At the bottom of this message, I included an email from one of the acousticians who was assisting us with our abandoned home (email dated from March, 2015) while I was searching for the IPCB noise measurement protocol. Due to wind turbine noise, a home in Falmouth Massachusetts was abandoned. Robert Rand and Steven Ambrose measured 42 dBA at that house.

As a clarification, last night before the meeting when Brad Passalacqua mentioned the wind farm project in Douglas County, I replied that "we are going to beat the wind farm in Ford County, also." John Hall's comment to me being something like "WE??....I didn't know this was a team effort" (or something similar to those words). I want everyone involved with these problems with wind turbines to know that "we" includes myself and the citizens who are about to be impacted by wind turbines if the proposed plans carry through. My goal is to not allow ANY FAMILY to lose the use of their homes due to decisions by incompetent or ignorant or just plain wrong choices made by naive appointed or elected decision makers.

I also find it weird and discouraging that citizens such as myself are not allowed to get any answers from developers who refuse to answer questions while having the appointed/elected representatives OF THE CITIZENS providing the cover for the developer. I anticipate the ZBA members won't be able to find the courage to ask the numerous questions requested from the citizens. One homeowner in the audience asked what the distance was from his home to the nearest panels and inverter. He also asked if the developer was going to drill water wells. (Perhaps for purposes of drawing water to clean the panels or perhaps even to water the grass and trees??) Even though the developer followed up at the end of the meeting and pleaded to have a final vote, the board members never asked him any of the questions about the wells or distance to that certain house.

My questions remain as follows:

- 1.) Water wells being drilled? How much water will be used?
- 2.) Will the new tiling system send water towards Sidney at a higher rate?
- 3.) What is the ability of the county to levy corrective action, fines, penalty, or have any power to shut down inverters if/when noise inverters exceed 39 dBA?
- 4.) What is the decommissioning price? Salvage? Panel disposal/recycling costs?
- 5.) Is the developer or acoustician who predicted and modeled the noise levels to be 38 dBA willing to purchase homes of a neighbor or if the buzzing/humming noise constitutes a "tonal noise" violation?

Please note that the IPCB noise limits have a penalty of some decibels for cases where noise is found to be impulsive or "tonal." Tonal noise is when one certain noise frequency is more prevalent than the adjacent octave band, and I was "shut down" from asking questions to Mr. Leech before I could quiz him on this detail. The full octave band output noise needs to be provided for the specific inverter proposed for this project to see if the tonal noise penalty comes into play.

Best regards,

Ted Hartke

Special message: **My email was hacked Dec 30, 2016.** If you received a message that looks like it came from me and it asks you to click a link to share files, DO NOT CLICK ON LINKS OR ICONS. I will never send you a link or ask you to download anything unless I include a detailed project-specific correspondence. To protect yourself, never attempt to download files or click links which seem random or out of the ordinary.

Theodore P. Hartke, PE, PLS
President
Hartke Engineering and Surveying, Inc.
117 S. East Avenue P.O. Box 123
Ogden, Illinois 61859 217.840.1612
tedhartke@hartke.pro

----- Forwarded message -----

From: **Stephen Ambrose** <seaa@myfairpoint.net>
Date: Mon, Mar 2, 2015 at 8:40 AM
Subject: Re: Note from Ted Hartke
To: Ted Hartke <tedhartke@hartke.pro>, <rrand@randacoustics.com>, Rick James <rickjames@e-coustic.com>, Henrik Møller <henrikmoeller2@gmail.com>

Ted, Rob and I measured 42 dBA at Falmouth, the house was later abandoned and then sold at a discount. Best wishes

--
Steve

Neighbors are far better acoustic analyzers for determining the quality of their life versus any acoustic instrument left unattended by an expert.

Stephen E. Ambrose, INCE, Bd.Cert.
Acoustics, Environmental Sound and Industrial Noise
SE Ambrose ' & Associates Tel/Fax: 207.892.6691
15 Great Falls Road Mobile: 207.653.9099
Windham, ME 04062 email: seaa@myfairpoint.net

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On 3/2/2015 9:28 AM, Ted Hartke wrote:

Dear Mr. Rand,

I just reviewed this work posted here:

<http://www.pcwindfarm.org/wp-content/uploads/2014/11/Rand-Re-Pleasant-Ridge-18Feb15.pdf>

It was good that you used my home as an example.

43 dBA predicted noise at the receiver = home abandonment.

I was wondering if there are other similar home abandonment instances where this was measured. One thing we are trying to overcome is the BS that:

- 1.) Hartke is just a wimp.....oversensitive
- 2.) Hartke is a liar, trying to extort money, making a big deal out of nothing
- 3.) Hartke's house is poorly constructed, rare combination of topography and noise "funnels" towards him
- 4.) Nobody else has the same problem as Hartke. They are an anomaly, his story is very rare and does not happen anywhere else.

If there are other families out there, I would like to be able to give a rebuttal about how others have gone before us.

I appreciate all of the work you are doing to help be sure that this does not happen to other families.

I have a follow-up for you to look into:

The "predicted" nighttime noise at my house was 43 dBA?

Mike Hankard said the as-measured noise was 0.1 dB lower than the maximum IPCB noise limit (without telling us the level of uncertainty in his measurements).

So, does this mean he measured 46.9 dB at 500 Hz? I would like to see what his MEASURED results of the A-weighted noise actually was. He reported it in the octave band levels.

I also think that you, Steve, and Rick seem to not want to make statements about impulsive noise. The impulsive noise limit in Illinois is more stringent than what everyone concentrates on. Hankard took special measures to state, "since wind turbines are non-tonal and non-impulsive" then the noise limit is higher. It would be good if acousticians started to talk about turbine noise being tonal and impulsive. (They definitely have a certain signature at certain frequencies.)

My feeling is that the turbines are indeed making pulsating noise which is why we wake up. It is a thumping noise which is more like a impact forging hammer noise pulse. Our heads are "pounding."

Thank you for all the hard work you are doing to help protect future victims from disasters. It definitely helps them defend themselves when bad things happen to them in the future. I wish we had this level of education before these turbines were placed near our home.

Warmest regards,

Ted

Theodore P. Hartke, PE, PLS
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117 S. East Avenue P.O. Box 123
Ogden, Illinois 61859 217.840.1612
tedhartke@hartke.pro

Susan Burgstrom

From: Ted Hartke <tedhartke@hartke.pro>
Sent: Friday, November 16, 2018 4:58 PM
To: John Hall; Susan Burgstrom
Subject: Fwd: ATTACHMENT: Steve Ambrose evaluation of Hankard-Schomer IPCB Compliance Measurement of Vermilion County InvEnergy Noise Exceedance
Attachments: Final Letter 4Dec2014 - Ted Hartke - Hankard-Schomer Noise Compliance California Ridge.pdf

Dear John and Susan,

Please distribute this email and attachment to all of the ZBA members and the ELUC members. This is an evaluation of the Hankard noise study completed in Vermilion County before we abandoned our home. INCE Steve Ambrose was critical of the noise study because none of the data collected was observed by any acoustician or any technician.

This supports my claims during last night's meeting that BayWa Renewable Energy's noise consultant failed to follow IPCB noise measurement protocol. Mr. Leech has a bunch of noise level data, but he has no clue and cannot prove what the data represents. I am still looking for Dr. Schomer's testimony on this matter.

Best regards,

Ted

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NOV 19 2018

CHAMPAIGN CO. P & Z DEPARTMENT

----- Forwarded message -----

From: Stephen Ambrose <seaa@myfairpoint.net>
Date: Wed, Dec 3, 2014 at 6:58 PM
Subject: Hankard Schomer - Final Letter
To: Ted Hartke <tedhartke@hartke.pro>

Dear Ted,

See attached.

Best wishes

--

Steve

Neighbors are far better acoustic analyzers for determining the quality of their life versus any acoustic instrument left unattended by an expert.

Stephen E. Ambrose, INCE, Bd.Cert.
Acoustics, Environmental Sound and Industrial Noise
SE Ambrose ' & Associates Tel/Fax: [207.892.6691](tel:207.892.6691)
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S.E. Ambrose & Associates

Email, seaa@myfairpoint.net

15 Great Falls Road, Windham, ME 04062

Acoustics, Environmental Sound & Industrial Noise

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NOV 19 2018

CHAMPAIGN CO. P & Z DEPARTMENT

December 4, 2014

Mr. Theodore P. Hartke, PE, PLS & President
Hartke Engineering and Surveying, Inc.
117 S. East Avenue P.O. Box 123
Ogden, Illinois 61859

Ref: Noise Level Compliance Analysis, California Ridge Wind Energy Project, March 7, 2014
Hankard Environmental, Inc. & Schomer & Associates, Inc.

Dear Mr. Hartke:

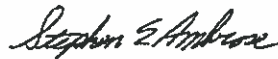
I have completed my review of the Noise Level Compliance Analysis and find it lacking in several critical aspects. Measurements were made without an observer, which contradicts IPCB rules. Measurements were made during mandatory operation curtailment or harvesting months. Analysis limited by unattended measurements and ineffective interpretation of audio recordings. Highly subjective methodology was used to select noise level measurements for analysis. Four-months' of noise level data had to be reduced to select tables, graphs, and charts with poor audio recordings.

- 1) Statement on page 10, 2nd paragraph, 3rd sentence. "At a certain point, turbines reach a maximum rotational speed and noise levels do not continue to increase with increasing wind speed." False, blades can be feathered to produce less electric output and noise at full rpm.
- 2) Statement, page 10, 2nd paragraph, 5th sentence. "Ground winds generate sound by rustling vegetation". These would be minimized by positioning microphones far away from elevated vegetation (view-attached pictures).
- 3) Conflicting statements: page 10, "The purpose of the subject measurements is to demonstrate, to a reasonable degree of scientific certainty, whether or not the wind turbines are in compliance with the applicable IPCB numerical limits." And page 14, last paragraph, "... but we do not know exactly when or where it occurred ... We were not confident with a reasonable degree of scientific certainty ... to separate harvest noise from turbine noise." There is no certainty or confidence.
- 4) Endangered species curtailment casts doubt on August/September measurements. October measurements contaminated by harvest equipment noise. Uncertainty of audio recordings hindered analysis.
- 5) Did not provide electric-power output for turbines 57, 75, 56 & 76 being tested. These are the critical turbines and there is no proof they are at full-power output. Turbine rpm has no value when the blades are feathered. Noise reduction option (NRO) feathers blades.

This report is not credible, does not comply with IPCB rules, and does not meet the intent to prove noise level compliance. Nearest wind-turbine noise level exceedances are expected for wind speeds above 5 m/s or when near full power output.

The Noise Level Compliance Analysis, California Ridge Wind Energy Project, March 7, 2014 report should not be used as a reference source for any purpose.

Respectfully,



Stephen E. Ambrose, ASA, INCE, Board Certified
Principal Consultant



Stronger Wind Speeds Through Tree And Growing Corn Stalks Affect Microphone.



Susan Burgstrom

From: Ted Hartke <tedhartke@hartke.pro>
Sent: Monday, November 19, 2018 10:34 AM
To: Susan Burgstrom; John Hall
Subject: Noise standards for rural areas
Attachments: Letter - Ted Harke, Livingston County - 9Sept2014.pdf

Dear Susan and John,
Please share with ZBA and ELUC committee members.

This attachment is Steve Ambrose's letter used by some communities to establish 30 dBA nighttime and 35 dBA daytime noise levels for RURAL areas for WIND TURBINES.

Since wind turbines have impulsive noise (thumping from blade pass), there is a 5 dBA adjustment penalty. Note that the accousticians ask for 33.5 dBA noise levels for wind turbines, add the 5 dBA allowance since solar is "non-impulsive", and this reaches 38.5 dBA.....so basically 39 dBA max noise limit.

I am still looking for the case where Dr. Schomer testified the reason the IPCB noise measurement procol includes "observed" measurements.

Ted

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CHAMPAIGN CO. P & Z DEPARTMENT

----- Forwarded message -----

From: Ted Hartke <tedhartke@hartke.pro>
Date: Thu, Sep 11, 2014 at 7:57 AM
Subject: Turbine Noise in Illinois: Steve Ambrose letter to Hartke
To:

Dear friends,

Post and share all over. There are strong statements made by INCE Steve Ambrose in this letter.

It is a summarized statement on safe nighttime noise limits.

Notice that, a long time ago, Dr. Schomer said 33.5 dBA was safe, and it is documented again on this chart. Schomer also says that 39 dBA should be an "absolute maximum limit." in his Highland Wisconsin testimony.

Also, some acousticians and other people describe turbine noise as "pulsating" and "thumping" or at times "contant jet sound."

This sounds like turbines could be classified as "impulsive noise" and also "tonal noise" which would reduce the limit of noise which they are allowed to make at nighttime in Illinois.

Some wind company employed acousticians state that turbines are "variable" and "non tonal" noise. Look at what Hankard states in the InvEnergy application for Livingston County, Illinois. If the Vermilion County turbines remained 0.1 dBA below the highest allowable maximum nighttime noise allowance for Illinois during his test at my rear property line, then it would be way out of compliance if this noise was deemed to be "impulsive" which shakes us out of our sleep. The microbarometer recordings we have show pretty large pulses at the blade pass frequency.....similar to how a metal stamping/forging operation noise is made.

We should take this little microbarometer over to Urbana and record a bunch of forging thumping noise, and see how it compares.

Ted

Theodore P. Hartke, PE, PLS
President
Hartke Engineering and Surveying, Inc.
117 S. East Avenue P.O. Box 123
Ogden, Illinois 61859 217.840.1612
tedhartke@hartke.pro

----- Forwarded message -----

From: **Stephen Ambrose** <seaa@myfairpoint.net>
Date: Mon, Sep 8, 2014 at 3:57 PM
Subject: Emailing: Letter - Ted Harke, Livingston County - 9Sept2014.pdf
To: Ted Hartke <tedhartke@hartke.pro>

Ted, My latest. best wishes

--
Steve

Neighbors are far better acoustic analyzers for determining the quality of their life versus any acoustic instrument left unattended by an expert.

Stephen E. Ambrose, INCE, Bd.Cert.
Acoustics, Environmental Sound and Industrial Noise
SE Ambrose '& Associates Tel/Fax: [207.892.6691](tel:207.892.6691)
15 Great Falls Road Mobile: [207.653.9099](tel:207.653.9099)
Windham, ME 04062 email: seaa@myfairpoint.net

September 9, 2014

Theodore P. Hartke, PE, PLS & President
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CHAMPAIGN CO. P & Z DEPARTMENT

Dear Mr. Hartke;

I have been a noise control professional since 1976, committed to maintaining the highest standards required for INCE [1]; "*Hold paramount the safety, health and welfare of the public.*" Noise complaints, neighbors' pleas for relief and ultimately home abandonment are strong indicators of real public harm. This has been proven true too many times, especially at night in rural communities where peace and tranquility are enjoyed without noise.

My first encounter with industrial wind turbines was out of curiosity. Why are so many neighbors' complaining, and why are regulators unable to protect the public? A visit to a wind turbine site during moderate wind speeds revealed that turbine noise ruined a once quiet community. Neighbors' complaints were valid, dramatic variations in turbine noise level and fluctuating audible pure tones. Regulatory agencies have failed to recognize that noise limits established for urban areas should not be used in rural communities.

The USEPA published groundbreaking community noise studies in the early 1970's. Many States and communities used these and other studies to create noise regulations. There was a common purpose to protect the majority of the US population, which live in urban areas. The 1972 Illinois regulation embraced the Chicago noise studies. Illinois chose to set their noise limits on a frequency spectrum of nine-octave bands versus the USEPA with dBA. Illinois and USEPA put off considerations for rural communities to future studies. Nonetheless, the USEPA issued a strong "cautionary" regarding populations living in rural communities. Appendix D, in the 1974 "*Levels Document*" presents a method to determine a "Community Noise Reaction" (CNR). This method was later modified and renamed "Community Tolerance Level" and adopted by international organizations; International Standard (ISO 1996 Part 1), American National Standard (ANSI S12.9 Part 4)].

The Illinois regulation was enacted to preserve the enjoyment of life and prevent noise pollution. **Section 900.101**, "*Noise pollution: the emission of sound that unreasonably interferes with the enjoyment of life or with any lawful business or activity*". **Section 900.102**, *Section Prohibition of Noise Pollution; No person shall cause or allow the emission of sound beyond the boundaries of his property, as property is defined in Section 25 of the Illinois Environmental Protection Act, so as to cause noise pollution in Illinois, or so as to violate any provision of this Chapter.*

The Illinois regulation is tiered by zoning land-use classifications that establish noise emitter property line limits. Industrial (Class C) were zoned for noisier activities. The most

1 Institute of Noise Control Engineering, Board Certified, Member since 1978.

protective noise limits were reserved for Class A & B for residential properties. Class C emitters are permitted to be 6 dB louder than for Class A & B, as shown below.

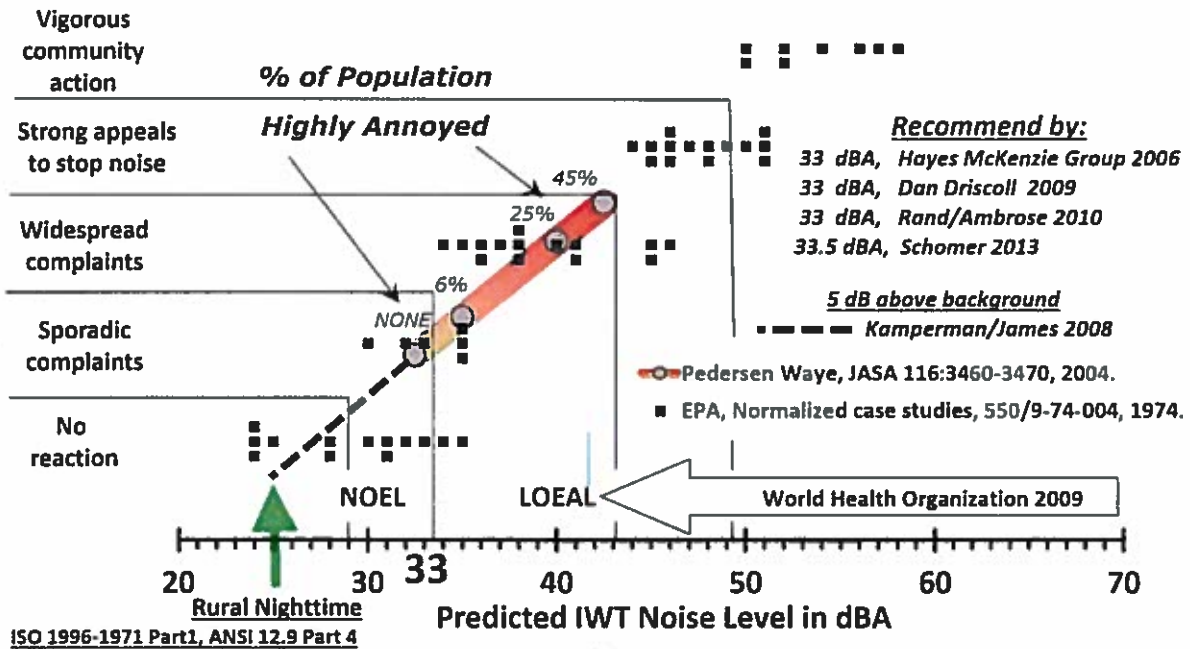
| Part 901.102 - Daytime | Octave Band Center Frequencies, Hz | | | | | | | | | (calc) | Part 901.106 |
|-------------------------------|------------------------------------|----|-----|-----|-----|------|------|------|------|------------|------------------|
| Class A Receiving Land | 31.5 | 63 | 125 | 250 | 500 | 1000 | 2000 | 4000 | 8000 | dBA | Impulsive |
| Class C Emitter Land | 75 | 74 | 69 | 64 | 58 | 52 | 47 | 43 | 40 | 60.7 | 53 dBA |
| Class B Emitter Land | 72 | 71 | 65 | 57 | 51 | 45 | 39 | 34 | 32 | 54.6 | 47 dBA |
| Class A Emitter Land | 72 | 71 | 65 | 57 | 51 | 45 | 39 | 34 | 32 | 54.6 | 47 dBA |

| Part 901.102 - Nighttime | Octave Band Center Frequencies, Hz | | | | | | | | | (calc) | Part 901.106 |
|-------------------------------|------------------------------------|----|-----|-----|-----|------|------|------|------|------------|------------------|
| Class A Receiving Land | 31.5 | 63 | 125 | 250 | 500 | 1000 | 2000 | 4000 | 8000 | dBA | Impulsive |
| Class C Emitter Land | 69 | 67 | 62 | 54 | 47 | 41 | 36 | 32 | 32 | 51.2 | 43 dBA |
| Class B Emitter Land | 63 | 61 | 55 | 47 | 40 | 35 | 30 | 25 | 25 | 44.4 | 37 dBA |
| Class A Emitter Land | 63 | 61 | 55 | 47 | 40 | 35 | 30 | 25 | 25 | 44.4 | 37 dBA |

These tables correlate with the USEPA recommended 55 dBA day and 45 dBA night for urban areas. Illinois Class A & B emitters are calculated at 54.6 dBA and 44.4 dBA, nearly the same. Rural areas were untested until the introduction of large wind turbines. Reclassifying Class A land used for wind turbines increased noise pollution by 6 dB.

The USEPA methodology adjustments [2] (Appendix D) were applied to reduce urban noise levels (Ldn 55, 55 day/45 night) to predict rural public responses, as shown below.

Predicted Community Reaction For Wind Turbines in a Quiet Area and Percent of Community Highly Annoyed



2 Adjustments Table D7; year round; 0, quiet rural; -10, no experience; -5, tones & impulsive; -5, Ldn to Leq; -6.

This chart is easy to use. The dBA noise level on the x-axis represents the predicted or measured wind turbine noise level. After locating the noise level (x-axis), slowly scan vertically, pausing at each dark square intersected and look to the y-axis to see the reaction. A noise level less than 30 dBA has "no reaction". From 30 to 35 dBA the response ranges from "no reaction", to "sporadic complaints", to "widespread complaints". Above 35 dBA, "widespread complaints" transitions to "strong appeals to stop the noise". At 50 dBA, the highest negative response of "vigorous community action" occurs.

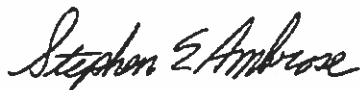
Researchers Pedersen & Waye found through their public questionnaire study that 33 dBA represents the origin for "Highly Annoyed", which rapidly increases to 45% at 43 dBA. Independent noise studies support 33 dBA; Paul Schomer, George Kamperman, Richard James, Dan Driscoll

Illinois Class C emitter nighttime octave band limit is approximately 51.2 dBA (calculated). When plotted the response ranges from "strong appeals to stop the noise" to "vigorous community action", and >45% "Highly Annoyed". Published public records in Illinois document this highest negative reaction to wind turbine noise. It should be noted that "home abandonment" has not been included in any known research studies to date.

In summary, the Illinois noise limits are consistent with those recommended by USEPA for urban areas, except for Class C emitters that are 6 dB louder. Illinois did not address noise protections for rural communities resulting in levels that are at least 10 dB too loud as evidenced by public records, hearings and courts. Noise regulations are not effective when the community reaction is "widespread complaints" and above. There is growing evidence from independent acoustic researchers supporting nighttime noise limits no higher than 33 to 35 dBA for quiet rural communities. Noise assessment methodologies can be used to bolster Illinois regulations published by two international standards; ISO 1996, Part 1 and ANSI/ASA S12.9 Part 4 or the 1974 USEPA "Levels Document", Appendix D.

Please feel free to keep me advised.

Respectfully,



Stephen E. Ambrose, ASA, INCE, Board Certified
Principal Consultant

Susan Burgstrom

From: Ted Hartke <tedhartke@hartke.pro>
Sent: Monday, November 19, 2018 10:59 AM
To: Susan Burgstrom; John Hall
Subject: Fwd: Hartkes-articles from 2011 re: Cal-Ridge project noise standards, Blazer representation

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CHAMPAIGN CO. P & Z DEPARTMENT

Dear Susan and John,

Please distribute to the ZBA and ELUC committee.

Here's an email from a time when John Hall was concerned about rural folks being able to use the yard surrounding our homes.

It was also a time when the Champaign County ZBA cared about protecting residents from noise (and other problems) with so-called renewable energy.....(rejecting the wind farm request 5 to 2.)

(It is IMPORTANT TO VERIFY THAT THE 39 dBA NOISE LIMIT IS FOR OUR PROPERTY LINES.)

----- Forwarded message -----

From: Jessica Hartke <jessicahartke@hotmail.com>
Date: Mon, Mar 24, 2014 at 9:25 PM
Subject: Hartkes-articles from 2011 re: Cal-Ridge project noise standards, Blazer representation
To: ted hartke <tedhartke@hartke.pro> ,

Hello Jim and Rick-

Some info to add to the Hartke-Invenergy file. I came across these old articles and noted a couple important items. Specifically, Champaign county originally had issues with Invenergy's standards for noise (apparently Invenergy did not originally want to follow the IPCB standards, see #1 below), Blazer's story that he only came on board with the Cal-Ridge project in May 2013 (not true, he's been with the project since the beginning) and Invenergy's pledge to follow IPCB regulations for all class A properties adjoining the project (Blazer has made comments recently that our property, or portions of our property are not Class A, see #2 below).

1-the Champaign County Zoning Board of Appeals originally voted 'no' on the Cal-Ridge project. In particular, I note the comments their zoning director makes about Invenergy's standards for noise pollution, saying that their standards don't comply with the IPCB standards.

The Champaign County Board will have to reverse the decision of the Zoning Board of Appeals if it wants to locate a wind farm in the northeast part of the county. Board members cited concerns with the Chicago company's standards for noise pollution impacting the yard of a rural resident. County Planning and Zoning Director John Hall said the company's standards for noise don't comply with those of the Illinois Pollution Control Board.

"This is regarding whether the noise standard applies just at the line of the dwelling, or in the yard outside of the dwelling," Hall said. "It's that simple. Why would have a residential noise standard that only applies inside the dwelling? "

<http://will.illinois.edu/news/story/champaign-county-zba-votes-against-wind-farm-request-5-2>

2-Mike Blazer likes to make comments about how he was retained by Invenergy in May 2013 or that he was brought on board to handle things with the California Ridge project in May 2013. This News Gazette article from November 2011 has a quote from Invenergy attorney Mike Blazer (so he's not new to this project, as he likes to claim), and it mentions how Invenergy has now pledged to follow Illinois Pollution Control Board standards regarding noise, and specifically mentions that they will follow the standards for any Class A land adjacent to the project.

This is important because at times during his Vermilion county board rants, Blazer has hinted that our property might not be Class A. Or maybe it was that our land wasn't class A, only the interior of our home qualified as class A. At any rate, we think he was beginning to lay the ground work for his argument that they shouldn't have to follow the same rules for inside our house versus our yard/acreage we own around our house. This would fit with the concerns outlined in the first article above, we have not seen Invenergy's internal noise standards (Rick, perhaps you are familiar with their internal standards?), but apparently they only take into account noise measured inside a home, so noise measured in a yard or in our case, our acreage that adjoins other properties hosting turbines, would not fall under the same noise standards.

<http://www.news-gazette.com/news/local/2011-11-03/zoning-board-votes-4-3-send-wind-farm-permit-county-board.html>

Jessica Hartke

Susan Burgstrom

From: Ted Hartke <tedhartke@hartke.pro>
Sent: Monday, November 19, 2018 1:05 PM
To: Susan Burgstrom
Cc: John Hall
Subject: Noise at the property line and the enforcement in response to violation

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CHAMPAIGN CO P & Z DEPARTMENT

Dear Susan,

Another message to pass along to Champaign County ZBA and ELUC.....

What happened to IPCB property line requirement?

Does Champaign County or BayWa Renewables have authorization from the neighbors to allow excessive noise easements across the property line and all the way up to the edge of their home? As a licensed land surveyor, I can confirm that all of the neighbors own ALL of their land and not just where the house is located. Taking of land for any purpose without just compensation goes against our rights as confirmed by the United States Constitution. Unless there are private agreements, waivers, easements, or outright buy-out of the neighbor, then the use and enjoyment across all of the property is certainly whisked away. Allowing a noise level (40 dBA) where the constant noise is the beginning of adverse health effects onto private un-leased property continues to be a concern because people are still paying all of their real estate taxes and mortgage payments for all of the land beyond the house footprint.

Although I am very satisfied with finally convincing some Champaign County decision makers that the 39 dBA noise limit should be the maximum level, perhaps it will be easier for everyone to understand that property rights matter and extend all the way to the property line.

Looking ahead to the noise violation event:

Will all of the neighbors agree to have noise recordings and an observer present with the sound meter on their front or back porch before sunrise till after dark each day to prove there is a problem? Wouldn't it make more sense to have that measurement and "lesser intrusion" happening out on the property line instead?

Please keep in mind that the pre-construction predicted noise level at my abandoned home in the wind farm was to be 43 dBA.

When the actual measurements were made, they were just 0.1 dB below the maximum IPCB allowance. When the noise study was going to be done for my house in the wind farm, InvEnergy demanded access to our property at the house. We refused to do this with the expectation that the recordings would be monitored properly with the observer being immediately around the house. Most responsible acousticians will do video and audio recordings along with the raw noise level data collection. Having this ongoing near the private space immediately adjacent to the home of a young family would be VERY intrusive.

We never allowed the wind company's hand-picked acoustician to have access to the immediate area near our house in order to maintain our privacy. The wind company's attorney and the county board attorney accused us as being uncooperative and painted us as the "bad guys."

Is the purpose of our county zoning ordinance to protect health/safety/welfare?

Taking noise complaints to the IPCB can take several years. You must have an attorney representation, a full and complete sound study, hearings, etc. If an IPCB determination is made, there is still no shutdown order or enforcement in place to stop the noise. Noise will continue. Residents and attorneys are well aware that the

IPCB complaint-hearing process is very long and expensive. The rules put forth have no teeth or enforcement to stop harming neighbors within any reasonable time. Is our current rule protective of health/safety/welfare for the neighbors?

I hope the 1500' distance limitation does not become applied for noise-related complaints. Although it might be far enough in regards to t a solar farm, our abandoned home is 1665' from nearest turbine, 2,225' from next nearest, and turbines within 3400 feet of our home were shut down so we would be able to sleep on two occasions back in 2013.

Please refer to my cross-examination of Mr. Leech.....I remember him saying predicted noise was to property lines. Even though he has no observed measurements, I think he acknowledged that the property line was the proper location for recording data. BayWa's spokesperson, Patrick Brown, seems confident his noise will be OK. I don't see anything wrong with holding him to his testimony there being little (no) risk of noise violation. It seems reasonable that the solar farm pay penalty or fine or face shutdown to take care of a noise problem.

Best regards,

Ted Hartke

Special message: My email was hacked Dec 30, 2016. If you received a message that looks like it came from me and it asks you to click a link to share files, DO NOT CLICK ON LINKS OR ICONS. I will never send you a link or ask you to download anything unless I include a detailed project-specific correspondence. To protect yourself, never attempt to download files or click links which seem random or out of the ordinary.

Theodore P. Hartke, PE, PLS
President
Hartke Engineering and Surveying, Inc.
117 S. East Avenue P.O. Box 123
Ogden, Illinois 61859 217.840.1612
tedhartke@hartke.pro

Susan Burgstrom

From: Ted Hartke <tedhartke@hartke.pro>
Sent: Monday, November 19, 2018 1:56 PM
To: John Hall; Susan Burgstrom
Subject: IPCB Noise Measurement Protocol Instructions Link

Follow Up Flag: Follow up
Flag Status: Flagged

Dear John and Susan,

This is the link for the instructions/protocol for IPCB noise measurement.
<https://pcb.illinois.gov/documents/dsweb/Get/Document-51628/>

It says to measure noise at property lines.
It says to record temperature and wind speed, etc.
It says to observe the measurements (Item 7 on page 5)

Best regards,

Ted Hartke

Special message: **My email was hacked Dec 30, 2016.** If you received a message that looks like it came from me and it asks you to click a link to share files, **DO NOT CLICK ON LINKS OR ICONS.** I will never send you a link or ask you to download anything unless I include a detailed project-specific correspondence. To protect yourself, never attempt to download files or click links which seem random or out of the ordinary.

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