

# ZA-16-01

## Wind Ordinance Text Amendment

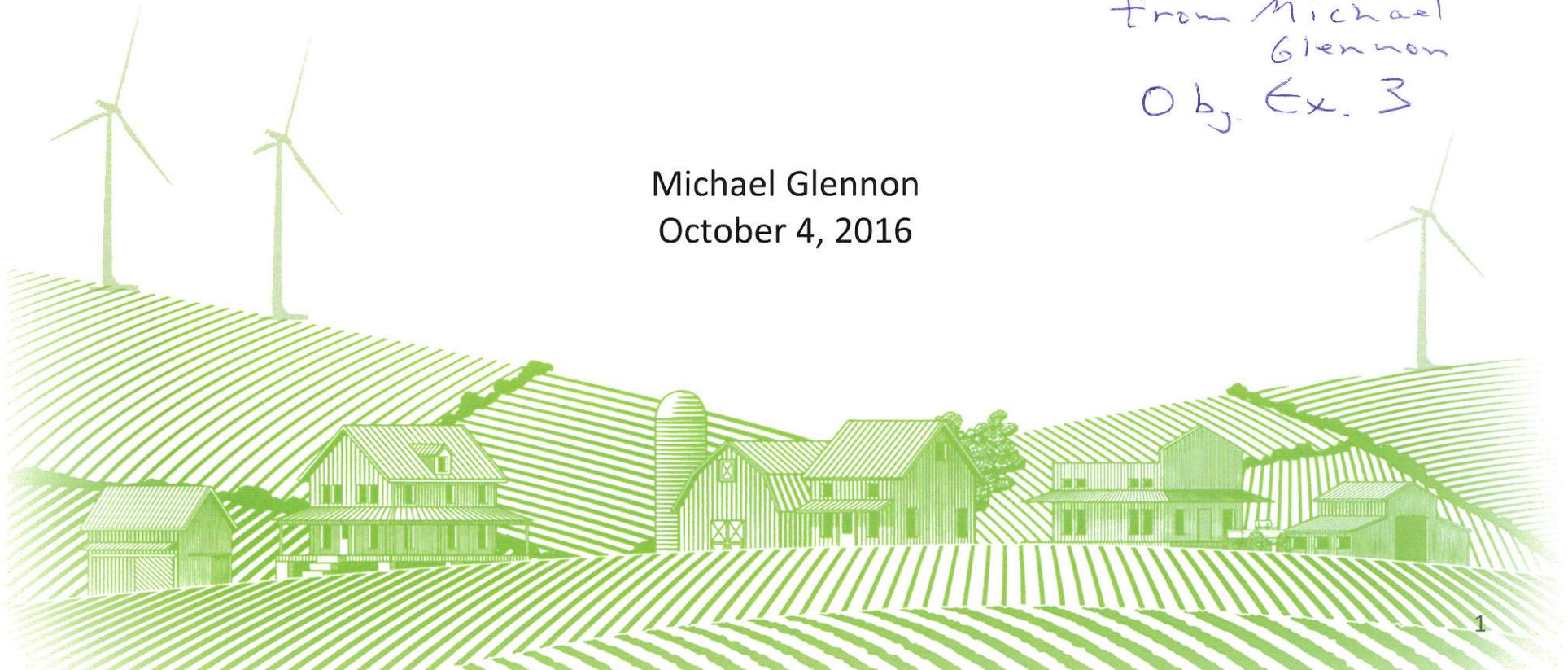
### Suggested Revisions

*ZA-16-01*

*from Michael  
Glennon*

*Obj. Ex. 3*

Michael Glennon  
October 4, 2016



## AGENDA

### I. INTRODUCTION

### II. DEFINITIONS

- A. Section 350-26
- B. References
- C. TEXT

### III. HEIGHT

### IV. SETBACK

- A. Easements
- B. "Effects" or "Consequences"
- C. Current Ordinance
- D. With Waiver

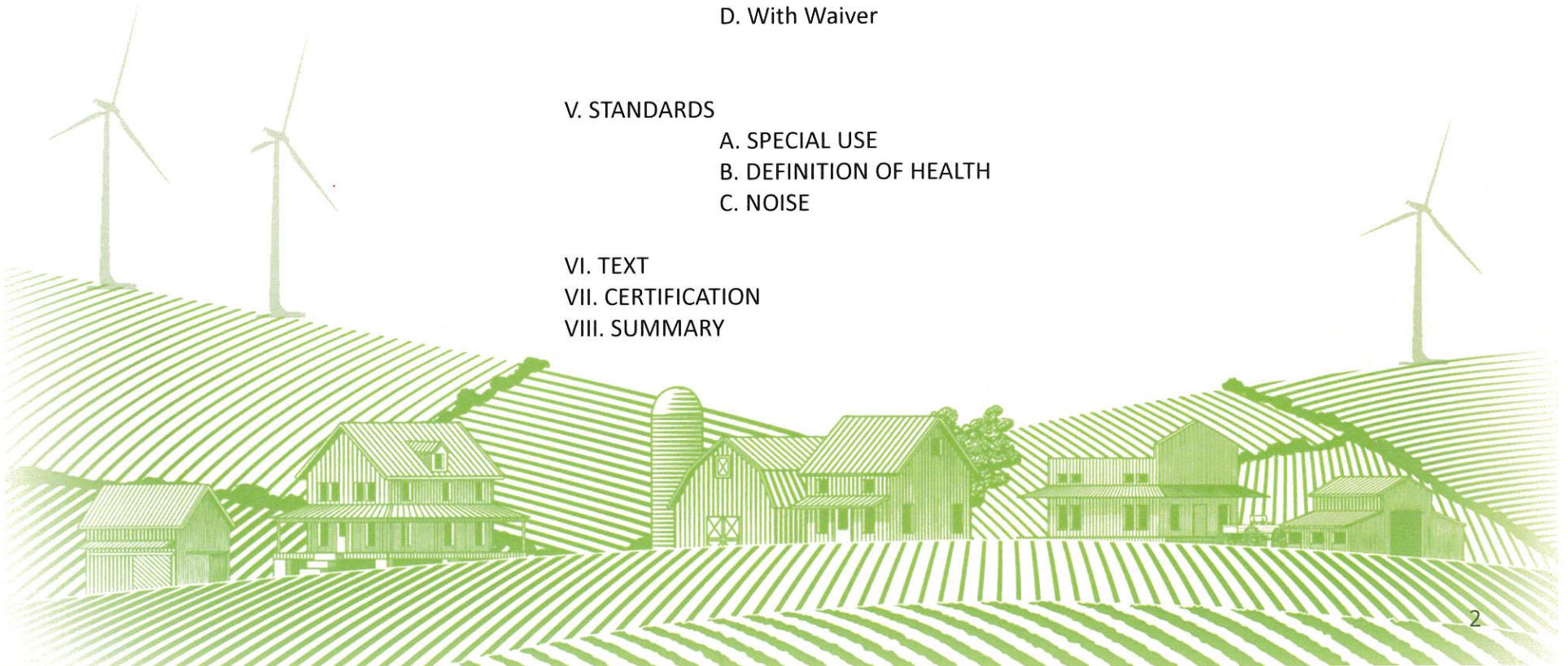
### V. STANDARDS

- A. SPECIAL USE
- B. DEFINITION OF HEALTH
- C. NOISE

### VI. TEXT

### VII. CERTIFICATION

### VIII. SUMMARY



# Introduction

WHO AM I?

WHY AM I HERE?

WHAT DO I AIM TO ACCOMPLISH?

WHAT I AM NOT ATTEMPTING TO DO?



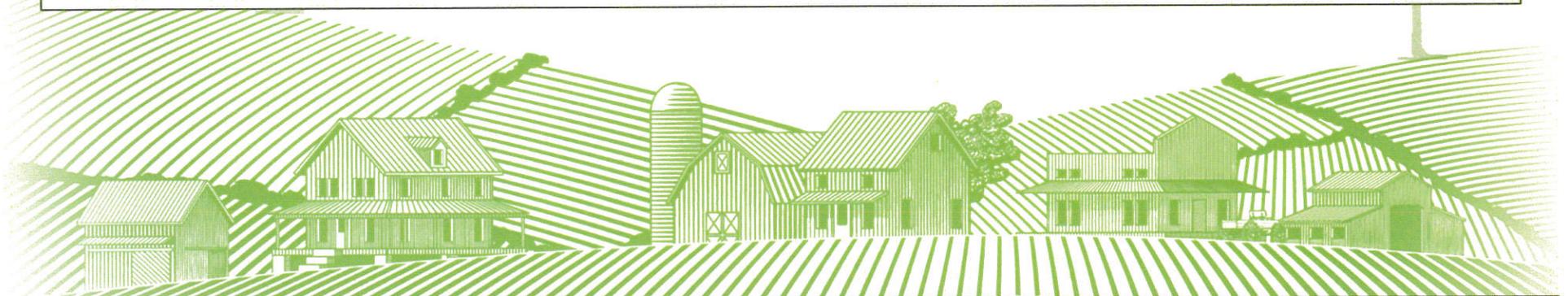
# DEFINITIONS

## Additions

### Proposed Additions

### Code Section 350-26. Definitions.

- 1) Operator, WECS
- 2) Non-participating property
- 3) Participating landowner
- 4) Participating property



# DEFINITIONS

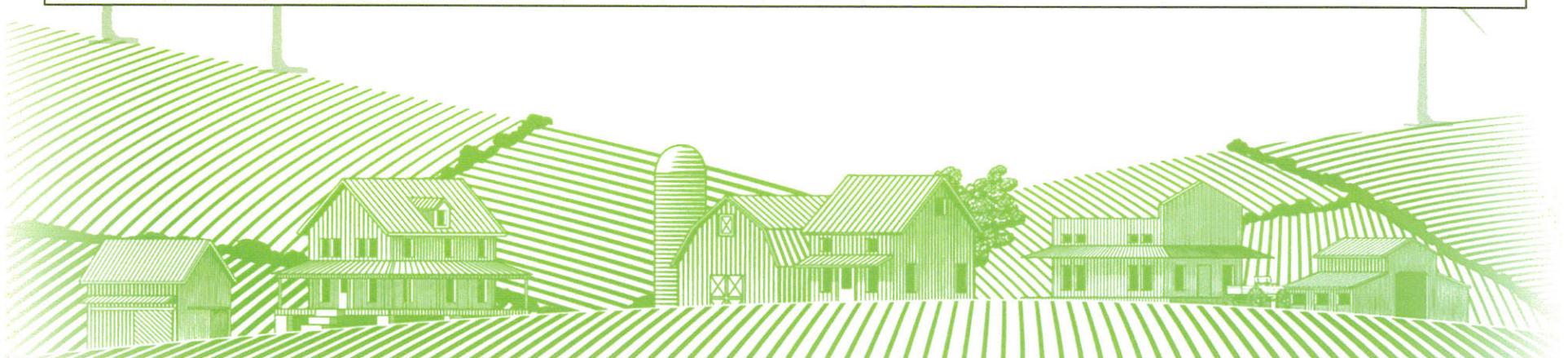
## Additions

REFERENCE 1 – Existing definition does not pertain specifically to a WECS

Code Section 350-26. Definitions.

### OPERATOR

For the purpose of enforcing the provisions of this chapter regulating bed-and-breakfast establishments, "operator" shall mean the owner of a bed-and-breakfast establishment, or the owner's agent, who is required to reside in the bed-and-breakfast establishment or on contiguous property.



# DEFINITIONS

## Additions

Letter From Farm Bureau Indicating that 'Operator' was included in an earlier version of the text amendment.

From: Anna Ziegler [mailto: [REDACTED]]  
Sent: Friday, April 15, 2016 3:50 PM  
To: Schmitt, Eric < [REDACTED] >  
Subject: RE: Electronic Copy of the Proposed Zoning Text Amendment

Exhibit  
1

Yes, here is a word document version of the text. We removed the second definition of 'operator.'

Thank you for meeting with us today.

Sincerely,

*Anna Ziegler*

Assistant Manager  
McLean County Farm Bureau®  
2242 Westgate Drive  
Bloomington, IL 61705  
[REDACTED]

# DEFINITIONS

## Additions

Code Section 350-26. Definitions.

The zoning office openly recognizes “non-participating” in a practical sense when drawing distinctions between participants

### Exhibit 1: Letter From McLean Co. Zoning Director to Energy Company

**From:** Dick, Philip [mailto: [REDACTED]]  
**Sent:** Thursday, December 10, 2015 12:16 PM  
**To:** Sand, Allyson < [REDACTED]>  
**Subject:** FW: White Oak Findings of Fact

Exhibit  
2

Allyson,

As requested, I have attached a copy of the White Oak Findings of Fact.

Essentially turbines need be set back 2,000 feet from the boundary line of the R-1 Single Family Residence District as measured from the tip of the blade, 1,500 feet from non-participating dwellings in the Agriculture District, at least 1.1 times the height of the tower from non-participating property lines and road rights-of-way.

Happy Holidays,  
Phil

Philip Dick, AICP, Director  
McLean County Department of Building and Zoning  
115 East Washington Street, Room M102  
Bloomington, IL 61702-2400  
Phone [REDACTED] cell [REDACTED]  
Fax [REDACTED]  
Email - [REDACTED]

# DEFINITIONS

## Additions

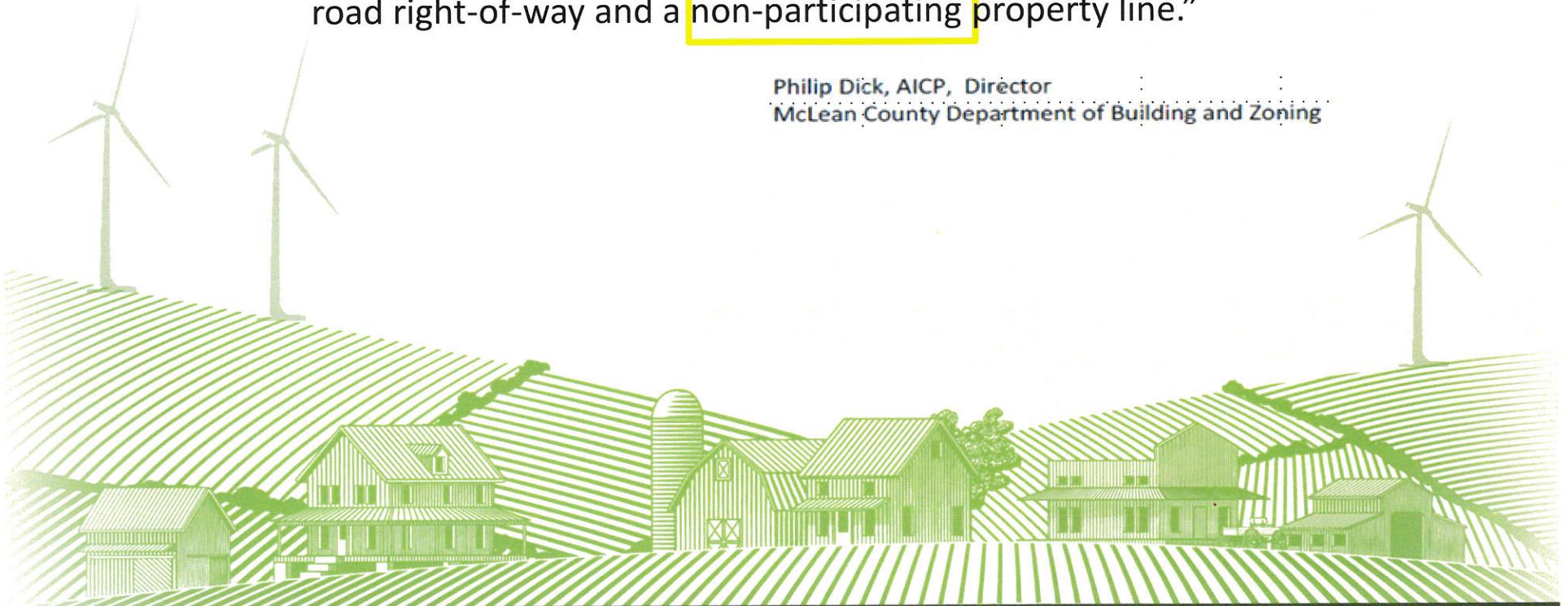
Code Section 350-26. Definitions.

The zoning office openly recognizes “non-participating” in a practical sense when drawing distinctions between participants

Reference: McLean County Board meeting on July 19, 2016

“Turbines need to be at least 1.1 times the height from the road right-of-way and a non-participating property line.”

Philip Dick, AICP, Director  
McLean County Department of Building and Zoning



# DEFINITIONS

## PROPOSED REVISION TO STAFF EXHIBIT A

Exhibit  
8

REFERENCE: BOONE COUNTY WIND  
ORDINANCE

(Additions are indicated by text and stricken material by ~~text~~)

### Section 350-26. Definitions.

#### Operator, WECS

Shall mean the entity responsible for the day-to-day operation and maintenance of the WECS and substations, including any third party subcontractors.

#### Non-participating property

Any property within the WECS project other than participating property.

#### Participating landowner

A landowner whose property (or portion thereof) is currently leased or proposed to be leased for the production, siting or development of a WECS and all landowners who have waived their rights to the setbacks provided in this section.

#### Participating property

A property where a WECS is located or proposed to be located pursuant to an agreement with the owner/operator.

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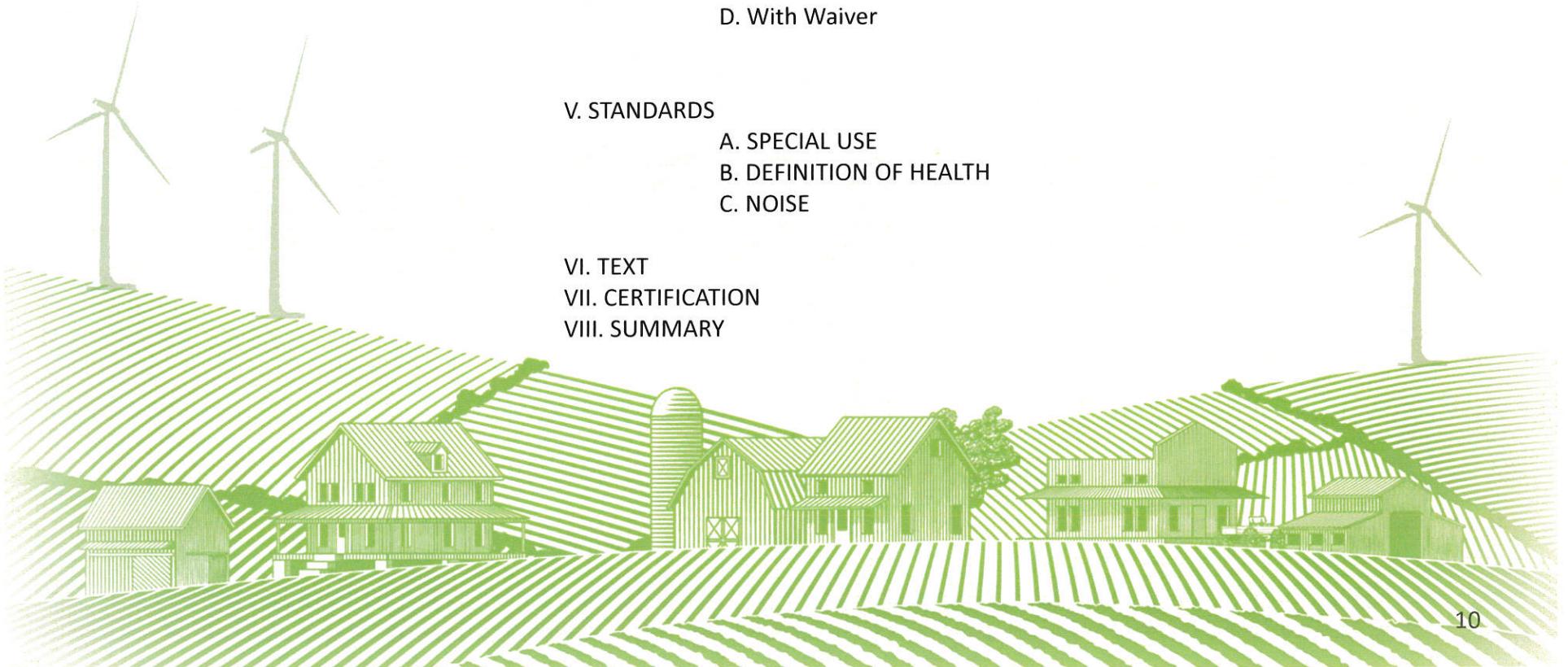
### V. STANDARDS

- A. SPECIAL USE
- B. DEFINITION OF HEALTH
- C. NOISE

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# HEIGHT

## CURRENT CODE

### Code Section 350-43 USE STANDARDS

00. Utility, major (if not a regional pollution control facility or otherwise exempted in Article I of these regulations).
- (1) Major utilities that are not regional pollution control facilities or otherwise exempted in Article I of these regulations shall not be located within 200 feet of a boundary line of an R-1 or R-2 District.
  - (2) However, wind power generation facilities shall not be located within 2,000 feet of a boundary line of an R-1 or R-2 District and shall also conform to the following requirements:  
[Amended 6-18-2002]
    - (a) No building or tower that is part of a wind power generation facility shall encroach onto any recorded easement prohibiting the encroachment unless the grantees of the easement have given their approval.
    - (b) Lighting shall be installed for security and safety purposes only. Except with respect to lighting required by the FCC or FAA, all lighting shall be shielded so that no glare extends substantially beyond the boundaries of a facility.
    - (c) No facility shall encroach onto an existing septic field.
    - (d) Any wind power generation facility located in a special flood hazard area or wetlands shall comply with the requirements of the FP Floodplain Overlay District<sup>[5]</sup> and Illinois Department of Natural Resources.  
[5] *Editor's Note: See § 350-41.*
    - (e) The height of the facility shall not exceed 499 feet, except if the facility is located within 1 1/2 miles of the corporate limits of a municipality with a population of 25,000 or more, the height of the facility shall not exceed 200 feet.  
[Amended 3-15-2005]

# HEIGHT

## FARM BUREAU APPLICATION

(Additions are indicated by text and stricken material by ~~text~~)

### Code Section 350-43 USE STANDARDS

#### OO(2)(j) Height

- (j) Height. The permitted maximum height of a WECS shall not exceed 499 feet, except if the facility is located within one and one-half miles of the corporate limits of a municipality with a population of 25,000 or more, the height of the facility shall not exceed 200 feet.



# HEIGHT

## Letter From Energy Company To Zoning Director Regarding Height

May 26, 2016

**From:** Chapman, Katie <[REDACTED]>  
**Sent:** Thursday, May 26, 2016 3:14 PM  
**To:** Dick, Philip; McQuade, Anne  
**Cc:** Aamir, Hira; Schmitt, Eric  
**Subject:** RE: McLean County Wind Text Amendment

Hi Phil,

My comments below. I am happy to put them on letterhead if it would be helpful. Thank you so much for the opportunity to comment. I will try to attend the hearing on the 7<sup>th</sup>.

Much of the information requested in the amendment seems to imply that the County should be responsible for

verifying  
respectf  
verify co  
repetitiv

**With respect to wind turbine height limits, the current generation of turbines have maximum heights of over 500 feet and are more efficient than older, smaller models. In general, larger turbines produce more power than smaller turbines so a 100MW project could be powered by fifty 2MW turbines or thirty three 3MW turbines. The height restriction both prevents wind project developers from using the most current technology and implies that the County would prefer to see more turbines below a height of 499 than fewer turbines above 500 feet. Since the setbacks are a function of turbine height and can be appropriately applied to turbines of any height, a height limit no longer seems to serve a purpose and we respectfully suggest that it might be increased or removed entirely.**

• wind turbine studies

With respect to wind turbine height limits, the current generation of turbines have maximum heights of over 500 feet and are more efficient than older, smaller models. In general, larger turbines produce more power than smaller turbines so a 100MW project could be powered by fifty 2MW turbines or thirty three 3MW turbines. The height restriction both prevents wind project developers from using the most current technology and implies that the County would prefer to see more turbines below a height of 499 than fewer turbines above 500 feet. Since the setbacks are a function of turbine height and can be appropriately applied to turbines of any height, a height limit no longer seems to serve a purpose and we respectfully suggest that it might be increased or removed entirely.

With respect to communications, we take measures post-construction to remedy issues which our operations are likely to have caused. We respectfully request that the ordinance language be modified to include that the wind project owner or operator is not required to rectify complaints that are not likely to be caused by the wind project as supported by studies or other professional evidence.

Best,

Katie

Exhibit  
3



# HEIGHT

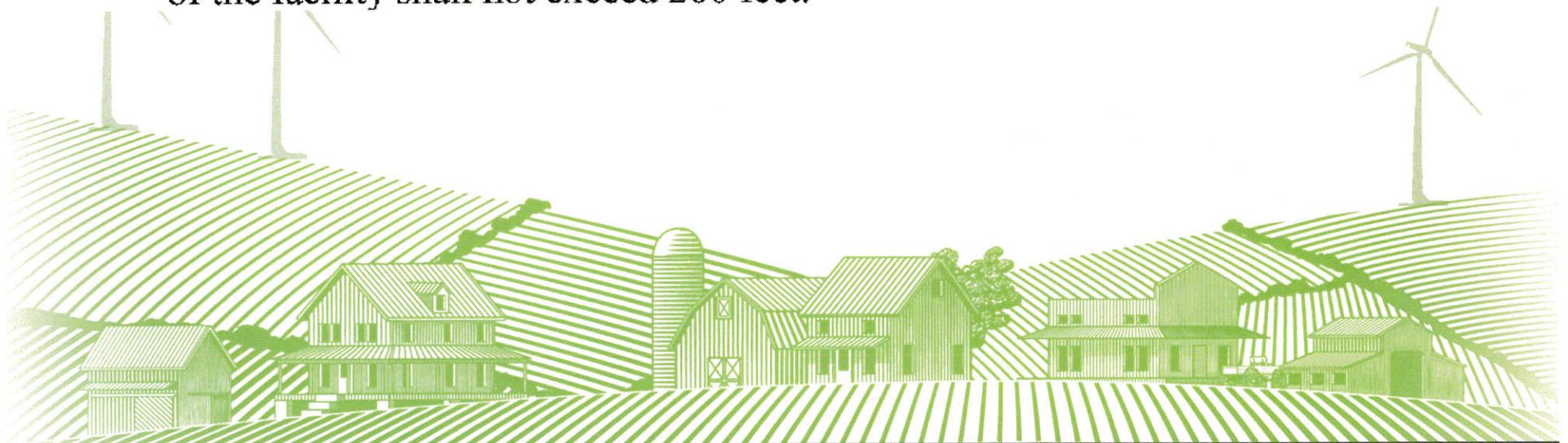
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(Additions are indicated by text and stricken material by ~~text~~)

### Code Section 350-43 USE STANDARDS

#### OO(2)(j) Height

- (j) Height. The permitted maximum height of a WECS tower shall not exceed 499 550 feet, ~~except if the facility is located within one and one-half miles of the corporate limits of a municipality with a population of 25,000 or more, the height of the facility shall not exceed 200 feet.~~



# HEIGHT

## Appreciation for SCALE

1" = 100'

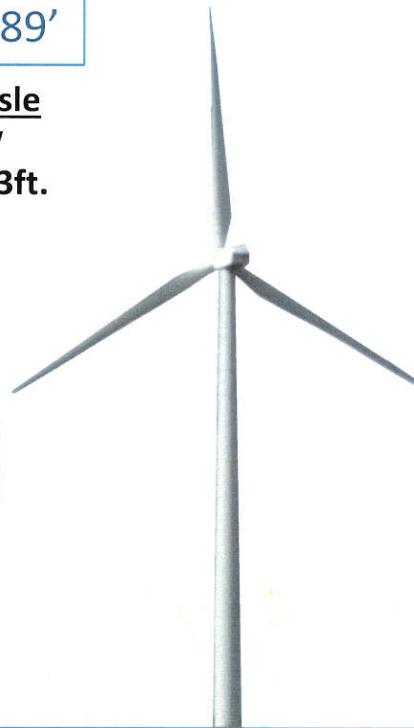
389'

**GE 1.5sle**  
1.5 MW  
Dia. **253ft.**

162'



State Farm Building,  
Bloomington IL



White Oak Turbine  
McLean Co

PROPOSED MAX

550'

540'

**VESTAS V110-2.0MW**  
Dia. **361 ft.**



EXAMPLE

25'



BARN

# HEIGHT EXPERIENCE

What we know (and understand) begins with experience.

Project Name	Turbines	Construction	Turbine Model	Turbine Size (MW)	HUB HEIGHT (ft.)	Dia. (ft.)	Tip Height	Setback	Setback /Tip Height RATIO
Twin Groves I & II	240	2006	Vestas V82	1.65	256	269	390.4	1500	3.84
White Oak	100	2010	GE 1.5sle	1.5	262.5	253	388.7	1500	3.85

We should exercise caution, before beginning our next journey.

- NO EXPERIENCE WITH TURBINE HEIGHTS OVER 400ft.
- NO EXPERIENCE WITH GENERATING CAPACITY OVER 1.65MW

# HEIGHT

## INFLUENCE ON NOISE

### Low-frequency noise from large wind turbines

Exhibit  
4

Henrik Møller<sup>a)</sup> and Christian Sejer Pedersen

Section of Acoustics, Aalborg University, Fredrik Bajers Vej 7-B5, DK-9220 Aalborg Ø, Denmark

(Received 5 July 2010; accepted 20 December 2010)

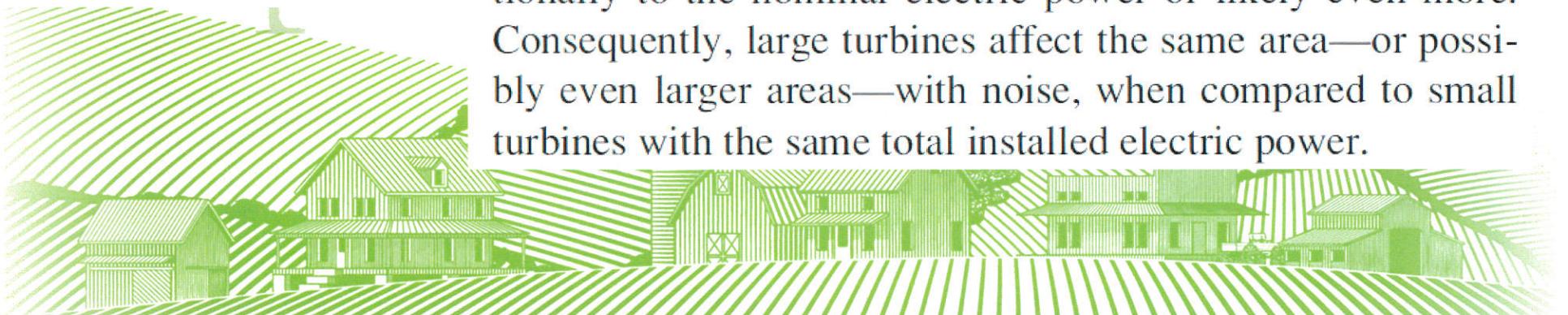
#### V. CONCLUSIONS

The results confirm the hypothesis that the spectrum of wind turbine noise moves down in frequency with increasing turbine size. The relative amount of emitted low-frequency noise is higher for large turbines (2.3–3.6 MW) than for the small turbines ( $\leq 2$  MW). The difference is statistically significant for one-third-octave bands in the frequency range 63–250 Hz. The difference can also be expressed as a downward shift of the low-frequency part of the spectrum plays an important role in the noise at the neighbors.

©2011 Acoustical Society of America

PACS number(s): 43.50.Rq, 43.28.H

The emitted A-weighted sound power increases proportionally to the nominal electric power or likely even more. Consequently, large turbines affect the same area—or possibly even larger areas—with noise, when compared to small turbines with the same total installed electric power.



# HEIGHT

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**Cc:** Aamir, Hira; Schmitt, Eric  
**Subject:** RE: McLean County Wind Text Amendment

Exhibit  
3

Hi Phil,

My comments below. I am happy to put them on letterhead if it would be helpful. Thank you so much for the

oppor

Much  
verify  
respe  
verify  
repet

With respect to communications, we take measures post-construction to remedy issues which our operations are likely to have caused. We respectfully request that the ordinance language be modified to include that the wind project owner or operator is not required to rectify complaints that are not likely to be caused by the wind project as supported by studies or other professional evidence.

• Best,

• Katie

• Wildlife studies

With respect to wind turbine height limits, the current generation of turbines have maximum heights of over 500 feet and are more efficient than older, smaller models. In general, larger turbines produce more power than smaller turbines so a 100MW project could be powered by fifty 2MW turbines or thirty three 3MW turbines. The height restriction both prevents wind project developers from using the most current technology and implies that the County would prefer to see more turbines below a height of 499 than fewer turbines above 500 feet. Since the setbacks are a function of turbine height and can be appropriately applied to turbines of any height, a height limit no longer seems to serve a purpose and we respectfully suggest that it might be increased or removed entirely.

With respect to communications, we take measures post-construction to remedy issues which our operations are likely to have caused. We respectfully request that the ordinance language be modified to include that the wind project owner or operator is not required to rectify complaints that are not likely to be caused by the wind project as supported by studies or other professional evidence.

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Katie



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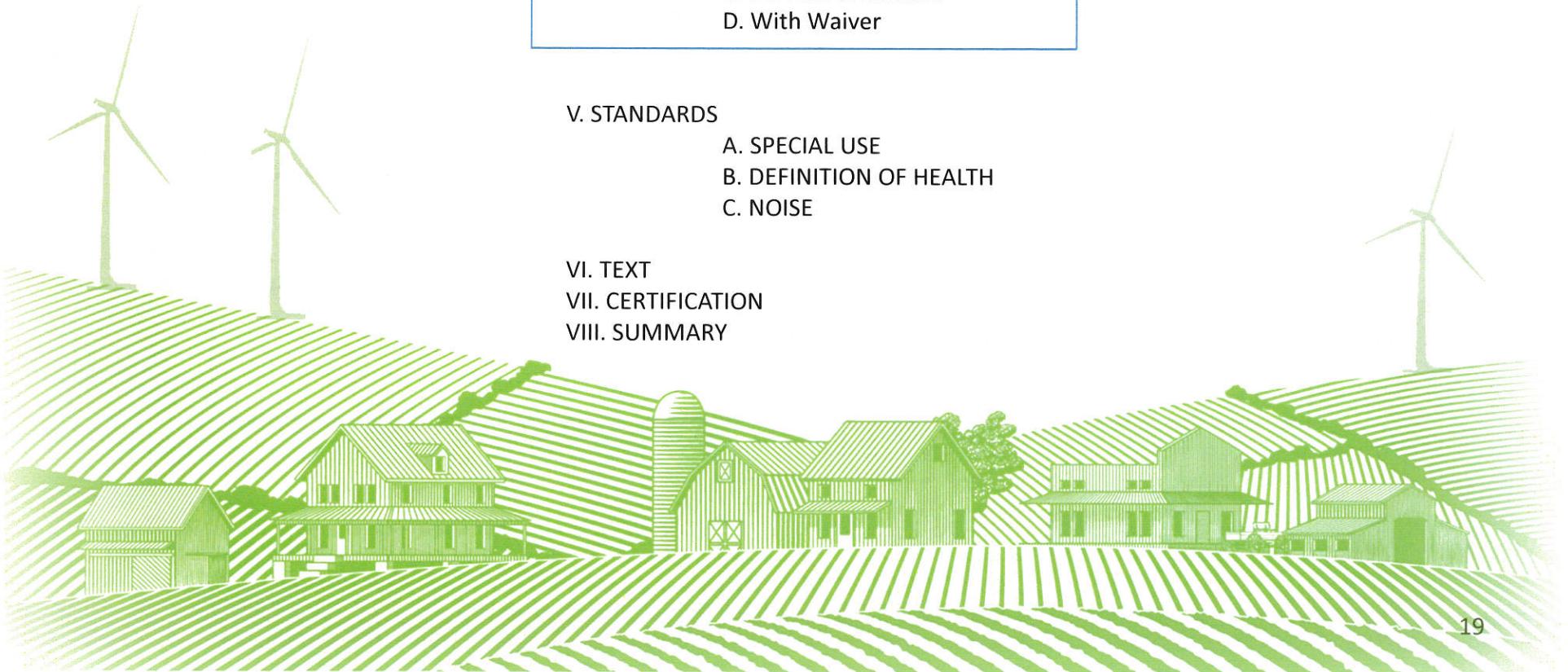
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# SETBACK

## Easements

### **Legal Definition of *easement***

: an interest in land owned by another that entitles its holder to a specific limited use or enjoyment

**affirmative easement** : an easement entitling a person to do something affecting the land of another that would constitute trespass or a nuisance if not for the easement  
(Merriam Webster)

### **Simple Definition of NUISANCE**

: a person, thing, or situation that is annoying or that causes trouble or problems

Source: Merriam-Webster's Learner's Dictionary

# SETBACK

## EFFECTS or CONSEQUENCES

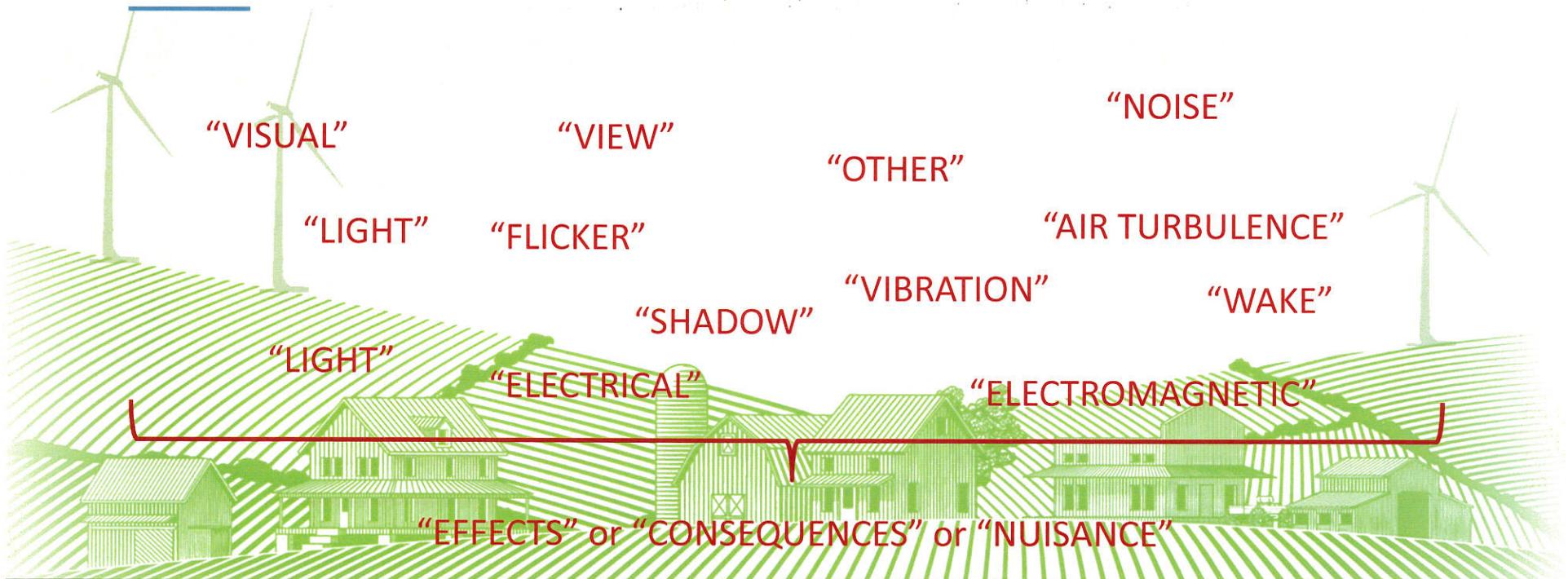
Excerpt from Lease Agreement:

Exhibit  
5

### EDP Renewables 2016 WIND ENERGY LEASE AND AGREEMENT

#### 1.3 Easements

1.3.1.1 A non-exclusive easement for audio, visual, view, light, flicker, noise, shadow, vibration, air turbulence, wake, electromagnetic, electrical and radio frequency interference, and any other effects attributable to any Project or Operations located on the Property or on adjacent properties over and across the Property.



# SETBACK

## EFFECTS or CONSEQUENCES

### Exhibit 2: 2016 *Invenergy* Wind Lease and Easement Agreement

Exhibit  
6

9.4 Requirements of Governmental Agencies and Setback Waiver. Owner shall assist and fully cooperate with Grantee, at no out-of-pocket expense to Owner, in complying with or obtaining any land use permits and approvals, building permits, environmental impact reviews or any other permits and approvals required for the financing, construction, installation, monitoring, repair, replacement, relocation, maintenance, operation or removal of Windpower Facilities, including, but not limited to, execution of applications and documents reasonably necessary for such approvals and permits, and participating in any appeals or regulatory proceedings respecting the Windpower Facilities. To the extent permitted by law, Owner hereby waives enforcement of any applicable setback requirements respecting the Windpower Facilities to be placed on or near the Property that are reasonably necessary, in Grantee's sole and absolute discretion, to carry out Grantee's Windpower Activities on or near the Property.

#### 2. Grant of Additional Easements.

2.1 Owner hereby grants, conveys and warrants to Grantee the following additional easements upon, over, across and under the Property:

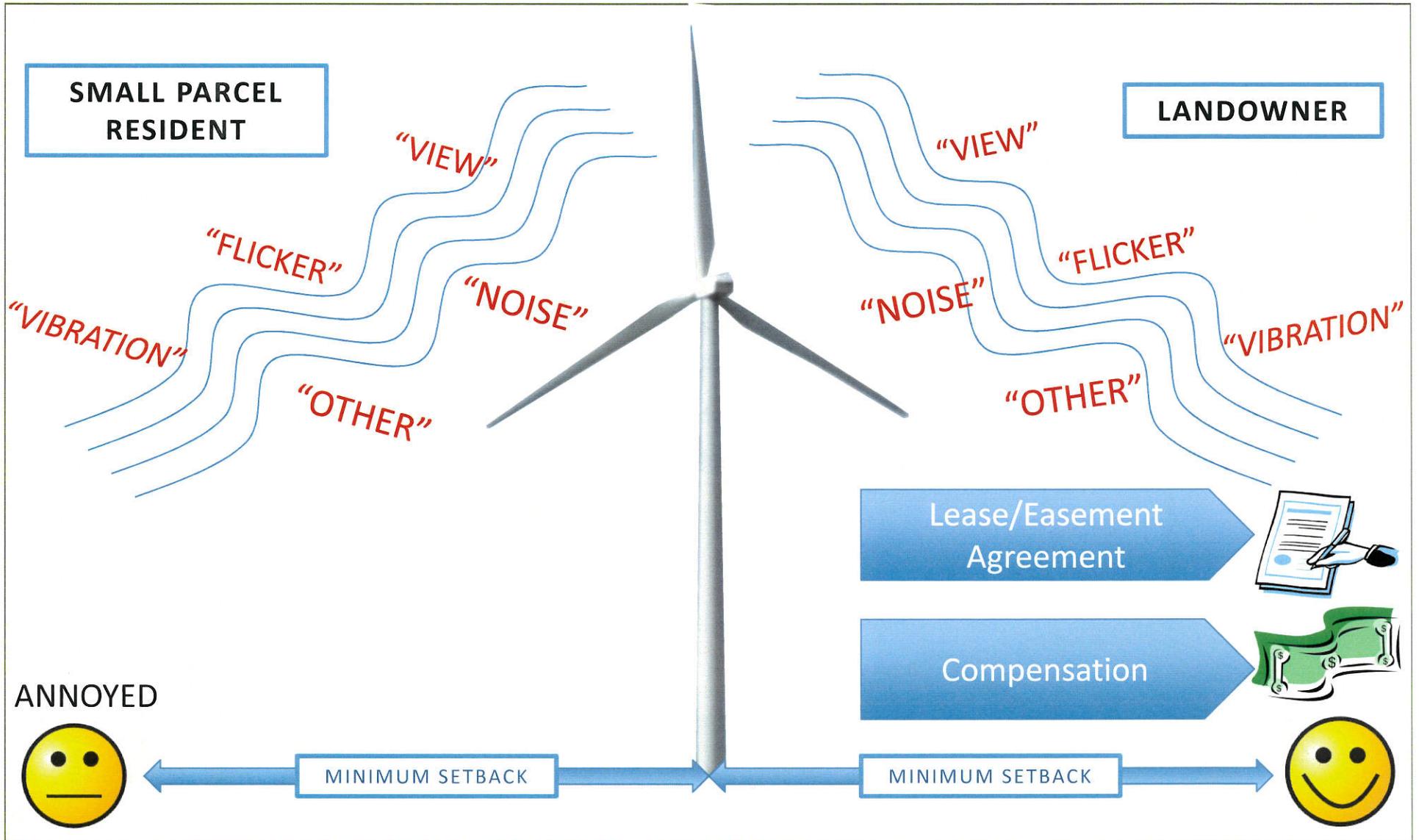
(a) Overhang. An exclusive easement to allow the rotors of Wind Turbines installed on adjacent land to overhang onto the Property;

(b) Non-Obstruct. An exclusive easement to capture, use and convert the unobstructed wind resources over and across the Property;

(c) Interference. An exclusive easement for electromagnetic, audio, flicker, visual, view, light, noise, vibration, air turbulence, wake, electrical, radio interference, shadow or other effects attributable to the Wind Turbines, or any other Windpower Activities;

# SETBACK

## CURRENT MINIMUM SETBACK



# SETBACK

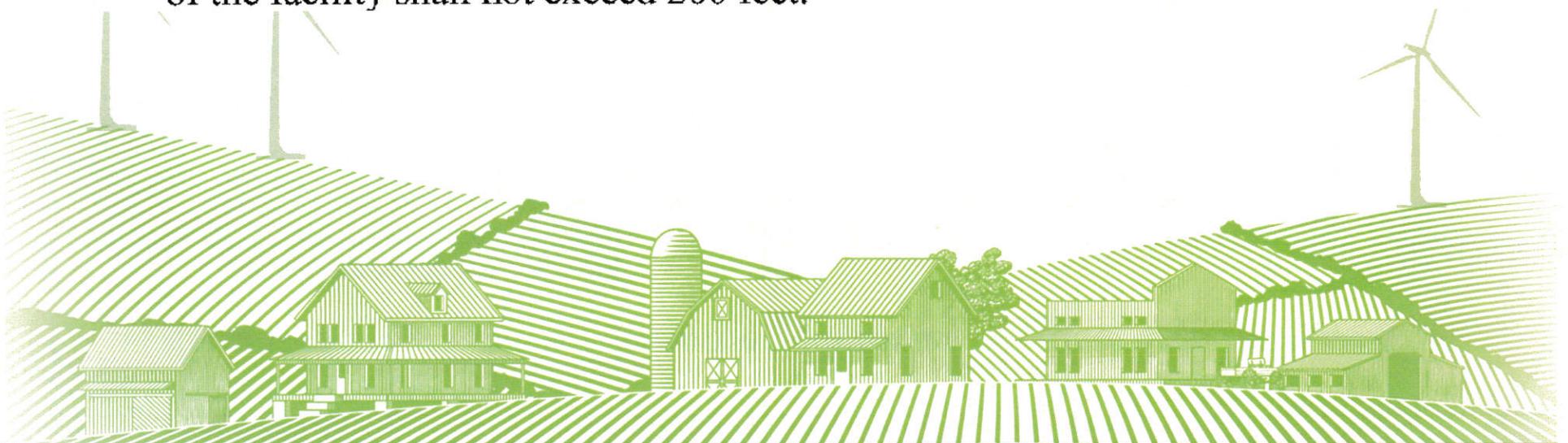
## STAFF AMMENDED EXHIBIT A

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#### OO(2)(j) Height

- (j) Height. The permitted maximum height of a WECS tower shall not exceed 499 550 feet, ~~except if the facility is located within one and one-half miles of the corporate limits of a municipality with a population of 25,000 or more, the height of the facility shall not exceed 200 feet.~~



# SETBACK

## Mitigation Techniques

### EDP Renewables 2016 WIND ENERGY LEASE AND AGREEMENT

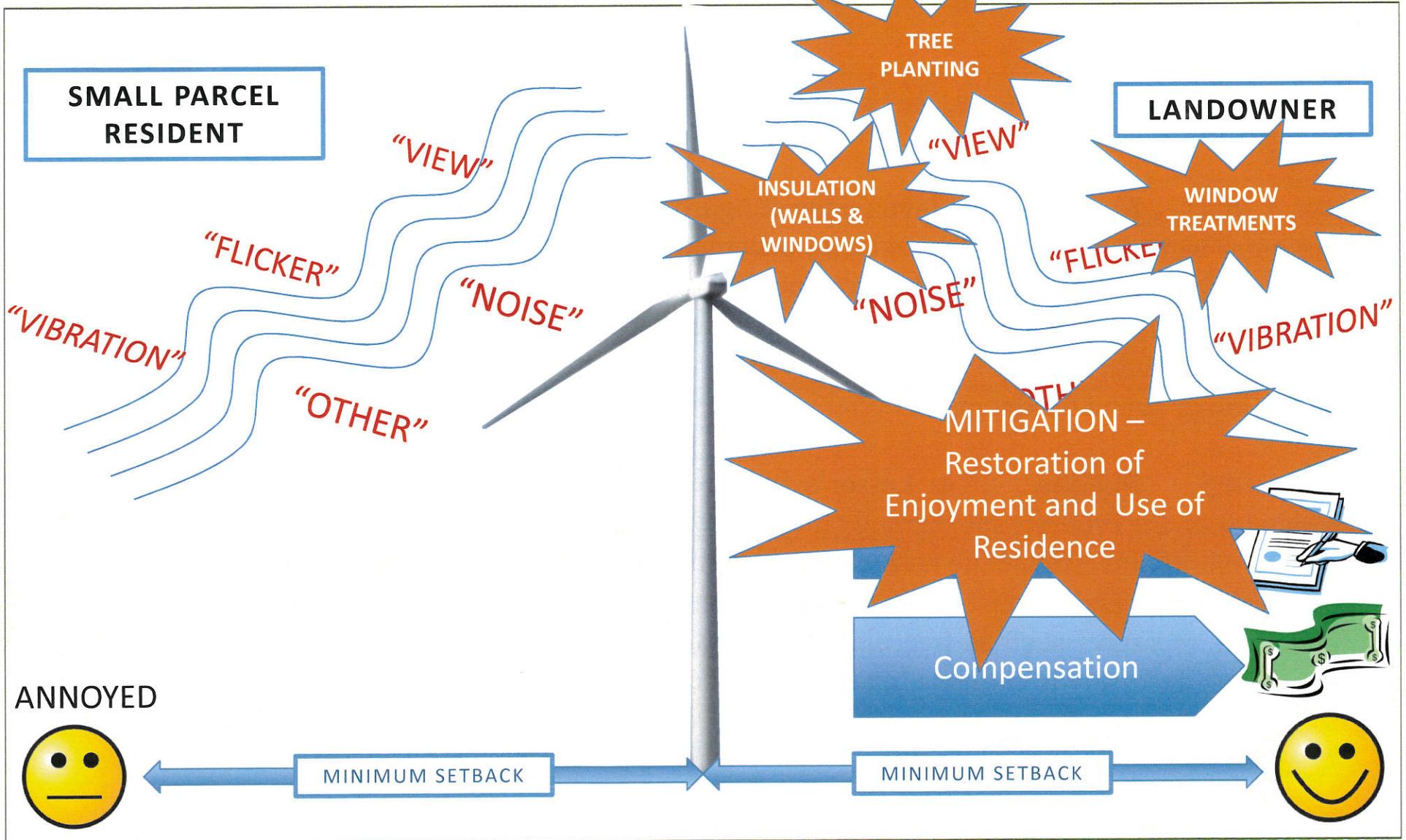
Exhibit  
5

4.4 **Noise.** If noise levels emanating from the Generating Units exceed fifty (50) db(A) at the outer wall of any presently existing occupied residence on the Property, as measured by an independent professional applying commonly accepted measurement instruments and standards, Lessee shall take the following measures to reduce such noise output (a) by installing landscaping, insulation, or other sound barriers at agreed locations on or off the Property or (b) by installing insulation or sound deadening material in the offending Generating Unit.

4.5 **Shadow.** If in Lessor's judgment the shadows cast at any presently occupied residence on the Property substantially interfere with the use and enjoyment of the residence, Lessee shall promptly investigate the nature and extent of the problem and the best methods of correcting any problems found to exist. Lessee at its expense, with agreement of Lessor, will then promptly undertake measures such as tree planting or installation of awnings, draperies or other window treatments necessary to mitigate the effects of the offending shadow.

# SETBACK

## MITIGATION ENTITLEMENT FOR PARTICIPANTS



# SETBACK

## ANNOYANCE vs. COMPENSATION

### A comparison between exposure-response relationships for wind turbine annoyance and annoyance due to other noise sources

Exhibit  
7

Sabine A. Janssen<sup>a)</sup> and Henk Vos

*Department of Urban Environment and Safety, Netherlands Organization for Applied Scientific Research,  
P.O. Box 49, 2600 AA Delft, The Netherlands*

Arno R. Eisses

*Department of Acoustics and Sonar, Netherlands Organization for Applied Scientific Research,  
P.O. Box 96864, 2509 JG The Hague, The Netherlands*

Eja Pedersen<sup>b)</sup>

*Ecology and Environmental Science, Halmstad University, P.O. Box 823, SE-301 18 Halmstad, Sweden*

(Received 4 November 2010; revised 17 June 2011; accepted 28 September 2011)

Surveys have shown that noise from wind turbines is perceived as annoying by a proportion of residents living in their vicinity, apparently at much lower noise levels than those inducing annoyance due to other environmental sources. The aim of the present study was to derive the exposure-response relationship between wind turbine noise exposure in  $L_{den}$  and the expected percentage annoyed residents and to compare it to previously established relationships for industrial noise and transportation noise. In addition, the influence of several individual and situational factors was assessed. On the basis of available data from two surveys in Sweden ( $N = 341$ ,  $N = 754$ ) and one survey in the Netherlands ( $N = 725$ ), a relationship was derived for annoyance indoors and for annoyance outdoors at the dwelling. In comparison to other sources of environmental noise, annoyance due to wind turbine noise was found at relatively low noise exposure levels. Furthermore, annoyance was lower among residents who received economical benefit from wind turbines and higher among residents for whom the wind turbine was visible from the dwelling. Age and noise sensitivity had similar effects on annoyance to those found in research on annoyance by other sources. © 2011 Acoustical Society of America. [DOI: 10.1121/1.3653984]

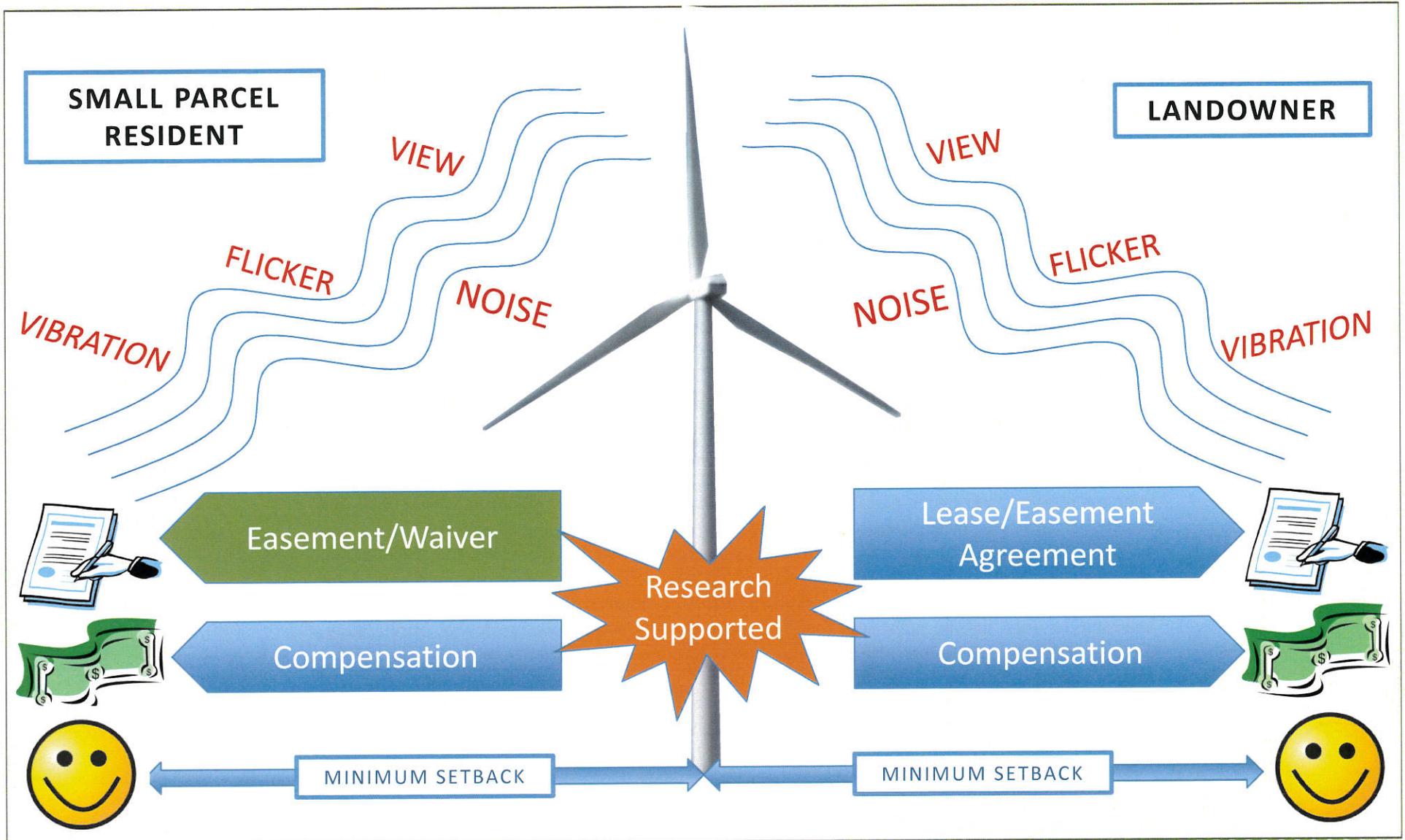
PACS number(s): 43.50.Qp, 43.50.Rq [BSF]

Pages: 3746–3753



# SETBACK

## PROPOSED MINIMUM SETBACK WITH WAIVER OPTION



# SETBACK

## EASEMENTS IN MCLEAN

### McLean County Recorder of Deeds

High Trail (Twin Groves)  
Agreement/Easement: 184  
Lease: 169

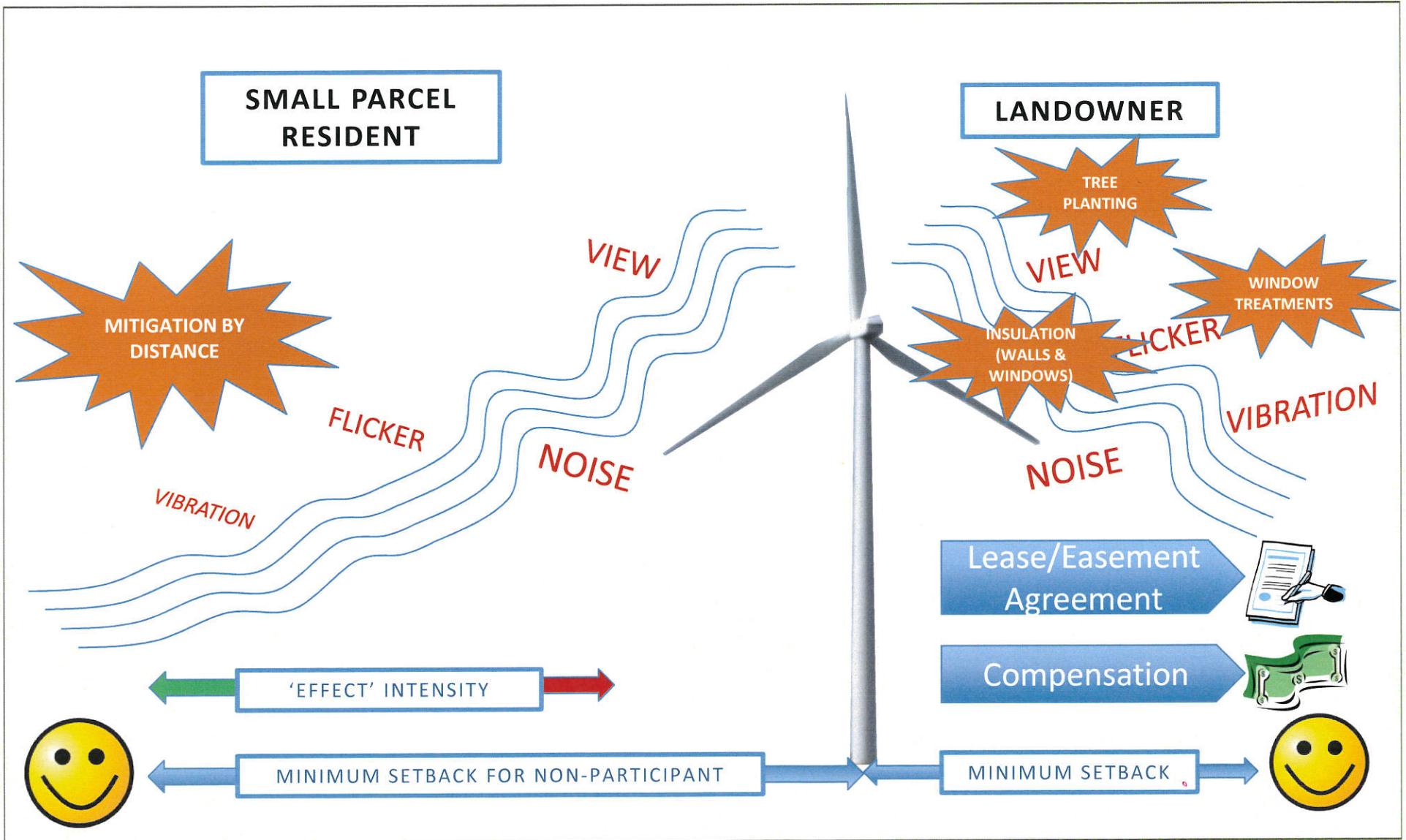
Old Trail (Twin Groves)  
Agreement/Easement: 143  
Lease: 130

Black Prairie (White Oak)  
Agreement/Easement: 74  
Lease: 236

Bright Stalk (Horizon)  
Agreement/Easement: 33  
Lease: 321

# SETBACK

## PROPOSED MINIMUM SETBACK FOR NON-PARTICIPANT



# SETBACK

## Additions

Most Recently BOONE CO. has adopted this approach

Exhibit  
8

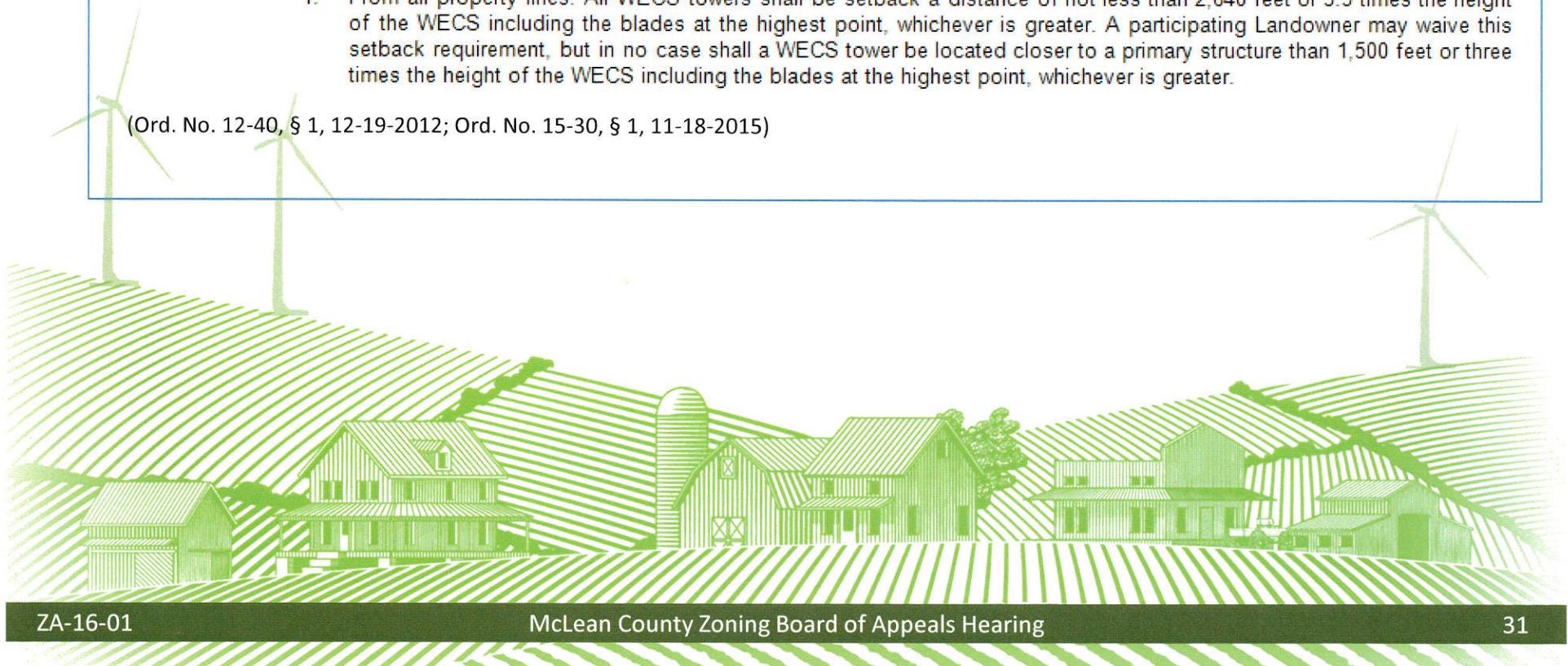
### 4.8. - WIND ENERGY CONVERSION SYSTEMS SITING

#### 4.8.7 - Design and installation.

H. Setbacks. All WECS towers shall provide the following minimum setbacks:

1. From all property lines: All WECS towers shall be setback a distance of not less than 2,640 feet or 5.5 times the height of the WECS including the blades at the highest point, whichever is greater. A participating Landowner may waive this setback requirement, but in no case shall a WECS tower be located closer to a primary structure than 1,500 feet or three times the height of the WECS including the blades at the highest point, whichever is greater.

(Ord. No. 12-40, § 1, 12-19-2012; Ord. No. 15-30, § 1, 11-18-2015)



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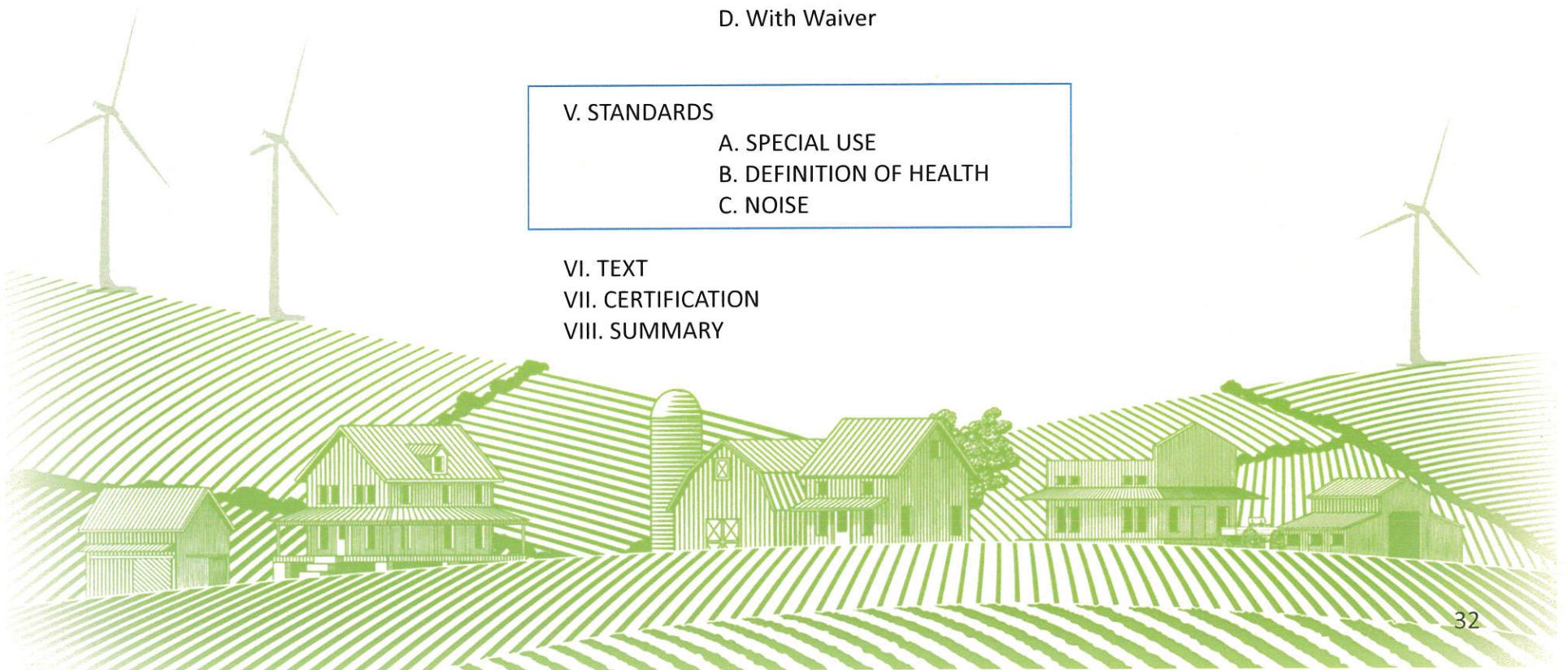
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# STANDARDS

## Certification

### □ § 350-56 **Standards for issuance.**

[Amended 2-20-2001]

Generally. Before any permit shall be granted, the Zoning Board of Appeals shall make written findings certifying that adequate provision has been made for the following:

- A. The proposed special use will not be detrimental to or endanger the health, safety, morals, comfort, or welfare of the public.
- B. The proposed special use will not be injurious to the use and enjoyment of other property in the immediate vicinity for purposes already permitted or substantially diminish property values in the immediate area.
- C. The proposed special use will not impede the orderly development of the surrounding property for uses permitted in the district.
- D. Adequate utilities, access roads, drainage and/or other necessary facilities have been or will be provided.
- E. Adequate measures have been or will be taken to provide ingress and egress so designed as to minimize traffic congestion in the public streets.
- F. The establishment, maintenance and operation of the special use will be in conformance with the intent of the district in which the special use is proposed to be located.  
[Amended 6-17-2008]
- G. The proposed special use, in all other respects, conforms to the applicable regulations of the district in which it is located.



# STANDARDS

## EFFECTS - HEALTH

### FREQUENTLY ASKED QUESTIONS

Q: Will the project increase my property taxes?

A: Wind energy development provides significant property tax revenue by substantially increasing the property tax base, without increasing the current tax rate levied on landowners. As Inverenergy invests in rural areas, we supplement county revenue by paying tax on our wind facilities, related improvements, and the real property upon which the structures sit. If an increase in property tax does occur, Inverenergy will pay for any property tax increase caused by the wind development, in addition to a production tax of \$1.20/MWh with 80% going to the county and 20% going to cities and townships.

Q: Do wind turbines cause health issues?

A: No. Numerous credible, peer-review scientific studies and government reports from around the world, including the U.S., Canada, Australia and United Kingdom, have found living near a wind farm does not harm human health and there is no evidence to support a link between the sound emitted from wind turbines and adverse health effects. In fact, harvesting clean, homegrown energy helps establish a healthier environment.

Q: What is shadow flicker and what does Inverenergy do to mitigate it?

A: With modeling, shadows from moving wind blades are predictable and turbines can be sited to significantly minimize impact on any landowner. Shadow flicker typically lasts just a few minutes near sunrise and sunset and can be addressed through use of proven mitigation techniques such as screening plantings, which Inverenergy will work with you to effect before we begin to address.

**Q: Do wind turbines cause health issues?**

**A: No. Numerous credible, peer-review scientific studies and government reports from around the world, including the U.S., Canada, Australia and United Kingdom, have found living near a wind farm does not harm human health and there is no evidence to support a link between the sound emitted from wind turbines and adverse health effects. In fact, harvesting clean, homegrown energy helps establish a healthier environment.**

Q: Are there any abandoned wind developments in the U.S.?

A: To Inverenergy's knowledge, there are currently no abandoned wind developments in the United States.

Q: Will the construction harm my crops or pasture land?

A: Each wind turbine site typically uses less than one acre of land. The project provides dependable, steady income for farmers and ranchers, which helps preserve and protect their prime, valuable farm or ranch land for future generations. Inverenergy holds itself responsible for preventing soil erosion and for correcting any impact to tillable soil, drain tile or grasslands that may occur.

Q: Why do some of the turbines have red blinking lights and others do not?

A: Inverenergy follows requirements set by the Federal Aviation Administration (FAA) in regards to turbine height and synchronized red turbine lights. The lighting plan, designed by the FAA, is based on turbine spacing.

POINT OF VIEW by PROSPECTIVE ENERGY COMPANY

From Lease/Easement Packet

Exhibit  
9

# STANDARDS

## EFFECTS – HEALTH

10/2/16

**EPA** US Environmental Protection Agency

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### Clean Air Act Overview

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- Roles of State, Local, Tribal and Federal Governments
- Developing Programs Through Dialogue
- Flexibility with Accountability
- The Clean Air Act and the Economy

## Title IV – Noise Pollution

The 1990 Clean Air Act Amendments added a new title IV, relating to acid deposition control, *without repealing the existing title IV, relating to noise pollution*. The U.S. Code designates the original title IV (noise pollution) as subchapter IV and the [new title IV \(acid deposition control\) as subchapter IV-A](#).

This page has links to Clean Air Act sections that are part of the U.S. Code Collection maintained by the U. S. Government Publishing Office. EPA does not control the content of that website.

Clean Air Act Section	U.S. Code	Title
201	7641	<a href="#">Noise abatement</a>
	7642	<a href="#">Authorization of appropriations</a>

### What is Noise Pollution?

**The traditional definition of noise is “unwanted or disturbing sound”.** Sound becomes unwanted when it either interferes with normal activities such as sleeping, conversation, or disrupts or diminishes one’s quality of life. The fact that you can’t see, taste or smell it may help explain why it has not received as much attention as other types of pollution, such as air pollution, or water pollution. The air around us is constantly filled with sounds, yet most of us would probably not say we are surrounded by noise. Though for some, the persistent and escalating sources of sound can often be considered an annoyance. This “annoyance” can have major consequences, primarily to one’s overall health.

Top of Page

### Health Effects

Noise pollution adversely affects the lives of millions of people. Studies have shown that there are direct links between noise and health. Problems related to noise include stress related illnesses, high blood pressure, speech interference, hearing loss, sleep disruption, and lost productivity. Noise Induced Hearing Loss (NIHL) is the most common and often discussed health effect, but research has shown that exposure to constant or high levels of noise can cause countless adverse health affects.

Exhibit  
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# STANDARDS

## EFFECTS - NOISE



Publication: NIGHT NOISE GUIDELINES FOR EUROPE  
(2009)(ISBN 978 92 890 4173 7)

Exhibit  
11

### FORWARD

WHO defines health as a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity, and recognizes the enjoyment of the highest attainable standard of health as one of the fundamental rights of every human being. Environmental noise is a threat to public health, having negative impacts on human health and well-being. In order to support the efforts of the Member States in protecting the population's health from the harmful levels of noise, WHO issued *Guidelines for community noise* in 1999, which includes guideline values for community noise in various settings based on the scientific evidence available. The evidence on health impacts of night noise has been accumulated since then.

# STANDARDS

## EFFECTS - NOISE



EUROPE

Publication: NIGHT NOISE GUIDELINES FOR EUROPE  
(2009)(ISBN 978 92 890 4173 7)

Exhibit  
11

### XIV EXECUTIVE SUMMARY

**Table 2**  
**Summary of effects**  
**and threshold levels**  
**for effects where**  
**limited evidence is**  
**available\*\***

Effect	Indicator	Estimated threshold, dB	
Biological effects	Changes in (stress) hormone levels	*	
<u>Well-being</u>	Drowsiness/tiredness during the day and evening	*	
	Increased daytime irritability	*	
	Impaired social contacts	*	
	<u>Complaints</u>	<u>L<sub>night, outside</sub></u>	<u>35</u>
Medical conditions	Impaired cognitive performance	*	
	Insomnia	*	
	Hypertension	L <sub>night, outside</sub>	50
	Obesity	*	
	Depression (in women)	*	
	Myocardial infarction	L <sub>night, outside</sub>	50
	Reduction in life expectancy (premature mortality)	*	
	Psychic disorders	L <sub>night, outside</sub>	60
(Occupational) accidents	*	*	

# STANDARDS

## EFFECTS - NOISE



EUROPE

Publication: NIGHT NOISE GUIDELINES FOR EUROPE  
(2009)(ISBN 978 92 890 4173 7)

Exhibit  
11

### RELATIONS WITH $L_{\text{NIGHT, OUTSIDE}}$

Over the next few years, the END will require that night 'noise' exposures are reported in  $L_{\text{night, outside}}$ . It is, therefore, interesting to look into the relation between  $L_{\text{night, outside}}$  and adverse health effects. The relation between the effects and  $L_{\text{night, outside}}$  is, however, not straightforward. Short-term effects are mainly related to maximum levels per event inside the bedroom:  $L_{A\text{max, inside}}$ . In order to express the (expected) effects in relation to the single European Union indicator, some calculation needs to be done. The calculation for the total number of effects from reaction data on events (arousals, body movements and awakenings) needs a number of assumptions. The first that needs to be made is independence: although there is evidence that the order of events of different loudness strongly influences the reactions, the calculation is nearly impossible to carry out if this is taken into consideration. Secondly, the reactions per event are known in relation to levels at the ear of the sleeper, so an assumption for an average insulation value must be made. In the report a value of 21 dB has been selected. This value is, however, subject to national and cultural differences. One thing that stands out is the desire of a large part of the population to sleep with windows (slightly) open. The relatively low value of 21 dB takes this into account already. If noise levels increase, people do indeed close their windows, but obviously reluctantly, as complaints about bad air then increase and sleep disturbance remains high. This was already pointed out in the WHO *Guidelines for community noise* (1999).

# STANDARDS

## EFFECTS - NOISE

Quantities and Procedures for Description and Measurement of Environmental Sound –  
Part 4: Noise Assessment and Prediction of Long-term Community Response

Exhibit  
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### F.3 Qualifications to the dose-response function

ANSI S12.9-2005/Part 4

**F.3.4.1** In newly created situations, especially when the community is not familiar with the sound source in question, higher community annoyance can be expected. This difference may be equivalent to up to 5 dB.

**F.3.4.2** Research has shown that there is a greater expectation for and value placed on "peace and quiet" in quiet rural settings. In quiet rural areas, this greater expectation for "peace and quiet" may be equivalent to up to 10 dB.

**F.3.4.3** The above two factors are additive. A new, unfamiliar sound source sited in a quiet rural area can engender much greater annoyance levels than are normally estimated by relations like equation (F.1). This increase in annoyance may be equivalent to adding up to 15 dB to the measured or predicted levels.



NEW IPSWICH, N.H. Ordinance March 13, 2012

5. Noise Level Limits and Measurement. The intent of this section is to preserve the quiet rural environment of New Ipswich and to provide protection from Excessive Noise levels that cause adverse Impacts to public Health, Welfare, and Well-being. The existing Background Noise Levels in New Ipswich are less than 30 dBA. Annoyance due to Noise, as measured by community surveys, is the consequence of activity interference. Noise Level limits are based on the recommended guidelines found in the United States Environmental Protection Agency's document *Information On Levels Of Environmental Noise Requisite To Protect Public Health And Welfare With An Adequate Margin of Safety, 550/9-74-004, March 1974* and include levels requisite to protect against activity interference. These Noise Level Limits are consistent with the World Health Organization (WHO) night noise guidelines for exposure to noise during sleep found in the following documents: *Night Noise Guidelines (NNLG) for Europe, 2007* and *ISBN 978 92 890 4173 7, 2009.*
- a. Noise Levels produced by the LWES shall not exceed 33 dBA (Leq 10 minute) anywhere at any time on a Non-Participating Landowner's property.

# STANDARDS

NOISE – Dr. SCHOMER

## SCHOMER AND ASSOCIATES, INC

Consultants in Acoustics and Noise Control

Paul D. Schomer, Ph.D., P.E.  
Member; Board Certified  
Institute of Noise Control Engineering

2117 ROBERT DRIVE  
CHAMPAIGN, ILLINOIS 61821  
PHONE (217) 359-6602  
FAX: (217) 359-3303

Exhibit  
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### PAUL D. SCHOMER Acoustical Engineer

BS, Electrical Engineering, University of Illinois, 1965.  
MS, Electrical Engineering-Acoustics, University of California, 1966.  
Ph.D., Electrical Engineering-Acoustics, University of Illinois, 1971.

Dr. Schomer has 35 years of experience dealing with noise measurement and the effects of noise on people and communities. This experience includes blast and mining noise, gunfire noise, airport, aircraft, helicopter, construction and traffic noise, and general industrial and urban noise. The citation for his selection as a Fellow of the Acoustical Society of America references his studies on community response to noise, and most of his work with the National Academy of Science has been concerned with noise assessment.

# STANDARDS

## NOISE – Dr. SCHOMER

BEFORE THE MCLEAN COUNTY ZONING BOARD OF APPEALS  
 IN THE MATTER OF: )  
 A TEXT AMENDMENT OF REGULATION )  
 FOR WIND POWER GENERATION FACILITIES )  
 IN THE MCLEAN COUNTY ZONING ORDINANCE )

ZA-16-01

AFFIDAVIT OF PAUL D. SCHOMER, Ph.D., P.E.

### DR. SCHOMER SWORN AFFIDAVIT REGARDING SETBACK DISTANCE IN THIS CASE (ZA-16-01)

Exhibit  
 15

STATE OF ILLINOIS )  
 ) SS  
 COUNTY OF McLean )

The undersigned, being first duly sworn upon oath, states as follows:

1. I am the President of Schomer & Associates, Inc. I am a Board Certified Member of the Institute of Noise Control Engineering, and Standards Director Emeritus of the Acoustical Society of America.

2. Introduction

This letter briefly summarizes the independent, unbiased data as to appropriate sound levels for rural, residential areas and estimates the length of a corresponding setback distance. It is important to note that the following four sources, evaluated herein, are independent of those community and industry members in favor of, or in opposition to, wind farm development.

3. Noise level (dB(A)) Criterion

As stated there are four pieces of evidence. The first piece of evidence, compiled in 2011, comes from the Minnesota Department of Commerce (Figure 1). It shows the noise criterion in rural areas for the countries or parts of countries indicated. All but three of the jurisdictions are at 40 dB(A) or lower as their criterion, and the average of all the lower limits is 37.3 dB(A).

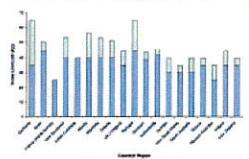


Figure 1: Country Wind Turbine Noise Levels of Residents

The second source of independent evidence is based on the ANSI 12.9 Part 4 standard which pegs the DNL in quiet, rural areas to be 45 dB(A) for all noise sources, not only wind turbines. DNL is a measure that represents the total sound on the average day with a 10 dB nighttime penalty. At 45 DNL, the

development. That said, based on the analysis described herein, the authors believe that 3000 feet is an adequate distance setback.

References

Minnesota Department of Commerce, Energy Facility Permitting. (2011). International Review of Policies and Recommendations for Wind Turbine Setbacks from Residences: Setbacks, Noise, Shadow Flicker, and Other Concerns. Retrieved from [http://mn.gov/commerce/energyfacilities/documents/International\\_Review\\_of\\_Wind\\_Policies\\_and\\_Recommendations.pdf](http://mn.gov/commerce/energyfacilities/documents/International_Review_of_Wind_Policies_and_Recommendations.pdf)

"Exposure to wind turbine noise: Perceptual responses and reported health effects." Michaud, David S., Feder, Katya, Keith, Stephen E., Voicescu, Sonia A., Marro, L., Than, J., Guay, M., Denning, A., McGuire, D., Bower, T., Lavigne, E., Murray, Brian J., Weiss, Shelly K., van den Berg, F., The Journal of the Acoustical Society of America, 139, 1443-1454 (2016), DOI: <http://dx.doi.org/10.1121/1.4942391>

"Personal and situational variables associated with wind turbine noise annoyance." Michaud, David S., Keith, Stephen E., Feder, Katya, Voicescu, Sonia A., Marro, L., Than, J., Guay, M., Bower, T., Denning, A., Lavigne, E., Whelan, C., Janssen, S. A., Leroux, T., and van den Berg, Frits., The Journal of the Acoustical Society of America, 139, 1455-1466 (2016), DOI: <http://dx.doi.org/10.1121/1.4942390>

ANSI (2005). "American National Standard Quantities and Procedures for Description and Measurement of Environmental Sound – Part 4: Noise Assessment and Prediction of Long-term Community Response." Acoustical Society of America, Melville, NY.

FURTHER AFFIANT SAYETH NAUGHT

DATED this 28<sup>th</sup> day of September, 2016

*Paul Schomer*

Paul Schomer, Ph.D., P.E.

SUBSCRIBED and SWORN to before me this 28<sup>th</sup> day of September, 2016

*Brett M. Belanger*

Notary Public



# STANDARDS

NOISE – Dr. SCHOMER

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15

DR. PAUL SCHOMER  
SWORN AFFIDAVIT

## 2. Introduction

This letter briefly summarizes the independent, unbiased data as to appropriate sound levels for rural, residential areas and estimates the length of a corresponding setback distance. It is important to note that the following four sources, evaluated herein, are independent of those community and industry members in favor of, or in opposition to, wind farm development.



# STANDARDS

NOISE – Dr. SCHOMER

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DR. PAUL SCHOMER  
SWORN AFFIDAVIT

## 3. Noise level (dB(A)) Criterion

As stated there are four pieces of evidence. The first piece of evidence, compiled in 2011, comes from the Minnesota Department of Commerce (Figure 1). It shows the noise criterion in rural areas for the countries or parts of countries indicated. All but three of the jurisdictions are at 40 dB(A) or lower as their criterion, and the average of all the lower limits is 37.3 dB(A).



# STANDARDS

NOISE – Dr. SCHOMER

Exhibit  
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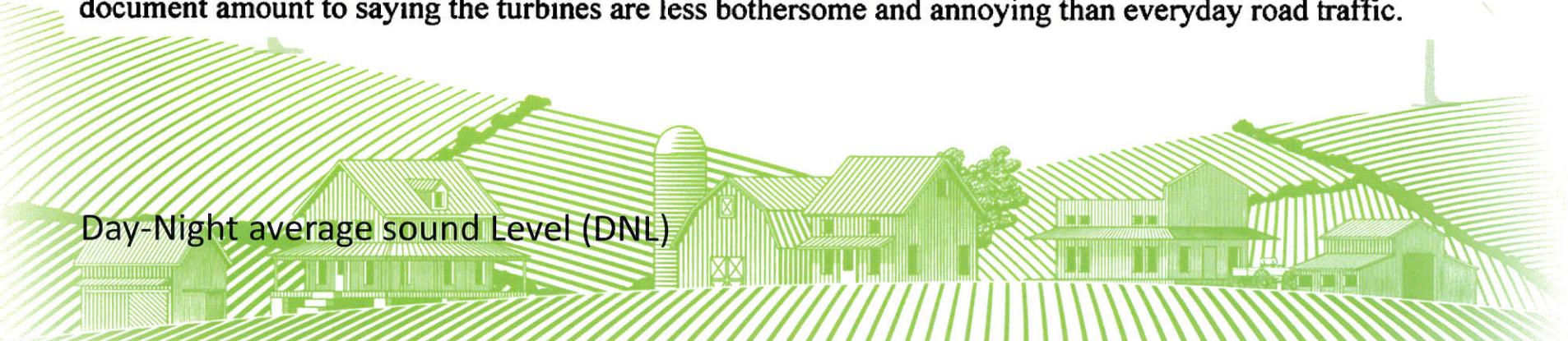
Exhibit  
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DR. PAUL SCHOMER  
SWORN AFFIDAVIT

## Section 3 continued

The second source of independent evidence is based on the ANSI 12.9 Part 4 standard which pegs the DNL in quiet, rural areas to be 45 dB(A) for all noise sources, not only wind turbines. DNL is a measure that represents the total sound on the average day with a 10 dB nighttime penalty. At 45 DNL, the

**nighttime levels range from 35-39 dB(A). The average is 37 dB(A). Arguing for numbers above the ANSI document amount to saying the turbines are less bothersome and annoying than everyday road traffic.**



Day-Night average sound Level (DNL)

# STANDARDS

NOISE – Dr. SCHOMER

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DR. PAUL SCHOMER  
SWORN AFFIDAVIT

Section 3 continued

The third piece of evidence comes from the Health Canada study which has been generally praised by the wind farm industry. This report shows that the annoyance percentage at [30-35) dB(A) is 1% and at [35-40) dB(A) is 10%. Recommendations from federal agencies for annoyance percentages are in about the 6-7% range. To equate this to how other noise sources are treated, wind farms should have an annoyance percentage of about 6%. All evidence we know suggests that as sound level increases, annoyance increases. That is, as the noise emitted from wind turbines increases, the annoyance towards the wind turbine noise increases. That being the case, 6% annoyed occurs at less than 40 dB(A) and greater than 35 dB(A). So the criterion must be in the range of 36-39 dB(A) with an average value of 37.5 dB(A).



# STANDARDS

NOISE – Dr. SCHOMER

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DR. PAUL SCHOMER  
SWORN AFFIDAVIT

Section 3 continued

The fourth piece of evidence is derived from four, foreign government sponsored surveys. These four were chosen by Michaud et al. (2016b) because they were the only research designs which permitted an estimate of the percent annoyed vs. DNL. Michaud et al. computed the Community Tolerance Level (CTL) for each of these surveys. CTL is decibel number representing how tolerant a community is of a particular noise source such as aircraft, road traffic, factories, or wind turbines. Being a single number representation, one can easily compare one community to another for differing noise sources. The comparison is the difference in CTL value for each community. The average CTL value of these four surveys is 62. This corresponds to an A-weighted DNL of 42 for 6 % annoyed. A DNL of 42 corresponds to a continuous limit of 36 dB(A).

Community Tolerance Level (CTL) = Decibel number representing how tolerant a community is of a particular noise source

Day-Night average sound Level (DNL)

# STANDARDS

NOISE – Dr. SCHOMER

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DR. PAUL SCHOMER  
SWORN AFFIDAVIT

## Section 3 continued

All four of these references are clearly unbiased. They all come out with similar answers using three different analysis methods: attitudinal survey, review of world-wide regulatory levels, and standards. The world-wide regulatory levels yield an average value of 37.3 dB(A). The Health Canada study yields an estimate between 36-39 dB(A). The ANSI standard yields an estimate of 35 to 39 dB(A) with a midpoint of 37 dB(A). The day-night limit suggested by the four foreign surveys is 36 dB(A). We do not know of any other sources containing independent data. Thus, the single number noise criterion for wind turbines should be between 37 and 38 dB(A).



# STANDARDS

NOISE – Dr. SCHOMER

DR. PAUL SCHOMER  
SWORN AFFIDAVIT

Exhibit  
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## 4. Distance criterion

A CTL level is calculated from pairs of data, each of which relates a noise level to an annoyance percentage. For most noise sources (airports, roadways, factories, etc.), as distance from the source increases in a stated direction, noise level decreases. Wind farms do not have this simple picture. They are more a set of randomly located houses overlaid by unevenly distributed wind turbines. That is, the wind turbines are not evenly spaced in a given area. There is no specific decrease of sound with distance within the area of a wind farm. The level can increase or decrease along any line going through the wind farm. This means that the notion of a setback distance can only be estimated statistically. We can say 1%, 10%, or 50% will be below a certain level, but not which homes or their specific levels.

Because the relationship between distance and noise level is not simple for wind farms, we instead relate distance to a level of annoyance. As noted above, a 6-7% annoyance is the criterion used for many noise sources. In these calculations, we use 6-7% as a target and adjust the setback distance until we reach this 6-7% annoyance figure. Based on this analysis, we recommend a distance setback of 3000 feet.



# STANDARDS

NOISE – Dr. SCHOMER

DR. PAUL SCHOMER  
SWORN AFFIDAVIT

Exhibit  
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## 5. Illinois Pollution Control Board regulations

I was part of a group of four faculty that did drafting and defense of the noise rules of the IPCB, so I have firsthand knowledge as to the intent of the regulations. The regulations were written with a goal of providing reasonably stringent, but clearly understandable noise rules for industry and commerce so that they would not be subject to the vagaries of a nuisance rule. So the intent was to protect the population of Illinois from excessive noise and these rules were fairly strict, i.e. quite protective. Wind farms were never contemplated in 1968 when these rules were promulgated. These rules are inappropriate for use with wind farms. They are anything but protective of the citizenry; So use of them in conjunction with wind farm noise must be deprecated.



# STANDARDS

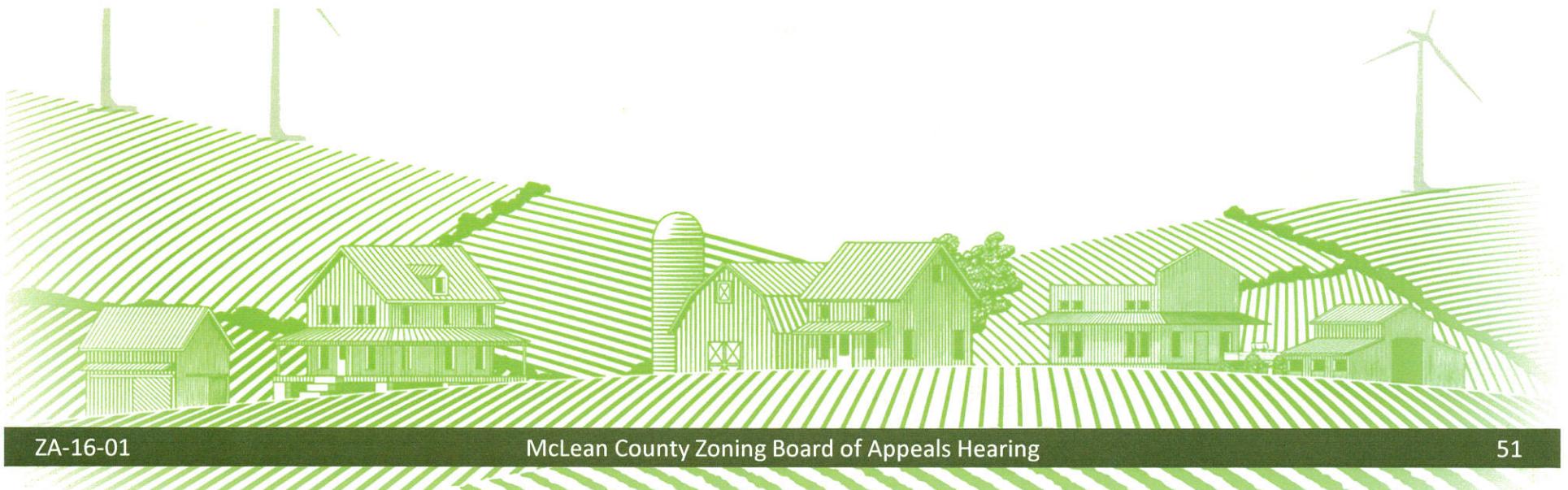
NOISE – Dr. SCHOMER

DR. PAUL SCHOMER  
SWORN AFFIDAVIT

Exhibit  
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## 6. Conclusions

The authors recommend a noise level limit of 37-38 dB(A). As with many other sources, the authors note that a noise level (dB(A)) limit is preferable to a distance setback when determining criteria for wind farm development. That said, based on the analysis described herein, the authors believe that 3000 feet is an adequate distance setback.



## AGENDA

### I. INTRODUCTION

### II. DEFINITIONS

- A. Section 350-26
- B. References
- C. TEXT

### III. HEIGHT

### IV. SETBACK

- A. Easements
- B. "Effects" or "Consequences"
- C. Current Ordinance
- D. With Waiver

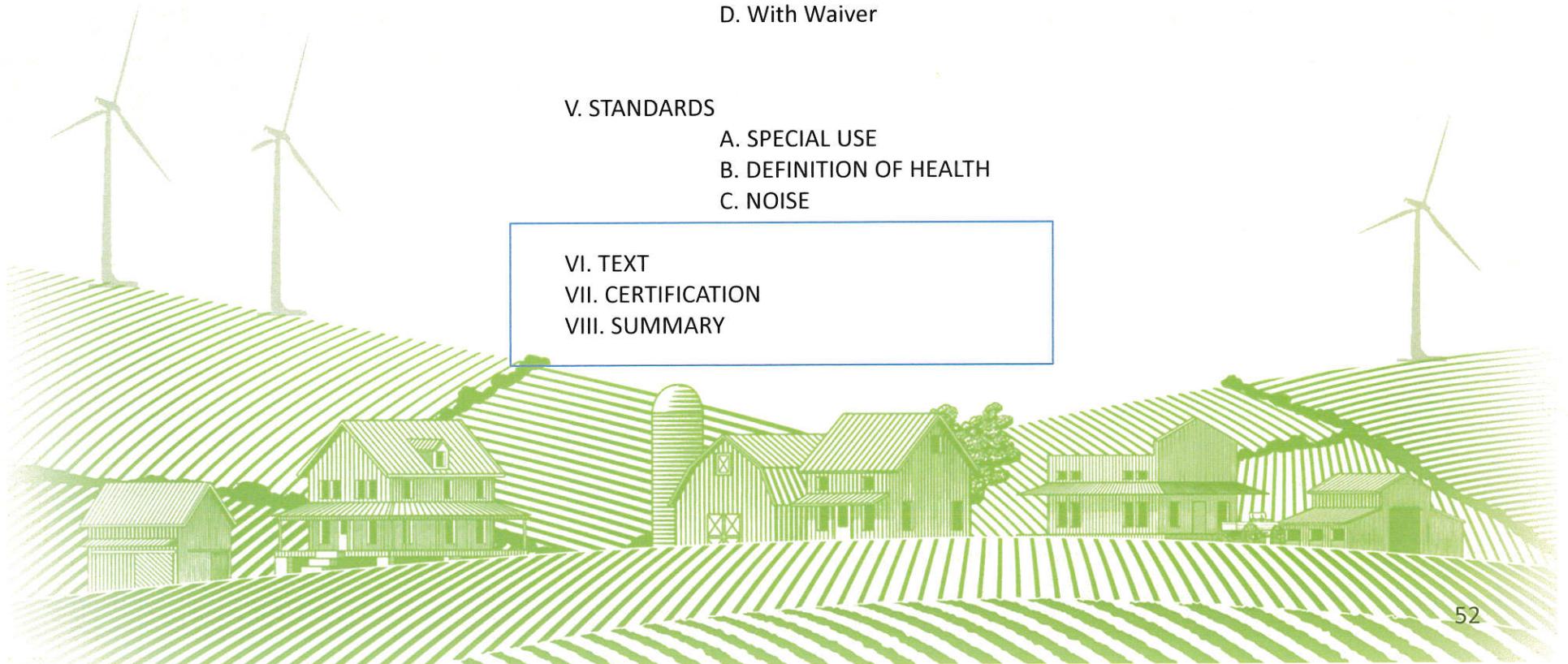
### V. STANDARDS

- A. SPECIAL USE
- B. DEFINITION OF HEALTH
- C. NOISE

### VI. TEXT

### VII. CERTIFICATION

### VIII. SUMMARY



## STAFF AMMENDED EXHIBIT A

(Additions are indicated by text and stricken material by ~~text~~)

### Code Section 350-43 USE STANDARDS

#### OO(2)(h) Height

#### (h) Setbacks.

1. ~~Wind power generation facilities~~ WECS towers and substations shall not be located within 2,000 feet of a boundary line of an R-1 or R-2 district.
2. All WECS towers shall be set back three times the height of the tower or 1,500 feet, whichever is greater, from any occupied residence. The distance for the above setback shall be measured from the point of the occupied residence foundation closest to the WECS tower to the center of the WECS tower foundation. The Owner of the occupied residence may waive this setback requirement; but in no case shall a WECS tower be located closer to an occupied residence then 1.10 times the WECS tower height.

## PROPOSED REVISIONS TO EXHIBIT A

(Additions are indicated by text and stricken material by ~~text~~)

REFERENCE: BOONE COUNTY WIND  
ORDINANCE

### Code Section 350-43 USE STANDARDS

#### OO(2)(h) Height

1. ~~Wind power generation facilities~~ WECS towers and substations shall not be located within ~~2,000~~ 3000 feet of a boundary line of an R-1 or R-2 district.
2. All WECS towers shall be set back ~~three~~ six times the height of the tower or ~~1,500~~ 3000 feet, whichever is greater, from any occupied residence of a non-participating property owner. The distance for the above setback shall be measured from the point of the occupied residence foundation closest to the WECS tower to the center of the WECS tower foundation. The owner of a residence on a non-participating property may waive this setback requirement; but in no case shall a WECS tower be located closer to a primary structure than 3.0 times the WECS tower height. ~~A Participating Landowner~~ The Owner of the occupied residence may waive this setback requirement; but in no case shall a WECS tower be located closer to ~~an occupied residence~~ a primary structure than 1.10 times the WECS tower height.

# CERTIFICATION

## A STANDARD STATE ZONING ENABLING ACT

**SECTION 1. GRANT OF POWER.**—For the purpose of promoting health,<sup>1</sup> safety, morals, or<sup>2</sup> the general welfare<sup>3</sup> of the community, the legislative body<sup>4</sup> of cities and incorporated villages<sup>5</sup> is hereby empowered to regulate and restrict<sup>6</sup> the height, number of stories,<sup>7</sup>

<sup>1</sup>“*health*”: It is to be noted that the word used is “health,” not “public health,” for the latter narrows the application. There are some things that relate to the health only of the people living in a given dwelling, such, for instance, as the size of yards, and have only a remote relation to public health. If the term “public health” were used, the act might be set aside in a given case where it would be possible to show that the particular provision in which legal action was being taken did not concern itself with the public health but only with health.

<sup>2</sup>“*or*”: It should be noted that the word used is “or” and not the word “and.” If the latter word were used, then it might be necessary to show to the satisfaction of the court that *all* four of the purposes mentioned were involved in a given case, viz, health, safety, morals, and general welfare. The use of the word “or” limits the application to any one of the four instead of to all of them.

<sup>3</sup>“*general welfare*”: The main pillars on which the police power rests are these four, viz, health, safety, morals, and general welfare. It is wise, therefore, to limit the purposes of this enactment to these four. There may be danger in adding others, as “prosperity,” “comfort,” “convenience,” “order,” “growth of the city,” etc., and nothing is to be gained thereby.

DEPARTMENT OF COMMERCE  
HERBERT HOOVER, SECRETARY

**A STANDARD  
STATE ZONING ENABLING ACT**  
UNDER WHICH MUNICIPALITIES MAY ADOPT ZONING  
REGULATIONS

BY THE  
ADVISORY COMMITTEE ON ZONING  
APPOINTED BY SECRETARY HOOVER

CHARLES B. BALL . . . . . Secretary-Treasurer, City Planning Division,  
Sanitary Engineer, American Society of Civil Engineers.  
EDWARD M. BASSETT . . . . . Council, Zoning Committee of New York.  
LAWYER.  
ALFRED BEITMAN . . . . . Director, National Conference on City Planning.  
LAWYER.  
IRVING B. SHEIT . . . . . Ex-President, National Association of Real Estate  
Brokers.  
JOHN IHLDER . . . . . Manager, Civic Development Department of the  
Housing Consultant, Chamber of Commerce of the United States.  
MORRIS KNOWLES . . . . . From the Chamber of Commerce of the United  
States; Chairman, City Planning Division,  
American Society of Civil Engineers.  
NELSON P. LEWIS\* . . . . . From the National Conference on City Planning  
and National Municipal League; Past Presi-  
dent, American City Planning Institute.  
J. HORACE McFARLAND . . . . . Ex-President, The American Civic Association.  
Municipal Engineer.  
FREDERICK LAW OLMSTED . . . . . Ex-President, The American Society of Land-  
scape Architects; Ex-President, American  
City Planning Institute.  
LAWRENCE VELLER . . . . . Secretary and Director, The National Housing  
Housing Expert, Association.  
\* Deceased.

JOHN M. GRIES  
Chief, Division of Buildings and Housing, Bureau of Standards  
Department of Commerce

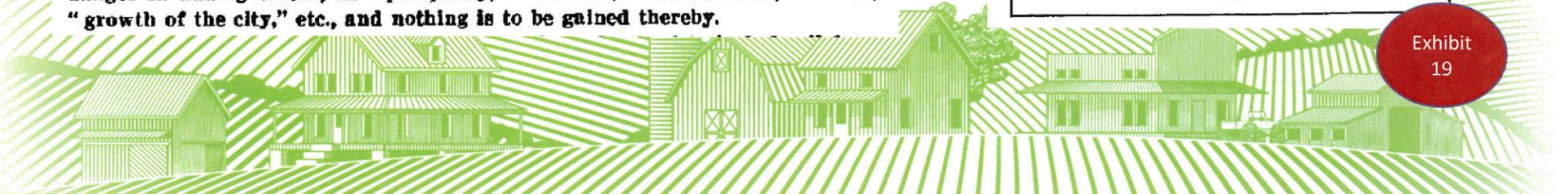


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Exhibit  
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# CERTIFICATION

□ § 350-56 **Standards for issuance.**

[Amended 2-20-2001]

A. The proposed special use will not be detrimental to or endanger the

Health  
Safety  
Morals  
Comfort  
Welfare

-or-

of the public.

## Comfort

Noun

- a. A condition or feeling of pleasurable physical ease or relief from pain or stress.
- b. A condition of well-being, contentment, and security.

# CERTIFICATION

## AGRICULTURAL NUISANCE DISCLAIMER

### CASE SU-09-07 FINDINGS OF FACT

### Agricultural Nuisance Disclaimer

#### LAND USE AND DEVELOPMENT COMMITTEE

Member Gordon, Chairman, presented the following:

#### FINDINGS OF FACT AND RECOMMENDATION OF THE McLEAN COUNTY ZONING BOARD OF APPEALS

This is the findings of fact and the recommendation of the McLean County Zoning Board of Appeals to the McLean County Board concerning an application of Horizon Wind Energy LLC, Black Prairie Wind Farm LLC, Black Prairie Wind Farm II LLC, and Black Prairie Wind Farm III LLC, in case SU-09-07. They are requesting a special use to allow a Major Utility (wind farm of up to 333 wind tower generators that are each up to 499 feet in height, as measured from the tip of the blade, that will generate up to a total of 500 megawatts of name plate power) and to be allowed to apply for a building permit for the first phase up to three years after County Board approval rather than two years as allowed, and to be allowed to apply for building permits for the second phase up to five years after beginning construction of the first phase on property which is part of Townships 24N Range 3E (Towanda Township), 24N Range 4E (Blue Mound Township), 24N Range 5E (Martin Township) and 24N Range 6E (Anchor Township) of the 3<sup>rd</sup> P.M., McLean County, IL.

The proposed wind farm is on 38,248 acres in the Agriculture District in Towanda, Blue Mound, Martin, and Anchor Townships and is located south of 1950 North Road, east of 2100 East Road, north of 1400 North Road and west of 4200 East Road.

After due notice, as required by law, the Board of Appeals held a public hearing in this case on October 19 and October 20, 2009 in the Ballroom of the Bloomington Center for the Performing Arts (ground floor of the Old Consistory), 500 N. East Street, Bloomington, IL, and continued the public hearing on October 29, November 9, and November 17, 2009 in Room 400, Government Center, 115 East Washington Street, Bloomington, IL and hereby report their findings of fact and their recommendation as follows:

Testimony was presented that significant taxes would be generated by the wind farm. Testimony was also presented that the current tax bill will sunset in the year 2011, and that taxes could expire on wind farms. The Zoning Board of Appeals agreed that the amount of property tax revenue generated by the proposed wind farm is not a relevant issue as to whether this project meets the standards for approval.

Testimony was presented that aerial spraying of crops could be negatively impacted by wind turbines in the area. Information was presented that aerial spraying is easier to apply to crops where the turbines are built in a linear pattern rather than a non linear pattern. The layout of turbines in the proposed wind farm is primarily in a linear pattern. Information was presented that the cost of aerial spraying would be higher on farms with wind turbines, and that the cost of aerial spraying may negatively impact non-participating farm owners due to the proximity of turbines on adjacent land. The Zoning Board of Appeals agreed that aerial spraying costs for farms with turbines could be higher, but that is a choice of the land owner. They also find that it would be unfortunate for non-participating farm owners to be negatively impacted with higher aerial spraying costs, but found higher costs for non-participating land owners to be unlikely. In addition, it was found that land application of spraying is usually preferable to aerial application except where soils are extremely wet.

The Agricultural Nuisance Disclaimer in the Zoning Ordinance that is required to be signed by people applying for special uses to build non-farm residences in the Agriculture District was discussed:

"Properties within the Agriculture District are located in an area where land is used for commercial agricultural production. Owners, residents, and other users of property in the Agriculture District or neighboring property may be subjected to inconvenience, discomfort,

# CERTIFICATION

## AGRICULTURAL NUISANCE DISCLAIMER

### Article V

#### § 350-35 A Agriculture District.

- B.** Agricultural nuisance disclaimer. Properties within the agricultural district are located in an area where land is used for commercial agricultural production. Owners, residents, and other users of property in the Agriculture District or neighboring property may be subjected to inconvenience, discomfort, and the possibility of injury to property and health arising from normal and accepted agricultural practices and operations, including but not limited to noise, odors, dust, the operation of machinery of any kind, including aircraft, the storage and disposal of manure, the application of fertilizers, soil amendments, herbicides, and pesticides. Therefore, owners, occupants, and users of property within the Agriculture District should be prepared to accept such inconveniences, discomfort, and possibility of injury from normal agricultural operations, and are hereby put on official notice that the state Right-to-Farm Law may bar them from obtaining a legal judgment against such normal agricultural operations.
- C.** Permitted uses. Generally, agricultural and accessory uses to agricultural activities are permitted. For a general listing of permitted uses, see Article VI of these regulations. The permitted uses will be determined based on compatibility with other uses permitted in the district and with uses listed in Article VI.

[Amended 2-20-2001]



# CERTIFICATION

## AGRICULTURAL NUISANCE DISCLAIMER

### Article VI

#### § 350-42 Use table.

- D. Use standards. A letter in the "Use Standards" column of the Use Table refers to standards and regulations applicable to the particular use in one or more of the districts in which such use is allowed. The referenced standards appear as subsections in § 350-43 of this article.

[Amended 2-20-2001; 2-21-2006; 9-19-2006; 6-17-2008; 6-16-2015]

#### Zoning Districts

##### Residential

##### Nonresidential

#### Use Type

A

R-1

R-2

C

M-1

M-2

Use Standards

Utility, major (if not a regional  
pollution control facility)

S

S

S

S

S

S

OO

S=Special Use

P=Permitted

# CERTIFICATION

## AGRICULTURAL NUISANCE DISCLAIMER

### § 350-43 Use standards.

00. Utility, major (if not a regional pollution control facility or otherwise exempted in Article I of these regulations).

- (1) Major utilities that are not regional pollution control facilities or otherwise exempted in Article I of these regulations shall not be located within 200 feet of a boundary line of an R-1 or R-2 District.
- (2) However, wind power generation facilities shall not be located within 2,000 feet of a boundary line of an R-1 or R-2 District and shall also conform to the following requirements:  
[Amended 6-18-2002]
  - (a) No building or tower that is part of a wind power generation facility shall encroach onto any recorded easement prohibiting the encroachment unless the grantees of the easement have given their approval.
  - (b) Lighting shall be installed for security and safety purposes only. Except with respect to lighting required by the FCC or FAA, all lighting shall be shielded so that no glare extends substantially beyond the boundaries of a facility.
  - (c) No facility shall encroach onto an existing septic field.
  - (d) Any wind power generation facility located in a special flood hazard area or wetlands shall comply with the requirements of the FP Floodplain Overlay District<sup>[5]</sup> and Illinois Department of Natural Resources.  
[5] *Editor's Note: See § 350-41.*
  - (e) The height of the facility shall not exceed 499 feet, except if the facility is located within 1 1/2 miles of the corporate limits of a municipality with a population of 25,000 or more, the height of the facility shall not exceed 200 feet.  
[Amended 3-15-2005]
  - (f) A tower that is part of a wind power generation facility shall require engineering certified by a registered engineer.
  - (g) Documentation, approved by the Director of Building and Zoning, shall be provided which verifies that the site and design are acceptable to the FAA.
  - (h) A wind power generation facility may be located on the same lot as one or more structures or uses.

# SUMMARY

1. TURBINES OF GREATER GENERATING CAPACITY(>2MW) HAVE LOWER FREQUENCY COMPONENT OF SOUND PRODUCED
2. MCLEAN COUNTY ZONING HAS NO DIRECT EXPERIENCE WITH THE 'EFFECTS' or 'CONSEQUENCES' OF TURBINES OVER 1.65MW or TOWERS OVER 400'
3. CURRENT SETBACKS WERE ARBITRARILY DERRIVED BASED ON SUBJECTIVE EVALUATION SOME YEARS EARLIER



# SUMMARY

1. ANNOYANCE CASUED BY THE SAME RANGE OF NOISE LEVELS IS PERCEIVED TO BE MORE PRONOUNCED BY INDIVIDUALS LIVING IN RURAL COMMUNITIES
  - This is consistent with the World Health Organization and research referenced by Dr. Schomer, particularly ANSI 12.9 PART 4
  - Based on an ANNOYANCE noise level limit of 37-38 dB(A), Dr. Schomer has calculated a Setback Distance of 3000 ft.



# SUMMARY

1. SETBACK DISTANCE REMAINS AT CURRENT STANDARD FOR NON-PARTICIPANTS WITH A WAIVER
  - ENSURES SIMILAR COMPENSATION TO THAT RECEIVED BY PARTICIPATING LANDOWNERS FOR EASEMENT OF 'EFFECTS' and 'CONSEQUENCES'
  - ENSURES SIMILAR ENTITELMENT TO MITIGATION METHODS AS PARTICIPATING LANDOWNERS RECEIVE FOR 'EFFECTS' and 'CONSEQUENCES'
  - ADDRESSES 'RESTRICTIVENESS' CONCERNS BY PROMOTING NEGOTIATION FOR ALL AFFECTED PARTIES
  
2. SETBACK AS MEASURED FROM THE FOUNDATION OF RESIDENCE REMAINS THE STANDARD
  
3. SETBACK DISTANCE FOR NON-PARTICIPANTING RESIDENCES INCREASES TO 3000 ft.
  - THIS MAINTAINS A LEVEL BELOW THE NOISE THRESHOLD ACCEPTED TO INCREASE ANNOYANCE
  - THIS MITIGATES 'EFFECTS' and 'CONSEQUENCES' THAT WOULD OTHERWISE BE DETRIMENTAL TO ONE'S HEALTH OR COMFORT, AS MEASURED BEFORE PROJECT COMMISSINOING

