

May 15, 2015

Steve Henrichsen  
Lincoln / Lancaster County  
Planning Department  
555 S. 10<sup>th</sup> Street, Suite 213  
Lincoln, NE 68508  
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**Re: Text Amendment – Commercial Wind Energy Conversion Systems**

Dear Steve:

In support of the Special Permit Section 13.018 text amendment discussion (hereinafter referred to as the “Process”), we submit the attached **Exhibit A** – proposed Special Permit Section 13.018 language – based upon the substantial body of discussion, research and existing Lincoln-Lancaster Code.

It is our understanding the primary goal of the Process is to adopt sensible rules that balance protecting the health, safety and welfare of the public and the community with allowing agriculture zone landowners to pursue safe and responsible wind energy use. Landowners in the agricultural zone of Lancaster County are entitled to pursue income-producing activities to the extent those activities do not threaten the health, safety and welfare of neighbors, the public, endangered species, air navigation and radio communications. The currently proposed 40 decibel limits do not strike this balance. Rather, such a limit would effectively prohibit Lancaster County landowners from taking advantage of the economic development, property tax and environmental benefits of wind energy development.

Around the United States, with nearly 50,000 commercial scale wind turbines in operation, the broad, overwhelming evidence demonstrates commercial scale wind turbines are compatible with agricultural areas, including in the vicinity of residences with proper setbacks. Independent, peer-reviewed studies conducted around the world, including in the U.S., have consistently found wind farms have no direct impact on physical health. If one addresses impacts of energy facilities, it is generally accepted solar and wind power have a much lower impact (in all aspects) than conventional, fossil-fueled power. The relative merits of fossil-fuel vs renewables is a discussion for another day. Our focus is on best practices in respect of Lincoln-Lancaster County zoning rules.

It is useful to document a little history of the Process. To date there have been many hours of discussion, meetings and research by Lancaster County staff, by parties in the Lancaster County Wind Energy Text Amendment Working Group, by academic advisors and industry specialists, in pursuit of the optimum rules to accomplish the Process’s primary goals. Lancaster County Planning Department staff reached a well-analyzed text amendment proposal in January 2015, which was scheduled for a Planning Commission hearing on February 4, 2015<sup>1</sup>. In the February

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<sup>1</sup> <http://www.lincoln.ne.gov/asp/city/pats/default.aspx?AppNum=TX14014>

4 proposal were staff's recommendations for the text amendment, together with a thorough evaluation of wind energy topics, and citing a substantial body of research and sources. After a phone call from Lancaster County Planning Department advising "greater public involvement"<sup>2</sup> Volkswind agreed to temporarily withdraw Text Amendment 14014, in favor of county-conducted "work sessions" scheduled during March – May 2015. In our view the work sessions have largely built upon the February 4, 2015 proposal, its associated effort and materials. Conclusions reached by Planning Department staff and Health Department in the February 4 evaluation were based on the same materials and information discussed in the work sessions, now nearing a close.

As a foundation for Exhibit A amendment, we would like to refer to several key sources as follows:

### **1. Lincoln / Lancaster County Planning Staff Report – Text 14014 – February 4, 2015**

As noted, as a result of many hours of discussion in 2013 and 2014 and comprehensive research on the subject, planning staff moved to approve Text Amendment No. 14014 concluding "the [requested amendment] ... of Section 13.018 provides for protection of the health, safety and welfare of the community and supports the development of alternative energy in Lancaster County." The Health Department stated "... three bodies of work [see text] as primary support material for our position to change the allowable noise levels in [special permit 13.018]. We believe the noise levels proposed for non-participating properties will provide a reasonable level of public health protection and that they are generally supported by the findings and conclusions in the reports."

To summarize the Health Department's February 4 recommended noise limits for wind turbines:

- For participating property dwellings, 55 dB(A) at the exterior wall
- For non-participating property dwellings:
  - Daytime noise limits the greater of:
    - 45 dB(A) at exterior wall of dwelling; or
    - 5 dB(A) above pre-construction background sound levels
  - Nighttime noise limits the greater of:
    - 40 dB(A) at exterior wall of dwelling; or
    - 5 dB(A) above pre-construction background sound levels

In an email to Volkswind dated October 9, 2014<sup>3</sup>, the Health Department representative stated "The 40/45 dbA levels were developed by LLCHD staff after a review of available resources concerning wind machine noise. This research included technical data from wind machine manufacturers, examining existing wind machine noise ordinances from other municipalities, reviewing studies that investigated complaints, irritation, and annoyance due to wind machine noise, and consultation with an acoustics and noise control expert."

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<sup>2</sup> Email from Steve Henrichsen dated January 30, 2015

<sup>3</sup> Email from Chris Schroeder dated October 9, 2014

In an email to Volkswind dated November 8, 2014<sup>4</sup>, the Health Department representative referred to the oft-cited Massachusetts study<sup>5</sup> which included table of nighttime sound pressure levels summarizing guidelines in Germany and Denmark (where some of the highest penetration of wind energy exist). The referenced table:

Promising Practices for Nighttime Sound Pressure Levels by Land Use Type Land Use Sound Pressure Level,dB(A) Nighttime Limits

	dB(A)
Industrial	70
Commercial	50
Villages, mixed usage	45
Sparsely populated areas, 8 m/s wind*	44
Sparsely populated areas, 6 m/s wind*	42
Residential areas, 8 m/s wind*	39
Residential areas, 6 m/s wind*	37

\*measured at 10 m above ground, outside of residence or location of concern

The Health Department referred to this table and the World Health Organization recommendation for maximum nighttime sound pressure level of 40 dBA in residential areas, as justification for a 40 dBA nighttime limit with respect to a wind turbine. However, a residential area reference is not appropriate for a wind facility in an agricultural zone. At Volkswind’s Hallam project, for example, the residential density is no higher than many, many other wind farms throughout the Midwest.

While we respect and honor the Health Department’s intention with respect to health and safety, based on comparison to other sources, including the City of Lincoln’s own Noise Control Ordinance and other authoritative studies the 40 dBA night time limit is overly restrictive.

If the above table is to be used as a reference point, the appropriate nighttime sound pressure level reference would be for “Villages, mixed usage” at 45 dBA or for a “sparsely populated area” at 42 to 44 dBA (which is correspondingly linked to wind speed). *It is critical to note that wind speed is always a factor for ambient sound at a residence. With an appropriate setback, any sound from a wind turbine - which only produces any sound when there is wind - will be masked by the sound of wind on the house structure itself or nearby trees.*

Even the most restrictive: i) wind energy codes around the U.S.; and ii) manufacturer’s own guidelines (discussed below) are no more restrictive than a 45 dBA day and nighttime limit at the receptor. Rainfall is generally producing at least 50 dBA; no one is complaining about rainfall noise. Here is a table of indicative dBA or decibel levels<sup>6</sup>:

<sup>4</sup> Email from Scott Holmes dated November 8, 2014

<sup>5</sup> Wind Turbine Health Impact Study: Report of Independent Expert Panel; January 2012; Prepared for: Massachusetts Department of Environmental Protection & MA Department of Public Health

<sup>6</sup> <http://chchearing.org/noise/common-environmental-noise-levels/>

0	The softest sound a person can hear with normal hearing
10	Normal breathing
20	Whispering at 5 feet
30	Soft whisper
50	Rainfall
60	Normal conversation
110	Shouting in ear
120	Thunder

## 2. City of Lincoln Noise Control Ordinance Chapter 8.24<sup>7</sup>

The City’s noise control ordinance sets forth a comprehensive program for managing noise within the City limits, including specific provisions for impulsive sound, continuous peak sounds, motor vehicles, racing events, and rail carriers. Decibel dB(A) limits are provided for daytime / nighttime periods for various land-use categories, including agricultural. A fine / penalty schedule is set forth in connection with violation of dB(A) limits at various levels.

The sound level limits (in dBA maximum ten-minute Leq) as measured at the receptor for agricultural land-use zones are:

- 6am to 10pm – 75 dBA
- 10pm to 6am – 50 dBA

Noise limits for County (outside City limits) agricultural zones should be consistent with the City limit agricultural zones. In terms of land character there is no difference. Agricultural settings beyond the city limits are not zero-sound “sanctuaries”. Sounds of all frequencies and intensities prevail in County agricultural settings, including those from freight trains, highways, aircraft, ag equipment, power plants, cicadas, frogs and weather-related sounds such as thunderstorms, wind on trees and structures, rain and hail. Lincoln/ Lancaster noise rules for agricultural zones should be consistently applied. There is no health and safety justification for county rules being more restrictive than city rules; moreover, the City Noise Control Ordinance sets forth a programmatic method for penalizing violations of sound levels. We would not object to a similar penalty program applicable to the wind energy special permit Section 13.018 (set forth below).

## 3. Other County Wind Energy Ordinances in Nebraska and Around U.S.

We attach a table of noise limits and setbacks from other counties in Nebraska, which the University of Nebraska has compiled<sup>8</sup>. This table demonstrates that the typical noise limit is 50 or 55 decibels, and some are as high as 60 decibels. Only Lancaster County is less than 50 decibels. With respect to population density in the agricultural zones, there

<sup>7</sup> <https://lincoln.ne.gov/city/attorn/lmc/ti08/ch824.pdf>

<sup>8</sup> <https://lincoln.ne.gov/city/plan/dev/wind/nebset.pdf>

is no material difference among any of these counties. Frequently in the Midwest a wind project overlaps one or more counties. In terms of wind facility sound limits, there is no justification for more restrictive limits in Lancaster County agricultural zones. Indeed, many of these counties have operating wind farms: Knox (50), Antelope (50), Gage (60) and Fillmore (50). There have been few complaints regarding noise in those counties.

#### **4. Wind Turbine Manufacturers' Siting Guidelines**

Major suppliers of commercial scale wind turbines include Vestas, General Electric, Siemens, and Mitsubishi. Well-known turbine manufacturers are global, power sector conglomerates held to the highest quality and safety standards. The leading suppliers know that unit failure or health hazards are to be avoided at all cost. GE, the most widely installed wind turbine make in the United States, is a familiar brand with many product divisions including medical equipment, locomotives, jet engines, power equipment and household goods. The top tier manufacturers have thousands of wind turbine units operating around the world.

Prior to finalizing supply for a multi-million dollar wind farm, the manufacturer conducts a thorough layout review to ensure that no turbine will constitute a health and safety hazard, conditioning their supply on the strictest review of setbacks and potential safety impacts. Our proposed wind energy special permit language (set forth below) is in line with said commercial scale wind turbine supplier guidelines; such suppliers as noted are subject to the strictest safety, regulatory and market standards.

In conclusion, the proposed **Exhibit A** - Special Permit Section 13.018 text amendment (set forth below) is in line with:

- Lincoln / Lancaster Planning Department staff's own conclusions and research over many meetings and months of research;
- City of Lincoln's Noise Control Ordinance Chapter 8.24;
- Industry best-practices in Nebraska and throughout the US; and
- Wind turbine supplier siting guidelines.

We look forward to working with you on a successful conclusion of the Process.

Sincerely,

Jeffrey Wagner

Exhibit A

**County Zoning Resolution Article 13 Proposed Amendment to Special Permit 13.018**

A Commercial Wind Energy Conversion System (CWECS) may be allowed in the AG District by Special Permit under the conditions listed below:

- (a) For purposes of this Section 13, a “participating” property is under a contractual agreement with the CWECS owner. Each CWECS machine shall be located no closer than:
  - i. 1,000 feet or 2.0 times total structure height, whichever is greater, from the closest exterior wall of a residence on a non-participating property;
  - ii. 1,000 feet or 2.0 times total structure height, whichever is greater, from the property line for a non-participating lot of less than 10 acres;
  - iii. 1,000 feet from the closest exterior wall of any participating residence.
  - iv. Machine hub height plus 0.5 times its rotor diameter to public paved roads;
  - v. 1.0 times machine rotor diameter to public unpaved roads;
  - vi. 1.0 times total structure height from the boundary of a property not participating in the Special Permit.
  
- (b) The distance from all external boundary lot lines and/or right-of-way lines of the Special Permit to any tower support base of the CWECS shall be equal to 1.0 times total structure height; provided, however, that in order to enable siting of CWECS which do not interfere with pivot irrigation systems, the Special Permit applicant may, at the time of applying, submit written waiver requests, signed by the relevant adjacent landowner(s), to allow a setback of rotor radius plus the setback of the district.
  
- (c) No CWECS shall operate in such a manner that the sound level (in dBA maximum ten-minute Leq at the receptor) emitted by the CWECS exceeds the levels set forth below. All readings shall be taken at the closest exterior wall of any dwelling (residence) located on the property.
  - i. For participating properties a fifty-five (55) dBA maximum 10 minute Leq during any one hour;
  - ii. For non-participating properties, the greater of:
    - 1. Forty-five (45) dBA maximum 10 minute Leq; or
    - 2. Five (5) dBA maximum 10 minute Leq above background level sound, such background level sound as determined by a pre-construction noise study establishing ambient sound levels over a representative 24 hour period at a representative dwelling.

As a condition of commencing construction under the Special Permit, the CWECS Special Permit grantee shall submit a pre-construction noise study, establishing representative ambient sound levels at representative location(s), to the Lincoln-Lancaster Health Department.

Violation of the sound limits set forth above shall be evaluated by Lincoln-Lancaster County Health Department, and must be further confirmed by an independent specialist Board Certified by the Institute of Noise Control Engineers (INCE).

Upon confirmation of violation(s) by an independent Board Certified INCE specialist, and further affirmation of such conclusion by the County Board, the Special Permit grantee shall be subject to a fine according to the schedule set forth in Table 1.

**Table 1. Fine Schedule for CWECS Violations of Sound Level Limits**

<b>Decibels (dBA) in Excess of Limit</b>	<b>Fine per Occurrence</b>
1-4	\$500
5-9	1,500
10-14	2,000
15-19	2,500
20+	3,000

At the County Board’s discretion, post-construction noise level measurements may be required; provided, however, that such discretionary measurement may not be required more frequently than twice per calendar year. All CWECS noise complaints shall be referred to the County Board, which shall determine whether noise monitoring is required to determine whether a violation has occurred.

- (d) CWECS construction shall not adversely impact identified by Nebraska Game & Parks Commission or U.S. Fish & Wildlife Service as rare or endangered natural resources, listed species, wetlands, native prairie or grasslands.
- (e) No CWECS shall obstruct or impair an identified view corridor.
- (f) CWECS shall be designed and placed in such a manner as to minimize to the greatest extent feasible, adverse visual impacts on areas adjacent to the Special Permit property. The Special Permit grantee shall document projections of the “shadow flicker” on any residences located outside of the Special Permit property which are occupied for at least 6 months per calendar year.
- (g) As a condition of commencing construction, the CWECS Special Permit grantee shall enter into an agreement with the County Engineer regarding use of County roads during construction.
- (h) CWECS machines shall comply with all Federal Aviation Administration (FAA) requirements and shall have only the lighting as required by the FAA or other Federal agency.
- (i) CWECS shall be finished in a white, gray or another unobtrusive color with a non-reflective finish. There shall be no advertising, logo or other symbols painted on the CWECS other than those required by the FAA or other governing body. Each CWECS

shall have a nameplate which is clearly legible and contains contact information of the operator of the wind facility.

- (j) Each CWECS shall have a decommissioning plan outlining the means, procedures and cost of removing the machine(s) and all related supporting infrastructure and a letter of credit, bond, or equivalent enforceable resource to guarantee removal and restoration upon discontinuance, decommissioning or abandonment.
- (k) CWECS must meet all applicable Federal, State and local rules and regulations.
- (l) In the case of CWECS which are part of a unified plan for a wind farm, parcels which are separated from one another only by the presence of a public right-of-way may be combined into one Special Permit application. When a CWECS special permit covers multiple premises, the lease or easement holder may sign the application rather than the lot owner.