

**BEFORE THE PUBLIC UTILITIES COMMISSION
OF THE STATE OF SOUTH DAKOTA**

**IN THE MATTER OF THE
APPLICATION BY DEUEL HARVEST
WIND ENERGY LLC FOR A PERMIT
OF A WIND ENERGY FACILITY AND
A 345-kV TRANSMISSION LINE IN
DEUEL COUNTY**

* **INTERVENOR CHRISTINA KILBY**
* **RESPONSES TO STAFF’S SECOND**
* **SET OF DATA REQUESTS**
* **EL18-053**
*
*

Below, please find Intervenor Christina Kilby’s Responses to Staff’s Second set of Data Requests.

2-1) Referring to the response of Christina Kilby to Staff Data Request 1-3, you state “I ask that setbacks for nonparticipating landowners be set at two miles with the option of a waiver. This is because of the characteristics of and problems caused by infrasound that turbines are known to produce.”

a) Please provide documentation that supports a two mile setback is appropriate to alleviate problems caused by infrasound.

I do not think that a two-mile setback is sufficient to alleviate problems from infrasound. However, it is better than what is proposed and something I believe is reasonable to help mitigate effects.

b) Is the recommended setback from the residence or property line?

I believe all setbacks should be from property lines. Non-participating properties should be protected in their entirety. I do not think there is any justification for inflicting any harms on non-participating property.

2-2) Referring to the response of Christina Kilby to Staff Data Request 1-3, you state “As an alternative to two-mile setbacks, sound levels should not be allowed to exceed any level that can cause sleep disturbance, annoyance, or stress. Non-participating landowners should not be forced to sacrifice their enjoyment, comfort, or health for the profits of the applicant.”

a) What is your recommendation for the sound level to avoid sleep disturbance for non-participating landowners? Please provide any documentation to support the recommendation.

I believe under 30dB is required to avoid any impact on sleep from noise. This is based on the attached study, Kenneth Hume et. al, Effects of Environmental Noise

on Sleep, Noise & Health, November-December 2012, Volume 14:61, 297-30, p. 297. (Att. 1) The study reports 30dB is the level under which no substantial biological effects are observed. (Id., p. 299)

b) What is your recommendation for the sound level to avoid annoyance for non-participating landowners? Please provide any documentation to support the recommendation.

I would also suggest a noise limit of 30dB to mitigate annoyance from noise. My reasoning is based on the study cited above.

c) What is your recommendation for the sound level to avoid stress for non-participating landowners? Please provide any documentation to support the recommendation.

I would also suggest a noise limit of 30dB to mitigate stress from noise. My reasoning is based on the study cited above.

These limits however do not necessarily prevent any of these issues from occurring if they are caused by infrasound.

2-3) Referring to the response of Christina Kilby to Staff Data Request 1-3, you state “I feel upon any reliable complaint made to a PUC liaison, Deuel Harvest should be required to shut down the possibly offending turbine until an independent test done at Deuel Harvest’s expense can prove no violation exists.”

a) In the last four wind energy dockets (Docket EL17-055, EL18-003, EL18-026, and EL18-046) the public liaison condition stated “the public liaison services shall terminate 90 days after the Project commences commercial operations, unless the appointment is extended by order of the Commission.” What is your recommendation for the duration of service of a public liaison?”

I request public liaison services for at least one year because of the variance in sound propagation during different seasons. In addition, there is some evidence that people become more sensitive over time to the noise produced by wind turbines. Ideally there would be permanent liaison services covering all operational wind energy facilities. There must also be sufficient remedial measures and enforcement provisions for any nuisance or harm created. I believe the Commission should retain authority to modify the Project if in its opinion the Project is found to create a nuisance.

b) Is it lawful to require the shutdown of a possibly offending turbine until an independent test can prove no permit violation exists? Please explain why a permit violation would not need to be ruled on by the Commission before a turbine be required to shut down.

According to 49-41B-25, the Commission has authority to impose such terms, conditions, or modifications of the construction, operation, or maintenance of the project as the commission deems appropriate. This would allow the commission to include the requirement that Deuel Harvest be required to shut down the possibly offending turbine upon a reliable complaint made to a public liaison until an independent test done at Deuel Harvest's expense can prove no violation exists.

Further, SDCL 49-13-16 provides that if any action or proceeding or order of the commission comes into question, the validity of the order is presumed. It is not necessary to allege or prove any fact upon which the validity of the order depends, but the burden is upon the party claiming the order to be invalid to plead and prove the facts establishing the invalidity.

The potential harm to people from a possibly offending turbine outweighs the benefit of allowing the potentially offending turbine to continue operation.

c) Regarding the PUC liaison, please explain why the PUC complaint process established by administrative rule will not be able to address the potential permit violations during operations.

The majority of SDCL 49-13, Procedure on Complaints to Public Utilities Commission, only applies to complaints regarding telecommunications companies or motor carriers. As such, there is no complaint process established to effectively address permit violations of the Deuel Harvest project.

I believe a process for should be imposed that prevents a significant burden on complainant. For example, how would a landowner prove non-compliance with a shadow flicker limit when the limit is annual? Not only would it take at least a year to prove non-compliance, but the cost of this testing should be the responsibility of Deuel Harvest, part of the cost of doing business. Stating any flicker limit as a monthly limit would also be beneficial.

Based on Invenergy's past actions in Williams v. Invenergy, I believe Deuel Harvest will force any complainant to endure lengthy and costly litigation, while Invenergy or Deuel Harvest attempts to evade enforcement of regulations. Meanwhile people are subjected to years of violations. This is why I strongly believe that upon any reliable complaint to a public liaison the possibly offending turbine be

shut down until independent testing is done to determine the turbine is in compliance.

I believe there should be recourse for potential complaints of noise, and annoyance, not requiring a claim of damages, nor even proof of any violation. This would help create goodwill on behalf of the project. However, I feel this would also require a public liaison officer to mediate.

And because of continuing research into the effects of noise and infrasound on people, I believe any permit granted to Deuel Harvest should contain a condition that if the project is determined at any time to pose a threat to human health, the Commission can require any modification to the construction or operation of the project to prevent such harm.

2-4) Referring to the response of Christina Kilby to Staff Request 1-3(a), you state “Long term and continuous harassment and health effects from turbine noise, flicker and infrasound is unjustified and a serious harm.” Is your position that shadow flicker causes health effects? If yes, please explain in detail and provide any supporting documentation.

My position is that flicker causes annoyance and/or stress which can result in negative effects to one’s health. See Testimony of Christina Kilby for studies discussing health effects from annoyance and stress.

2-5) Referring to the response of Christina Kilby to Applicant Data Request 1-7, you state “The size, number and location of turbines in close proximity to our property will destroy the peace, and quiet we currently enjoy at the property. The size, number, and location of the turbines in close proximity will prevent the safe use and enjoyment of the property, because of shadow flicker, noise, infrasound, and risk of ice throw, component liberation and fire.”

a) Please explain and describe the risk of ice throw stated above. Please provide documentation to support the response. Do you have a setback recommendation for ice throw? Please support such recommendation with documentation.

Under the right conditions ice can form on turbine blades. There is then the potential that if or when the turbine is operating, the ice can be thrown from the blades. This poses a significant risk of injury or death to people and damage to property. Please see study cited below regarding blade and fragment throw, showing a 10% fragment of a blade can be thrown 4796 ft. I am assuming ice throw would be similar to blade fragment throw and I would suggest a setback of 4796 ft to prevent injury, death, or damage from ice throw.

b) Please explain and describe component liberation stated above. Please provide documentation to support the response. Do you have a setback recommendation for component liberation? Please support such recommendation with documentation.

Component liberation is another name for blade throw.

I am attaching a report regarding the estimation of impact probabilities of a full or partial blade loss from a wind turbine based upon mathematical modelling techniques. (Numerical Modelling of Wind Turbine Blade Throw Report Number ESS/2006/27, p. 1) (Att. 2) The model discussed indicates full blades may be thrown up to 203m, (666 feet), and a 10% blade fragment may be thrown up to 1462m (4796 ft). (Id. p. 8) However, according to the report, lift, spinning, gliding and bouncing effects were not accounted for. (Id. p.20) The model does not address the distance smaller pieces can be thrown.

To prevent injury, death or damage from the throw of a 10% blade fragment, it appears a setback of at least 4796 feet would be required.

2-6) Referring to the response of Christina Kilby to Applicant Data Request 1-7, you state “I am concerned about disturbance from the construction and operation of the turbines polluting the aquifer and other bodies of water.”

a) Please describe and explain the disturbance from the construction and operation of the turbines that would pollute the aquifer and other bodies of water.

My concern is that the weight of trucks, cranes, equipment, and turbine components will disrupt the shallow aquifers underlying portions of the project and areas surrounding the project, whether from weight or vibrations. Portions of the project are located in Aquifer Zone B described in the Deuel County Ordinances.

b) Please provide documentation that supports the claim that the construction and operation of wind energy facilities pollute aquifers and other bodies of water.

I am not claiming this will happen, but it is a concern of mine. I do not have documentation regarding this at this time.

2-7) Referring to the response of Christina Kilby to Applicant Data Request 1-8, you state “Because of the distance infrasound can travel, I request a two-mile setback for non-participating landowners, with the option of a waiver.” How far can infrasound travel? Please provide documentation to support the claim.

I am attaching a study finding that “Infrasound from a 60-turbine windfarm was found to propagate to distances up to 90km under nighttime atmospheric conditions.” (Marcillo, O., S. Arrowsmith, P. Blom, and K. Jones (2015), On infrasound generated by wind farms and its propagation in low-altitude tropospheric waveguides, J. Geophys. Res. Atmos., 120, 9855–9868, doi:10.1002/2014JD022821, Abstract) (Att. 3).

The long distance infrasound from wind projects is able to travel may explain some of the results of the Health Canada study submitted by Dr. Ellenbogen.

2-8) Referring to the response of Christina Kilby to Applicant Data Request 1-11, you state “I believe the market value of all residences located in and around the project will decrease. I do not believe anyone would choose to live near an industrial wind project if given a choice, especially if wanting to live in a quiet rural area. I know the project will negatively affect the value of our family property. No formal appraisals have been done that I am aware of at this time. But the property will no longer have the desired characteristics it has now.”

a) Are you aware of any market sales near a wind tower that supports that assertion that the market value of all residences located in and around wind turbines will decrease? If yes, please provide all information you are aware of, including address, of the market transaction.

I believe George and Ruby Holborn sold their home at a significant loss because of the planned Deuel Harvest project, however, I do not have specifics on the sale.

b) Do you think the market value of a participating landowner will decrease, even if the wind turbine lease payments are transferred in the property sale? Please explain and provide any evidence you have.

I think it will, yes. According to Mr. Lawrence: “The most common issues farmers cited about wind towers is the limitation of aerial spraying, poor reclamation, and compaction issues after the installation of the towers, possible yield loss due to the inability to plant straight rows and the difficulties associated with working around the towers during planting and harvest.” (Marous Testimony 12-15) As people become more aware of these issues, I believe the values of all properties close to turbines will decrease.

I think decommissioning costs are underestimated. Once possible buyers of participating land become aware of the financial liability for decommissioning in the event the wind companies walk away and decommissioning funds are not adequate, I believe property values of even participating land will be negatively affected. This may not be reflected yet because potential buyers are not yet aware of these issues.

I believe people get more bothered by turbines the longer they live by them. Many buyers may not think the turbines will bother them when they purchase the property.

Here are some of the interviews from Mr. Lawrence's report:

“Own & lease farmland with wind towers. Live in proximity to wind towers. Noisy. Poor reclamation after construction of towers; compaction & loss of yields. Difficult to farm around towers.”

“Some buyers won't look at home near wind towers.”

“The towers sound like jet planes when you are working in the yard. But paid the same, even though they don't like the noise.”

“Got tired of the annoying noise. Decided to sell. We thought it would effect the value; but it didn't matter to the buyer. Glad to not be living next to wind towers.”

(Marous, Testimony, p. 11)

“Trying to sell a house within the proposed project area. Currently listed on MLS. Had an offer on the property, but believes the disclosure of the proposed wind project near the property ended the deal.”

“Purchased home prior to the wind project. There are periods of the day when there is a shadow effect depending on the angle of the sun. Best way to describe it is like a camera flash. The curtains in the house have to be closed during the flicker times. The flash scares the horses. The red lights, light up the night sky and destroy star gazing. The house was listed for sale and most potential buyers drove away when they saw how close the towers are to the house. The wind company over promised and under delivered.”

“Built retirement home prior to the wind project. Towers within 1,000 ft of property on all sides. Noisy. Shadow and flicker effect during certain times of the day. Have to deal with constant noise. Some days louder than others, depending of direction on the wind. Believes the towers are effecting his ability to sell the property.”

“Trying to sell a house within the proposed project area. Currently listed on MLS. Had an offer on the property, but believes the disclosure of the proposed wind project near the property ended the deal.”

(Marous Testimony, p.12)

As Mr. Lawrence stated, “the interview and site analysis support the presumption that proximity to a wind tower could influence the property owner's bundles of rights, such as

the right to quiet enjoyment. (Lawrence 17-19) The interviews summarized by Mr. Lawrence corroborate many problems cited regarding the proximity of people to wind turbines. (Marous Testimony p. 11) As turbines continue to spread across the county and state, more and more people will become aware of these issues and will not want to buy property near turbines.

Dated: March 18, 2019

/S/ Christina Kilby

Intervenor

112 Geneva Blvd.

Burnsville, MN 55306

christinakilby@yahoo.com