From: PUC
Sent: Tuesday, July 3, 2018 11:14 AM
To: [redacted]
Subject: EL18-026

Mr. Hubner,

Thank you for your email regarding the Prevailing Wind project, docket EL18-026. An application was filed with the Public Utilities Commission for a siting permit to construct that project on May 30, 2018. You can find this docket on the PUC's website at http://puc.sd.gov/Dockets/Electric/2018/EL18-026.aspx.

Since this is a pending docket before the commission, your message and my response will be posted under Comments and Responses in the open, public docket for my fellow commissioners and others to read. I encourage you to read the filings and follow along as the docket is processed.

Here is a link to the commission's Information Guide to Siting Energy Conversion & Electric Transmission Facilities: http://puc.sd.gov/commission/Publication/sitinghandout.pdf. It may be
helpful in explaining the commission's processing of dockets such as this.

Kristie Fiegen, Chairperson
South Dakota Public Utilities Commission
www.puc.sd.gov

From: Michael Bollweg [redacted]
Sent: Tuesday, July 3, 2018 12:17 PM
To: PUC-PUC <PUC@state.sd.us>; PUC-DOCKET FILINGS <PUCDocketFilings@state.sd.us>
Cc: [redacted]
Subject: [EXT] Existing Docket Filing - EL18-026

Docket Number: EL18-026 Last Name: Bollweg First Name: Michael Company: Bollweg Farms Address: [redacted] City: Harrold State: SD Zip: 57536 Phone: [redacted] Fax: Email: [redacted] Comments: Attached is a PDF including a cover letter and corresponding exhibit. Please include in Docket EL18-026. Thank you.

Public Utilities Commission
Capitol Building, 1st floor
500 E. Capitol Ave.
Pierre, SD 57501-5070

RE: Docket EL18-026

Madam Chairperson, South Dakota Public Utilities Commissioners and Support Staff:

I am writing to provide comments and share my concerns with regard to the Prevailing Wind Park Project (PWPP) proposal to erect 61 industrial wind turbines, associated infrastructure, and transmission poles within the three county region of Bon Homme County, Charles Mix County and Hutchinson County.

The two areas of most concern I have are the potential health effects as a result of the counties' erroneous setback ordinances and the negative impact on upland birds including pheasants, and our state's indigenous species: sharp-tail grouse and the Greater prairie chicken.

Health Concerns

Since as early as the 1980's there have been numerous scientific studies (including a NASA study) that have showed at times high levels of infrasound and low frequency noise are generated by industrial wind turbines. Compound this with audible noise levels above 40 dbA that disrupt rural areas that enjoy levels as low as 10-15 dbA it becomes a real cause for concern for many, but not all people. At this point I would cite the numerous studies/documents, but I'm confident your staff has and will continue to do their due diligence in uncovering the supportive, unbiased resources.

Another point of concern is the potential of physical blade throw from a result of catastrophic blade failure and/or ice throw from winter buildup on the blades. In the February 2015 Peer Review Research Article – *Wind Energy-Analysis of throw distances of detached objects from horizontal-axis wind turbines*, " It is found that, while at tip speeds of about 70 m/s (normal operating conditions), pieces of blade (with weights in the range of approximately 7-16 ton) would be thrown out less than 700 m for the entire range of wind turbines, and turbines operating at the extreme tip speed of 150 m/s may be subject to blade throw of up to 2 km from the turbine. For the ice throw cases, maximum distances of approximately 100 and 600 m are obtained for standstill and normal operating conditions of the wind turbine, respectively, with the ice pieces weighting from 0.4 to 6.5 kg." 1000' setbacks from a home, let alone a property line, create an extremely dangerous situation as a result of irresponsible trespass zoning. Whether a family is enjoying a summer evening on the patio of their home or riding horseback with their children along their property line, they should be afforded a safe use of all their property.

As these projects continue to engulf our great state, please ensure the safety, health and welfare of rural family homes and farms within the footprint are not infringed upon as a result of the PWPP's overall quest to impose an intermittent, unreliable, inefficient source of energy upon this pristine, aesthetic region of rural America. Setbacks of at least 2 miles from occupied residences are an absolute necessity so families who plan to live and thrive in the region are not subject to industrial wind's negative impacts. Project participants, whether or not they live within the project's footprint, have the luxury to make decisions on the location of wind turbines including the distance from their homes. If project participants wish to risk the potential of being subject to negative impacts for the reward of promises of more industrial wind turbines on their property they should be allow to sign a release waiver. However those who choose not to participate don't have that luxury and are reliant on their neighbor's discretion and local commissioner boards. A 1000' setback from a 590' industrial wind generator is an absolute nightmare in the making. 2 miles setbacks are responsible and still provide a project to move forward in such a manner.

South Dakota's Upland Game Birds

A group consisting of representatives from Iowa DNR's Wildlife Bureau and Energy Section, US Fish & Wildlife Service, several non-governmental conservation organizations, energy companies, and the Iowa Renewable Energy Association put together siting recommendations with regard to industrial wind projects and their distance from sensitive wildlife and plant populations. EXHIBIT 1. Significant findings published include:

* "Avoid placing turbines at locations where any species of fish, wildlife or plants protected under the federal Endangered Species Act have been documented."

* "Avoid placing turbines in or near recognized bird concentration areas or migration pathways, including lakes, wetlands, forests, river valleys, ridge tops or bluff tops, large grasslands, known bird roosting areas, public wildlife areas, parks, and areas with frequent incidence of fog mist or low clouds."

* "Consider possible cumulative regional effects of multiple wind energy projects. While one project alone may result in few concerns for wildlife, multiple projects across one landscape could significantly multiply adverse effects."

* "Avoid placement of turbines in or near areas where highly "area-sensitive" wildlife species, such as prairie-chickens, are known. Area-sensitive species require expansive, unfragmented habitat. For prairie-chickens in particular, a separation distance of at least 5 miles from all known leks (breeding grounds) is strongly recommended."

A three year study recently completed in 2018 as a thesis "Ring-necked Pheasant responses to wind energy in Iowa" by Iowa State University graduate student James Norman Dupuie Jr. with program study committee professors Stephen J. Dinsmore and Julie A. Blanchong provides some interesting insight.

The study concluded a linear regression showed statistically significant effects of the presence of wind turbines on pheasant counts. Pheasant counts increased with increasing distance from the nearest wind turbine. Furthermore they showed a population decrease as the density of wind turbines near the survey point increased. South Dakota has a significantly higher population of pheasants than Iowa. Can you imagine how much more significant the negative impacts would be if you transferred South Dakota's pheasant population data into their statistical formulas?

In December 2013 at the SD Pheasant Summit, the South Dakota Game, Fish and Parks Dept. data showed pheasant hunters spend about $219 million each year. In total, South Dakota hunting has generated almost $100 million in salaries, wages and business owners' income and created 4,500 jobs. – *Capital Journal* 10 Dec 2013. It seems evident the SD Office of Economic Development has overlooked this significant information with their carefree actions of supporting every wind development project without completely comprehending the negative repercussions other major facets of our state's economy will endure. The PUC's discretion to deny or amend a project in the event the "project will not pose a threat to the social and economic condition of the inhabitants" is significant. As the state continues to be blanketed with industrial wind facilities, the economic and social impacts linked to our beloved wildlife will become more and more stressed and must be taken into serious consideration.

The agricultural splendor, wildlife, natural habitat, and great people who have made this region their home for generations do not deserve the life altering negative impacts associated with the proposed transition of agricultural lands into industrial wind parks without serious oversight. Thank you for your consideration.

Sincerely,

Michael J Bollweg
Agronomist – '96 Graduate SDSU
Bollweg Farms
Tumbleweed Lodge
[redacted]
Harrold, SD 57536

EXHIBIT 1-1

Wind Energy and Wildlife Resource Management in Iowa:
Avoiding Potential Conflicts

Introduction

Iowa is on its way to ranking among the world's leading producers of wind-generated electrical energy. In our efforts to become less dependent upon fossil fuels, nuclear power, hydropower and other sources with frequent environmental concerns, the possibility of this "green" energy has caused much excitement. Many Iowans eagerly await expansion of this low-cost (after initial infrastructure investments) source of electricity as one step towards energy independence.

The Governor, General Assembly, and Department of Natural Resources all consider wind energy development in Iowa a high priority. With much open farmland upon which wind generators might be placed, and in a region of nation realizing relatively high average wind velocities, Iowa seems destined to be a national focal point for wind energy development. Many state and national conservation organizations also support increasing wind energy production.

No energy source has yet been found to be without some degree of environmental costs, however, and wind energy is no exception. It has been demonstrated that if proper siting of wind turbines is not carefully planned, certain locations may result in collisions with, and death of, both wild birds and bats. In one or two noteworthy instances, excessive mortality of hawks, eagles and other birds of prey has resulted in major modifications to both design and placement of wind turbines, or even periodic shut-downs of large facilities. Additional costs involved with such measures can reduce cost-effectiveness of energy production.

Iowa currently exercises minimal regulation on locating wind farms. Nevertheless, some energy companies recognize the benefits of consulting with wildlife resource managers *before* final decisions are made on siting of new facilities. Such actions will result in greater trust and cooperation between energy producers and those charged with protecting our wildlife resources This can lead to an orderly and beneficial development of Iowa's wind energy.

An *ad hoc* Iowa wind energy and wildlife discussion group has met infrequently to review current developments regarding wind energy and wildlife interactions. The group consists of representatives from Iowa DNR's Wildlife Bureau and Energy Section, US Fish & Wildlife Service, several non-governmental conservation organizations, energy companies, the Iowa Renewable Energy Association and other interested parties. The group has no rule-making or regulatory authority; rather it simply works cooperatively to discuss mutual concerns and to learn of the latest developments.

Wildlife Concerns

Just what are the problems wind turbines might pose to our wildlife and other natural resources? The most obvious is direct collisions of birds and bats with rotating blades. Fortunately for

birds, the annual mortality rate at most Midwestern wind farms appears to remain relatively low and probably insignificant. An exception occurs when turbines are placed in or very near major migration corridors and pathways, such as large river valleys and ridgetops or bluffs. Because birds tend to follow or congregate along these natural landscape features during their semi-annual migrations, wind turbines placed near these features have potential for causing significant bird kills in spring and fall. A few examples of such landscapes in Iowa include the Des Moines River, Little Sioux River, Wapsipinicon River, Loess Hills, and Mississippi River blufflands. Still, with Iowa's mostly open landscape, birds generally are widely dispersed throughout much of the year and chance of interaction with turbines is small.

Bats present an entirely different situation. For reasons still mostly unknown, bat collisions and mortality is much higher than for birds at many wind farms. Early efforts are underway to attempt a better understanding of the problem, but little is known at this time. However, bats usually are associated with trees or wooded areas and wetlands, where the insects on which they feed are abundant. Wind turbines placed near woodlands and wetlands thus might reasonably be expected to result in more bat deaths than turbines situated in open farmlands.

An emerging concern for birds is wind turbines placed within or very near large expanses of grassland. In some western states, ground-nesting lesser prairie-chickens have been found to abandon their nesting grounds when wind turbines were erected and operated nearby. It is quite likely that Iowa's greater prairie-chickens, a state endangered species requiring large expanses of unbroken habitat, would exhibit similar behavior. Many other ground-nesting grassland birds have yet to be studied, but some of these species already are in steep decline nationwide and cannot risk another factor that might potentially threaten their survival. A leading cause of much bird decline is related to fragmentation, or "parcelization", of their remaining habitat, breaking it into parcels too small to meet certain birds' survival or reproductive needs. It has been suggested that wind turbines placed in the middle of a large grassland may similarly fragment habitat and greatly reduce its value. This is a question in need of much additional research.

In summary, adverse effects of wind turbines on birds and bats have been documented in some locations, but much remains to be learned. A few energy companies or developers have collaborated with wildlife researchers to conduct some desperately needed studies. They are to be recognized for their commitment to better conservation of all our natural resources. Nevertheless, much more research is needed, especially in comparing "before and after" effects upon wildlife where wind farms are constructed. Information garnered would be invaluable in helping with future wind farm siting decisions.

Wind Turbine Siting Recommendations and Guidelines

Until we more fully understand how wildlife interacts with wind turbines, interim guidelines have been prepared to help wind energy developers and producers do a better job of designing and siting their wind farms. The list of recommendations below will serve as a starting point for things that *should* be considered when planning wind energy developments. These have been collected from a variety of sources, chief among them the US Fish & Wildlife Service Interim Guidelines for siting and construction of wind energy facilities, and recommendations from the

National Wind Coordinating Committee. Keep in mind that this list is a *work in progress*, subject to change as new information is gained.

Siting Recommendations:

- Avoid placing turbines at locations where any species of fish, wildlife or plants protected under the federal Endangered Species Act have been documented. Information may be obtained by contacting the Iowa Department of Natural Resources Endangered Species Coordinator or Wildlife Bureau staff. Any action resulting in losses to federally-listed species could result in substantial fines or other penalties.
- Avoid placing turbines in or near recognized bird concentration areas or migration pathways, including lakes, wetlands, forests, river valleys, ridge tops or bluff tops, large grasslands, known bird roosting areas, public wildlife areas, parks, and areas with frequent incidence of fog mist or low clouds. While there is no firm information on the amount of buffer zone needed between turbines and these habitats, a separation distance of at least one mile might be considered an absolute minimum (more for prairie-chickens—see below).
- Avoid placement of turbines in or near areas where highly "area-sensitive" wildlife species, such as prairie-chickens, are known. Area-sensitive species *require* expansive, unfragmented habitat. For prairie-chickens in particular, a separation distance of at least 5 miles from all known leks (breeding grounds) is *strongly* recommended.
- Avoid placing turbines near documented bat hibernation, breeding or nursery colonies and in migration corridors (see bird recommendation above) or between known colonies and feeding areas.
- Avoid placement of multiple turbines in close proximity to one another or perpendicular to known migration pathways (typically north-south). Widely spaced turbines, in arrays parallel to normal bird migration routes, can reduce collisions.
- Reduce or eliminate availability of carrion within wind farms, to reduce chances of attracting eagles, vultures and other raptors colliding with turbine blades. Neither dead livestock nor wildlife should be left within or near wind farm boundaries.
- Place wind turbines in areas already fully developed for agriculture, especially row-crop farming, where there is minimal extant wildlife habitat—Iowa is especially rich in such lands, and it has been estimated that as much as 80% of Iowa's landscape might be considered suitable for wind energy development with few adverse effects upon wildlife.
- If wildlife habitat losses or fragmentation must be mitigated, develop a plan to create or restore habitat *away* from the wind farm site. This will serve to attract birds, bats and other wildlife away from the development and reduce collisions. Wherever possible, coordinate habitat mitigation sites with other public or private wildlife lands, to connect, enlarge or enhance those areas.
- Certain landscapes, such as the Loess Hills in western Iowa and the "Iowa Great Lakes Region" in northwest Iowa, are known for their beauty, rarity *and* for extensive wildlife breeding and migrating activities. Such landscapes should be avoided entirely both for biological and aesthetic reasons.
- Consider possible *cumulative* regional effects of multiple wind energy projects. While one project alone may result in few concerns for wildlife, multiple projects across one landscape could significantly multiply adverse effects.

- A map of Iowa, denoting areas of particular concern for possible adverse effects by wind turbines upon wildlife and habitat, has been developed and is updated periodically. Construction within these areas may not necessarily result in wildlife conflicts, and consultation with DNR wildlife biologists can assist developers in finding suitable sites within these potentially sensitive landscapes, or in suggesting plan modifications to minimize adverse effects.

Turbine Design and Operation Recommendations:

- Tubular support towers with pointed tops, rather than lattice supports, greatly reduce opportunities for birds to perch or nest upon the structures. Avoiding placement of permanent external ladders or platforms on tubular towers also reduces nesting and perching.
- Avoid use of guy wires for turbine or meteorological tower supports. Any existing guy wires should be marked with recommended bird deterrent devices (Avian Power Line Interaction Committee 1994).
- Taller turbines, having a top-of-rotor sweep exceeding 199 ft., may require lights for aviation safety. The minimum amount of pilot warning and avoidance lighting necessary should be used, and unless otherwise required by the Federal Aviation Administration, only white strobe lights should be used at night. These should be minimized in number, intensity, and number of flashes per minute. Solid red or pulsating red lights should *not* be used, as they appear to attract more night-migrating birds than do white strobes.
- Electric power lines should be placed underground wherever possible, or should utilize insulated, shielded wire when placed above ground, in order to reduce bird perching and electrocution.
- Where the height of rotor-sweep area produces high wildlife collision risks, tower heights should be adjusted to lower risks.
- If wind turbine facilities absolutely must be located in areas known for high seasonal concentration of birds, it is essential that a bird monitoring program be established, with at least three years of data collected to determine peak use periods. Data may be collected by direct observation, radar, infrared or acoustic methods. When birds are highly concentrated in or near the site, turbines should be shut down until birds have dispersed.
- When older facilities must be upgraded or retrofitted, the guidelines above should be employed as closely as possible.

Ideally, a site study plan and description of turbine structural and lighting design should be submitted to Iowa DNR well in advance of final siting decisions, for review by staff wildlife experts and advisements on acceptability or suggestions for modifications and/or monitoring. Hiring a reputable environmental consultant with a strong background in bat and bird ecology is strongly recommended. A baseline inventory of wildlife and evaluation of habitat should be considered for every site under serious consideration for windfarm development. Use of National Wind Coordinating Committee study guidelines will allow for comparison with other studies. Special attention should be paid to Spring and Fall migration seasons, reviewing

migrational use of the proposed site by raptors, waterfowl, shorebirds, gulls, songbirds and bats. Upon completion and startup of wind energy generation, monitoring wildlife populations and migrations should be conducted for at least 2-3 years.

Related Links

The following websites of other agencies and organizations may be useful in further understanding of potential wind energy and wildlife conflicts, and how to reduce or mitigate threats to wildlife:

http://www.fws.gov/habitatconservation/wind.pdf
http://www.nationalwind.org/publications/siting.htm
http://www.dnr.wi.gov/org/es//science/energy/wind/guidelines.pdf
http://www.aplic.org

Michael Bollweg PERMISSION TO REPRINT

From: "Murphy, Alex" <alex.murphy@dnr.iowa.gov>
Date: Wednesday, April 04, 2018 5:27 PM
To: [redacted]
Attach: wind_wildliferecs_Current2018.pdf
Subject: Re: wind_wildliferecs.pdf

Michael,

Here is the updated document, feel free to use this in place of the old one.

Thanks,
AM

ALEX MURPHY | *Director of Communications*
Director's Office
Iowa Department of Natural Resources
P 515-725-8219 | C 515-729-7533 | 502 E. 9th St., Des Moines, IA 50319
www.iowadnr.gov

On Wed, Apr 4, 2018 at 3:28 PM, Michael Bollweg <[redacted] wrote:

Alex,

Please find the attached document. If you could grant me permission (in writing) to reprint, cite, use the material that would be greatly appreciated. Thank you!

http://www.google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd=1&ved=0ahUKEwiIrNaCuqHaAhXk6IMKHU74D7UQFggnMAA&url=http%3A%2F%2Fwww.iowadnr.gov%2FPortals%2Fidnr%2Fuploads%2Fwildlife%2Fwind_wildliferecs.pdf&usg=AOvVaw1aHBd0_VehwHpYZGMz02_m

Michael J. Bollweg
Bollweg Farms
[redacted]
Harrold, SD 57536
[redacted]

From: PUC
Sent: Tuesday, July 3, 2018 2:33 PM
To: [redacted]
Subject: EL18-026

Mr. Bollweg,

Thank you for your email regarding the Prevailing Wind project, docket EL18-026.

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Kristie Fiegen, Chairperson
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