BEFORE THE PUBLIC UTILITIES COMMISSION

OF THE STATE OF SOUTH DAKOTA

IN THE MATTER OF THE APPLICATION OF DEUEL HARVEST WIND ENERGY LLC FOR A PERMIT OF A WIND ENERGY FACILITY AND A 345-KV TRANSMISSION LINE IN DEUEL COUNTY	* * * * * * * *	**GARRETT HOMAN'S RESPONSE TO STAFF'S SECOND SET OF DATA REQUESTS** **EL18-053**

Exhibit G20

Below, please find Garrett Homan's response to Staff's Second Set of Data Requests to Garrett Homan. The original request is restated and followed by my response to that request.

2-1) Referring to the response of Garret Homan to Staff Data Request 1-3(1): Does FAA order JO 7400.2L and 14 CFR 77 apply to private-use airstrips? If no, please explain why it is appropriate to apply these standards to private-use airstrips for safety purposes.

Since private landing strips are not regulated by the FAA, these do not apply as Federal Law to private airstrips without instrument approaches. However, FAA regulations, orders, and guidance material (such as Advisory Circulars) associated with airports, airspace, etc. constitute the de facto standards to use in matters such as these (definition of and dimensioning of airspace) in an absence of other more conservative standards applied by state or local authorities (which South Dakota does not have). These standards are reflective of physics, industry expected safety margins, how aircraft operate, and how pilots are trained to fly – so deviating from these standards would be eroding safety away from the effected operations. FAA regulations and standards are typically established as minimums, and state and local authorities may establish more conservative standards with a higher level of safety in matters such as these.

(Note that a newer revision of JO 7400.2"M" was released on February 28, 2019, which I was not aware of previously. But from my review, no content related to my previous statements has been changed.)

2-2) Referring to the response of Garret Homan to Staff Data Request 1-3(2):

a) Please provide the "safety manual" recommendation for ice throw as it applies to the turbines proposed in this Application?

I have provided this in my pre-filed testimony. The safety manual is titled "GE Power and Water, Technical Documentation, Wind Turbine Generator Systems 1&2MW Platform, Safety Manual." In the Seneca Wind Farm project application made to the Ohio Power Siting Board made in July 2018 (provided as an exhibit in my pre-filed testimony). The Seneca Wind Farm project proposes GE turbine models GE 2.3-116 and GE 2.5-127 (see page S-2 of the application). And the Deuel Harvest Wind Application is proposing to use an identical model, GE 2.3-116, and a similar 2MW platform model, GE 2.82-127. Therefore, the safety manual applies to the Deuel Harvest Wind project as well.

b) Have you requested the safety manual from the Applicant through discovery?

Yes, I have, but I have not received their response at this time.

2-3) Referring to the response of Garret Homan to Staff Data Request 1-3(3):

a) Regarding the "state-managed 24-7 hotline and response department", please explain why the PUC complaint process established by administrative rule will not be able to address the concerns listed.

The first issue with this is public knowledge and access. When I received this request, I first had to research what it was referencing since I didn't know such a thing existed. As such, I'd expect most of the general public did not know either. With my following response, I'm assuming you're referring to the process described on https://puc.sd.gov/consumer/consumercomplaints.aspx.

The second issues with this is that the PUC website https://puc.sd.gov/consumer/statutes.aspx provides the Administrative Rules regarding consumer complaints with utility providers. The relationship between the proposed Project and residents and landowners is not one of consumer and utility provider. So, it would seem that his process does not apply, or at least be confusing to the general public on what steps are appropriate, who they should contact, and how to proceed.

The third issue is that if this process does apply in this example, it does not provide details on how the developer should proceed to address the complaint, or how that is paid for. The concern I have is that in an example where a complaint is made that the Project is polluting a sensitive area on neighboring property, affecting neighboring birds or wildlife, or exceeding noise or shadow flicker allowances, the Project operator is disincentivized in doing a thorough and proper investigation into the matter in a timely fashion. However, they are incentivized to do nothing and wait out with hope that the complaints stop (due to frustration, the party filing the complaint has moved, etc.), or higher the cheapest bidder that may or may not spend the necessary time to research the issue properly before providing a report and closing the issue. How the detailed work is done to research an issue and render findings should be executed by the State as a neutral party who's only objective is to determine the truth in the matter and whether or not the conditions of the project are being met in practice.

b) Regarding the "safety issues (such as oil leaks and other pollution, …":
   i. Please describe the specific "other pollution" you are referring to in the response, and explain what aspects of the construction, operation, and maintenance of a wind energy facility would cause the pollution.

Without full knowledge of the materials used in the turbines, it's impossible for me to say what specific other pollution may cause environmental or human safety issues we need to be concerned about. Are there sources of lead or heavy metals used in the turbines that may leech into the ground from rain during operation or a failure? What chemicals and coatings are used in or when pouring the foundations? What other fluids or chemicals (other than oil?) are present in the turbines that could be a source of concern? What are the specific maintenance requirements – everything from replenishing oils or greases to paints or epoxies used? The Application provides almost no details about the various materials that will be used or handled during construction, operation, maintenance, or decommissioning to determine the risks associated with pollution. Without providing the PUC with all of these details it is impossible to decided that the Applicant has met their burden of proving significant harm to the environment or human safety will not happen. I recommend the Commission requires a full accounting of all materials and processes used in the construction, operation, maintenance, and decommissioning and undertake independent research into the pollution that may be associated with this project over its entire life.

ii. Please provide documentation that supports the claim that wind energy facilities causes the other pollution identified in 1-3)b)i).

It is not my burden to prove that this project WILL cause pollution affecting the local environment or human safety. Rather, it is the burden of the Applicant to prove that the project WILL NOT cause this. Again, without full knowledge of the materials used in the turbines, it's impossible to say what specific pollution we need to be concerned about.

However, I have included evidence of significant oil leaks in other wind farms in my pre-filed testimony. Also, another news article from Michigan sheds light on oil spills associated with wind turbines (see attached, from https://www.michigansthumb.com/news/article/Oil-leaks-at-wind-turbines-in-the-Thumb-not-a-9150402.php?utm_campaign=CMS+Sharing+Tools+%28Desktop%29&utm_source=facebook.com&utm_medium=referral&fbclid=IwAR2NMUsepDXuu7VE37WXzs6jQDsvuFDEUmrXLTGyhSwO99JJYmTOwmN4H5o).

The Application doesn't address risks of pollution like these in their environmental studies, and as such haven't met their burden of proof. I recommend the Commission requires the Applicant to conduct expanded environmental studies addressing the impacts of oil leaks from operations, catastrophic oil leaks from failures or malfunctions, and any other pollutants present and all associated impacts on ground water, wells, livestock, vegetation, wildlife, and inhabitants with this Project over its entire life.

c) Regarding the "ground water contamination":

i. Please describe the specific ground water contamination you are referring to in the response, and explain what aspects of the construction, operation, and maintenance of a wind energy facility would cause the pollution.

See responses above.

ii. Please provide documentation that supports the claim that wind energy facilities cause the ground water contamination identified in 1-3)c)i).

See responses above.

2-4) Referring to the response of Garret Homan to the Applicant Data Request 1-9, you cited a recommendation for ice throw that the German Wind Institute made in 1999. Is this recommendation applicable to the turbines proposed in this 2018 filing? Please explain.

The GE safety manual that cited the German Wind Institute source is applicable to the turbine models in this project. See response to 2-2 above.

2-5) Referring to the response of Garret Homan to the Applicant Data Request 1-11, you asserted that "the project will negatively affect the property value of my parents' property, both monetary and the intrinsic value." Are you aware of any market sales near a wind tower that supports that assertion? If yes, please provide all information you are aware of, including address, of the market transaction.

I am not aware of any market sales near a wind tower at this time. However, I will continue to research the issue and provide any information I can find.

However, in discussions with friends, coworkers, acquaintances, etc. it is apparent that the general public supports wind turbines in theory but would never want to live with them nearby and put up with the constant sound, shadow flicker, blinking lights at night, etc. – people wouldn't want to live with those issues if they could help it. Since there is a general preference to not live with the issues associated with wind turbines, then logically there is a reduced value (monetary or intrinsic) of property experiencing those issues due to proximity of wind turbines. This is simply the same issue that devalues urban property near freeways or trains (apartments, hotels, etc.) if given the choice, a consumer would choose not to live next to these issues, therefore the value is reduced.

2-6) Referring to the response of Garret Homan to the Applicant Data Request 1-13, you stated that you "look forward to flying much more often in the future because of the availability of our airstrip." Please explain the advantages and benefits of using a private airstrip compared to the local public airstrips. In other words, how is the private airstrip going to allow you fly more often in the future than current available options?

My statement was meant as we will enjoy flying into the airstrip at our farm and therefore will choose to fly more often in the future. Where my family is in our life now, and with my

soon to be complete instrument rating, we will be able to fly ourselves more often. Having an airstrip on our property provides a great benefit in that it is easier and quicker to land directly at our destination, allowing us more time to enjoy the property - no need to rent a car or coordinate ground transportation, no need to pay for tie downs or a hangar, etc. Aside from travel, the airstrip will also provide a great benefit by allowing us to potentially base a small plane, ultralight, powered parachute, etc. on our own property for pleasure flying around the area. And the airstrip provides a benefit to public safety as a charted airstrip that can be used as a visual navigation aid and another safe landing site for general aviation emergencies.

2-7) Referring to the response of Garret Homan to the Applicant Data Request 1-18:

a) Please provide a copy of the Special Exception Permit from Deuel County.

The Special Exception Permit for the airstrip was granted to John Homan, and it is attached to my responses.

b) Did you request the setbacks as described in the response of Garret Homan to the Applicant Data Request 1-8 as part of the Special Exception Permit? What setbacks were granted by Deuel County for the private airstrip?

Yes, I brought up our concerns regarding safety during the Special Exception Permit hearing, provided research and the SMS / COPA expert panel determinations for setbacks. No setbacks were granted, and the Deuel County Board of Adjustment never expressed concern for the safety of users of our airstrip. I submitted a written testimony to the record of the SEP hearing, which I've attached here, "Deuel Harvest Proposal's Impact to Homan Field Airport." I was allowed only 3 minutes to present my case, which is grossly insufficient for the board to hear and understand the details of my concerns. I was not asked any questions regarding my statement by the board. After I presented, the board noted that John Homan had signed a Letter of Assurance regarding his landing strip, to which I asked if I could explain how that didn't apply to the safety concerns I was addressing, at which time I was forcibly told to "sit down." It was clear from the hearing and the Board's behavior that they had largely made up their mind regarding the outcome before the hearing started, by statements like "we've been talking about wind turbines for a long time now" (this was the first public hearing regarding the proposed project) and "we want to make a decision tonight" (it took many public meetings for the board to render a

decision regarding our airstrip's SEP, and where the public had unlimited time to challenge the permit). They were negligent in their duties in that no written findings were made for statements provided to the public record before the board voted to grant the Deuel Harvest project permits, so I have no confidence my submittal was considered or even read by the Deuel County Board of Adjustment. They have not acted in a manner that would make a reasonable person believe they were interested in the safety of those using our airstrip.

2-8) Did you receive a letter from the FAA titled "Notice of Airport Airspace Analysis Determination Establish Private Use Airport" similar to letter available via the following link: https://puc.sd.gov/commission/dockets/electric/2017/el17-055/testimony/crocker/Rebuttal/Morrisexhibit1.PDF ? If yes, please provide.

The FAA provided this to John Homan, and it is attached to my responses.

2-9) Are you aware of any state governmental agency in other states that is regulating setbacks from private airstrips? If yes, please provide with supporting documentation.

Kevin Elwood has provided pre-filed testimony regarding a case in Ontario, Canada, where the Environmental Review Tribunal decided to revoke the renewable energy approval for the Fairview Wind Project near Collingwood, Ontario. The decision was based on the determination that the wind project would have posed a risk of serious harm to human health because of the proximity of the proposed eight 500-foot-tall turbines to the public Collingwood Regional Airport and the private Clearview Aerodrome. Mr. Elwood's testimony includes supporting evidence. Aviation operations are very similar in the US and Canada, pilots in one are able to fly in the other with only minor differences (radio licensing, etc.), but the fundamental attributes of aviating are the same (airmenship, training, procedures, etc.), as are the physics and risks related to flying. In this regard, the safety assessments regarding the Fairview Wind Farm and the COPA / SMS report I provided in my testimony are directly applicable to the situation of the proposed Deuel Harvest wind turbines near Homan Field and the serious risk of injury or death they pose. I ask that this matter be closely reviewed and considered as precedent.

I am not aware of any agencies in other US states formally regulating wind turbine setbacks from private airstrips. I will continue to research this and provide information in the future if found. However, I believe SDCL Title 50 Aviation includes provisions for

preventing the creation or establishment of airport hazards which apply to both private and public airports by the Definitions provided in SDCL 50-1-1, which I have included in my testimony.

Date 3/17/19

Garrett Homan

Intervenor

5669 Maple Grove Road

Hermantown, MN 55811

IT IS UNLAWFUL TO COMMENCE WORK BEFORE THIS PERMIT IS PLACED IN A CONSPICUOUS PLACE ON THE PREMISES

THIS CERTIFIES THAT

SPECIAL EXCEPTION

PERMIT NUMBER 17-16 ZONING DISTRICT AG

has been issued to **John Homan**

in compliance with the requirements of the Deuel County Planning Commission Ordinances for To build and operated an airplane landing strip for private use

located in GLENWOOD TOWNSHIP Sec 32 T 116 N; R 47 DOE # 1986

W1/2 Loss Porption Lying North of The Railroad in NE1/1NW1/4

SPECIFIC CONDITIONS OR VARIANCE REQUIREMENTS

SPECIAL EXCEPTION: on the condition that the applicant (John Homan) signs a letter of assurance acknowledging that if he needs unrestricted access to the air space over the neighbor's property, applicant is required to secure those rights from the adjacent property owners to use the following property: W1/2 less portion lying north of Railroad in NE1/4NW1/4 Section 32-116-47, Glenwood Township, to build and operate an airplane landing strip for private use in an Ag Zoned District.

The Board determined that it is empowered under the section of the ordinance described in the application to grant the special exception and that granting the special exception will not adversely affect the public interest. The Board then made written findings as required by Section 504, Subparagraph 5(a-h) of the Ordinance.

a. Entrance to and exit from property and proposed structures thereon with particular reference to automotive and pedestrian safety and convenience, traffic flow and control, and access in case of fire or catastrophe: Doesn't apply for automotive.

b. Off-street parking and loading areas where required, with particular attention to the items in (a) above and the economic, noise, glare, odor or other effects of the special exception on adjoining properties and properties generally in the district: Applicant has sufficient parking. Loading is not a concern. The special exception will have no or minimal economic, noise, glare, odor or other effects on the adjoining properties or properties generally in the district.

c. Utilities, with reference to locations, availability, and compatibility: Doesn't apply.

d. Screening and buffering with reference to type, dimensions, and character: Doesn't apply.

e. Signs, if any, and proposed exterior lighting with reference to glare, traffic safety, economic effect and compatibility and harmony with properties in the district: There are no signs or exterior lighting.

f. Required yards and other open spaces: Applicant has sufficient yard and other open spaces.

g. General compatibility with adjacent properties and other property: The applicant's proposed use is generally compatible with the adjacent properties and other properties in the Ag District.

h. Refuse and service areas, with particular reference to the items in (a) and (b) above: There are no concerns regarding refuse or service areas. Doesn't apply.

On 9-11-17 the Letter of Assurance was signed.

DATE September 11, 2017

DEUEL COUNTY ZONING OFFICER
JODI THEISEN
PO BOX 606
CLEAR LAKE, SD 57226

DEUEL HARVEST PROPOSAL'S IMPACT ON HOMAN FIELD AIRPORT

Garrett Homan, 1/15/2018

1. OVERVIEW

Construction of Industrial Wind Turbines less than 14,000 to 15,000 feet from Homan Field Airport (residing in sections 1, 6, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 35, 36) violates the standards established by the FAA and will render the runway unsafe to use. This reduction in safety is due to obstructions to air navigation, turbulence, and wind shear (a change in wind speed or direction over a short distance) – which can lead to mid-air collisions, controlled flight into terrain (crash), loss of control, structural failures, or airplane upsets.

The zoning board has an obligation to consider matters of health and safety first and foremost when reviewing project applications, and therefore the reduction in safety due to Industrial Wind Turbines near the airport must be taken into account. Furthermore, the Zoning Board must follow the Deuel County Zoning Ordinance for Wind Energy Systems (WES) which clearly states in Section 1215.02 that "all WESs shall meet or exceed standards and regulations of the Federal Aviation Administration."

Section 7.3.1 (page 16) of the Invenergy consolidated permit application for the Deuel Harvest project attempts to address zoning ordinance section 1215.02 by stating "The Project will obtain Determinations of No Hazard from the FAA and any required permits from the South Dakota Aeronautics Commission. The Project will also meet all other applicable government regulations." Since the project has not yet conducted the necessary assessments or provided their results to the board, the application is incomplete and cannot be approved as submitted. Furthermore, the application only addresses FAA regulations and does not comply with the zoning ordinance requirement to "meet or exceed the standards" of the FAA. FAA standards are established in many forms, including but not limited to the Code of Federal Regulations, Orders, Notices, Advisory Circulars, policy statements, rulemaking, and any other guidance documents publically published by the FAA.

Homan Field is compatible with all other approved uses in the Agriculturally Zoned areas, except the obstructions and fluid dynamic effects created by Industrial Wind Turbines. Although one or two Industrial Wind Turbines may be able to be accommodated in the vicinity after careful consideration and special planning, the cumulative effect of multiple turbines around the runway as proposed would render it unusable due to multiple hazards creating a substantial reduction in operational safety.

The Zoning Board must comply with the Deuel County Zoning Ordinances and must respect and preserve the landowners' property rights in the permitted runway, the safety of flight operations, and utility of the airport.

2. HOMAN FIELD AIRPORT

Homan Field is a private-use airport consisting of one 2350 ft (long) x 100 ft (wide) grass surface runway oriented north/south (runway 36/18). The runway is located in section 32 and is centered at 44°48'33.80" N, 96°29'55.75"W. Construction is planned to begin spring of 2018, with completion and flight operations beginning before the end of fall of 2018. Operations are planned to range from ultralight aircraft up to 4+ seat general aviation airplanes (e.g. Cessna 182, Cirrus SR20, etc.). Public use will be allowed with prior approval from the airport owner.

The construction and operation of Homan Field Airport provides a benefit to South Dakota and the general aviation community in the form of a charted navigational aide and, more importantly, a safe landing site in the event of an emergency.

Notice of approval to establish a private use airport from the FAA was signed on June 12, 2017 for Homan Field.

The special exception permit to construct a private airstrip (Homan Field Airport) in an Ag District was approved by the Deuel County Board of Adjustment on September 11, 2017.

Figure 2-1 Homan Field Runway Layout

3. AIRSPACE OBSTRUCTIONS

Title 14 of the Code of Federal Regulations Part 77 defines the federal regulations for the Safe, Efficient Use, and Preservation of the Navigable Airspace. Therefore, it establishes the minimum standards to be used for determining safe and unsafe conditions affecting the airspace around airports, notably airspace obstructions.

As stated previously, the Zoning Ordinance states "all WESs shall meet or exceed the standards and regulations of the Federal Aviation Administration." The proposed layouts do not meet or exceed the standards of the Federal Aviation Administration in the vicinity of Homan Field Airport.

Per §77.17 Obstruction standards:

> (a) An existing object … is, and a future object would be an obstruction to air navigation if it is of greater height than any of the following heights or surfaces: …
>
> (1) a height greater than 499 ft AGL at the site of the object.
>
> (2) A height that is 200 feet AGL … within 3 nautical miles of the established reference point of an airport …

…

(5) The surface of a takeoff and landing area of an airport or any imaginary surface established under §77.19…

Per §77.17, any future object that would extend higher than (penetrate) these surfaces is defined as an obstruction to air navigation. As defined in FAA order JO 7400.2L, a single structure that exceeds a 14 CFR, Part 77 obstruction standard "is considered to have an adverse effect" meaning it reduces safety margins. The cumulative effect of many such structures would comprise a substantial reduction in safety margins that would render any airport in the vicinity unusable.

Currently, the nearest charted obstacle to Homan Field is two collocated towers 308 ft tall (AGL – above ground level) and located approximately 2½ miles north and ¾ miles east of the airport, and does not present an adverse effect on safe flight operations into, around, or out of Homan Field. The proposed Deuel Harvest project would substantially change that.

4. §77.19 IMAGINARY SURFACES FOR HOMAN FIELD

A preliminary assessment of the primary 77.19 imaginary surfaces results in the maximum height limits for future objects to not affect safe operations of:

- 150 feet AGL for a horizontal distance of 4,000 feet in all directions from the runway (Fig 2-1, blue curve), then
- extending linearly up to 350 feet AGL at a horizontal distance of 9,000 feet in all directions from the runway (Fig 2-1, red curve), and
- from ground level to a height of approximately 300 feet AGL 10,000 feet from the end of each runway (Fig 2-1, purple curve).

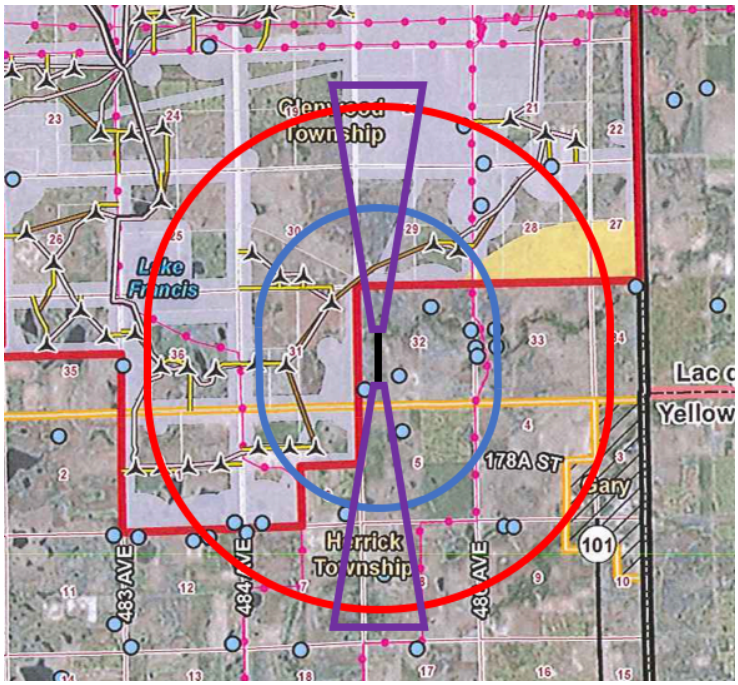

Figure 4-1 Primary Imaginary Surfaces Overlaid on Deuel Harvest Layout 1

A. Horizontal surface

A horizontal plane 150 feet above the established airport elevation, the perimeter of which is constructed by swinging arcs of a specified radii from the center of each end of the primary surface of the runway and connecting the adjacent arcs by lines tangent to those arcs. The radius of each arc is 5,000 feet.

B. Conical surface

A surface extending outward and upward from the periphery of the horizontal surface at a slope of 20 to 1 for a horizontal distance of 4,000 feet. The difference in height from the inner to outer edges of the conical surface is 200 feet.

C. Approach surface

A surface longitudinally centered on the extended runway centerline and extending outward and upward from each end of the primary surface. The approach surface expands from the primary surface to a width of 1,250 feet. The approach surface extends for a horizontal distance of 10,000 feet at a slope of 34 to 1, therefore the difference in height from the inner to outer ends is 294 feet.

D. Others

The above constitutes only a preliminary assessment of the primary 77.19 imaginary surfaces for Homan Field, and further refinement may include additional surfaces or dimensions not provided here.

5. TRAFFIC PATTERN AIRSPACE

FAA order JO 7400.2L defines the traffic pattern airspace dimensions for use in airport and surrounding area planning. For Homan Field, the prescribed dimensions of the traffic pattern airspace are 1.5 nautical miles (1.73 statute miles) from each end and side of each runway. Per FAA Advisory Circular 90-66A, Recommended Standard Traffic Patterns and Practices for Aeronautical Operations at Airports without Operating Control Towers, the traffic pattern altitudes for ultralight and general aviation airplanes ranges from 500 ft AGL (ultralights) to 1000 ft AGL (airplanes). The presence of obstructions inside the traffic pattern airspace (including under the traffic pattern altitude) presents a substantial reduction in safety margins and would render the airport unusable.

Figure 5-1 below presents the preliminary (roughly scaled) traffic pattern airspace of Homan Field depicted as a yellow dashed line superimposed over the imaginary surfaces, to provide context of the airspace dimensions needing to be considered.

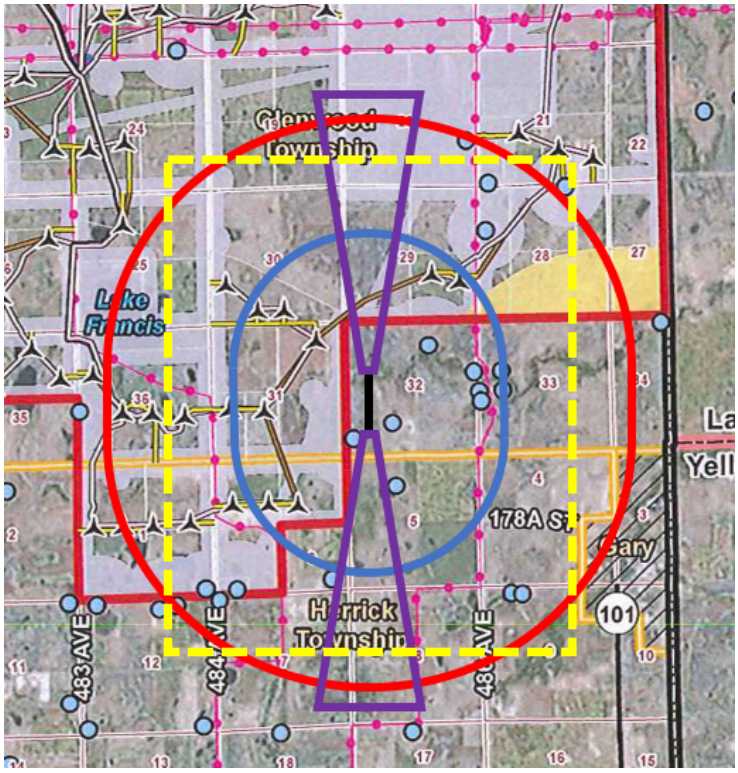

Figure 5-1 Homan Field Traffic Pattern Airspace (Yellow Dashed Line)

6. UNSAFE DISTANCES FROM WIND TURBINES

Industrial wind turbines have a negative effect on aviation safety if not located properly. SMS Report No. 1101, *Aviation Safety-risk Assessment of the Effect of Wind Turbines on General Aviation Aircraft*, summarizes the results and determinations of a panel of aviation and wind turbine experts. The report is intended to be used by policy makers,

industrial wind turbine project developers, and pilots to manage the risks imposed on aviation by industrial wind turbines.

The report discusses the risks to General Aviation aircraft presented by industrial wind turbines as both obstacles and sources of turbulence, vortices, and wind shear. The panel agreed "The consequences of an aircraft colliding with a wind turbine would be catastrophic." More specific details are summarized below. For the purposes of risk assessments, "catastrophic" severity is described as destruction of property and/or loss of life.

The expert panel determined the risks associated with wind turbines as obstacles include:

- Aircraft collision with wind turbine components (catastrophic)
- Controlled or uncontrolled flight into terrain (CFIT or UCFIT) due to maneuvering to avoid wind turbines (catastrophic)
- Pilot distraction due to navigating near and around wind farms

The expert panel determined the risks associated with wind turbine generated turbulence include:

- Aircraft structural failure from extreme forces applied to the airplane (catastrophic)
- Uncontrolled flight into terrain due to loss of control after encountering wake turbulence (catastrophic)
- Temporary and non-sustained loss of control

The expert panel determined the risks related to wind turbine generated wind shear are:

- Uncontrolled flight into terrain (catastrophic)
- Pilots forced to change course and fly around wind farms to avoid the effects of wind shear
- Pilots being forced to divert from an unusable airport

The expert panel determined minimum setback standards for industrial wind turbines near airports should include:

- An area extending 2.5 km (1.6 miles) from both ends and sides of the runway in which there are no obstacles greater than 45 m (148 ft).
- A restriction on constructing wind turbines within the distance equal to 7-10 rotor diameters (4920 ft)
- The area of land under the traffic pattern airspace is free of wind turbines.

Although the final size of industrial wind turbine is not detailed in the proposed layout maps, the permit application states the rotor diameter may be up to 492 ft for a 590 foot tall industrial wind turbine tower. Therefore, to meet the expert panel recommendations, the wind turbines would need to be placed more than 4,920 feet

away from airport operation areas so as to not create a significantly unsafe flight condition. Figure 6-1 below includes a green curve that roughly sizes the 5,000 ft setback from the airport operations.

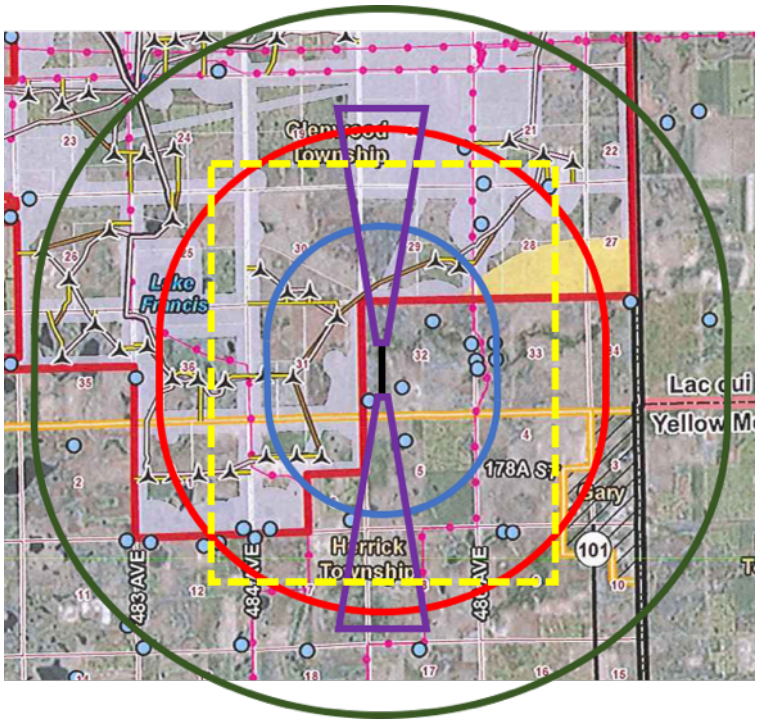

Figure 6-1 Rough Setbacks (Green Curve) from Homan Field Operations Area

7. CONCLUSION

Industrial Wind Turbines must be located so as to meet or exceed the standards established by the FAA. The Deuel Harvest project proposal does not meet or exceed these standards.

Public policy makers and approval boards must also adopt the most current expert recommendations when they are made known to them, and to disregard expert recommendations without supporting evidence to the contrary from an equivalent source would present an abuse of authority and constitute negligence. The Deuel Harvest project proposal does not meet the expert recommendations presented here.

In addition to Homan Field, these considerations apply to all airports affected by the proposed Deuel Harvest project.

When reviewing the Deuel Harvest project proposal, the Zoning Board must comply with all Deuel County Zoning Ordinances, must require complete details when reviewing applications, and must respect and preserve the landowners' property rights in the permitted airstrip, the safety of flight operations, and utility of the airport.

Federal Aviation Administration
Airports District Office
6020 - 28th Avenue South, Room 102
Minneapolis, MN 55450-2706

June 12, 2017

TO:
John Homan
4114 12th Ave NE
Watertown, SD 57201
homan1971@gmail.com

NOTICE OF AIRPORT AIRSPACE ANALYSIS DETERMINATION
ESTABLISH PRIVATE USE AIRPORT
****CONDITIONAL NO OBJECTION****

The Federal Aviation Administration(FAA) has conducted an aeronautical study under the provisions of Title 14 of the Code of Federal Regulations, Part 157, concerning:

RE: *(See attached Table 1 for referenced case(s))*

Table 1 - Letter Referenced Case(s)

ASN	Prior ASN	Airport Name	Description	Location	Latitude (NAD83)	Longitude (NAD83)	Airport Elevation (feet)
2017-AGL-2633-NRA		HOMAN FIELD	Establish new private airport	Gary, SD	44-48-32.97N	96-29-56.03W	1590

We have completed an airspace analysis of the proposed private use airport. As studied, the location is approximately 3 nautical miles NW of Gary, SD.

This office has studied the subject private-use airport proposal from the standpoint of safety of aircraft operations. Because this is a proposed private-use airport, all operators proceed at their own risk. The proponent must meet all state and local requirements. To enhance the safety of operations, we recommend: 1. All operations are conducted in VFR weather conditions. 2. The landing area is limited to private use only. 3. A non-obstructing wind indicator is maintained adjacent to the takeoff/landing area. 4. No night operations are conducted unless the runway and wind indicator are lit. 5. No terrain or obstacles penetrate the 20:1 (1 ft rise for every 20 ft from the runway end) visual approach/departure surface at least 100 ft wide or as wide as the runway (whichever is wider) and extending into the approach area from the landing threshold for each runway end. The threshold may be displaced to provide a clear 20:1 surface provided enough landing distance remains for safe operations in the aircraft to be used. 6. Unauthorized persons are restricted from access to the runway during flight operations.

It is recommended that your airport be constructed to the standards identified in FAA Advisory Circular (AC) 150/5300-13, Airport Design (current version). Also, a clear approach slope, as identified in (AC) 150/5300-13 Table 3-2 Approach/Departure Standards, should be established at each runway end. If there are other obstructions that penetrate the approach surface, they should be removed or lowered. If the penetrating obstructions cannot be removed or lowered, we recommend that the thresholds be displaced and appropriately

marked, so as to provide a clear approach slope surface to each runway end. Please note that roads are defined as obstructions by 14 CFR Part 77. Private roads are the greater of a 10 foot vertical obstruction or the highest mobile object that normally traverses the road. Public roads are considered a 15 foot obstruction, interstate highways are a 17 foot obstruction, railroads are 23 foot obstructions and waterways are the highest mobile object that traverses the waterway.

Be advised, in accordance with 14 CFR Part 157, any construction, alteration to or abandonment of the subject airport requires notice to the FAA for aeronautical review. Notice for these actions can be given using FAA Form 7480-1, "Notice for Construction, Alteration and Deactivation of Airports". Please refer to Form 7480-1 for triggering events that will require notice.

Provided that the aforementioned conditions are met, our aeronautical study has determined that your proposed private use airport will not adversely affect the safe and efficient use of the navigable airspace by aircraft.

This determination does not constitute FAA approval or disapproval of the physical development involved in the proposal. It is a determination with respect to the safe and efficient use of navigable airspace by aircraft and with respect to the safety of persons and property on the ground. In making the determination, the FAA has considered matters such as the effects the proposal would have on existing or planned traffic patterns of neighboring airports, the effects it would have on the existing airspace structure and projected programs of the FAA, the effects it would have on the safety of persons and property on the ground, and the effects that existing or proposed manmade objects (on file with the FAA) and known natural objects within the affected area would have on the airport proposal.

The FAA cannot prevent the construction of structures near an airport. The airport environment can only be protected through such means as local zoning ordinances, acquisitions of property in fee title or aviation easements, letters of agreements, or other means. This determination in no way preempts or waives any ordinances, laws, or regulations of any government body or agency.

Please complete, sign and date the enclosed Airport Master Record Form and return it to my attention. HOMAN FIELD is activated and assigned/secured a private use location identifier.Please indicate on the Airport Master Record Form if you desire to have your airport charted. Please be advised that charting of private use airports is not guaranteed. Additionally, if charted, there is no guarantee your airport will remain on FAA published charts. Charting of private use airports relies heavily on landmark value and chart clutter. The inclusion on a chart may take several charting cycles and does not coincide with the issuance of a location identifier. Instructions for completion of the 5010-5 Form can be found online at https://www.faa.gov in Advisory Circular (AC) 150/5200-35, "Submitting the Airport Master Record in Order to Activate a New Airport".

In order to avoid placing any unfair restrictions on users of the navigable airspace, this determination is valid until 12/12/2018. Should the airport not be established and the Airport Master Record 5010-5 Form not returned by 12/12/2018, an extension of our determination should be requested in writing by 11/27/2018. Should you not elect to establish the airport, please notify the FAA in writing by 12/12/2018.

If you have any questions concerning this determination, please contact me at Nick.Pratt@faa.gov or at (612) 253-4633.

Sincerely,

Nick Pratt

ADO

Attachment: Airport Master Record 5010 Form

U.S. DEPARTMENT OF TRANSPORTATION
FEDERAL AVIATION ADMINISTRATION

AIRPORT MASTER RECORD

PRINT DATE: 06/12/2017
AFD EFF
Form Approved OMB 2120-0015

> 1 ASSOC CITY: Gary	4 STATE: SD	LOC ID:	FAA SITE NR: 0.
> 2 AIRPORT NAME: HOMAN FIELD		5 COUNTY: Deuel	
3 CBD TO AIRPORT (NM): 3 NW	6 REGION/ADO: AGL/DMA	7 SECT AERO CHT: TWIN CITIES	

GENERAL

10 OWNERSHIP:	PR
11 OWNER:	John Homan
12 ADDRESS:	4114 12th Ave NE Watertown SD 57201
13 PHONE NR:	605-520-4992
14 MANAGER:	John Homan
15 ADDRESS:	4114 12th Ave NE Watertown SD 57201
16 PHONE NR:	605-520-4992
17 ATTENDANCE SCHEDULE:	
MONTHS DAYS HOURS	
18 AIRPORT USE:	Private
19 ARPT LAT:	44-48-32.9700N
20 ARPT LONG:	96-29-56.0300W
21 ARPT ELEV:	1590.0
22 ACREAGE:	0
> 23 RIGHT TRAFFIC:	
24 NON-COMM LANDING:	

SERVICES

70 FUEL:	

FACILITIES

> 80 ARPT BCN:	
> 81 ARPT LGT SKED:	
> 82 UNICOM:	0.0
83 WIND INDICATOR:	
84 SEGMENTED CIRCLE:	
85 CONTROL TWR:	NO
86 FSS:	
87 FSS ON ARPT:	NO
88 FSS PHONE NR:	
89 TOLL FREE NR:	

BASED AIRCRAFT

90 SINGLE ENG:	0
91 MULTI ENG:	0
92 JET:	0
TOTAL:	0
93 HELICOPTERS:	0
94 GLIDERS:	0
95 MILITARY:	0
96 ULTRA-LIGHT:	0

RUNWAY DATA

> 30 RUNWAY IDENT:	18/36
> 31 LENGTH:	2400
> 32 WIDTH:	50
> 33 SURF TYPE-COND:	

LIGHTING/APCH AIDS

> 40 EDGE INTENSITY:	
> 42 RWY MARK TYPE-COND	/

OBSTRUCTION DATA

50 FAR 77 CATEGORY:	A(V) / A(V)
51 DISPLACED THR:	0 / 0
52 CTLG OBSTN:	/
53 OBSTN MARKED/LGTD:	/
54 HGT ABOVE RWY END:	/
55 DIST FROM RWY END:	/

(>) ARPT MGR PLEASE ADVISE FSS IN ITEM 86 WHEN CHANGES OCCUR TO ITEMS PRECEDED BY >

111 OWNER/MANAGER SIGNATURE: John Homan 113 DATE: 11-26-18

Huron Daily Tribune
https://www.michigansthumb.com/news/article/Oil-leaks-at-wind-turbines-in-the-Thumb-not-a-9150402.php

Oil leaks at wind turbines in the Thumb not a rarity

Chris Aldridge, Tribune Staff Writer **Published 6:30 am EDT, Friday, April 8, 2016**

IMAGE 1 OF 3

A Feb. 24 report from the Coast Guard's National Response Center stated a caller said this turbine was leaking oil onto the ground near Charleston Road south of Minden City. This photo was taken Feb. 29. ... more

UPPER THUMB — Ominous black spots on wind turbines in the Thumb have raised a few eyebrows.

Huron County Building and Zoning Director Jeff Smith says residents have questioned what look like grease stains on six or seven turbines between Sebewaing and Owendale.

Recommended Video

"It was disturbing to see that," Smith said, adding he drove through the area Monday.

Seals on the turbine were coming out of bearing holders, Smith said, comparing it ure if the bearings on the turbines are faulty

ıfacturer General Electric, adding he got an ning.

There are 32 turbines in Exelon Wind Generation's Harvest 1 project in Oliver and Chandler townships. A 400-foot, 485,000-pound turbine that fell on Feb. 25 spilled 25 gallons of greases, oil and coolant, according to the DEQ (**http://bit.ly/1TVboJD**). The spill posed "no imminent drinking water or environmental health threat," a DEQ official told the Tribune.

Exelon says the fallen turbine held about 400 gallons of oil.

The leaks aren't limited to just Huron County.

South of Minden City, some of DTE Energy's 20 turbines are planted in organic farm fields. A landowner on Charleston Road who farms about 1,000 acres said in February the Environmental Protection Agency and Michigan Department of Environmental Quality arrived about six months back when oil was leaking from a turbine's nacelle, which encases inner components and is where the rotor attaches, but that oil did not leak onto the field.

Reports from the Coast Guard's National Response Center for 2016 show a caller on Feb. 24 stated the turbine near Charleston Road was leaking oil onto the ground. The report shows an "unknown amount" of hydraulic oil and grease leaked. It didn't cause injury, damage or road or waterway closings, but an "N" appears in an entry for "RELEASE_SECURED" and the report states an environmental impact to vegetation. The report gives no description for remedial action and says the EPA was notified.

Jennifer Wilt, lead communications specialist at DTE, says the utility currently has one turbine experiencing an oil leak. The cause is typically blade bearings, according to DTE.

The utility has established a process for notifications, remediation and cleanup of oil leaks, Wilt said.

“Through our environmental management practice, we do not have any concerns for landowners or the general public as the result of an oil leak," Wilt said in an email. “Turbines are designed to contain oil leaks within the tower itself."

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