

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

**EL18-026 - IN THE MATTER OF THE
APPLICATION BY PREVAILING
WIND PARK, LLC FOR A PERMIT OF
A WIND ENERGY FACILITY IN BON
HOMME COUNTY, CHARLES MIX
COUNTY AND HUTCHINSON
COUNTY, SOUTH DAKOTA, FOR THE
PREVAILING WIND PARK PROJECT**

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**APPLICANT’S UPDATED RESPONSES
TO INTERVENORS’ DATA REQUESTS
EL18-026**

Below please find Applicant’s Updated Responses to Intervenors’ Data Requests to Applicant.

- 1-2) Produce all manuals, guides, information sheets, studies, reports, and like documents that refer or relate to the turbine model selected for the Project, namely the GE 3.8-137.**

Lisa Agrimonti: Prevailing Wind Park objects to this request to the extent that it seeks information and/or documents not in the possession, custody, or control of Prevailing Wind Park, or that are confidential. Prevailing Wind Park further objects to this request because it is overbroad and vague in its request for “like documents.” Subject to and without waiving this objection, Prevailing Wind Park further responds:

Peter Pawlowski: sPower Development Company LLC (“sPower”) has a copy of the safety manual for the GE 3.8-137 turbine model that is subject to a confidentiality agreement. sPower is in contact with General Electric to determine under what circumstances the document may be disclosed in this docket. Additional information about the GE turbine can be found on General Electric’s publicly available website. See <https://www.ge.com/renewableenergy/wind-energy/turbines/3mw-platform>.

Updated Response (Lisa Agrimonti): See Attachment 1-2 (Technical Documentation Wind Turbine Generator Systems All Onshore Types). Prevailing Wind Park also has two additional responsive documents for the proposed turbine: an operating manual and a safety manual which are subject to a non-disclosure agreement. General Electric has advised that the two documents are proprietary and contain trade secret data that would advantage its competitors if disclosed. General Electric has consented to Prevailing Wind Park submitting the documents to the South Dakota Public Utilities Commission provided they are treated as confidential trade secret information pursuant to, and in accordance with, ARSD 20:10:01:39-20:10:01:45 and SDCL 1-27-1.5. The confidential documents also may be provided to counsel for Intervenors marked “**Attorneys’ Eyes Only**” to be reviewed by counsel of record in this matter, but may not be further disclosed or disseminated. Documents designated as “**Attorneys’ Eyes Only**” may not be disclosed to any intervenor or any other third party without the written consent of Prevailing Wind Park.

1.4 Produce all studies, reports, and like documents that refer or relate to ice-throw from turbines.

Lisa Agrimonti: Prevailing Wind Park objects to this request to the extent that it seeks information and/or documents not in the possession, custody, or control of Prevailing Wind Park, or that is confidential. Prevailing Wind Park further objects to this request because it is overbroad and vague in its request for “like documents.” Subject to and without waiving this objection, Prevailing Wind Park further responds:

Peter Pawlowski: See response to 1-2.

Updated Response (Peter Pawlowski). See also Attachment 1-2.

1-11) State the number of participating residences located within (a) 1,000 feet of a turbine; (b) 2,000 feet of a turbine; (c) 1/2 mile of a turbine; (d) 1 mile of a turbine; and (e) 2 miles of a turbine.

Bridget Canty: As shown in the Application:

(a) There are 0 participating residences within 1,000 feet of a proposed turbine location;

(b) There are 5 participating residences within 2,000 feet of a proposed turbine location;

(c) There are 21 participating residences within ½ mile of a proposed turbine location;

(d) There are 40 participating residences within one mile of a proposed turbine location; and

(e) There are 45 participating residences within two miles of a proposed turbine location.

Updated Response (Bridget Canty): Prevailing Wind Park reverified the number of occupied residences within the Project area and within .5 miles of the Project area. Based on that review, part (e) is updated to 47 participating residences within two miles of a proposed turbine location.

1-12) State the number of non-participating residences located within (a) 1,000 feet of a turbine; (b) 2,000 feet of a turbine; (c) 1/2 mile of a turbine; (d) 1 mile of a turbine; and (e) 2 miles of a turbine.

Bridget Canty: As shown in the Application:

(a) There are 0 non-participating residences within 1,000 feet of a proposed turbine location;

- (b) There is 1 non-participating residence within 2,000 feet of a proposed turbine location;
- (c) There are 10 non-participating residences within ½ mile of a proposed turbine location;
- (d) There are 46 non-participating residences within one mile of a proposed turbine location; and
- (e) There are 82 non-participating residences within two miles of a proposed turbine location.

Updated Response (Bridget Canty):Prevailing Wind Park reverified the number of occupied residences within the Project area and within .5 miles of the Project area. Based on that review, part (e) is updated to 87 non-participating residences within two miles of a proposed turbine location.

Dated this 5th day of October, 2018.

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Technical Documentation

Wind Turbine Generator Systems

All Onshore Turbine Types



General Description

Setback Considerations for Wind Turbine Siting



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1 Introduction

This document provides setback guidance for the siting of wind turbines. This guidance considers potential safety risks associated with wind turbines such as objects (maintenance tools, ice, etc.) directly falling from the wind turbine, unlikely occurrences such as tower collapse and blade failure, and environmental / operational risks such as ice throw. The guidance is general in nature, and is based on the published advice of recognized industry associations. Local codes and other factors may dictate setbacks greater than the guidance in this document. The owner and the developer bear ultimate responsibility to determine whether a wind turbine should be installed at a particular location, and they are encouraged to seek the advice of qualified professionals for siting decisions. It is strongly suggested that wind developers site turbines so that they do not endanger the public.

2 Falling Objects

There is the potential for objects to directly fall from the turbine. The objects may be parts dislodged from the turbine, or dropped objects such as tools. Falling objects create a potential safety risk for anyone who is within close proximity to the turbine, i.e., within approximately a blade length from the turbine.

3 Tower Collapse

In very rare circumstances a tower may collapse due to unstable ground, a violent storm, an extreme earthquake, unpredictable structural fatigue, or other catastrophic events. Tower collapse presents a possible risk to anyone who is within the distance equal to the turbine tip height (hub height plus $\frac{1}{2}$ rotor diameter) from the turbine.

4 Ice Shedding and Ice Throw

As with any structure, wind turbines can accumulate ice under certain atmospheric conditions. A wind turbine may shed accumulated ice due to gravity, and mechanical forces of the rotating blades. Accumulated ice on stationary components such as the tower and nacelle will typically fall directly below the turbine. Ice that has accumulated on the blades will likewise typically fall directly below the turbine, especially during start-up. However, during turbine operation under icing conditions, the mechanical forces of the blades have the potential to throw the ice beyond the immediate area of the turbine.

5 Blade Failure

During operation, there is the remote possibility of turbine blade failure due to fatigue, severe weather, or other events not related to the turbine itself. If one of these events should occur, pieces of the blade may be thrown from the turbine. The pieces may or may not break up in flight, and are expected to behave similarly to ice thrown from the blade. Blade failure presents a possible risk for anyone beyond the immediate area of the turbine.

6 Industry Best Practices

Recognized industry practices suggest the following actions be considered when siting turbines in order to mitigate risk resulting from the hazards listed above:

- Place physical and visual warnings such as fences and warning signs as appropriate for the protection of site personnel and the public.
- Remotely stop the turbine when ice accumulation is detected by site personnel or other means. Additionally, the wind turbine controller may have the capability to shut down or curtail an individual turbine based on the detection of certain atmospheric conditions or turbine operating characteristics.
- Restrict site personnel access to a wind turbine if ice is present on any turbine surface such as the tower, nacelle or blades. If site personnel absolutely must access a turbine with ice accumulation, safety precautions should include but are not limited to remotely shutting down the turbine, yawing the turbine to position the rotor on the side opposite from the tower door, parking vehicles at a safe distance from the turbine, and restarting the turbine remotely when the site is clear. As always, appropriate personnel protective gear must be worn.

7 Setback Considerations

Setback considerations include adjoining population density, usage frequency of adjoining roads, land availability, and proximity to other publicly accessed areas and buildings. Table 1 provides setback guidance for wind turbines given these considerations. GE recommends using the generally accepted guidelines listed in Table 1, in addition to any requirements from local codes or specific direction of the local authorities, when siting wind turbines.

Setback Distance from center of turbine tower	Objects of concern within the setback distance
All turbine sites (blade failure/ice throw): 1.1 x tip height ¹ , with a minimum setback distance of 170 meters	<ul style="list-style-type: none"> - Public use areas - Residences - Office buildings - Public buildings - Parking lots - Public roads <ul style="list-style-type: none"> - Moderately or heavily traveled roads if icing is likely - Heavily traveled multi-lane freeways and motorways if icing is not likely - Passenger railroads
All turbine sites (tower collapse): 1.1 x tip height ¹	<ul style="list-style-type: none"> - Public use areas - Residences - Office buildings - Public buildings - Parking lots - Heavily traveled multi-lane freeways and motorways - Sensitive above ground services²
All turbine sites (rotor sweep/falling objects): 1.1 x blade length ³	<ul style="list-style-type: none"> - Property not owned by wind farm participants⁴ - Buildings - Non-building structures - Public and private roads - Railroads - Sensitive above ground services

Table 1: Setback recommendations

The wind turbine buyer should perform a safety review of the proposed turbine location(s). Note that there may be objects of concern within the recommended setback distances that may not create a significant safety risk, but may warrant further analysis. If the location of a particular wind turbine does not meet the Table 1 recommended guidelines, contact GE for guidance, and include the information listed in Table 2 as applicable.

1 The maximum height of any blade tip when the blade is straight up (hub height + ½ rotor diameter).

2 Services that if damaged could result in significant hazard to people or the environment or extended loss of services to a significant population. Examples include pipelines or electrical transmission lines.

3 Use ½ rotor diameter to approximate blade length for this calculation.

4 Property boundaries to vacant areas where there is a remote chance of future development or inhabitanacy during the life of the wind farm.

Condition/object within setback circle	Data Required
If icing is likely at the wind turbine site	- Annual number of icing days
Residences	- Number of residences within recommended setback distance - Any abandoned residences within setback distance
For industrial buildings (warehouse/shop)	- Average number of persons-hours in area during shift - Number of work shifts per week - Any abandoned buildings within setback distance
For open industrial areas (storage/parking lot)	- Average number of persons-hours in area during shift - Number of shifts per week. - Any abandoned buildings within setback distance
For sports/assembly areas	- Average number of persons in area per day - Average number of hours occupied per day - Number of days area occupied per week - If area covered, what type of cover
For roads/waterways	- Plot of road/waterway vs. turbine(s) - Average number of vehicles per day - Type of road and speed limit (residential, country, # of lanes, etc.)
For paths/trails (walk, hike, run, bike, ski)	- Plot of paths/trails vs. turbine(s) - Average number # of persons per day by type of presence (walk, hike, etc.) - Flat or uneven/hilly terrain

Table 2: Setback recommendations