

Appendix G
Aviation Constraints Study



April 6, 2016

Ms. Christina White
Infinity Renewables, LLC
3760 State St., Suite 102
Santa Barbara, CA 93105

Re: South Dakota Project, ASI # 16-N-0614.003

Dear Ms. White:

As requested, Aviation Systems, Inc. (ASI), has evaluated the feasibility of the South Dakota Project, (hereinafter referred to as the "Project"), from an aviation and airspace point of view. We reviewed the Project against Federal aviation and airspace criteria set forth in:

- Federal Aviation Regulation (FAR) Part 77 (14 CFR 77), the *Safe, Efficient Use and Preservation of the Navigable Airspace*;
- FAA Order 8260.3B, the *United States Standard for Terminal Instrument Procedures* (referred to as TERPs);
- FAA Order JO 7400.2K, the *Procedures for Handling Airspace Matters* and;
- FAA Order 7610.4, *Special Military Operations*.

The criteria in these documents comprise the factors the Federal Aviation Administration (FAA) will use in evaluating the aeronautical compatibility and regulatory compliance of the Project when it is submitted for their official regulatory review under FAR Part 77 as specified in Title 49 U.S. Code Section 44718.

Basic Project Information

- Our task was to determine the feasibility of wind turbines up to 499 feet above ground level (AGL) proposed in an approximate area of 23.1 x 9.50 Nautical Miles (NM) in Hyde County, South Dakota. Please see the attached map depicting the Project and surrounding area.
- Terrain within the Project area varies from 1,708 feet above mean sea level (AMSL) to 2,183 feet AMSL. With a proposed structure height of 499 feet AGL, the highest point of the Project could theoretically be 2,682 feet AMSL. A 50-foot

buffer is added for terrain variations and to establish the "Target Height"¹ of 2,732 feet AMSL.

- The nearest public-use airport subject to the Federal regulatory criteria above is Highmore Municipal Airport (FAA Identifier: 9D0) located 7.51 NM northeast of the Project center point. 9D0 Airport is an Visual Flight Rules (VFR) Airport with one paved runway (13/31), 5 based aircraft and approximately 5,616 annual operations. The Project would impact airport operations, as noted below.
- One other airport, Miller Municipal (MKA), located 26.31 NM east of the Project centerpoint will be impacted by the Project as noted below.

Analytical Findings

- The Project would not impact Minimum Vectoring Altitudes (MVA) or Enroute Low Altitude Airways.
- Impact is likely to Joint Use Long Range Radar (LRR) (Ref: Yellow on DoD Screening tool). Further LRR study may be advisable.
- No impact is expected to NEXRAD weather radar (Ref: Green on DoD Screening Tool). Further weather radar study is not necessary.
- The Project is outside any Military Operations Areas (MOA) or Restricted Areas.

Conclusion

- The following tabulation indicates the vertical AMSL limits of each Project Sector:

<u>SECTOR</u>	<u>LIMIT</u>	<u>CAUSAL FACTOR</u>
A	2204	9D0 VFR CAT B Traffic Pattern Area
B	2600	MKA RNAV (GPS) RWY 15/33 Feeder Fix
C	2732	Target Height

Based on the Sector limits above, 499-feet AGL turbines would not be approvable in Sector A.

In flat Sector B, 499-feet AGL turbines should be approved where the ground elevation does not exceed 2,101 feet AMSL.

The "Target Height" is not an official FAA vertical limitation but, rather, an in-house artificial convention used to limit the analysis to only relevant and material factors which might influence building heights and FAA approvability. In simple terms, if you do not exceed the "Target Height" your structures should have no FAA FAR Part 77 operational airspace issues.

Sector C reaches the Target Height where 499 feet AGL turbines should be approvable anywhere.

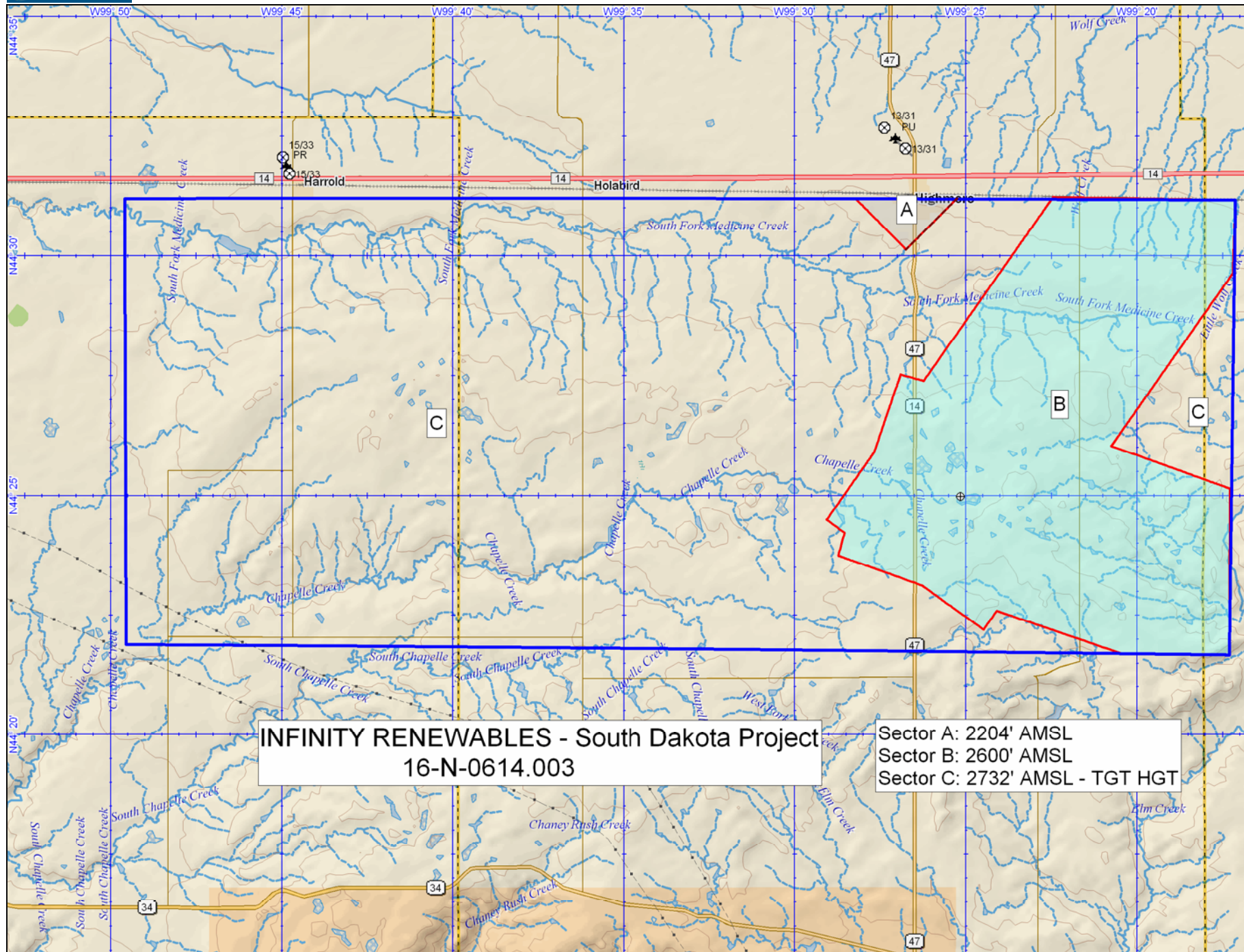
As a cautionary note, the FAA makes changes to the National Aviation System every day. New approaches are published, departure procedures are changed, new runways are planned, MVAs are modified, etc. Consequently, it is possible for the study findings to become obsolete in a relatively short time. We recommend the study findings be reviewed for currency before filing sites within the study area. Studies older than 12 months should automatically be re-visited, and their findings confirmed.

Furthermore, study findings are intended as a planning tool in conjunction with the resolution of other pertinent issues. Actual construction activities are not advisable until DNHs are issued for any structures that require filing.

Sincerely,

A handwritten signature in cursive script that reads "Gary M. Allen". The signature is written in dark ink and is positioned above the printed name and title.

Gary M. Allen, Esq., Ph.D.
President and General Counsel
Attachments: As stated



INFINITY RENEWABLES - South Dakota Project
16-N-0614.003

Sector A: 2204' AMSL
 Sector B: 2600' AMSL
 Sector C: 2732' AMSL - TGT HGT

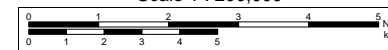
Data use subject to license.

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Scale 1 : 200,000



1" = 2.74 NM

Data Zoom 10-0

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DoD Preliminary Screening Tool

[DoD Preliminary Screening Tool - Desk Reference Guide V_2014.2.0](#)

Disclaimer:

- The DoD Preliminary Screening Tool enables developers to obtain a preliminary review of potential impacts to Long-Range and Weather Radar(s), Military Training Route(s) and Special Airspace(s) prior to official OE/AAA filing. This tool will produce a map relating the structure to any of the DoD/DHS and NOAA resources listed above. The use of this tool is **100 % optional** and will provide a first level of feedback and single points of contact within the DoD/DHS and NOAA to discuss impacts/mitigation efforts on the military training mission and NEXRAD Weather Radars. **The use of this tool does not in any way replace the official FAA processes/procedures.**

Instructions:

- Select a screening type for your initial evaluation. Currently the system supports pre-screening on:
 - Air Defense and Homeland Security radars(Long Range Radar)
 - Weather Surveillance Radar-1988 Doppler radars(NEXRAD)
 - Military Operations
- Enter either a single point or a polygon and click submit to generate a long range radar analysis map.
- Military Operations is only available for a single point.
- At least three points are required for a polygon, with an optional fourth point.
- The largest polygon allowed has a maximum perimeter of 100 miles.

Screening Type: Geometry Type:

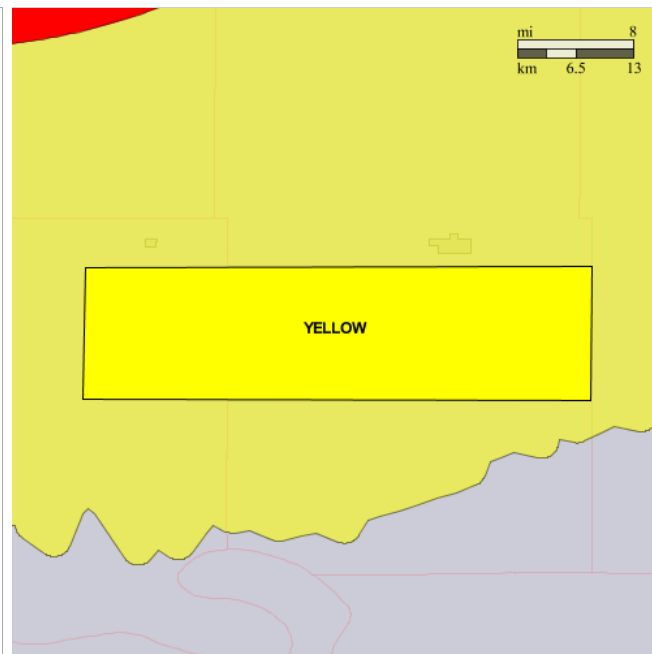
Point	Latitude				Longitude			
	Deg	Min	Sec	Dir	Deg	Min	Sec	Dir
1	<input type="text" value="44"/>	<input type="text" value="29"/>	<input type="text" value="56.6"/>	<input type="text" value="N"/>	<input type="text" value="99"/>	<input type="text" value="48"/>	<input type="text" value="14.6"/>	<input type="text" value="W"/>
2	<input type="text" value="44"/>	<input type="text" value="29"/>	<input type="text" value="58.7"/>	<input type="text" value="N"/>	<input type="text" value="99"/>	<input type="text" value="17"/>	<input type="text" value="59.7"/>	<input type="text" value="W"/>
3	<input type="text" value="44"/>	<input type="text" value="22"/>	<input type="text" value="02.9"/>	<input type="text" value="N"/>	<input type="text" value="99"/>	<input type="text" value="48"/>	<input type="text" value="26.8"/>	<input type="text" value="W"/>
4	<input type="text" value="44"/>	<input type="text" value="21"/>	<input type="text" value="59.6"/>	<input type="text" value="N"/>	<input type="text" value="99"/>	<input type="text" value="18"/>	<input type="text" value="05.8"/>	<input type="text" value="W"/>

Horizontal Datum:

Map Legend:

- Green:** No anticipated impact to Air Defense and Homeland Security radars. Aeronautical study required.
- Yellow:** Impact likely to Air Defense and Homeland Security radars. Aeronautical study required.
- Red:** Impact highly likely to Air Defense and Homeland Security radars. Aeronautical study required.

Note: Map colors will show as depicted in the map legend when using the 'Polygon' Geometry Type; map colors will be subdued when using the 'Single Point' Geometry Type.



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Screening Type: Geometry Type:

Point	Latitude				Longitude			
	Deg	Min	Sec	Dir	Deg	Min	Sec	Dir
1	44	26	20.3	N	99	32	35.4	W

Horizontal Datum:

The preliminary review of your proposal does not return any likely impacts to military airspace. Please contact Dr. Thomas (Thom) H. Rennie at the USAF Regional Environmental Coordinator at (214)767-4678 for confirmation and documentation.

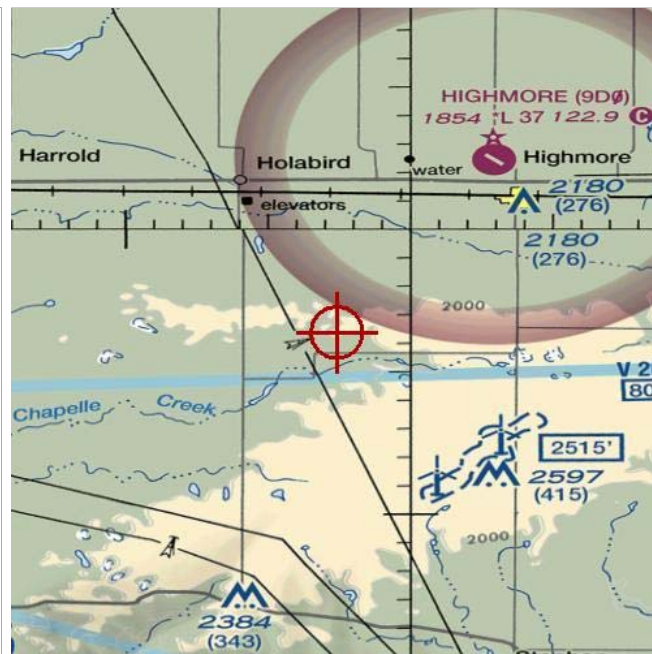
The preliminary review of your proposal does not return any likely impacts to military airspace. Please contact the US Navy Representative, FAA Central Service Area at the USN Regional Environmental Coordinator at (817) 222-5930 for confirmation and documentation.

The preliminary review of your proposal does not return any likely impacts to military airspace. Please contact LTC Owen B. Castlemain at the USA Regional Environmental Coordinator at (817) 222-5921 for confirmation and documentation.

The preliminary review of your proposal does not return any likely impacts to military airspace. Please contact the US Navy Representative, FAA Central Service Area at the USMC Regional Environmental Coordinator at (817) 222-5930 for confirmation and documentation.

This is a preliminary review of your proposal and does not preclude official FAA processes.

Your search data is not retained and the privacy of all your searches is assured.



Any questions interpreting the map, please email Steve Sample with your question/s and phone number at steven.sample@pentagon.af.mil

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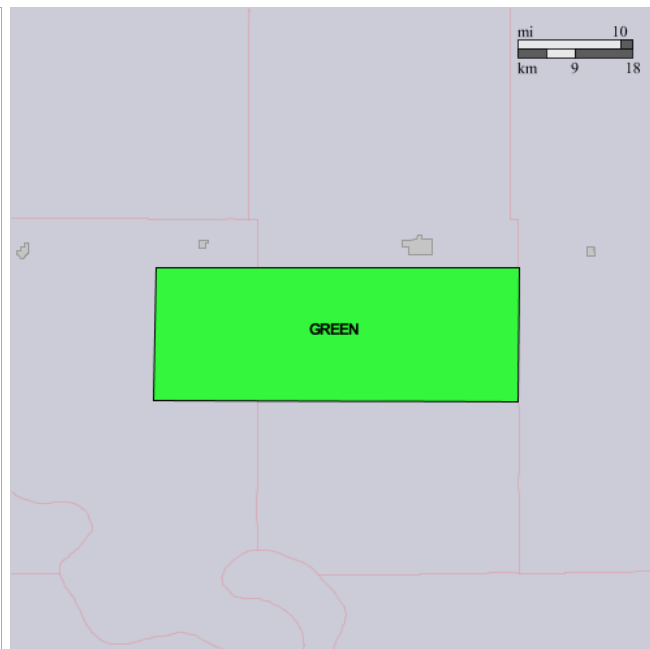
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Horizontal Datum:

Map Legend:

- Green: No Impact Zone.** Impacts not likely. NOAA will not perform a detailed analysis, but would still like to know about the project.
- Dk Green: Notification Zone.** Some impacts possible. Consultation with NOAA is optional, but NOAA would still like to know about the project.
- Yellow: Consultation Zone.** Significant impacts possible. NOAA requests consultation to discuss project details and to perform a detailed impact analysis. NOAA may request mitigation of significant impacts.
- Orange: Mitigation Zone.** Significant impacts likely. NOAA will likely request mitigation if a detailed analysis indicates that the project will cause significant impacts.
- Red: No-Build Zone.** Severe impacts likely. NOAA requests developers not build wind turbines within 3 km of the NEXRAD. Detailed impact analysis required.

Note: Map colors will show as depicted in the map legend when using the 'Polygon' Geometry Type; map colors will be subdued when using the 'Single Point' Geometry Type.



Because the NEXRAD can detect wind turbines occasionally at great distance, NOAA would like to know the location of all wind farm projects so that corrupted radar data can be flagged. Send project information directly to NOAA at wind.energy.matters@noaa.gov or through the National Telecommunications & Information Administration (NTIA) in the Dept. of Commerce. NOAA protects all wind project information as proprietary and sensitive.