

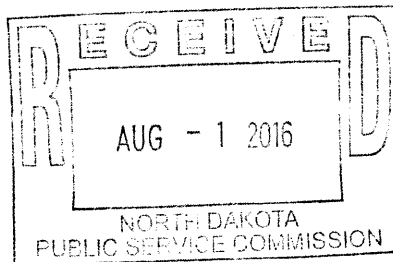


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July 28, 2016

Mr. Darrell Nitschke  
Executive Director  
North Dakota Public Service Commission  
600 E. Boulevard Avenue, Dept. 408  
Bismarck, ND 58505-0480



Submitted via email to [ndpsc@nd.gov](mailto:ndpsc@nd.gov)

Re: Glacier Ridge Wind Farm Application for Certificate of Site Compatibility  
Case No. PU-16-539

Dear Mr. Nitschke:

In support of Glacier Ridge Wind Farm, LLC's application for a Certificate of Site Compatibility for the Glacier Ridge Wind Farm in Barnes County, attached is the response from the National Telecommunications and Information Administration (NTIA) to our request for review of a general study area for the project. We request that this be added to the case docket. A hard copy will be sent to your office as well.

Please note that although the Department of Commerce Radar Operations Center has identified concerns regarding radar line of sight, this is confined to the northern portion of the study area, which is being avoided by our final turbine layout. The Radar Operations Center recommended that mitigation is not necessary. We have submitted the turbine layout to the Radar Operations Center for concurrence that no impacts are anticipated. We anticipate a response in the next 1-2 weeks, and will submit that to you as well.

Please do not hesitate to contact me with any questions at 512-213-8501 or [anne-marie.griger@res-group.com](mailto:anne-marie.griger@res-group.com).

Sincerely,

Anne-Marie Griger  
Permitting Specialist

7 **PU-16-539** Filed: 8/1/2016 Pages: 4  
Copy of letter from the National Telecommunications  
and Information Administration

Glacier Ridge Wind Farm, LLC

Anne-Marie Griger, Permitting Specialist



**UNITED STATES DEPARTMENT OF COMMERCE**  
**National Telecommunications and**  
**Information Administration**  
Washington, D.C. 20230

JUL - 8 2016

Mr. Frank O'Brien  
COMSEARCH  
19700 Janelia Farm Blvd.  
Ashburn, VA 20147

Re: Glacier Ridge Project: Barnes County, ND

Dear Mr. O'Brien:

In response to your request on May 6, 2016, the National Telecommunications and Information Administration provided to the federal agencies represented in the Interdepartment Radio Advisory Committee (IRAC) the plans for the Glacier Ridge Wind Project, located in Barnes County, North Dakota.

After a 45 day period of review, one federal agency, the Department of Commerce (DOC), identified concerns regarding blockage of its radio frequency transmissions. Please see the attached Impact Analysis Report for further information.

While the other IRAC agencies did not identify any concerns regarding radio frequency blockage, this does not eliminate the need for the wind energy facilities to meet any other requirements specified by law related to these agencies. For example, this review by the IRAC does not eliminate any need that may exist to coordinate with the Federal Aviation Administration concerning flight obstruction.

Thank you for the opportunity to review this proposal.

Sincerely,

Peter A. Tenhula  
Deputy Associate Administrator  
Office of Spectrum Management

Attachment

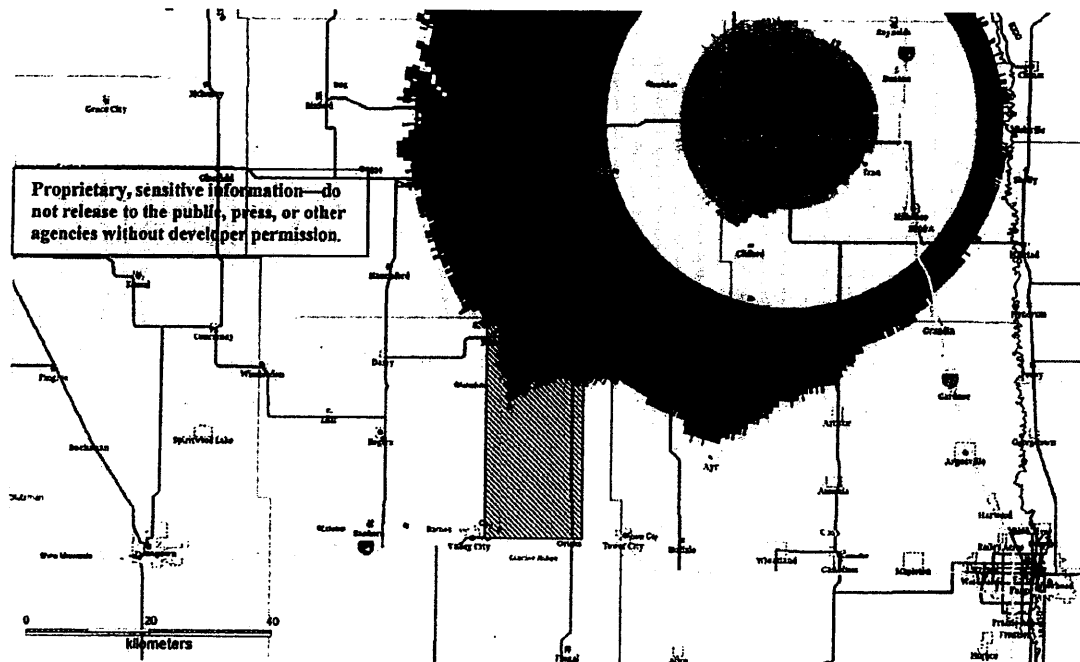


## Glacier Ridge Wind Project – Impact Analysis NOTIFICATION OF CHANGES REQUESTED



### Fargo/Grand Forks WSR-88D Impacts Summary and Desired Action

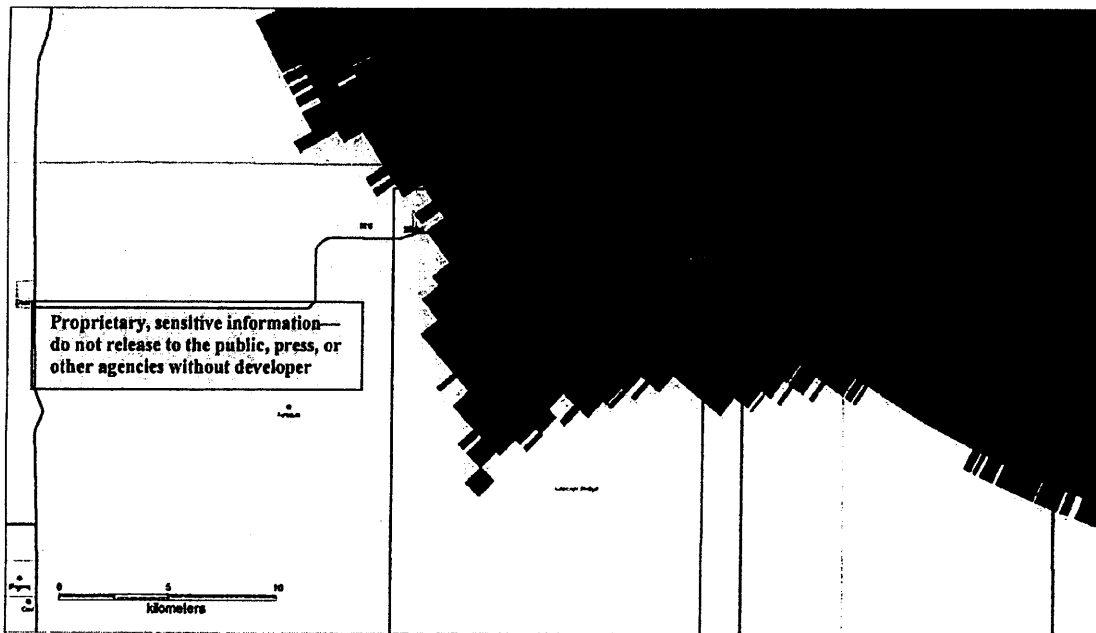
A portion of the proposed Glacier Ridge Wind Energy Project would be in the Fargo/Grand Forks WSR-88D radar's line of sight (RLOS) and would routinely cause clutter in the radar data. Approximately 29% of the project area is within the radar's designated Notification Zone (olive-green area in Fig 1). However, due to the distance from the radar, impacts to radar data should be low and confined to the wind farm area. The Radar Operations Center would like to track the project to completion and reanalyze it if significant changes are made. Please notify the Radar Operations Center of significant project changes via email at [wind.energy.matters@noaa.gov](mailto:wind.energy.matters@noaa.gov).



**Figure 1: Fargo/Grand Forks WSR-88D turbine impact zone map showing proposed wind farm area (blue hatched box). The red RLOS area is the 4-km radius No Build Zone, the orange RLOS area is the Mitigation Zone, the yellow RLOS area is the Consultation Zone, and the Olive Green RLOS area is the Notification Zone.**

### Glacier Wind Energy Project Analysis

The proposed project would install an unknown number of wind turbine generators, each with a maximum blade-tip height AGL of 150 meters, in a 585 sq km area as close as 46.8 km southwest of the Fargo/ Grand Forks, ND WSR-88D. Beam propagation analysis indicates that 150-m turbines placed in 29% of the area (northern portion) would protrude into the radar beam, up to 7% of the beam width, during the 1<sup>st</sup> elevation scan angle (0.5 deg), under standard atmospheric conditions. Wind turbines placed in this portion of the project area would be frequently visible in the radar data in radar azimuths 218-236° (SW). Due to distance (> 20 km), multipath scattering down-range from the wind farm is not expected to occur. Data impacts should be confined to the portion of the wind farm area in the RLOS. Mitigation is not necessary (see Fig 2).



**Figure 2:** Close up of the northern portion of the proposed Glacier Ridge wind project area (blue rectangle). The black-shaded area indicates where 150-m turbines would penetrate the radar line-of-sight.

**Recommendations**

- NOAA will not request mitigation for this project configuration.
- NOAA requests to be notified of any significant changes to the wind energy project, such as raising the turbine heights by more than 10 meters, or if the project boundaries change.

**Report date:** 17 May 2016

For more information, please visit the Radar Operations Center Wind Farm Interaction Web Page at [http://www.roc.noaa.gov/WSR88D/WindFarm/WindFarm\\_Index\\_GreatFalls.aspx?wid=\\*](http://www.roc.noaa.gov/WSR88D/WindFarm/WindFarm_Index_GreatFalls.aspx?wid=*)

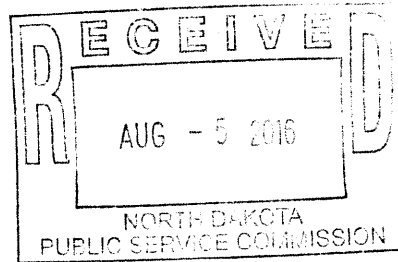


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August 2, 2016

Mr. Darrell Nitschke  
Executive Director  
North Dakota Public Service Commission  
600 E. Boulevard Avenue, Dept. 408  
Bismarck, ND 58505-0480



Submitted via email to [ndpsc@nd.gov](mailto:ndpsc@nd.gov)

Re: Glacier Ridge Wind Farm Application for Certificate of Site Compatibility  
Case No. PU-16-539

Dear Mr. Nitschke:

In support of Glacier Ridge Wind Farm, LLC's application for a Certificate of Site Compatibility for the Glacier Ridge Wind Farm in Barnes County, attached is the response dated July 28, 2016 from the National Weather Service Radar Operations Center to our request for review of our proposed wind turbine layout. They concurred that no impacts are anticipated. Also attached is a memo summarizing the habitat mapping results for the Project.

We request that these two items be added to the case docket. A hard copy will be sent to your office as well.

Please do not hesitate to contact me with any questions at 512-213-8501 or [anne-marie.griger@res-group.com](mailto:anne-marie.griger@res-group.com).

Sincerely,

Anne-Marie Griger  
Permitting Specialist

**Anne-Marie Griger**

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**From:** Jessica Schultz - NOAA Federal <jessica.a.schultz@noaa.gov>  
**Sent:** Thursday, July 28, 2016 3:18 PM  
**To:** Anne-Marie Griger  
**Cc:** wind.energy.matters@noaa.gov  
**Subject:** Re: Glacier Ridge Wind Project

Ms. Griger,

Thank you for the follow-up and additional information. The updated proposal takes the turbines outside of the radar's notification zone. We do not request any further contact on this project unless there are changes to turbine height or location.

Best Regards,

Jessica Schultz  
National Weather Service  
Radar Operations Center  
405-573-8808

On Mon, Jul 25, 2016 at 2:50 PM, Anne-Marie Griger <[Anne-Marie.Griger@res-group.com](mailto:Anne-Marie.Griger@res-group.com)> wrote:

Hello,

We received the attached notification regarding our proposed Glacier Ridge Wind Project in Barnes County, North Dakota. Also attached is a spreadsheet with the proposed turbine locations. There are a total of 99 proposed locations, although only 87 turbines will be constructed. Can you please review these locations and let us know if you anticipate any impacts to radar at these locations?

Thank you,

Anne-Marie

**Anne-Marie Griger**  
Permitting Specialist

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[anne-marie.griger@res-group.com](mailto:anne-marie.griger@res-group.com) | <http://www.res-group.com>



**ENVIRONMENTAL & STATISTICAL CONSULTANTS**

4007 State Street, Suite 109, Bismarck, ND 58503  
Phone: 701-250-1756 • www.west-inc.com • Fax: 701-250-1761

August 2, 2016

Sean Flannery  
Glacier Ridge Wind Farm, LLC  
330 2nd Avenue South, Suite 820  
Minneapolis, Minnesota 55401 USA

**RE: Glacier Ridge Wind Farm Land Cover Mapping**

Dear Mr. Flannery,

Land cover types (or "habitat") were delineated using ArcGIS, ArcMap 10.3 within the Glacier Ridge Wind Farm (Project). Using 2015 USDA NAIP aerial imagery and National Wetlands Inventory (NWI), all land within the Project area was delineated and assigned one of 11 land cover types, that were then collapsed down to six types (e.g., different types of NWI wetlands were collapsed into "wetland"; Table 1 and Figure 1).

The Project area, as described, contained approximately 34,450 acres. Cultivated crop made up the majority of land cover in the Project area (87%). Grassland had the next highest percentage of land cover with 6%. This includes areas used for pasture, grassed waterways, planted grasslands, including potential Conservation Reserve Program areas, and possibly some native prairie. There are two areas of somewhat larger grasslands, one in the southeastern to south-central portion of the Project and the other in the northwestern portion of the Project. Based on a review of historic aerial photographs as well as the land use/land cover identified in the 2010 North Dakota Gap Analysis Land Cover, these areas have been previously tilled and are not comprised of larger blocks of native grasslands. In descending order, the following land cover types made up the remaining area of the Project: wetlands, tree/shrubs, farmsteads, and developed areas.

Land cover types were dispersed across the Project area with no significant concentration of wetlands, grasslands, or other types in any general area (Figure 1).

Let me know if you have any questions or need further details.

Sincerely,

Clayton Derby  
Senior Manager

**Table 1. Land Cover within the Glacier  
Ridge Wind Farm.**

<b>Land Cover Type</b>	<b>Acres</b>	<b>% of Total</b>
Cultivated Crop	29,995	87.07
Developed	11	0.03
Farmstead	230	0.67
Grassland	2,049	5.95
Tree/Shrub	561	1.63
Wetland	1,604	4.66
<b>Total</b>	<b>34,450</b>	<b>100.00</b>

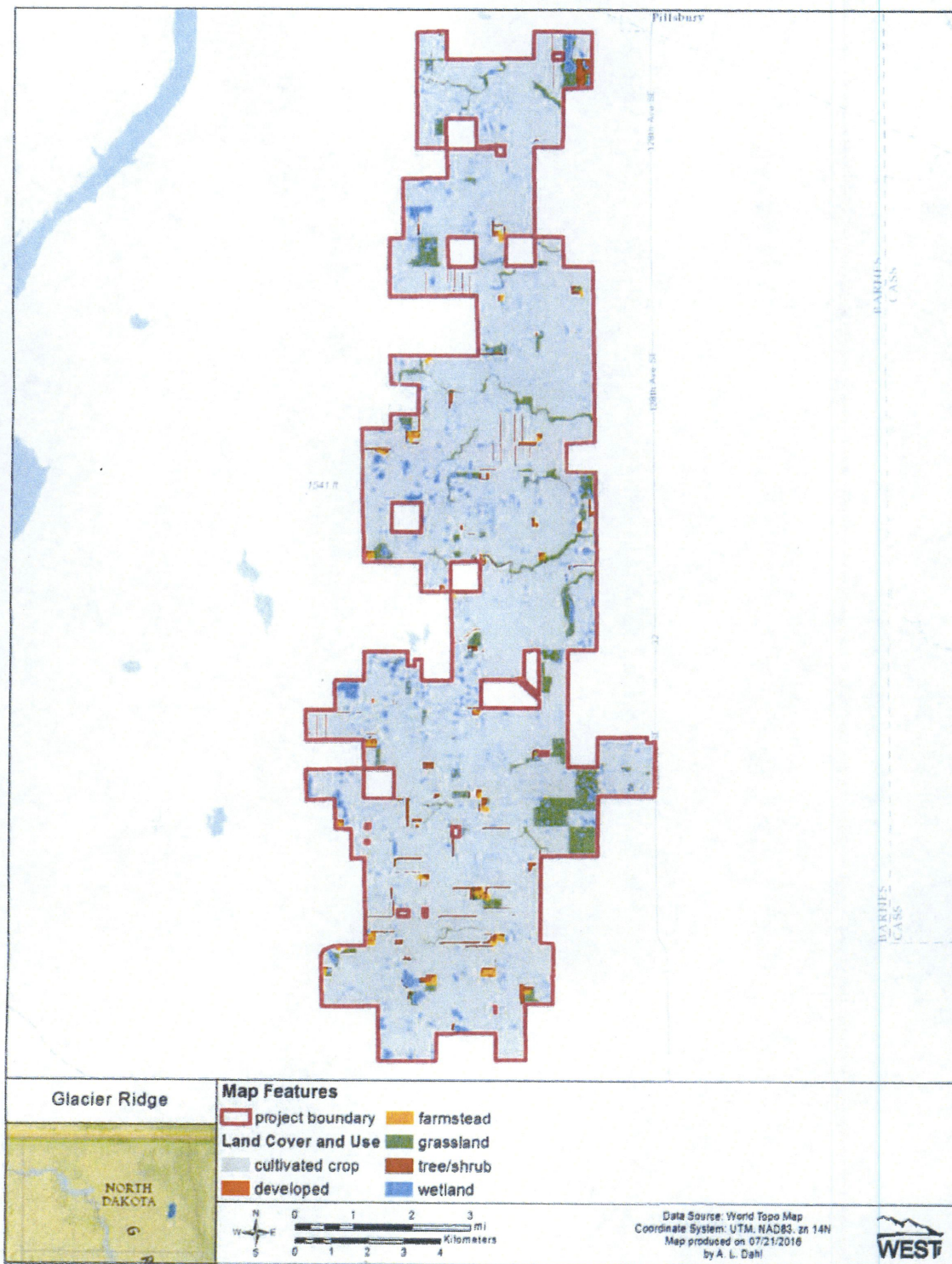


Figure 1. Land cover within the Glacier Ridge Wind Farm.