

Appendix D – Microwave Beam Path Study

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Wind Power GeoPlanner™

Microwave Study

Luverne



Prepared on Behalf of
Atwell, LLC

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COMSEARCH
A CommScope Company

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1. Introduction

Microwave bands that may be affected by the installation of wind turbine facilities operate over a wide frequency range (900 MHz – 23 GHz). Comsearch has developed and maintains comprehensive technical databases containing information on licensed microwave networks throughout the United States. These systems are the telecommunication backbone of the country, providing long-distance and local telephone service, backhaul for cellular and personal communication service, data interconnects for mainframe computers and the Internet, network controls for utilities and railroads, and various video services. This report focuses on the potential impact of wind turbines on licensed, proposed and applied non-federal government microwave systems.

2. Project Overview

Project Information

Name: Luverne

County: Griggs & Steele

State: North Dakota

Number of Turbines: 33

Blade Diameter: 97 meters

Hub Height: 80 meters

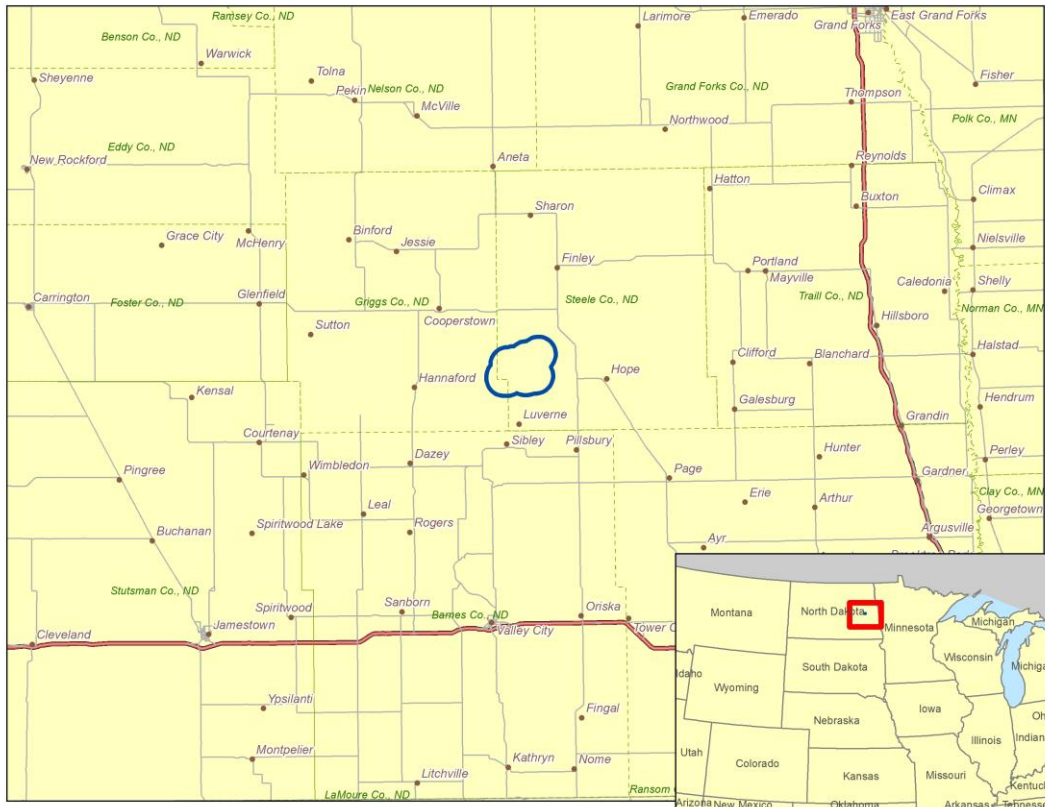


Figure 1: Area of Interest

3. Microwave Study Result

Methodology

Our obstruction analysis was performed using Comsearch’s proprietary microwave database, which contains all non-government licensed, proposed and applied paths from 0.9 - 23 GHz¹. We determined all microwave paths that intersect the area of interest². The area of interest encompasses the planned turbine locations. In this case, Comsearch identified no microwave paths that intersect the project area³.

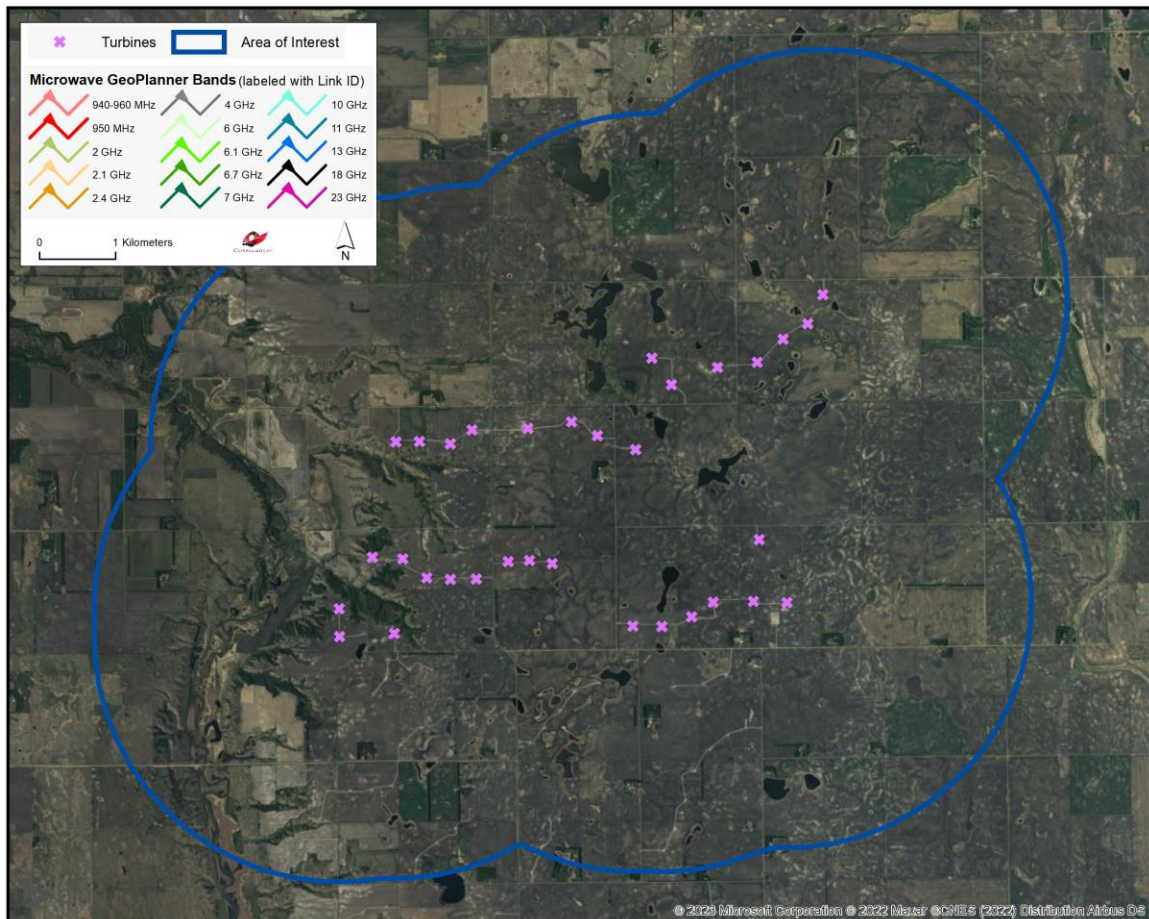


Figure 2: Microwave Paths that Intersect the Area of Interest

¹ Please note that this analysis does not include unlicensed microwave paths or federal government paths that are not registered with the FCC.

² We use FCC-licensed coordinates to determine which paths intersect the area of interest. It is possible that as-built coordinates may differ slightly from those on the FCC license.

³ Comsearch makes no warranty as to the accuracy of the data included in this report beyond the date of the report. The data provided in this report is governed by Comsearch’s data license notification and agreement located at http://www.comsearch.com/files/data_license.pdf.

Discussion of Potential Obstructions

Total Microwave Paths	Paths with Affected Fresnel Zones	Total Turbines	Turbines Obstructions
0	0	33	0

For this project, 33 turbines were considered in the analysis, each with a blade diameter of 97 meters and turbine hub height of 80 meters. Since there were no microwave paths in the area of interest, none of the proposed turbines will cause obstructions.

4. Contact

For questions or information regarding the Microwave Study, please contact:

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 Company: Comsearch
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 Fax: 703-726-5595
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 Web site: www.comsearch.com

Appendix: Turbine Locations

Case ID	FAA ASN	Latitude	Longitude
3030635	2009-WTE-3194-OE	47.328590	-97.914589
3030641	2009-WTE-3200-OE	47.362293	-97.892792
3030638	2009-WTE-3197-OE	47.360291	-97.915688
3030637	2009-WTE-3196-OE	47.357094	-97.912292
3030615	2009-WTE-3174-OE	47.334492	-97.951195
3030628	2009-WTE-3187-OE	47.352192	-97.937393
3030642	2009-WTE-3201-OE	47.364094	-97.888489
3030611	2009-WTE-3170-OE	47.336193	-97.933495
3030632	2009-WTE-3191-OE	47.350792	-97.960388
3030639	2009-WTE-3198-OE	47.359093	-97.904289
3030633	2009-WTE-3192-OE	47.331390	-97.905594
3030619	2009-WTE-3178-OE	47.328194	-97.961090
3030636	2009-WTE-3195-OE	47.328693	-97.919594
3030618	2009-WTE-3177-OE	47.337193	-97.964691
3030614	2009-WTE-3173-OE	47.334492	-97.946693
3030626	2009-WTE-3185-OE	47.351192	-97.925293
3030627	2009-WTE-3186-OE	47.352894	-97.929794
3030634	2009-WTE-3193-OE	47.329693	-97.909393
3030629	2009-WTE-3188-OE	47.352093	-97.947090
3030623	2009-WTE-3182-OE	47.331390	-97.898590
3030613	2009-WTE-3172-OE	47.336491	-97.941093
3030625	2009-WTE-3184-OE	47.349491	-97.918694
3030617	2009-WTE-3176-OE	47.336990	-97.959389
3030620	2009-WTE-3179-OE	47.331192	-97.970589
3030612	2009-WTE-3171-OE	47.336594	-97.937393
3030616	2009-WTE-3175-OE	47.334690	-97.955292
3030643	2009-WTE-3202-OE	47.367493	-97.885788
3030631	2009-WTE-3190-OE	47.350792	-97.956291
3030624	2009-WTE-3183-OE	47.338692	-97.897491
3030630	2009-WTE-3189-OE	47.350491	-97.950890
3030621	2009-WTE-3180-OE	47.327892	-97.970589
3030640	2009-WTE-3199-OE	47.359592	-97.897392
3030622	2009-WTE-3181-OE	47.331192	-97.892792