

Appendix E

Telecommunications Reports

1. Microwave Study
2. Off-Air Television Report
3. Land Mobile & Emergency Services Report
4. AM and FM Radio Report



Wind Power GeoPlanner™

Microwave Study

Homestead Wind Project

Prepared on Behalf of
Homestead Wind, LLC

October 3, 2025

Table of Contents

1. Introduction	- 1 -
2. Project Overview	- 1 -
3. Microwave Study Result	- 2 -
4. Contact	- 3 -
Appendix: Turbine Locations	- 4 -

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: Homestead Wind Project
County: Williams
State: North Dakota

Number of Turbines: 81
Blade Diameter: 163/154 meters
Hub Height: 113/116 meters

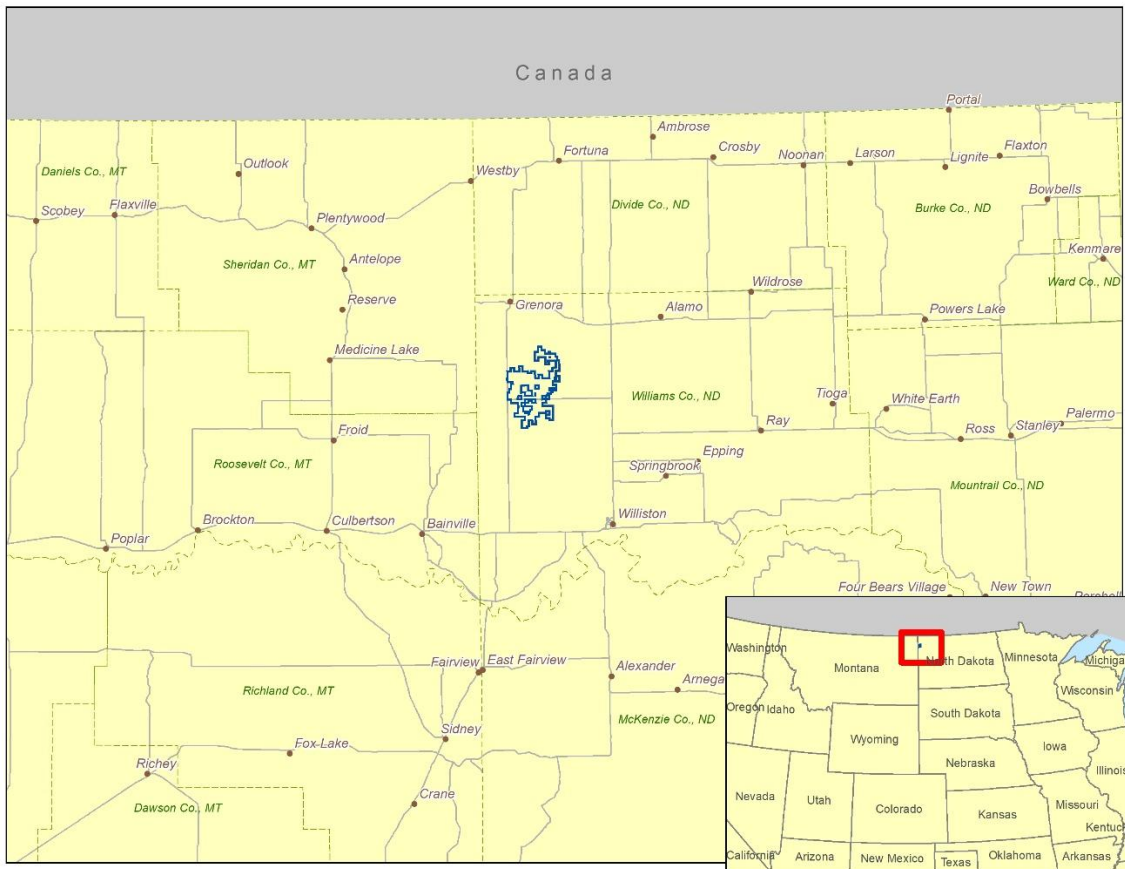


Figure 1: Area of Interest

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 area or the vicinity of this map, including microwave towers³.

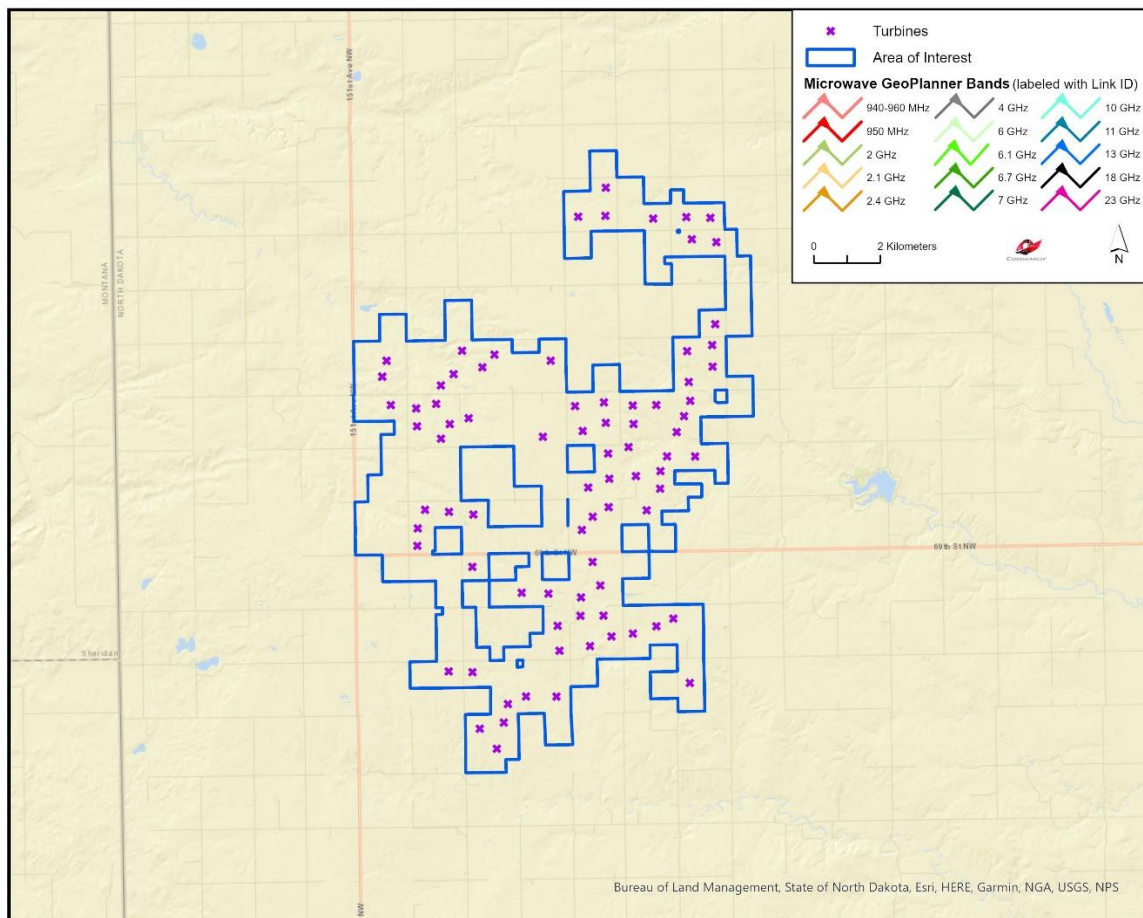


Figure 2: Microwave Paths that Intersect the Area of Interest

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	81	0

For this project, 81 turbines were considered in the analysis, each with a max blade diameter of 163 meters and max turbine hub height of 116 meters. Since there were no microwave paths in the area of interest, none of the proposed turbines will cause obstructions. There are also no microwave towers in the Project vicinity.

4. Contact

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

Contact person: David Meyer
Title: Senior Manager
Company: Comsearch
Address: 21515 Ridgetop Circle, Suite 300, Sterling, VA 20166
Telephone: 703-726-5656
Fax: 703-726-5595
Email: DMeyer@comsearch.com
Web site: www.comsearch.com

Appendix: Turbine Locations

id	Latitude	Longitude
T01	48.51512601	-103.8461701
T02	48.50750083	-103.8464542
T03	48.50735244	-103.8575629
T04	48.50680606	-103.8134891
T05	48.50653863	-103.8037238
T06	48.50655489	-103.8269842
T07	48.50081393	-103.8113848
T08	48.49990122	-103.8014609
T09	48.47771423	-103.8023956
T10	48.47205028	-103.8037605
T11	48.47155376	-103.9056203
T12	48.47052826	-103.8140528
T13	48.47038571	-103.8925335
T14	48.46851633	-103.8696267
T15	48.46907685	-103.93641
T16	48.46620131	-103.8037888
T17	48.46696142	-103.8975111
T18	48.46525106	-103.9092768
T19	48.46480112	-103.9383552
T20	48.46215907	-103.8135349
T21	48.46222794	-103.9144904
T22	48.45703352	-103.8130856
T23	48.45697093	-103.8481702
T24	48.45725032	-103.916517
T25	48.4560961	-103.8269167
T26	48.45708075	-103.9350295
T27	48.45606389	-103.8365273
T28	48.45610929	-103.8599752
T29	48.45611452	-103.9246905
T30	48.45294488	-103.8156882
T31	48.45325043	-103.9033564
T32	48.45143432	-103.8475988
T33	48.45101069	-103.8362948
T34	48.45173425	-103.9111361
T35	48.45128611	-103.9244337
T36	48.4493172	-103.8570419
T37	48.44868838	-103.8187637
T38	48.44792443	-103.8732723
T39	48.44779195	-103.9147321
T40	48.44479768	-103.838458
T41	48.4431336	-103.8467926
T42	48.44214814	-103.8228611
T43	48.44196357	-103.8114646
T44	48.4381578	-103.825685
T45	48.43691225	-103.8356258

id	Latitude	Longitude
T46	48.43631077	-103.8465336
T47	48.43398207	-103.855117
T48	48.43337712	-103.8258768
T49	48.42862826	-103.8469411
T50	48.42862222	-103.9216718
T51	48.42760749	-103.8315235
T52	48.42798075	-103.911899
T53	48.42715502	-103.901992
T54	48.42609879	-103.8534977
T55	48.42360766	-103.9247452
T56	48.42256415	-103.8579304
T57	48.41887713	-103.9249356
T58	48.41382651	-103.8538099
T59	48.41301616	-103.9027239
T60	48.40743265	-103.8508375
T61	48.40577814	-103.8828243
T62	48.40542908	-103.8719746
T63	48.40430639	-103.8587187
T64	48.39925549	-103.8496945
T65	48.39933741	-103.8590273
T66	48.39816122	-103.8213008
T67	48.3967038	-103.8684104
T68	48.39615101	-103.8282533
T69	48.39429795	-103.8378554
T70	48.39360897	-103.8466084
T71	48.39106585	-103.8553586
T72	48.3899464	-103.8678229
T73	48.38480042	-103.9129418
T74	48.3845106	-103.9033193
T75	48.38069322	-103.8150579
T76	48.37768834	-103.8816404
T77	48.37754185	-103.8692915
T78	48.37572896	-103.8890558
T79	48.37072925	-103.8908618
T80	48.3691568	-103.9006145
T81	48.36367792	-103.8938334



Wind Power GeoPlanner[™]

Off-Air Television Report

Homestead Wind Project

Prepared on Behalf of
Homestead Wind, LLC

October 3, 2025

Table of Contents

1. Introduction	- 1 -
2. Summary of Results	- 1 -
3. Impact Assessment	- 4 -
4. Recommendations	- 5 -
5. Contact	- 6 -

1. Introduction

Off-air television stations broadcast signals from terrestrially-based facilities directly to television receivers. Comsearch identified those off-air stations whose service could potentially be affected by the proposed Homestead Wind Project wind project in Williams County, North Dakota. Comsearch then examined the coverage of the stations and the communities in the area that could potentially have degraded television reception due to the location of the proposed wind turbines.

2. Summary of Results

The proposed wind energy project area and local communities are depicted in Figure 1, below.

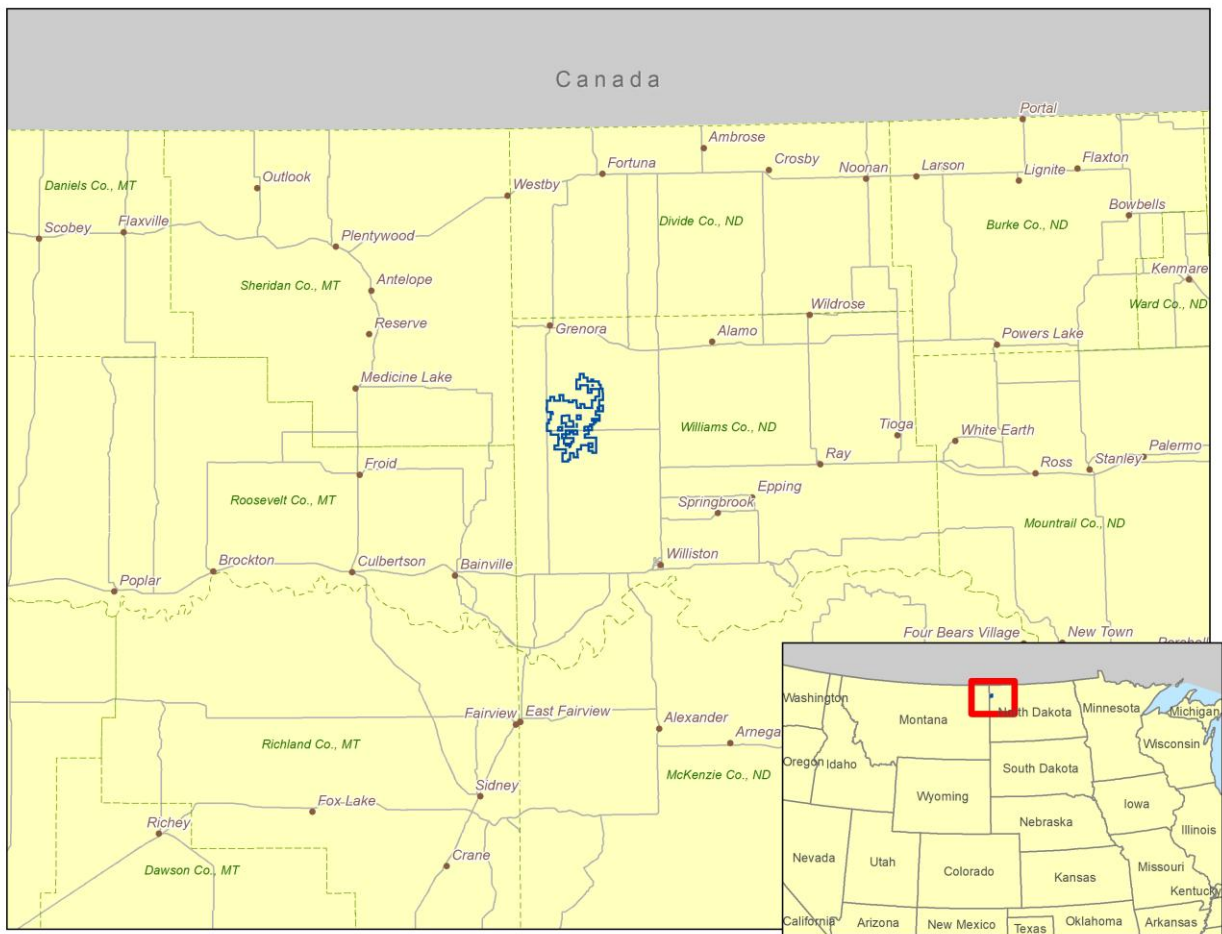


Figure 1: Wind Farm Project Area and Local Communities

To begin the analysis, Comsearch compiled all off-air television stations¹ within 150 kilometers of the proposed turbines. TV stations at a distance of 150 kilometers or less are the most likely to provide off-air coverage to the project area and neighboring communities. These stations are listed in Table 1, on the next page, and a plot depicting their locations is provided in Figure 2. There are a total of 44 database records for stations within approximately 150 kilometers of the proposed turbines. Of these stations, only 25 stations are currently licensed and operating, 22 of which are low-power stations or translators. Translator stations are low-power stations that receive signals from distant broadcasters and retransmit the signal to a local audience. These stations serve local audiences and have limited range, which is a function of their transmit power and the height of their transmit antenna.

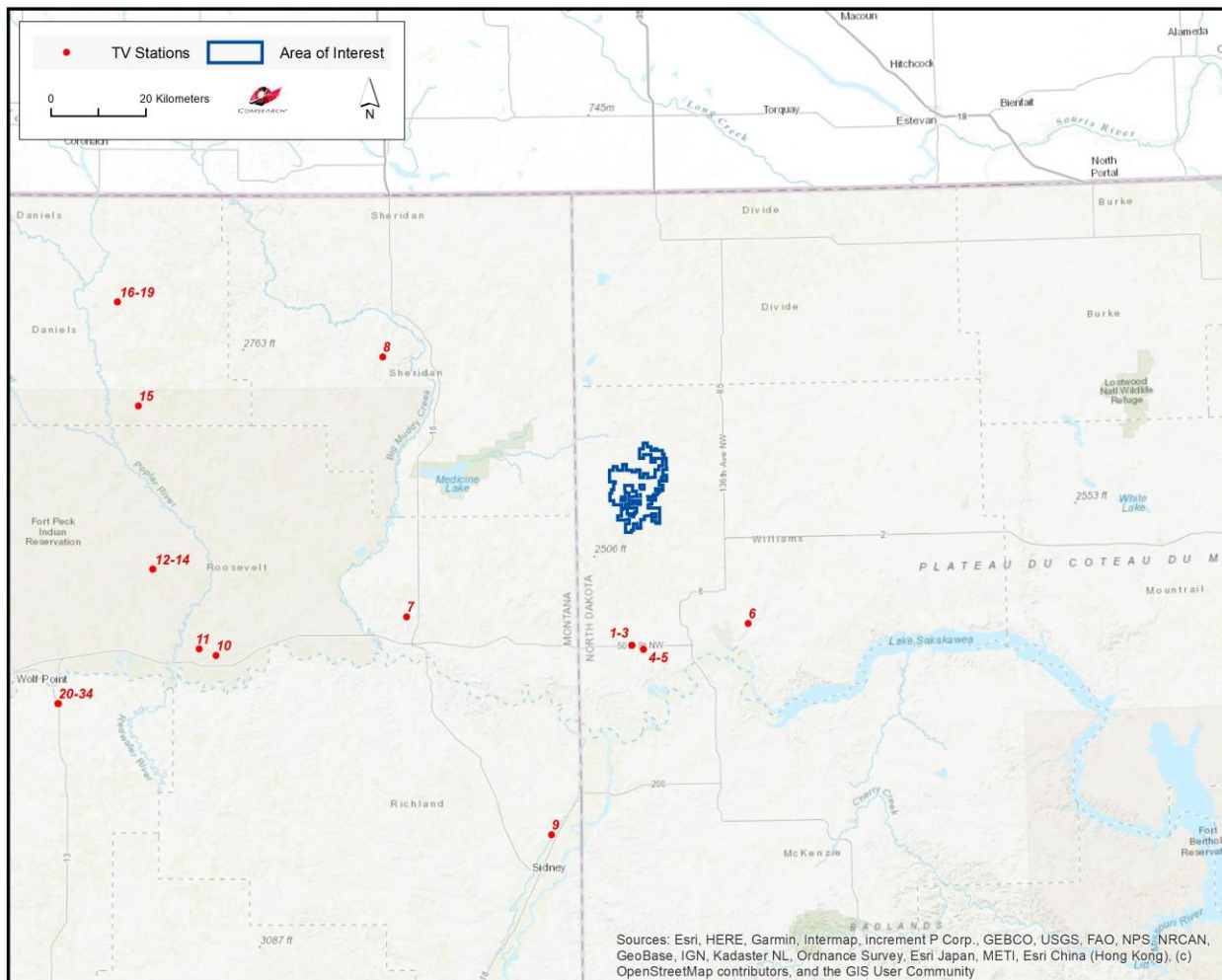


Figure 2: Plot of Off-Air TV Stations within 150 Kilometers of Proposed Turbines

¹ Comsearch makes no warranty as to the accuracy of the data included in this report beyond the date of the report. The data presented in this report is derived from the TV station's FCC license and governed by Comsearch's data license notification and agreement located at http://www.comsearch.com/files/data_license.pdf.

ID	Call Sign	Status	Service ²	Channel	Transmit ERP ³ (kW)	Latitude (NAD 83)	Longitude (NAD 83)	Distance to the Closest Turbine (km)
1	KWSE	LIC	DTV	11	84.9	48.141667	-103.893333	24.68
2	KXMD-TV	AMD	DTV	14	40.0	48.141667	-103.893333	24.68
3	KXMD-TV	LIC	DTV	14	100.0	48.141667	-103.893333	24.68
4	KUMV-TV	LIC	DTV	8	6.0	48.133889	-103.860556	25.66
5	K20PB-D	LIC	LPD	20	15.0	48.133889	-103.860556	25.66
6	K28QQ-D	LIC	LPT	28	1.0	48.179250	-103.562194	29.21
7	K34GY-D	LIC	LPT	34	0.354	48.200000	-104.532167	50.32
8	K28OB-D	LIC	LPT	28	0.3	48.693056	-104.596056	54.65
9	K13IG-D	LIC	LPT	13	0.014	47.784167	-104.126861	66.71
10	K05KK-D	LIC	LPT	5	0.037	48.127778	-105.073028	90.72
11	K13PZ-D	LIC	LPT	13	0.054	48.140278	-105.121361	93.71
12	K15KR-D	LIC	LPT	15	0.245	48.291111	-105.253028	99.25
13	K17MS-D	LIC	LPT	17	0.245	48.291111	-105.253028	99.25
14	K22KY-D	LIC	LPT	22	0.245	48.291111	-105.253028	99.25
15	K31MJ-D	LIC	LPT	31	1.052	48.600556	-105.296083	101.36
16	K03DP-D	LIC	LPT	3	0.03	48.797500	-105.357306	110.87
17	K13MA-D	LIC	LPT	13	0.038	48.797500	-105.357306	110.87
18	K24OQ-D	LIC	LPT	24	0.239	48.797500	-105.357306	110.87
19	K26PD-D	LIC	LPT	26	0.239	48.797500	-105.357306	110.87
20	K19JR-D	APP	LPT	19	0.431	48.035278	-105.520000	125.55
21	K19JR-D	CP	LPT	19	0.431	48.035278	-105.520000	125.55
22	K19JR-D	STA	LPT	19	0.431	48.035278	-105.520000	125.55
23	K25HO-D	CP	LPT	25	0.252	48.035278	-105.520000	125.55

² Definitions of service and status codes:

ACA - Analog Class A
 DCA - Digital Class A
 DRT - Digital Replacement Translator
 DT - ETL testing
 DTS - Distributed Transmission System
 DTV - Full Service Television
 DTX - Digital TV Auxiliary
 LPA - Low Power Analog TV
 LPD - Low Power Digital TV
 LPT - Digital TV Translator
 LPX - Analog TV Translator
 TS - Legacy Service for Analog TV Auxiliary
 TV - Analog TV legacy

LIC – Licensed and operational station
 CP – Construction permit granted
 CP MOD – Modification of construction permit
 APP – Application for construction permit, not yet operational
 STA – Special transmit authorization, usually granted by FCC for temporary operation
 AMD - Amendment

³ ERP = Transmit Effective Radiated Power

ID	Call Sign	Status	Service ²	Channel	Transmit ERP ³ (kW)	Latitude (NAD 83)	Longitude (NAD 83)	Distance to the Closest Turbine (km)
24	K25HO-D	APP	LPT	25	0.252	48.035278	-105.520000	125.55
25	K25HO-D	STA	LPT	25	0.252	48.035278	-105.520000	125.55
26	K27JQ-D	APP	LPT	27	0.252	48.035278	-105.520000	125.55
27	K27JQ-D	CP	LPT	27	0.252	48.035278	-105.520000	125.55
28	K27JQ-D	STA	LPT	27	0.252	48.035278	-105.520000	125.55
29	K29FS-D	STA	LPT	29	0.252	48.035278	-105.520000	125.55
30	K29FS-D	APP	LPT	29	0.252	48.035278	-105.520000	125.55
31	K29FS-D	CP	LPT	29	0.252	48.035278	-105.520000	125.55
32	K25HO-D	LIC	LPT	25	0.252	48.035000	-105.520528	125.60
33	K27JQ-D	LIC	LPT	27	0.252	48.035000	-105.520528	125.60
34	K29FS-D	LIC	LPT	29	0.252	48.035000	-105.520528	125.60
35	K04GF-D	LIC	LPT	4	0.019	48.112222	-105.695556	135.75
36	K06AV-D	LIC	LPT	6	0.019	48.112222	-105.695556	135.75
37	K13FP-D	LIC	LPT	13	0.028	48.112222	-105.695556	135.75
38	K19JR-D	LIC	LPT	19	0.431	48.112222	-105.695556	135.75
39	K23PV-D	CP	LPT	23	0.431	48.112222	-105.695556	135.75
40	K04GF-D	APP	LPT	23	0.431	48.112222	-105.695556	135.75
41	K06AV-D	APP	LPT	32	0.431	48.112222	-105.695556	135.75
42	K32PD-D	CP	LPT	32	0.431	48.112222	-105.695556	135.75
43	K34RA-D	CP	LPT	34	0.431	48.112222	-105.695556	135.75
44	K13FP-D	APP	LPT	34	0.431	48.112222	-105.695556	135.75

Table 1: Off-Air TV Stations within 150 Kilometers of Proposed Turbines

3. Impact Assessment

Based on a contour analysis of the licensed stations within 150 kilometers of the Homestead Wind Project, it was determined that three of the full-power digital stations, identified below in Table 2, along with low-power digital station K20PB-D, may have their reception disrupted in and around the project. The areas primarily affected would include TV service locations within 10 kilometers of the turbines that have clear line-of-sight (LOS) to a proposed wind turbine but not to the respective station. After the wind turbines are installed, communities and homes in these locations may have degraded reception of these stations. This is due to multipath interference caused by signal scattering as TV signals are reflected by the rotating wind turbine blades and mast.

ID	Call Sign	Status	Service	Channel	Transmit ERP (kW)	Latitude (NAD 83)	Longitude (NAD 83)	Distance to the Closest Turbine (km)
1	KWSE	LIC	DTV	11	84.900	48.141667	-103.893333	24.68
3	KXMD-TV	LIC	DTV	14	100.000	48.141667	-103.893333	24.68
4	KUMV-TV	LIC	DTV	8	6.000	48.133889	-103.860556	25.66
5	K20PB-D	LIC	LPD	20	15.000	48.133889	-103.860556	25.66

Table 2: Licensed Off-Air TV Stations Subject to Degradation

4. Recommendations

While TV signals are reflected by wind turbines, which can cause multipath interference to the TV receiver, modern digital TV receivers have undergone significant improvements to mitigate the effects of signal scattering. When used in combination with a directional antenna, it becomes even less likely that signal scattering from wind farms will cause interference to digital TV reception.

Nevertheless, signal scattering could still impact certain areas currently served by the TV station mentioned above, especially those that would have line-of-sight to at least one wind turbine but not to the station antenna. In the unlikely event that interference is observed in any of the TV service areas, it is recommended that a high-gain directional antenna be used, preferably outdoors, and oriented towards the signal origin in order to mitigate the interference.

Both cable service and direct broadcast satellite service will be unaffected by the presence of the wind turbine facility and may be offered to those residents who can show that their off-air TV reception has been disrupted by the presence of the wind turbines after they are installed.

5. Contact

For questions or information regarding the Off-Air TV Analysis, please contact:

Contact person: David Meyer
Title: Senior Manager
Company: Comsearch
Address: 21515 Ridgetop Circle, Suite 300, Sterling, VA 20166
Telephone: 703-726-5656
Fax: 703-726-5595
Email: DMeyer@comsearch.com
Web site: www.comsearch.com



Wind Power GeoPlanner™
Land Mobile & Emergency
Services Report
Homestead Wind Project

Prepared on Behalf of
Homestead Wind, LLC

October 6, 2025

Table of Contents

1. Introduction	- 1 -
2. Summary of Results	- 2 -
3. Impact Assessment	- 5 -
4. Contact	- 6 -
	- 7 -
Appendix A	

1. Introduction

An assessment of the emergency services in the Homestead Wind Project wind project area was performed by Comsearch to identify potential impact from the planned turbines. We evaluated the registered frequencies for the following types of first responder entities: police, fire, emergency medical services, emergency management, hospitals, public works, transportation and other state, county, and municipal agencies. We also identified all industrial and business land mobile radio (LMR) systems and commercial E911 operators within the proposed wind energy facility boundaries. This information is useful in the planning stages of the wind energy facility because the data can be used in support of facility communications needs and to evaluate any potential impact on the emergency services provided in that region. An overview of the project area, which is located in Williams County, North Dakota, appears below in Figure 1.

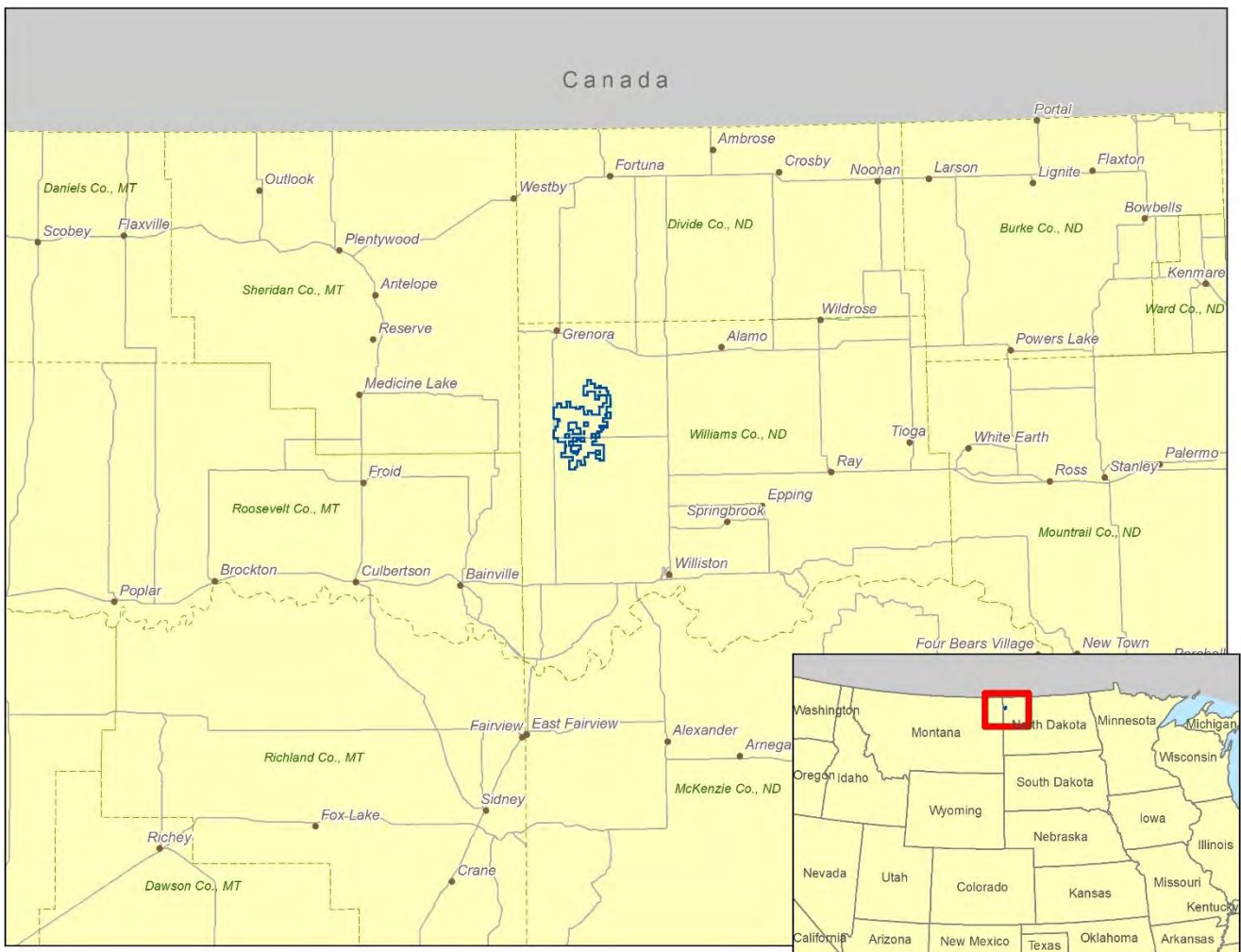


Figure 1: Area of Interest (AOI)

2. Summary of Results

Our land mobile and emergency services incumbent data¹ was derived from the FCC’s Universal Licensing System (ULS) and the FCC’s Public Safety & Homeland Security bureau. We identified both site-based licenses as well as regional area-wide licenses designated for public safety use.

Site-Based Licenses

The site-based licenses were imported into GIS software and geographically mapped relative to the energy project area of interest as defined by the customer. Each site on the map was given an ID number and associated with site information in a data table. A depiction of the fixed-site licenses near the project area appears in Figure 2.

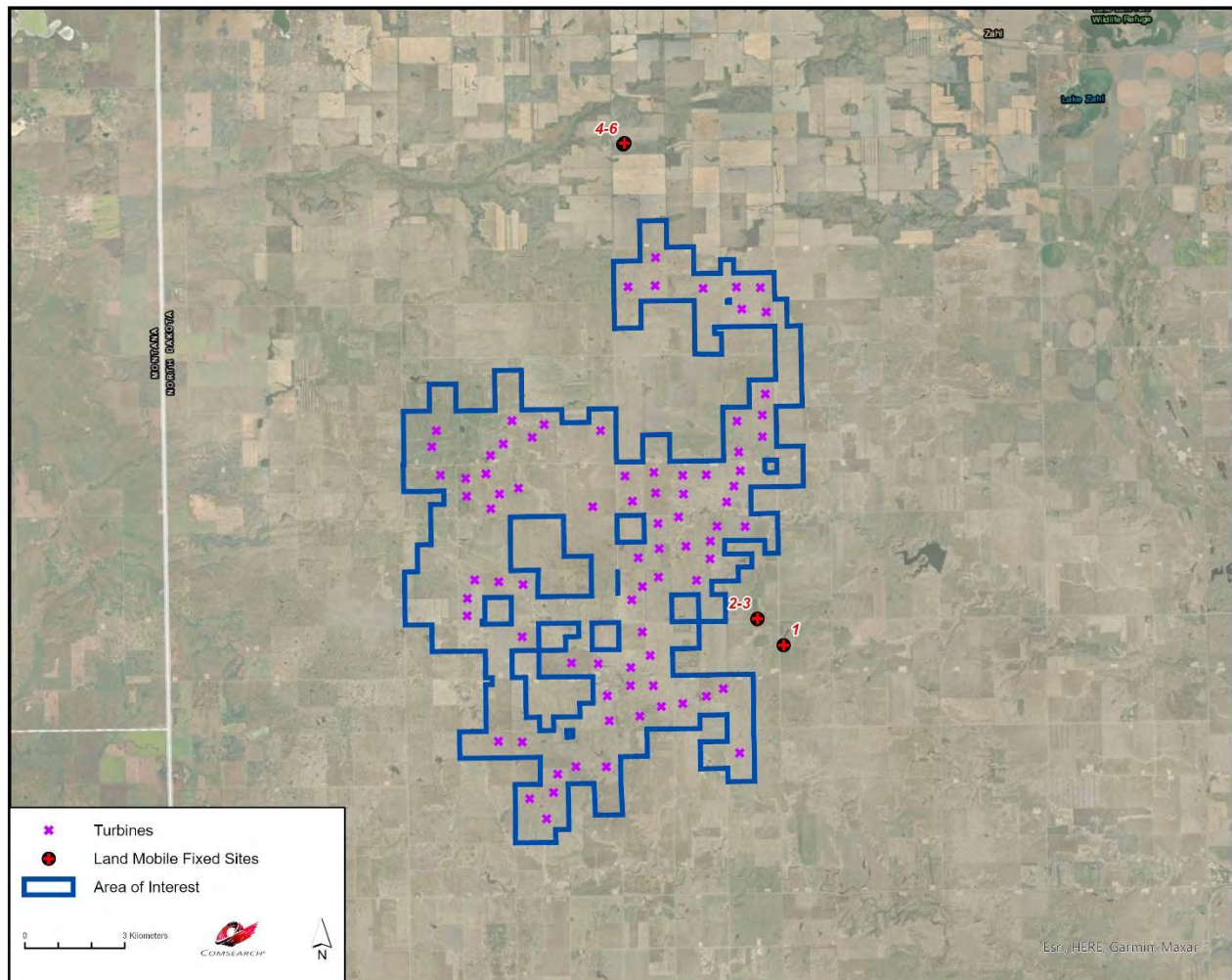


Figure 2: Land Mobile & Emergency Service Sites near Area of Interest

¹ Comsearch makes no warranty as to the accuracy of the data included in this report beyond the date of the report. The data presented in this report is derived from the land mobile station’s FCC license and governed by Comsearch’s data license notification and agreement located at http://www.comsearch.com/files/data_license.pdf

Figure 2 identifies 6 site-based licenses near the Homestead Wind Project area of interest. Specific information about these sites is provided in Table 1.

ID	Call Sign	Frequency Band (MHz)	Licensee	Antenna Height AGL (m)	Latitude (NAD83)	Longitude (NAD83)	Distance to Nearest Turbine (km)
1	WQNL933	450-470	BASIN ELECTRIC POWER COOPERATIVE	77.4	48.40963889	-103.79647222	2.24
2	WRCN978	150-174	JOHNSON, SCOTT	13	48.41680556	-103.80708333	2.17
3	WSIH497	150-174	BERG, JOHN	4	48.41694444	-103.80694444	2.17
4	KNEK337	150-174	WILLIAMS, COUNTY OF	27.4	48.54583333	-103.85861111	3.54
5	WQBR535	150-174	Williams County Emergency Management	33.2	48.54583333	-103.85861111	3.54
6	WRJW967	800/900	NORTH DAKOTA INFORMATION TECHNOLOGY DEPT	39.6	48.54622222	-103.85819444	3.57

Table 1: Land Mobile & Emergency Service Sites in Area of Interest

Mobile Licenses

In addition to the fixed-site licenses above, 136 mobile licenses defined by center point and radius were found to intersect the Homestead Wind Project area. Appendix A contains a tabular summary of these stations.

Area-Wide Licenses

The regional area-wide licenses were compiled from FCC data sources and identified for each county intersected by the wind energy project area. The Homestead Wind Project is located in Williams County, North Dakota, part of Public Safety Region #32, which contains all the counties in North Dakota. The regional public safety operations are overseen by the entity listed below.

Darin Anderson

Chairperson, Public Safety Region #32
Division Director, ND DES State Radio Emergency Communications Center / ND Statewide Interoperability Coordinator (SWIC)
35 Fraine Barracks Rd, Bismarck, ND 58503
Phone: 701-328-8150
Email: darinlanderson@nd.gov

The chairperson for Region #32 serves as the representative for all public safety entities in the area and is responsible for coordinating current and future public safety use in the wireless spectrum. In the bands licensed by the FCC for area-wide first responders, which include 220 MHz, 700 MHz, 800 MHz and 4.9 GHz, as well as the traditional Part 90 public safety pool of frequencies, twelve licenses were found for the State of North Dakota and two for the County of Williams (see Table 2). These area-wide licenses are designated for mobile use only.

ID	Licensee	Area of Operation	Frequency Band (MHz)
1	American National Red Cross	Statewide: ND	25-50
2	MINOT POLICE DEPARTMENT	Statewide: ND	450-470, 2450-2500
3	NATIONAL SKI PATROL SYSTEM INC	Statewide: ND	150-174
4	NDDOT-Telecom	Statewide: ND	150-174
5	North Dakota Department of Health & Human Services	Statewide: ND	0-10
6	North Dakota Dept. of Health	Statewide: ND	150-174
7	North Dakota Dept. of Transportation	Statewide: ND	4940-4990
8	NORTH DAKOTA EMS ASSOCIATION	Statewide: ND	450-470
9	North Dakota Information Technology Dept	Statewide: ND	150-174, 800/900
10	North Dakota State Emergency Communications Center	Statewide: ND	0-10, 150-174, 450-470
11	NORTH DAKOTA, STATE OF	Statewide: ND	150-174, 450-470
12	STATE OF NORTH DAKOTA DEPT. OF TRANSPORTATION Telecommunications.	Statewide: ND	150-174
13	Williams County Emergency Management	Countywide: WILLIAMS, ND	150-174
14	WILLIAMS, COUNTY OF	Countywide: WILLIAMS, ND	150-174

Table 2: Regional Licenses

E911 Operators

Wireless operators are granted area-wide licenses from the FCC to deploy their cellular networks, which often include handsets with E911 capabilities. Since mobile phone market boundaries differ from service to service, we disaggregated the carriers' licensed areas down to the county level. We have identified the type of service for each carrier in Williams County, North Dakota, in Table 3.

Mobile Phone Carrier	Service ²
AT&T	700 MHz, AWS, Cellular, PCS, WCS
DISH Network	700 MHz, AWS
Infrastructure Networks	700 MHz
Nemont Telephone (Sagebrush Cellular)	700 MHz, PCS
T-Mobile	AWS, PCS
Verizon	700 MHz, AWS, Cellular, PCS

Table 3: Mobile Phone Carriers in Area of Interest with E911 Service

3. Impact Assessment

The first responder, industrial/business land mobile sites, area-wide public safety, and commercial E-911 communications as described in this report are typically unaffected by the presence of wind turbines. Although each of these services operates in different frequency ranges and provides different types of service including voice, video and data applications, there is commonality among these different networks with regard to the impact of wind turbines on their service. Each of these networks is designed to operate reliably in a non-line-of-sight (NLOS) environment. Many land mobile systems are designed with multiple base transmitter stations covering a large geographic area with overlap between adjacent transmitter sites in order to provide handoff between cells. Therefore, any signal blockage caused by the wind turbines does not materially degrade the reception because the end user is likely receiving signals from multiple transmitter locations. Additionally, the frequencies of operation for these services have characteristics that allow the signal to propagate through wind turbines. As a result, no change in their coverage should occur when the wind turbines are installed.

² AWS: Advanced Wireless Service at 1.7/2.1 GHz
 CELL: Cellular Service at 800 MHz
 PCS: Personal Communication Service at 1.9 GHz
 WCS: Wireless Communications Service at 2.3 GHz
 700 MHz: Lower 700 MHz Service

When planning the wind energy turbine locations in the area of interest, a conservative approach would dictate not locating any turbines within 77.5 meters of land mobile fixed-base stations to avoid any possible impact to the communications services provided by these stations. This distance is based on FCC interference emissions from electrical devices in the land mobile frequency bands. As long as the turbines are located more than 77.5 meters from the land mobile stations, they will meet the setback distance criteria for FCC interference emissions in the land mobile bands. All turbines are sited more than 77.5 meters from land mobile stations at the Homestead Wind Project. The closest turbine is approximately 2.71 kilometers from a land mobile station. Therefore, impacts are not anticipated.

4. Contact

For questions or information regarding the Land Mobile & Emergency Services Report, please contact:

Contact person: David Meyer
Title: Senior Manager
Company: Comsearch
Address: 21515 Ridgetop Circle, Suite 300, Sterling, VA 20166
Telephone: 703-726-5656
Fax: 703-726-5595
Email: DMeyer@comsearch.com
Web site: www.comsearch.com

Appendix A

ID	Call Sign	Frequency Band (MHz)	Licensee	Mobile Area Radius (km)	Latitude (NAD83)	Longitude (NAD83)
1	WQUU649	150-174	Aasheim Farms GP	40	48.589750	-104.344389
2	WQVN419	450-470	AMERICAN TIME & SIGNAL CO.	20	48.620694	-103.933333
3	WQUA318	150-174	ANDERSONS BEAU	40	48.148000	-103.996972
4	WRN575	150-174	BAINVILLE PUBLIC SCHOOLS	40	48.140028	-104.222722
5	WQKQ990	450-470	Basin Electric Power Cooperative	80	48.777889	-103.201056
6	WQJY220	450-470	BASIN ELECTRIC POWER COOPERATIVE	80	48.128333	-103.439333
7	WQJZ898	450-470	BASIN ELECTRIC POWER COOPERATIVE	80	48.210361	-104.392194
8	WQMF626	450-470	BASIN ELECTRIC POWER COOPERATIVE	80	47.710833	-104.356389
9	WQNL933	450-470	BASIN ELECTRIC POWER COOPERATIVE	80	48.409639	-103.796472
10	WQNS969	450-470	BASIN ELECTRIC POWER COOPERATIVE	80	47.818917	-104.568278
11	WQSB262	450-470	BASIN ELECTRIC POWER COOPERATIVE	80	48.408389	-102.860917
12	WQSV298	450-470	BASIN ELECTRIC POWER COOPERATIVE	80	47.797111	-103.578194
13	WQSZ546	450-470	BASIN ELECTRIC POWER COOPERATIVE	80	48.232583	-103.951472
14	WSIH497	150-174	BERG, JOHN	40	48.416944	-103.806944
15	KAG468	150-174	BNSF Railway Co.	40	48.142889	-103.621583
16	KAG468	150-174	BNSF Railway Co.	40	48.345528	-103.432694
17	KOG355	150-174	BNSF Railway Co.	40	48.142944	-104.219944
18	WQJK889	150-174	BNSF Railway Co.	40	48.170167	-103.971917
19	WQOP495	150-174	BNSF Railway Co.	40	48.024528	-103.905500
20	KOG352	150-174	BNSF RAILWAY CO.	40	48.030028	-104.088056
21	WPDU892	150-174	BRENNER, BILL	121	47.701417	-104.146889
22	WPAW860	150-174	Buller, Jan	121	47.643639	-105.072750
23	WQNZ764	450-470	CARLSON, DEAN E	32	48.374417	-103.973694

ID	Call Sign	Frequency Band (MHz)	Licensee	Mobile Area Radius (km)	Latitude (NAD83)	Longitude (NAD83)
24	WQRE804	150-174	CITY OF WILLISTON	24	48.266389	-103.750833
25	WQRE804	150-174	CITY OF WILLISTON	40	48.177361	-103.631889
26	WQWW934	150-174	CITY OF WILLISTON/LANDFILL/WWRRF	40	48.165556	-103.577639
27	WNWL535	450-470	DANIELSON, DALE	80	47.854472	-104.000500
28	WREM936	450-470	DELTA AIR LINES INC	16	48.257861	-103.747889
29	WNP424	150-174	DENOWH, TIM J	56	47.887528	-104.012722
30	WPAF558	150-174	Deubner, Paul	48	48.432250	-104.476889
31	WQSK221	150-174	ESTVOLD OILFIELD SERVICES	121	47.986389	-102.385556
32	WRDF715	150-174	Everson, Cory	40	48.090361	-103.957611
33	WQXU796	150-174	Farrenkopf, Michael	40	48.125028	-103.517972
34	WPBT544	450-470	FINNESGARD, LINCOLN:FINNESGARD, ORVIN	48	48.799194	-103.511028
35	WRDF745	450-470	FLATIRONS FIELD SERVICES,LLC	32	48.228583	-103.518528
36	WQNP344	150-174	Folvag, Justin	40	48.271389	-103.599861
37	WQPX963	150-174	GARAAS, FRANK	80	48.514167	-103.944444
38	WRZQ822	450-470	GARAAS, JAMES H	32	48.444194	-103.887417
39	WQVP632	450-470	GO WIRELINE LLC	32	48.329722	-103.548056
40	KPK364	150-174	GRAY TELEVISION LICENSEE, LLC	64	48.150000	-103.860556
41	WPCT264	450-470	GREV, STAN	64	48.388083	-103.658806
42	WRXI703	450-470	Gunlikson, Kelly	32	48.450639	-103.713556
43	WQUD575	150-174	Halliburton Energy Services, Inc.	32	48.152750	-103.689917
44	WQNW274	150-174	HARMON, DEAN:HARMON, WAGNER	40	48.088361	-104.247444
45	WQNT365	150-174	HEEN, GREG	40	48.035000	-103.999389
46	WRT538	150-174	HORIZON RESOURCES	40	48.156667	-103.498611
47	WQRG449	150-174	HOROB TRANSPORT CO.	40	48.142083	-103.717028
48	WQRG449	150-174	HOROB TRANSPORT CO.	40	48.110472	-103.443972

ID	Call Sign	Frequency Band (MHz)	Licensee	Mobile Area Radius (km)	Latitude (NAD83)	Longitude (NAD83)
49	WQLR219	450-470	IRET Properties	32	48.189139	-103.640278
50	WQDX884	450-470	JCPENNEY SHARED SERVICES CENTER	32	48.147500	-103.621944
51	WQUX961	150-174	JOHNSON, DONALD A	40	48.442250	-104.453556
52	WQSW247	450-470	JOHNSON, NEIL:JOHNSON, NORMAN	32	48.763639	-103.604361
53	WRCN978	150-174	JOHNSON, SCOTT	40	48.416806	-103.807083
54	WPIW392	150-174	JORGENSON, Glenn H	64	48.248917	-103.822139
55	WQNZ498	150-174	Knife River Inc.	40	48.233111	-103.582139
56	WQPY376	450-470	Kotana Communications, Inc.	32	48.781139	-103.869639
57	WPIW445	150-174	KROGEDAL, DAVID:KROGEDAL, MERLE	120.7	48.391417	-104.392722
58	WPIW445	150-174	KROGEDAL, DAVID:KROGEDAL, MERLE	120.7	48.388639	-104.329389
59	WQSU953	150-174	LAKEVUE FARMS	40	48.520389	-104.427639
60	WQNW379	25-50	Lindvig, Thomas H	121	48.012250	-103.597417
61	WQPA601	150-174	LUNDBY FARMS	40	48.561194	-103.988417
62	WQGQ522	150-174	MAHLEN, SYVERT	40	48.186417	-103.972722
63	WREC898	150-174	MAXX NORTH AMERICA	50	48.333611	-103.451389
64	KOA660	25-50	MC CONE ELECTRIC CO OP INC	241	47.283333	-105.417222
65	WQJB554	150-174	MCCODY CONCRETE PRODUCTS, INC.	40	48.110472	-103.443972
66	WRJM930	150-174	MILLER, CHARLES R	40	48.298333	-103.976944
67	KNCW498	450-470	MITCHELLS OILFIELD SERVICE INC	121	47.707806	-104.400778
68	KNCW498	450-470	MITCHELLS OILFIELD SERVICE INC	121	47.466194	-102.930333
69	WNBW671	150-174	Montana-Dakota Utilities Co.	563	46.181944	-103.392972
70	WQDM971	150-174	Montana Highway Patrol	64	48.200583	-104.530889
71	WQJL379	150-174	Montana Highway Patrol	64	48.200611	-104.530917
72	KOF337	25-50	MorningStar Operating, LLC	121	47.678639	-104.043000
73	WNZK326	150-174	MORTENSON, STEVEN M	40	48.139444	-103.890556

ID	Call Sign	Frequency Band (MHz)	Licensee	Mobile Area Radius (km)	Latitude (NAD83)	Longitude (NAD83)
74	WNZK326	150-174	MORTENSON, STEVEN M	40	48.070028	-103.832694
75	WPPX490	450-470	MULLER FARM AND RANCH	32	48.667806	-103.862694
76	WNLH531	450-470	MULLER, STEVEN C	40	48.489472	-104.036889
77	WSDB433	150-174	Nelson, Dale	40	48.418333	-104.383333
78	WPMA661	450-470	North Dakota State Emergency Communications Center	48	48.113917	-103.440472
79	WPPG482	450-470	North Dakota State Emergency Communications Center	48	48.817528	-103.776306
80	WNAN611	150-174	O NEIL COMPANY INC	80	48.143917	-103.619639
81	WQWK902	450-470	Ohio Semitronics California, Inc.	80	48.147222	-103.621667
82	WRCH724	150-174	OLSON, CODY	40	48.549833	-103.382944
83	WQOQ292	150-174	ONEOK Rockies Midstream L.L.C.	40	48.230000	-103.944167
84	WRFT439	150-174	Opperud, Derek	40	48.583083	-103.466333
85	WRZS920	150-174, 450-470	OVER ZERO FARMING CORPORATION	40	48.434194	-104.222472
86	WREX464	150-174, 450-470	Overland Aviation FBO JV LLC	13	48.265889	-103.749361
87	WNSK328	150-174	OWAN, WILLIAM	121	48.831972	-103.832417
88	WSJI901	450-470	PACIFIC HIDE & FUR DEPOT, INC DBA PACIFIC STEEL & RECYCLING	32	48.139306	-103.672444
89	WQWU897	450-470	PACIFIC RECYCLING	32	48.139278	-103.672444
90	KNAZ531	150-174	Plains Pipeline, L.P.	120	47.787500	-104.376389
91	KNAZ531	150-174	Plains Pipeline, L.P.	121	48.160028	-103.494361
92	WPGZ538	450-470	PULVERMACHER, GENE	80	48.910583	-103.492139
93	WRNV794	450-470	RASMUSSEN, LONNY A	40	48.405028	-103.833528
94	WQSE861	150-174	RED RIVER OILFIELD SERVICES	80	48.146944	-103.603889
95	WNNU365	150-174	RICHLAND, COUNTY OF	121	47.707778	-104.400833
96	WNNW389	150-174	RICHLAND, COUNTY OF	121	47.707778	-104.400833
97	WNSV876	150-174	RICHLAND, COUNTY OF	121	47.707778	-104.400833

ID	Call Sign	Frequency Band (MHz)	Licensee	Mobile Area Radius (km)	Latitude (NAD83)	Longitude (NAD83)
98	WSDQ446	150-174	RIVERSIDE WELDING INC	40	48.258167	-103.610111
99	WQWE754	150-174	ROMO RANCH	40	48.138333	-104.223111
100	KNRT412	800/900	SADDLE BUTTE TOWERS	113	47.860028	-102.891861
101	WNNM815	450-470	SADDLE BUTTE TOWERS	97	47.860028	-102.891861
102	WQQQ272	150-174	Schlumberger Technology Corporation	40	48.110472	-103.443972
103	WQQQ272	450-470	Schlumberger Technology Corporation	80	48.110472	-103.443972
104	WQEQ250	150-174	Sheridan, County of	64	48.693528	-104.595111
105	WQEQ311	150-174	Sheridan, County of	64	48.693528	-104.595111
106	WQJU942	150-174	Sheridan, County of	64	48.693583	-104.595028
107	KNCR992	150-174	SHERIDAN, COUNTY OF	64	48.695028	-104.595528
108	KNGV887	150-174, 450-470	SHERIDAN, COUNTY OF	64.4	48.695028	-104.595528
109	WNGZ654	150-174	SHERIDAN, COUNTY OF	64.4	48.695028	-104.595528
110	WNGZ654	150-174	SHERIDAN, COUNTY OF	64.4	48.785028	-104.595250
111	KNDD635	450-470	Sidney Red-E-Mix	121	47.707778	-104.400833
112	WNKK787	150-174	SIMONSEN, KENNY	80	47.857806	-104.469944
113	WQJB553	150-174	SK & S OILFIELD SERVICES, INC.	40	48.110472	-103.443972
114	WQRM589	150-174	SMITH, DEVYN	40	48.502778	-103.628528
115	WQTG935	450-470	Source Energy Services Proppants LP	80	47.802194	-103.283194
116	WRUY825	450-470	STEALTH ENERGY GROUP LLC	32	48.141278	-103.571167
117	WRNB502	150-174	STEVENS, BLAINE J	40	48.689028	-103.537361
118	WQDX901	150-174	STEWART, JOHN	40	48.638333	-103.639167
119	WRWB859	150-174	STRATA CORPORATION	40	48.183889	-103.641500
120	WNFF934	150-174	SYLTE, RONALD	40	48.354472	-103.619361
121	WRYD901	450-470	Torgerson, Jacob	32	48.416444	-104.109917
122	KPK954	150-174	Townsquare License, LLC	80	48.149750	-103.614917

ID	Call Sign	Frequency Band (MHz)	Licensee	Mobile Area Radius (km)	Latitude (NAD83)	Longitude (NAD83)
123	WRA345	150-174	TVEIT FARMS INC	80	47.905028	-104.257167
124	KQX949	150-174	Vivtech LLC	121	47.678639	-104.043000
125	WQNS731	450-470	WESTERN STATES FIRE PROTECTION	75	48.139556	-103.571417
126	WSGV949	150-174	WESTGARD, PARKER	40	48.820833	-104.118889
127	WROT934	25-50	White Rock Oil & Gas, LLC	121	47.707778	-104.400833
128	WQBR535	450-470	Williams County Emergency Management	32	48.154083	-103.626056
129	WQBR535	150-174	Williams County Emergency Management	40	48.156139	-103.499361
130	KNEK337	150-174	WILLIAMS, COUNTY OF	40	48.545833	-103.858611
131	KNEK337	150-174	WILLIAMS, COUNTY OF	40	48.111694	-103.449361
132	KNEK337	150-174	WILLIAMS, COUNTY OF	40	48.590611	-103.322111
133	KNCW673	150-174	WILLISTON, CITY OF	40	48.155028	-103.612139
134	WRBK683	150-174	WILLISTON, CITY OF	40	48.262222	-103.747611
135	WRBK683	150-174	WILLISTON, CITY OF	40	48.200556	-103.632222
136	WRBK683	150-174	WILLISTON, CITY OF	40	48.156333	-103.614111

Table A: Mobile Licenses Intersecting Project Area



Wind Power GeoPlanner™
AM and FM Radio Report
Homestead Wind Project

Prepared on Behalf of
Homestead Wind, LLC

October 6, 2025

Table of Contents

1. Introduction	- 1 -
2. Summary of Results	- 1 -
3. Impact Assessment	- 5 -
4. Recommendations	- 5 -
5. Contact	- 5 -

1. Introduction

Comsearch analyzed AM and FM radio broadcast stations whose service could potentially be affected by the proposed Homestead Wind Project Williams County, North Dakota.

2. Summary of Results

AM Radio Analysis

Comsearch found two database records¹ for AM stations within approximately 30 kilometers of the project, as shown in Table 1 and Figure 1. These records represent a single AM station which is licensed separately for daytime and nighttime operations at the same power. The station, KEYZ, which is licensed in Williston, North Dakota, is located to the southeast of the project area, 19.92 km from the nearest turbine location.

ID	Call Sign	Status ²	Frequency (kHz)	Transmit ERP ³ (kW)	Operation Time	Latitude (NAD 83)	Longitude (NAD 83)	Required Separation Distance ⁴ (km)	Distance to Nearest Turbine Location (km)
1	KEYZ	LIC	660	5.0	Daytime	48.238917	-103.650750	3.00	19.92
2	KEYZ	LIC	660	5.0	Nighttime	48.238917	-103.650750	0.45	19.92

Table 1: AM Radio Stations within 30 Kilometers of Project Area

¹ Comsearch makes no warranty as to the accuracy of the data included in this report beyond the date of the report. The data presented in this report is derived from the AM/FM station's FCC license and governed by Comsearch's data license notification and agreement located at http://www.comsearch.com/files/data_license.pdf.

² LIC = Licensed and operational station; APP = Application for construction permit; CP=Construction permit granted; CP MOD = Modification of construction permit.

³ ERP = Transmit Effective Radiated Power.

⁴ The required separation distance is based on the lesser of 10 wavelengths or 3 kilometers for directional antennas and 1 wavelength for non-directional antennas.

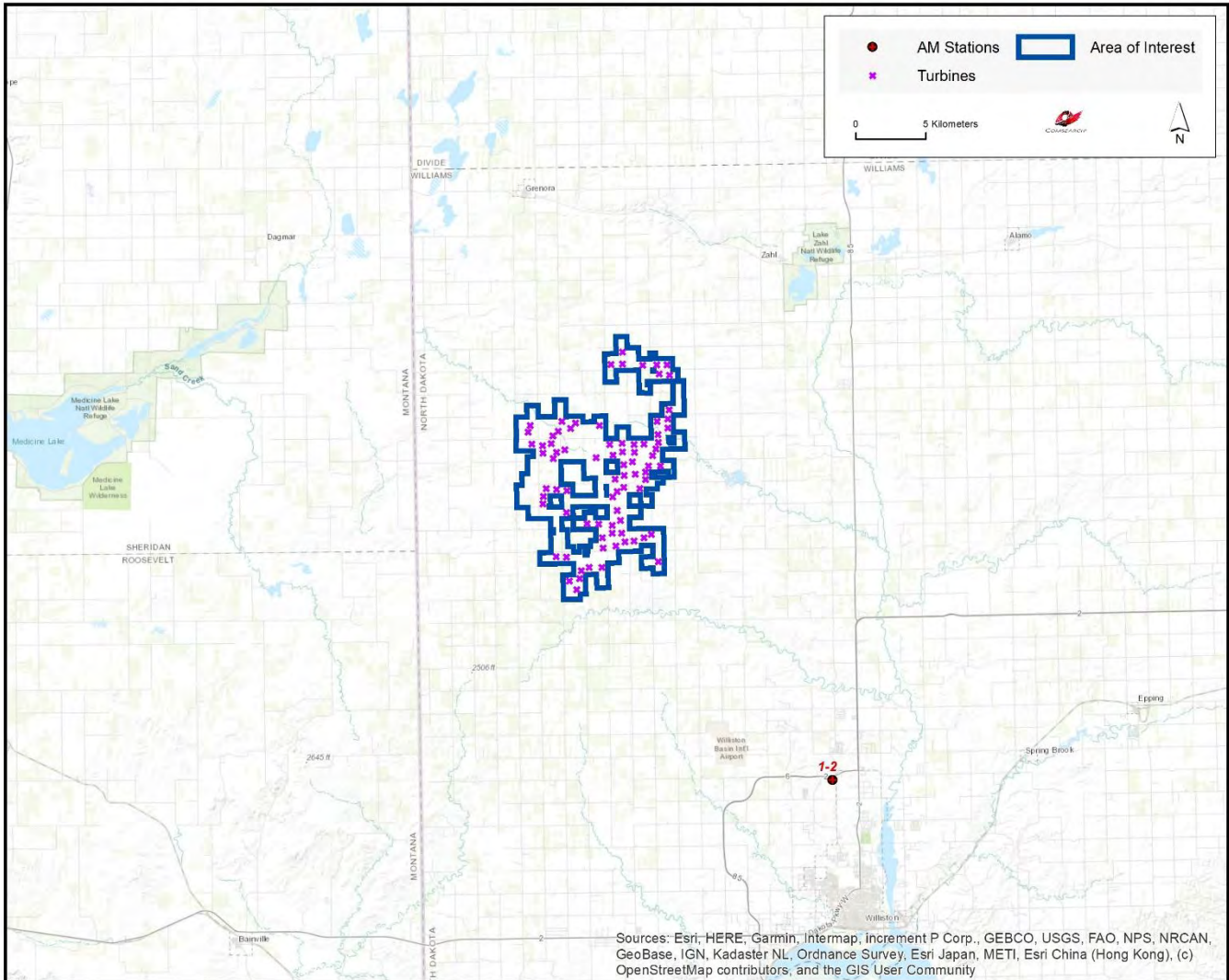


Figure 1: AM Radio Stations within 30 Kilometers of Project Area

FM Radio Analysis

Comsearch determined there were five database records for FM stations within a 30-kilometer radius of the Homestead Wind Project, as shown in Table 2 and Figure 2. Four of these stations are currently licensed and operating, one of which is a translator station and one is a low power station that operates with limited range. The closest stations KPPW, K206EI, KPPR and KJND-FM are co-located and all are currently licensed in Williston, North Dakota. These stations are located to the south of the project area, 24.68 km from the nearest proposed turbine location.

ID	Call Sign	Status ⁵	Service ⁶	Frequency (MHz)	Transmit ERP ⁷ (kW)	Latitude (NAD 83)	Longitude (NAD 83)	Distance to Nearest Turbine Location (km)
1	KPPW	FM	LIC	88.7	50.0	48.141694	-103.893250	24.68
2	K206EI	FX	LIC	89.1		48.141694	-103.893250	24.68
3	KPPR	FM	LIC	89.5	10.5	48.141694	-103.893250	24.68
4	KJND-FM	FM	LIC	90.7	5.0	48.141694	-103.893250	24.68
5	NEW	FL	AMD	105.5	0.1	48.197222	-103.623056	24.88

Table 2: FM Radio Stations within 30 Kilometers of Project Area

⁵ LIC = Licensed and operational station; APP = Application for construction permit; CP=Construction permit granted; CP MOD = Modification of construction permit.

⁶ FM = FM broadcast station; FX = FM translator station; FL = Low-power FM station; FS = FM auxiliary (backup) station; FB = FM booster station.

⁷ ERP = Transmit Effective Radiated Power.

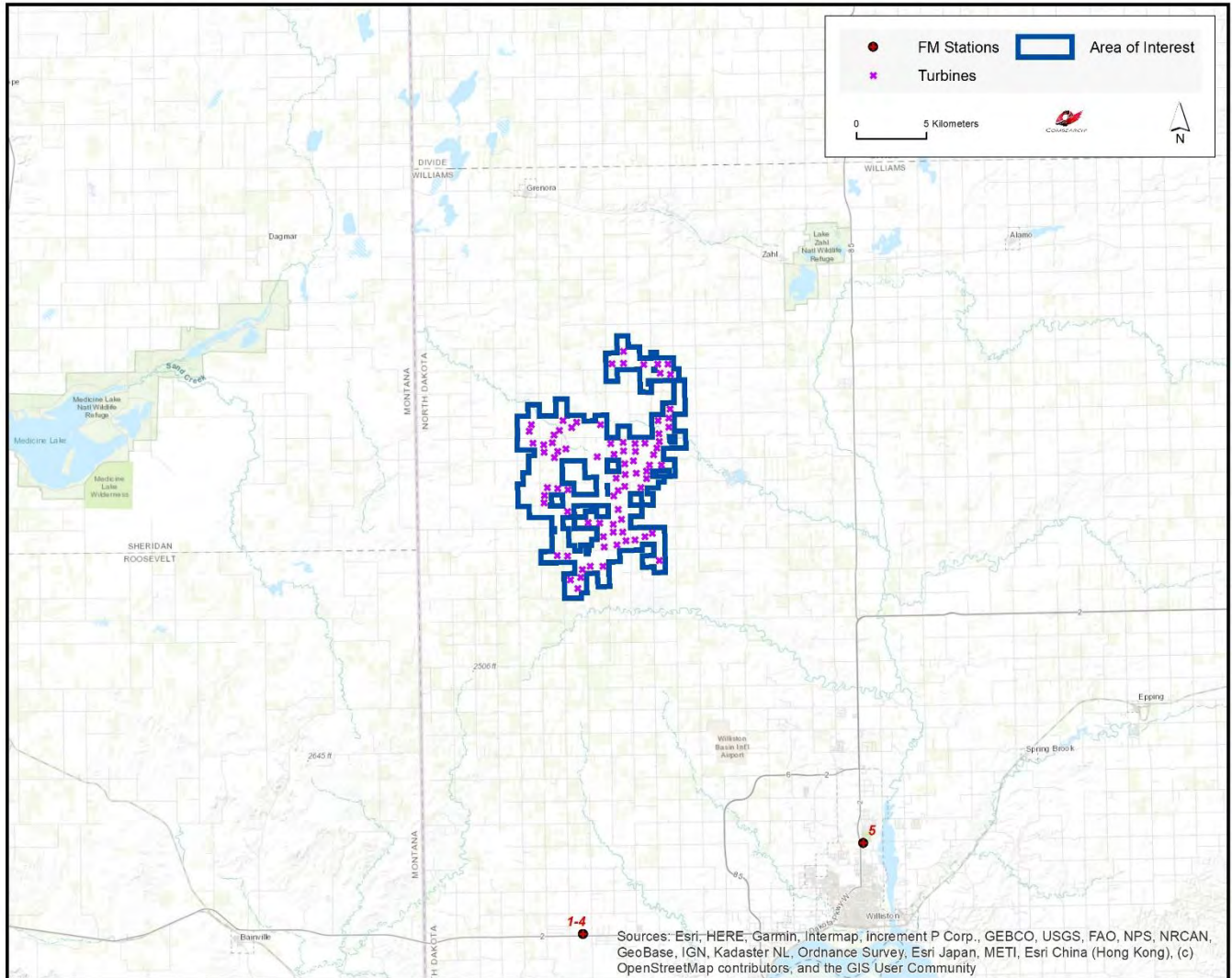


Figure 2: FM Radio Stations within 30 Kilometers of Project Area

3. Impact Assessment

The exclusion distance for AM broadcast stations varies as a function of the antenna type and broadcast frequency. For directional antennas, the exclusion distance is calculated by taking the lesser of 10 wavelengths or 3 kilometers. For non-directional antennas, the exclusion distance is simply equal to 1 wavelength. Potential problems with AM broadcast coverage are only anticipated when AM broadcast stations are located within their respective exclusion distance limit from wind turbine towers. The closest AM station (KEYZ) is located 19.92 km from the project. As there were no stations found within 3 kilometers of the project, which is the maximum possible exclusion distance based on a directional AM antenna broadcasting at 1000 KHz or less, the project should not impact the coverage of local AM stations.

The coverage of FM stations is generally not sensitive to interference due to wind turbines, especially when large objects (e.g., wind turbines) are located in the far field region of the radiating antenna to avoid the risk of distorting its radiation pattern. Stations KPPW, K206EI, KPPR and KJND-FM would be the nearest FM stations to any given turbine at 24.68 km away. At this distance there should be adequate separation to avoid radiation pattern distortion.

4. Recommendations

Since no impact on the licensed and operational AM or FM broadcast stations was identified in our analysis, no recommendations or mitigation techniques are required for this project.

5. Contact

For questions or information regarding the AM and FM Broadcast Radio Study, please contact:

Contact person: David Meyer
Title: Senior Manager
Company: Comsearch
Address: 21515 Ridgetop Circle, Suite 300, Sterling, VA 20166
Telephone: 703-726-5656
Email: DMeyer@comsearch.com
Web site: www.comsearch.com