Appendix H

Telecommunications Studies

Community Wind South Repower Project
Nobles County, Minnesota

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Wind Power GeoPlanner™

AM and FM Radio Report

Community Wind South

Prepared on Behalf of
Zephyr Wind, LLC

May 26, 2020

COMSEARCH®
A CommScope Company

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1. Introduction

Comsearch analyzed AM and FM radio broadcast stations whose service could potentially be affected by the proposed Community Wind South repower in Nobles County, Minnesota.

2. Summary of Results

AM Radio Analysis

Comsearch found four database records[1] for AM stations within approximately 30 kilometers of the project, as shown in Table 1 and Figure 1. The closest station, KWOA, is licensed separately for daytime and nighttime operations with higher power during the day. It broadcasts out of Worthington, Minnesota, to the southeast of the project area, 12.29 km from the nearest repower turbine location.

ID	Call Sign	Status[2]	Frequency (kHz)	Transmit ERP[3] (kW)	Operation Time	Latitude (NAD 27)	Longitude (NAD 27)	Distance to Nearest Turbine (km)
1	KWOA	LIC	730	1.0	Daytime	43.630000	-95.678056	12.29
2	KWOA	LIC	730	0.159	Nighttime	43.630000	-95.678056	12.29
3	KQAD	LIC	800	0.5	Daytime	43.650278	-96.171944	28.50
4	KQAD	LIC	800	0.08	Nighttime	43.650278	-96.171944	28.50

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.

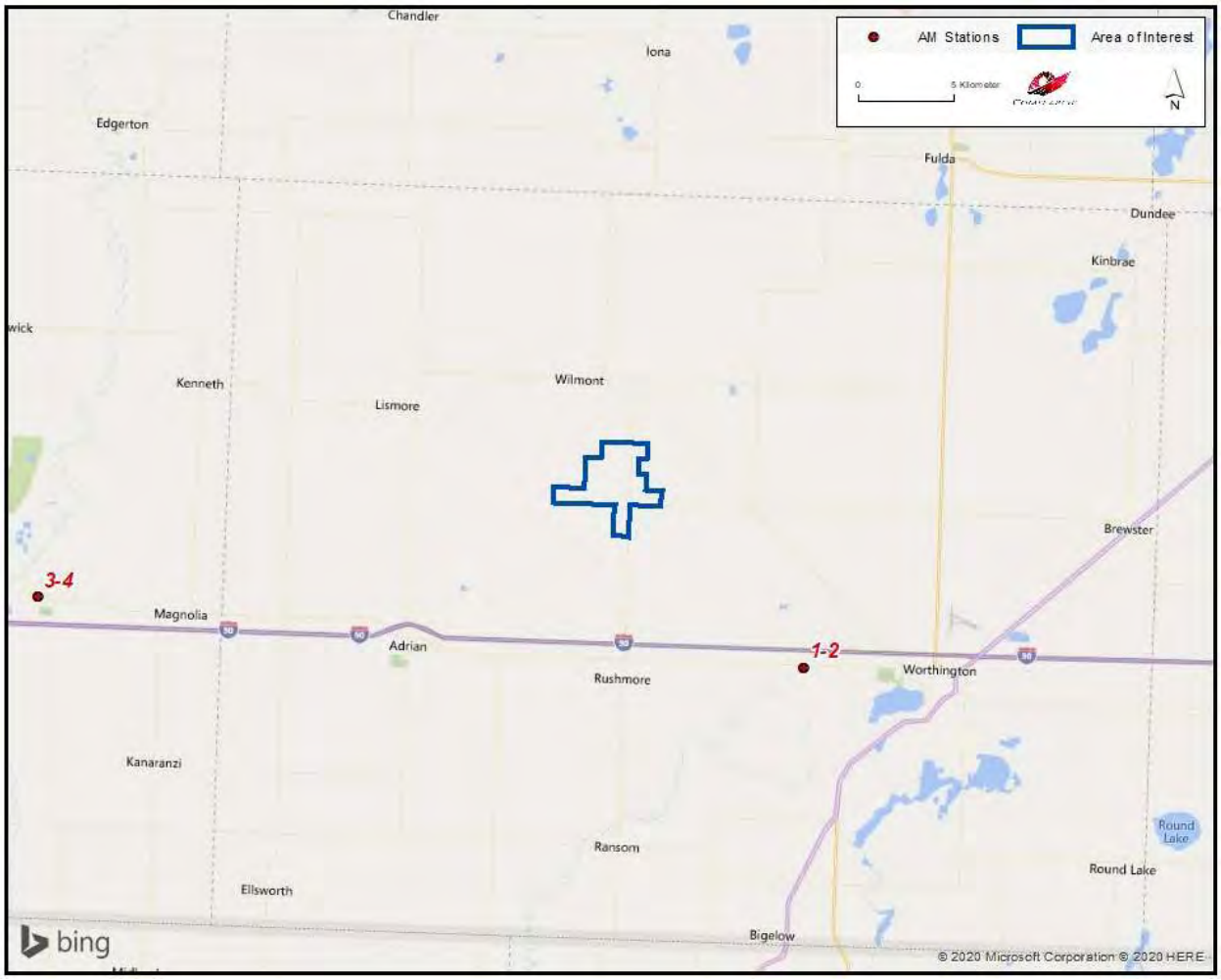

Figure 1: AM Radio Stations within 30 Kilometers of Project Area

FM Radio Analysis

Comsearch determined that there were nine database records for FM stations within a 30-kilometer radius of the Community Wind South, as shown in Table 2 and Figure 2. All of these stations are currently licensed and operating, three of which are translator stations that operate with limited range. The closest stations are KUSQ and K262AR, both of which are currently licensed in Worthington, Minnesota, to the southeast of the project area, 12.27 km from the nearest repower turbine location.

ID	Call Sign	Status[4]	Service[5]	Frequency (MHz)	Transmit ERP[6] (kW)	Latitude (NAD 27)	Longitude (NAD 27)	Distance to Nearest Turbine (km)
1	KUSQ	LIC	FM	95.1	100.0	43.629972	-95.678333	12.27
2	K262AR	LIC	FX	100.3	0.25	43.629972	-95.678333	12.27
3	KZTP	LIC	FM	104.3	3.4	43.541639	-95.751694	18.71
4	KRSW	LIC	FM	89.3	100.0	43.883583	-95.929194	19.88
5	KNSW	LIC	FM	91.7	99.0	43.883583	-95.929194	19.88
6	K231DG	LIC	FX	94.1	0.25	43.897750	-95.947528	21.95
7	KISD	LIC	FM	98.7	100.0	43.897750	-95.947528	21.95
8	K257FP	LIC	FX	99.3	0.25	43.897750	-95.947528	21.95
9	KJOE	LIC	FM	106.1	10.0	43.897750	-95.947528	21.95

Table 2: FM Radio Stations within 30 km

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

[5] FM = FM broadcast station; FX = FM translator station; FS = FM auxiliary (backup) station; FB = FM booster station.

[6] ERP = Transmit Effective Radiated Power.

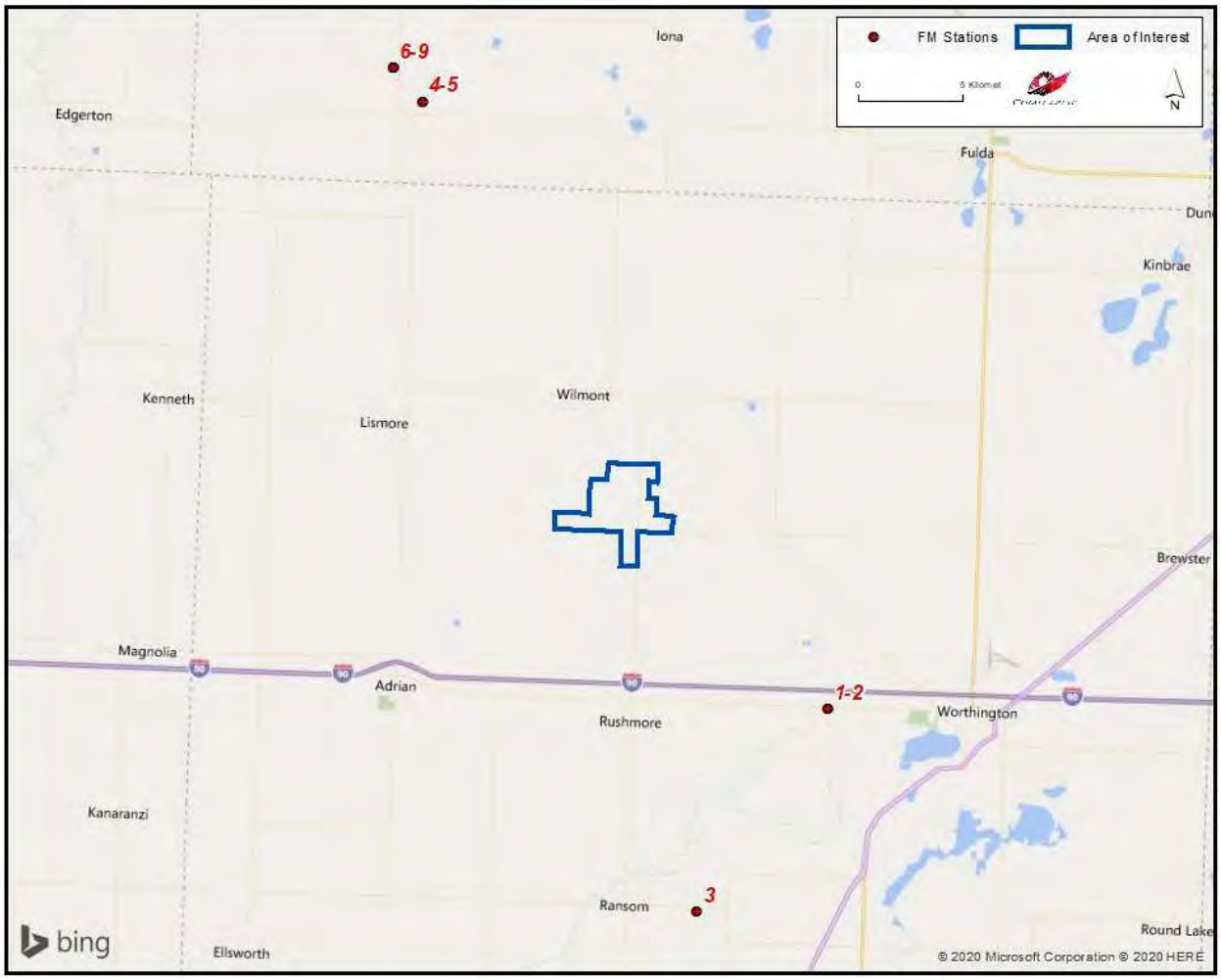

Figure 2: FM Radio Stations within 30 km

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 (KWOA) is located 12.29 km from the nearest repower turbine. 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 KUSQ and K262AR are the nearest FM stations to any given repower turbine at 12.27 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 Radio Report, please contact:

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Wind Power GeoPlanner™

Land Mobile & Emergency Services Report

Community Wind South

Prepared on Behalf of
Zephyr Wind, LLC

May 26, 2020

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Table of Contents

1. Introduction

An assessment of the emergency services in the Community Wind South project area was performed by Comsearch to identify potential impact from the repowered 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 Nobles County, Minnesota, appears below in Figure 1.

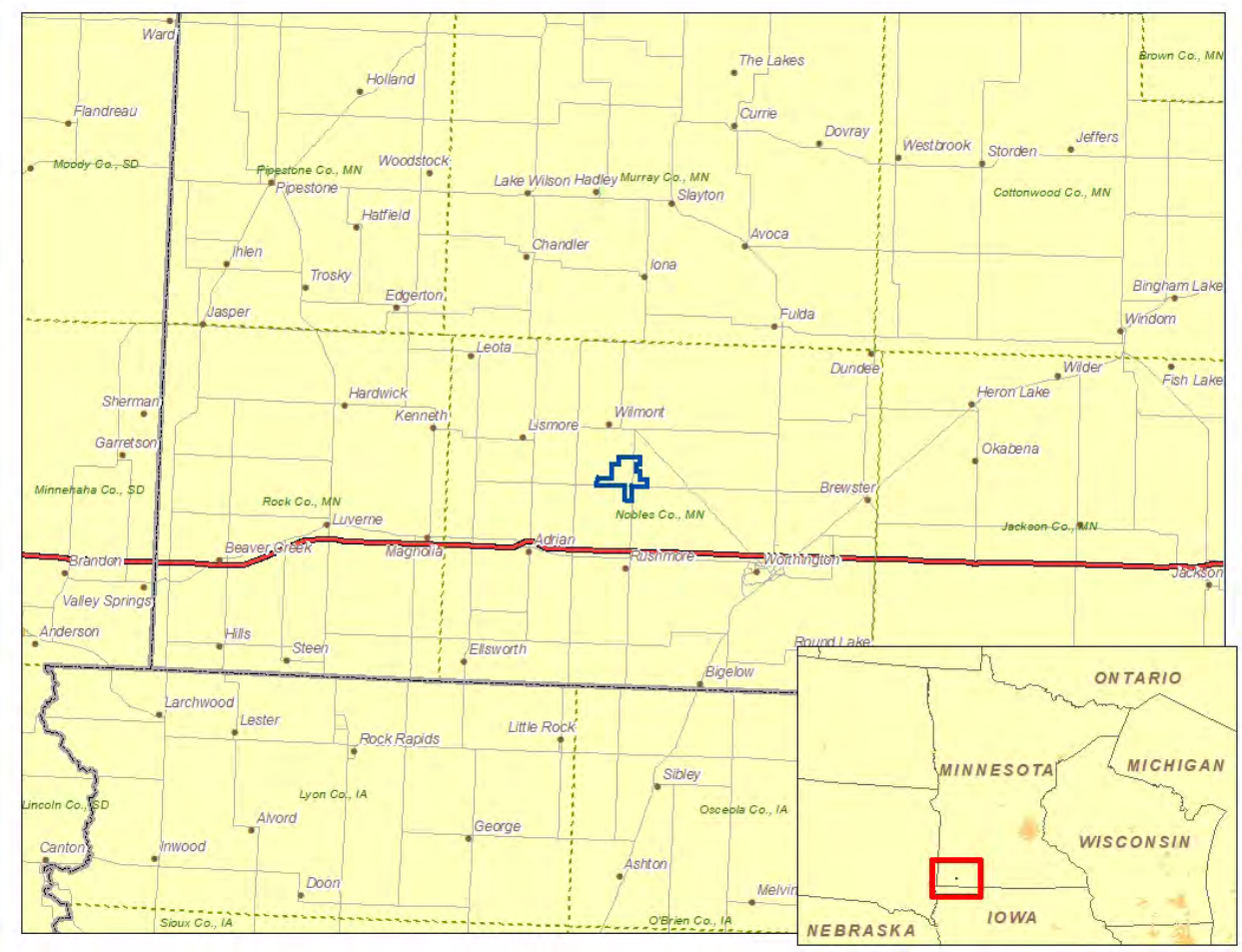

Figure 1: Area of Interest (AOI)

2. Summary of Results

Our land mobile and emergency services incumbent data[1] 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 wind 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 in and around the project area appears in Figure 2.

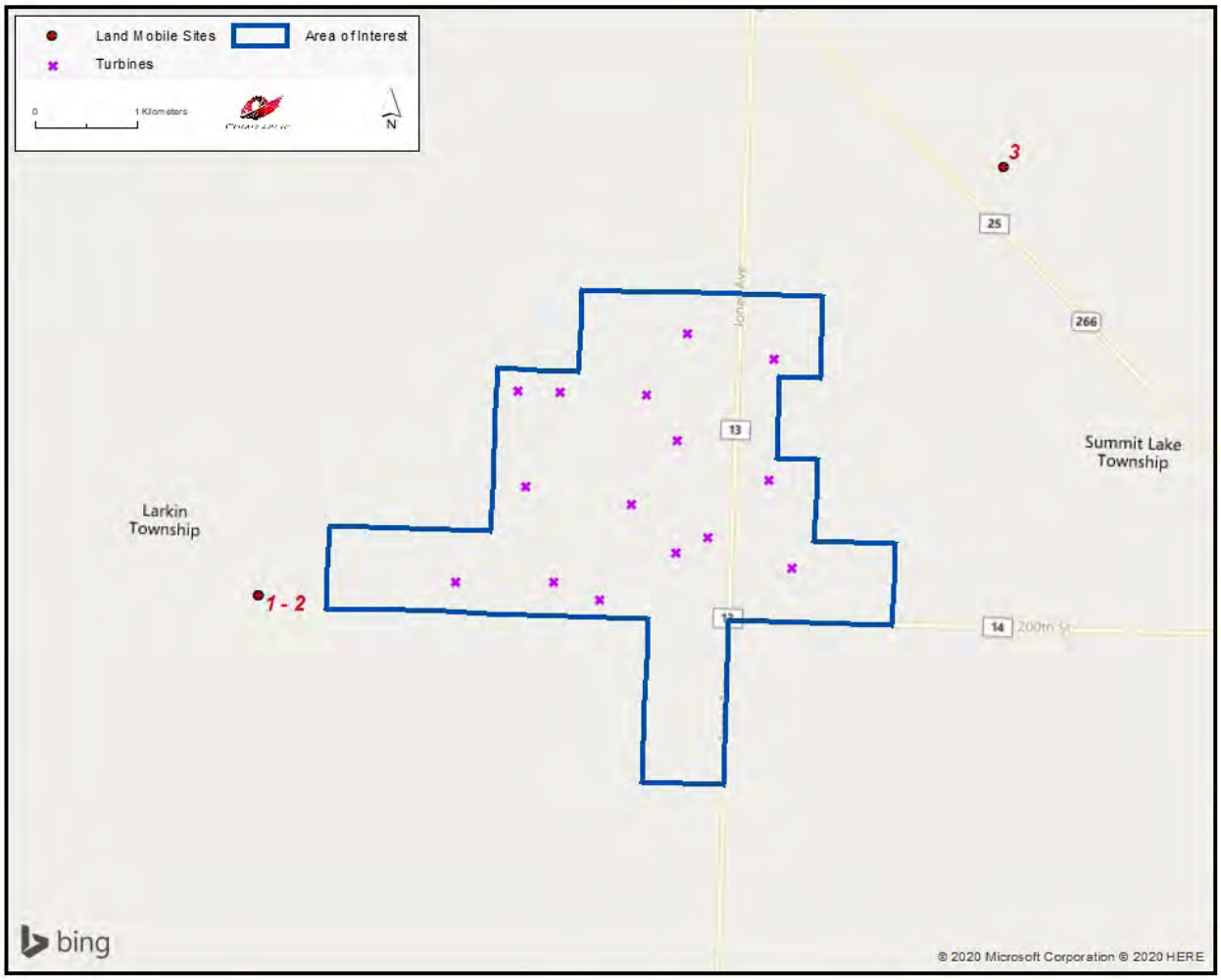

Figure 2: Land Mobile & Emergency Service Sites near Area of Interest

Figure 2 identifies three site-based licenses near the Community Wind South 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	WQKZ788	800/900	MINNESOTA, STATE OF	104.3	43.703861	-95.851250	1.94
2	WQOH267	150-174	MINNESOTA, STATE OF	106.7	43.703861	-95.851250	1.94
3	WYP715	450-470	Penning Bros.	30	43.744139	-95.761667	2.95

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

Mobile Licenses

In addition to the fixed-site licenses above, 315 mobile licenses defined by center point and radius were found to intersect the Community Wind South 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 Community Wind South project is located in Nobles County, Minnesota, part of Public Safety Region #22, which contains all the counties in Minnesota. The regional public safety operations are overseen by the entity listed below.

James Mohn
Chairman
Office of Statewide Radio Communications, Minnesota Department of Transportation
1500 W CR B2, Roseville, MN 55113
Phone: 651-234-7969
Email: james.mohn@state.mn.us

The chairperson for Region #22 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, 13 licenses were found for the State of Minnesota and none for the County of Nobles (see Table 2). These area-wide licenses are designated for mobile use only.

[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

ID	Licensee	Area of Operation	Frequency Band (MHz)
1	AMERICAN NATIONAL RED CROSS	Statewide: Minnesota	25-50
2	CART INC	Statewide: Minnesota	150-174
3	City of Minneapolis, MN	Statewide: Minnesota	2450-2500
4	GREATER NORTHWEST EMERGENCY MEDICAL SERVICES	Statewide: Minnesota	450-470
5	HENNEPIN, COUNTY OF	Statewide: Minnesota	25-50, 150-174, 406-413, 450-470, 800/900
6	Minnesota Canine Search Rescue and Tracking	Statewide: Minnesota	150-174
7	MINNESOTA DEPARTMENT OF PUBLIC SAFETY	Statewide: Minnesota	150-174
8	MINNESOTA, STATE OF	Statewide: Minnesota	0-10, 150-174, 450-470, 769-775/799-805, 769-775/799-805, 800/900, 2450-2500, 4940-4990
9	NATIONAL SKI PATROL SYSTEM INC	Statewide: Minnesota	150-174
10	Nevada Division of Forestry	Statewide: Minnesota	150-174
11	NORTHSTAR SEARCH AND RESCUE	Statewide: Minnesota	150-174
12	ROCHESTER CITY OF	Statewide: Minnesota	150-174
13	SAINT LOUIS, COUNTY OF	Statewide: Minnesota	150-174, 450-470, 800/900

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 Nobles County, Minnesota, in Table 3.

Mobile Phone Carrier	Service[2]
AT&T	700 MHz, AWS, Cellular, WCS
DISH Network	700 MHz, AWS
Sprint	PCS
Standing Rock Telecommunications	PCS
TerreStar	AWS
T-Mobile	700 MHz, 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, and we do not anticipate any significant harmful effect to these services in the Community Wind South project area. 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 repowering wind turbines does not materially degrade the reception because the end user is likely receiving signals from multiple transmitter locations. Additionally,

[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

the frequencies of operation for these services have characteristics that allow the signal to propagate through wind turbines. As a result, very little, if any, change in their coverage should occur when the wind turbines are repowered.

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. Based on the distance calculations, the closest land mobile fixed-base station is 1.94 km from the repowered turbine locations, well beyond the recommended separation distance. Therefore, we do not anticipate any impact on these communications services.

4. Conclusions

Since the project is a repower of an existing project and the required separation distances are met, no impact is anticipated. In the event that a public safety entity believes its coverage has been compromised by the presence of the wind energy facility, it has many options to improve its signal coverage to the area through optimization of a nearby base station or even adding a repeater site. Utility towers, meteorological towers or even the turbine towers within the wind project area can serve as the platform for a base station or repeater site.

5. Contact

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

Contact person:	David Meyer
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Company:	Comsearch
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Web site:	www.comsearch.com

Appendix A

ID	Call Sign	Frequency Band (MHz)	Licensee	Mobile Area Radius (km)	Latitude (NAD83)	Longitude (NAD83)
1	WPIF619	450-470	21ST CENTURY WIRELESS GROUP INC	121.0	43.638833	-94.615806
2	KC25235	450-470	ABSOLUTE COMMUNICATIONS II, L.L.C.	97.0	43.619694	-95.598333
3	WPPE488	150-174	ABSOLUTE COMMUNICATIONS II, L.L.C.	91.0	43.619694	-95.598333
4	WPPE491	150-174	ABSOLUTE COMMUNICATIONS II, L.L.C.	91.0	43.619694	-95.598333
5	WRCZ478	450-470	AHLERS, JARED	32.0	43.614972	-95.501278
6	WPXP467	450-470	AHRENDT BROTHERS	32.0	43.710000	-96.214722
7	WPJU667	450-470	Allnet Wireless LLC	121.0	43.999972	-96.308361
8	WPPW631	800/900	ALPHA WIRELESS COMMUNICATIONS CO	112.0	43.227750	-95.134722
9	WNNM935	800/900	ALPHA WIRELESS COMMUNICATIONS CO.	113.0	43.884167	-95.182500
10	WPEY485	800/900	ALPHA WIRELESS COMMUNICATIONS CO.	113.0	43.968833	-94.646361
11	WQTW218	450-470	ALTMAN, CLIFF	40.0	43.749944	-95.953361
12	WQOH613	450-470	AMERICAN STUDENT TRANSPORTATION OF WORTHINGTON, INC.	32.0	43.629972	-95.675833
13	WQTM214	450-470	ARENDS FARMS INC.	32.0	43.644972	-96.143917
14	WRCN924	450-470	ASPENALL ENERGY SERVICES LLC	34.0	43.541167	-95.468639
15	WNGG479	450-470	AVERA MC KENNAN HOSPITAL	322.0	43.530528	-96.713667
16	WQEK972	450-470	Basin Electric Power Cooperative	80.0	43.375806	-96.449472
17	WPTZ321	450-470	BEDFORD TECHNOLOGY	32.0	43.633889	-95.570833
18	WNBR804	450-470	BENSON, DERRY L	121.0	43.649972	-96.917000
19	WQML326	150-174	BERGMAN, BRIAN	80.0	43.748889	-96.072778
20	WQVL970	150-174	BERGMAN, NICK	40.0	43.895917	-95.683861
21	WQRL262	450-470	BINFORD FARMS	32.0	43.686167	-96.134333
22	KNFW958	450-470	BLANKENFELD, ALAN	64.0	43.858583	-96.553389
23	WQWM205	150-174	BLOCK, DAN	24.0	43.566500	-95.953000

ID	Call Sign	Frequency Band (MHz)	Licensee	Mobile Area Radius (km)	Latitude (NAD83)	Longitude (NAD83)
24	WNUY922	450-470	BOEVE, ALLEN:BOEVE, MYRON	56.0	43.526083	-96.170861
25	WPQA615	150-174	BOSE, JEFF	40.0	44.000806	-95.815306
26	WNRV466	450-470	BOUSEMA FARMS INC.	32.0	43.632583	-95.719806
27	KNAP966	450-470	BRAKE, DOUGLAS	64.0	43.801639	-95.875861
28	WPPV893	450-470	Brandon Communications Inc.	32.0	43.646639	-95.525028
29	WPZT739	450-470	BREWSTER PUBLIC SCHOOLS	32.0	43.697444	-95.471833
30	WQFD337	150-174	BROCKBERG, TOM	32.0	43.771111	-96.186111
31	KNCQ826	150-174	BRUEGGEMAN, AL	40.0	43.474972	-95.450278
32	WPDQ236	450-470	BRUNK BROS	32.0	43.706361	-95.436111
33	WNWU368	450-470	BUDS CUSTOM 2 WAY	64.0	44.056611	-95.196389
34	WPDZ343	150-174	BUESING FARMS INC	121.0	44.789667	-95.660028
35	WQNS645	450-470	BUFFALO RIDGE CONCRETE INC.	32.0	43.897778	-95.947500
36	WQNR706	150-174	BUILDING PRODUCTS	80.0	43.565833	-96.748889
37	WNCA530	450-470	BULLERMAN FARMS	32.0	43.630528	-95.911139
38	WRCK588	450-470	BULLERMAN LIVESTOCK LLC	34.0	43.714889	-95.950778
39	WQTF624	450-470	BULLERMAN, CODY	34.0	43.573056	-95.913333
40	WQSM486	450-470	BULLERMAN, MARK	32.0	43.666083	-95.925028
41	WQKF985	150-174	BURKE, GARY	121.0	44.113333	-96.333056
42	WNNQ585	450-470	BUSCH, TOM	48.0	43.769417	-95.473333
43	KNIJ684	150-174	BUSMAN, JOHN	64.0	43.848583	-95.915583
44	WNZN424	450-470	CARLBLOM, TIMOTHY	56.0	44.041611	-95.250278
45	WQNN366	150-174	CARLSON, GARY W	40.0	43.959722	-95.901389
46	WQXP478	450-470	Cemstone Concrete Materials, LLC	30.0	43.616972	-95.595333
47	WPBJ384	800/900	CenterPoint Energy	48.0	43.806639	-96.206694
48	WQSH269	800/900	CENTRAL VALLEY COMMUNICATIONS, LLC	113.0	43.510444	-96.738778

ID	Call Sign	Frequency Band (MHz)	Licensee	Mobile Area Radius (km)	Latitude (NAD83)	Longitude (NAD83)
49	WPKQ438	450-470	CHRISTOFFER FARMS INC	32.0	43.616361	-95.469444
50	WNWS216	450-470	CHRISTOPHEL FARMS	80.0	43.749389	-94.830806
51	WPKS367	450-470	CITY OF WINDOM	60.0	43.883833	-95.100278
52	WQOK610	150-174	CLIPPER'S HAULING INC.	80.0	43.966611	-96.403583
53	WNNG910	150-174	COOPER, WALLY J	40.0	43.730250	-95.694722
54	WQTK920	450-470	CRISP, KEVIN R	79.0	43.809806	-96.576861
55	WQNS915	800/900	DAKOTA, COUNTY OF	241.0	44.714833	-93.124778
56	WNIJ877	800/900	DAMMAN, ROBERT:DAMMAN, GLENN DBA DAMMAN CO	80.0	43.179167	-95.654167
57	WQTI325	450-470	DEBEER, DANIEL	34.0	43.541111	-95.954667
58	WQBD899	450-470	DEE JAY'S SQR, INC.	121.0	43.515722	-96.770889
59	KNIV751	800/900	DEL MONTE CORPORATION	113.0	44.299972	-94.741639
60	WNBS409	450-470	DEUTZ, GARY	80.0	44.403028	-95.751694
61	WPMX409	450-470	DIEKMANN, TOM	32.0	43.767194	-95.953639
62	WQQJ926	450-470	DIETER, DAVID	32.0	43.692583	-95.533639
63	WQOW614	450-470	DOEDEN, THOMAS	40.0	43.433222	-95.751917
64	WQNQ556	150-174	Duininck, Inc	40.0	43.606722	-95.533750
65	WQTM323	450-470	DYKSTRA, DORWARD	32.0	43.515083	-95.647833
66	WQXF943	800/900	EAST RIVER ELECTRIC POWER COOP	113.0	44.004528	-97.113250
67	WQXM222	800/900	EAST RIVER ELECTRIC POWER COOPERATIVE	113.0	43.776750	-96.322583
68	WNIE705	450-470	EIGENBERG FARMS	48.0	43.866361	-95.342222
69	WPHF742	450-470	ELECTRONIC ENGINEERING CO.	64.0	43.417750	-95.537500
70	WPHS573	800/900	Electronic Specialties, Inc	113.0	42.757194	-95.623611
71	WPEJ851	450-470	Electronic Specialties, Inc.	97.0	43.163306	-95.146111
72	WPIM542	800/900	Electronic Specialties, Inc.	113.0	43.292194	-94.513028
73	WRCK403	450-470	ELIAS BROTHERS	34.0	43.649667	-95.955722

ID	Call Sign	Frequency Band (MHz)	Licensee	Mobile Area Radius (km)	Latitude (NAD83)	Longitude (NAD83)
74	WQAL327	150-174	ELLIS & EASTERN COMPANY	40.0	43.699972	-96.000306
75	WNQR999	450-470	ENGELKES, ALAN	48.0	43.600806	-95.736972
76	WQGY731	450-470	ENXCO SERVICE	32.0	43.956528	-95.890111
77	WQVF994	150-174	ERICKSON FARM INC	79.0	43.617306	-96.513028
78	WQRV592	450-470	FARMERS ELEVATOR COOP	80.0	43.187361	-96.131278
79	WNWS729	450-470	FELDKAMP FARMS	72.0	43.404694	-95.731694
80	WQKZ362	450-470	FERGUSON'S GARDEN CENTER	80.0	43.433611	-95.062222
81	WQUS965	450-470	FICK, MORRIS	79.0	43.587333	-96.269361
82	WQUY831	150-174	FIIHR, DENNIS	79.0	43.199417	-96.011972
83	WPDX603	450-470	FISCHER, DANIEL L	32.0	43.818611	-95.604000
84	WQVP639	150-174	FLUIT FARMS INC.	80.0	43.431861	-96.175444
85	WQVP639	150-174	FLUIT FARMS INC.	80.0	43.684611	-96.232528
86	WPZP383	450-470	FREESE, MARC A	32.0	43.933500	-95.652583
87	WQNU858	450-470	Froggy Bottom	161.0	42.740500	-96.415972
88	WQJF408	150-174	FULDA, CITY OF	32.0	43.869694	-95.601722
89	WRY270	150-174, 450-470	FULDA, CITY OF	105.0	43.876361	-95.595278
90	WPPU947	450-470	FULLERTON BUILDING SYSTEMS INC	32.0	43.620806	-95.589722
91	KNEW845	450-470	FULTZ FARMS INC	80.0	44.230778	-95.573611
92	WNWV732	150-174	GABRIELSON, GREG	40.0	43.616639	-96.207806
93	WQOW985	450-470	GARLOFF TRUCKING	40.0	43.538389	-95.375833
94	WQPD491	150-174	GATOR BROTHERS BORING INC.	113.0	43.195833	-96.301111
95	KNJK352	450-470	GCC Alliance Concrete Inc.	97.0	42.991667	-96.059750
96	WPQJ581	800/900	GCC Alliance Concrete Inc.	32.0	43.450806	-95.955861
97	KNBA595	25-50	GM CONTRACTING INC	161.0	44.114694	-94.211639
98	WPGV231	150-174	GMC FARMS LTD	56.0	43.490528	-96.320306

ID	Call Sign	Frequency Band (MHz)	Licensee	Mobile Area Radius (km)	Latitude (NAD83)	Longitude (NAD83)
99	WYL786	450-470	GOHR, HARLAN:GOHR, MARVAN K DBA GOHR BROTHERS	121.0	43.829111	-94.937500
100	WQOB738	450-470	GRADERT GRAIN FARMS	32.0	43.431889	-95.749083
101	WNYN608	450-470	GRADERT, KEVIN	32.0	43.433306	-95.750583
102	WQME946	450-470	GRANUM, COREY	121.0	44.203889	-96.907778
103	KNEC904	150-174	GREAT LAKES CONCRETE INC	97.0	43.416917	-95.106667
104	WNBG496	800/900	GREAT LAKES COOPERATIVE	113.0	43.431889	-94.946639
105	WPCG836	800/900	GREAT LAKES COOPERATIVE	64.0	43.326361	-95.230833
106	WPQK435	450-470	GREAT RIVER ENERGY	32.0	43.781917	-95.873639
107	WPSK730	450-470	Great River Energy	32.0	43.999556	-95.747139
108	WNBF723	150-174	GREENFIELD, KENNETH	80.0	44.266083	-95.895583
109	WNJZ650	150-174	GRIESSE, LEROY	48.0	43.433306	-96.186972
110	WPPD445	150-174	GUNDERSEN LUTHERAN MEDICAL CENTER	600.0	43.794417	-91.249583
111	WNWM567	150-174	HABERMAN, DENNIS	40.0	43.730528	-95.466389
112	WQPF472	450-470	HAMANN, MICHAEL	40.0	43.660000	-96.262222
113	WNVK807	450-470	HANSMANN DENNIS HANSMANN ELLEN HANSMANN CHAD	56.0	43.348028	-95.938083
114	WNPU584	150-174	HARRIS, CITY OF	64.0	43.445806	-95.434444
115	WPFK854	450-470	HAYENGA, MARK	56.0	43.449694	-95.703639
116	WQNY783	450-470	HEMMER, JEFF	80.0	43.826889	-96.719861
117	WNUW617	150-174	HERON LAKE OKABENA INDEPENDENT SCHOOL DISTRICT 330	80.0	43.741083	-95.316389
118	WNUW617	150-174	HERON LAKE OKABENA INDEPENDENT SCHOOL DISTRICT 330	80.0	43.793306	-95.313056
119	WQKP465	150-174	HOKENESS, DEAN	40.0	43.558694	-95.826833
120	WNLQ667	450-470	HOOGENDOORN BROS INC	56.0	43.263861	-96.003083
121	WPLS660	450-470	Hubbard Feeds Inc. dba Ridley Block Operation	24.0	43.635528	-95.573611
122	WNUW618	150-174	INDEPENDENT SCHOOL DISTRICT 2895	80.0	43.679889	-95.173111

ID	Call Sign	Frequency Band (MHz)	Licensee	Mobile Area Radius (km)	Latitude (NAD83)	Longitude (NAD83)
123	WQGY407	450-470	Indpendent School District #2169	32.0	43.984361	-95.756361
124	WQDV323	150-174	Interstate Power & and Light Company	290.0	43.557167	-93.661056
125	WNNH904	800/900	Interstate Power and Light Company	113.0	42.880528	-95.221389
126	WNNH904	800/900	Interstate Power and Light Company	113.0	43.159167	-95.255278
127	WNNH904	800/900	Interstate Power and Light Company	113.0	43.404500	-95.644417
128	WNNH904	800/900	Interstate Power and Light Company	113.0	43.429167	-95.013056
129	WQMN422	800/900	INTERSTATE POWER AND LIGHT COMPANY	113.0	42.767500	-95.584722
130	WQMN422	800/900	INTERSTATE POWER AND LIGHT COMPANY	113.0	43.188000	-95.365194
131	WQVJ691	800/900	INTERSTATE POWER AND LIGHT COMPANY	113.0	43.529667	-96.365056
132	WPMF469	150-174	IOWA, STATE OF, DOT	40.0	43.433306	-96.147806
133	WQMM943	450-470	ITC MIDWEST	80.0	43.807972	-95.603056
134	WQMM943	450-470	ITC MIDWEST	80.0	44.013972	-95.113667
135	WNIJ435	450-470	J.R. Simplot Company	48.0	43.790250	-96.268361
136	WNQO218	150-174	JARMER, GERALD	48.0	43.948306	-95.404167
137	KAL211	150-174	JASPER, MERLE	48.0	43.883306	-96.246139
138	WQYL461	450-470	JENNIGES, ADAM	32.0	43.522222	-96.015778
139	WQTC657	150-174	JOHNSON, BRADY	40.0	43.998444	-95.948778
140	WNCA625	450-470	K & K CUSTOM & REPAIR	80.0	43.087472	-96.297528
141	WNWH287	150-174	KAR MAR FARMS LTD	64.0	43.527750	-96.383639
142	WQWM841	150-174	KELLENBERGER CUSTOM FARMING	75.0	43.438361	-96.328750
143	WQPL293	450-470	KIRCHNER, JACOB	32.0	43.849417	-95.457583
144	KNAW486	450-470	KLASSEN, LOUIS	105.0	43.863278	-94.994722
145	WQSB630	450-470	KLAY, JOSH	32.0	43.643833	-96.052667
146	WQFT464	450-470	KNIPS, KEVIN	32.0	43.688000	-96.013611
147	WNNZ352	450-470	KNIPS, RICK	72.0	43.760528	-95.952250

ID	Call Sign	Frequency Band (MHz)	Licensee	Mobile Area Radius (km)	Latitude (NAD83)	Longitude (NAD83)
148	WNPL995	450-470	KOOIKER, LE ROY	64.0	43.433861	-96.033639
149	WQMY719	450-470	KOPPLOW, JARED	32.0	43.563750	-95.817000
150	WQWS980	150-174	KRACHT, KYLE	79.0	43.865667	-96.171361
151	WQYD305	450-470	KREMER FARMS	32.0	43.892250	-95.779944
152	WQSI906	150-174	KRUGER, TODD E	32.0	43.626861	-95.602083
153	WQUA211	150-174	KRUISSELBRINK, ALEANOR	40.0	44.015694	-96.105250
154	WQRG291	150-174	KUHL, BURDELL	32.0	43.663861	-95.733028
155	WQAD248	450-470	KUHL, WENDELL	32.0	43.649972	-95.675278
156	WNZF434	150-174	KUNZE, BRIAN C	40.0	43.737472	-95.611389
157	WQTX555	450-470	LANNERS, DEAN	32.0	43.887944	-95.797722
158	WQPM938	450-470	Lenz, Mark	32.0	43.709972	-95.991972
159	WQLY996	150-174	LINCOLN PIPESTONE RURAL WATER SYSTEM	40.0	43.631000	-95.748000
160	WQQK853	450-470	LONNEMAN, ANTHONY	32.0	43.537528	-95.928667
161	WPWI617	450-470	Loose, Daniel	250.0	44.335000	-95.288611
162	WQUA234	450-470	LOOSEBROCK DIGGING SERVICE	50.0	43.745917	-95.951139
163	WPDX608	150-174	LUBBEN, BRUCE	56.0	43.630806	-95.371111
164	WQRH977	150-174	LUITJENS, RON	32.0	43.683139	-95.454083
165	WNSG237	450-470	LUNSTRA, ROGER	113.0	43.626361	-96.664778
166	KCT629	150-174	LUVERNE, CITY OF	32.0	43.656639	-96.207250
167	WQEY253	150-174	LUVERNE, CITY OF	32.0	43.656806	-96.208611
168	WQWN363	450-470	LYNN, BRAD	50.0	43.732611	-95.999250
169	WQZX266	450-470	LYNN, BRAD	32.0	43.732639	-95.999083
170	WNED714	450-470	M & H COMMUNICATIONS	80.0	43.899972	-95.937806
171	WNHJ252	450-470	M & H COMMUNICATIONS	80.0	43.790250	-96.268361
172	WNSA964	450-470	M & H COMMUNICATIONS	80.0	43.999972	-96.321139

ID	Call Sign	Frequency Band (MHz)	Licensee	Mobile Area Radius (km)	Latitude (NAD83)	Longitude (NAD83)
173	WNKA385	450-470	MADSEN, ROBERT	48.0	43.763583	-95.315833
174	KES979	25-50	MATHIOWETZ CONSTRUCTION CO	121.0	44.221639	-94.808583
175	WRAD773	450-470	MATUS, TODD	79.0	43.641583	-96.408500
176	KNAQ463	150-174	MCBETH FARMS	40.0	44.028472	-95.981139
177	WQLD454	450-470	Merten, Dallas	80.0	43.176278	-95.131694
178	WQPD946	450-470	METZ WASTE APPLICATORS	113.0	43.732222	-95.892500
179	WQJJ583	450-470	MEULEBROECK, DENNIS	80.0	44.306389	-95.836111
180	WQNI323	450-470	MIDWEST ALARM COMPANY, INC.	80.0	43.524083	-96.729917
181	WNZR540	150-174	MILLER, KENNETH L	56.0	44.108306	-95.879750
182	WPYI905	450-470	Minnesota Soybean Processors	32.0	43.695833	-95.454444
183	WPYI905	450-470	Minnesota Soybean Processors	32.0	43.695833	-95.454444
184	WNZV528	450-470	MINNESOTA WEST COMMUNITY AND TECHNICAL COLLEGE	32.0	43.621944	-95.627917
185	WQKR260	800/900	MINNESOTA, STATE OF	40.0	43.720667	-95.439722
186	WQKZ777	800/900	MINNESOTA, STATE OF	40.0	43.943333	-95.982222
187	WQKZ777	800/900	MINNESOTA, STATE OF	40.0	43.977556	-95.733694
188	WQKZ788	800/900	MINNESOTA, STATE OF	40.0	43.546083	-96.093917
189	WQKZ788	800/900	MINNESOTA, STATE OF	40.0	43.652222	-95.675083
190	WQKZ788	800/900	MINNESOTA, STATE OF	40.0	43.703861	-95.851250
191	WQOH265	150-174	MINNESOTA, STATE OF	40.0	43.720667	-95.439722
192	WQOH267	150-174	MINNESOTA, STATE OF	40.0	43.703861	-95.851250
193	WQOH267	150-174	MINNESOTA, STATE OF	40.0	43.943333	-95.982222
194	WQLW753	450-470	MONOGRAM MEAT SNACKS LLC	32.0	43.936083	-95.953083
195	WQLW753	450-470	MONOGRAM MEAT SNACKS LLC	32.0	43.936083	-95.953083
196	WPZZ828	450-470	MOUW'S FEED & GRAIN, INC.	30.0	43.835056	-96.013167
197	WPFZ761	150-174	NELSON, MARK	80.0	43.633306	-95.611944

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198	WQVY637	450-470	NEPP SALES AND SERIVCE	40.0	44.026000	-95.750861
199	WQIQ793	150-174	NEUMAN, KEVIN	80.0	44.429444	-95.649167
200	WNQE795	150-174	New Vision Coop	56.0	43.529139	-96.357250
201	WPNP634	800/900	NEW VISION COOPERATIVE	32.0	43.697750	-95.471111
202	WNWD859	450-470	NEWDALE HUTTERIAN BRETHREN INC	121.0	44.299139	-96.525611
203	WQMX968	470-512	NEXSTAR BROADCASTING, INC.	100.0	43.541944	-96.727500
204	WPPE485	450-470	NOBLES BROADCASTING COMPANY LTD	91.0	43.619694	-95.598333
205	WPPF635	800/900	NOBLES COOPERATIVE ELECTRIC	40.0	43.781917	-95.873639
206	KAC379	150-174	NOBLES, COUNTY OF	40.0	43.676639	-95.751667
207	WNIR501	150-174	NOBLES, COUNTY OF	48.0	43.676639	-95.751667
208	WNIR501	150-174	NOBLES, COUNTY OF	40.0	43.835056	-96.013167
209	WQER211	150-174	NOBLES, COUNTY OF	40.0	43.517500	-96.018056
210	WQER211	150-174	NOBLES, COUNTY OF	40.0	43.697500	-95.471944
211	WQCE712	450-470	Northwest Iowa Community College	79.0	43.186528	-95.880972
212	KKI439	25-50, 150-174	Northwest Ready Mix Concrete Inc	64.0	43.457194	-95.317778
213	WQCE445	150-174	NUTRIEN AG SOLUTIONS INC	40.0	43.993806	-95.769694
214	WPXR215	150-174	NYKAMP, RONALD	40.0	43.861667	-96.112222
215	WQOL696	450-470	OBERMOLLER, RUSSELL	32.0	43.629417	-95.575833
216	WQTU991	450-470	OCHEDA DAIRY INC.	32.0	43.557361	-95.601056
217	WNUQ319	450-470	OLSEM, NICHOLAS	48.0	43.924972	-95.401389
218	KZJ672	150-174	OSBORNE, BRUCE	121.0	43.144694	-94.541083
219	WQRR641	150-174	PAULZINE, ANTHONY	32.0	43.825917	-95.812361
220	WNDR369	150-174	PELTOLA, ALAN L:PELTOLA, CHARLES D DBA PELTOLA BROTHERS	48.0	44.044417	-95.645833
221	WYP715	450-470	Penning Bros.	56.0	43.744139	-95.761667
222	WPFK814	450-470	PETERSEN, RONALD	56.0	43.399972	-95.446667

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223	WQTC745	450-470	PUTNAM, RUTH	40.0	43.615333	-95.452639
224	KNAL685	450-470	RAAK, IRWIN	80.0	43.790250	-96.268361
225	WQKD900	800/900	RACOM Corporation	113.0	43.092778	-96.156944
226	WQKD903	800/900	RACOM Corporation	113.0	43.545083	-96.763722
227	WQKD910	800/900	RACOM Corporation	113.0	43.656944	-94.612222
228	WQKD920	800/900	RACOM Corporation	113.0	44.324722	-96.799444
229	WQKD927	800/900	RACOM Corporation	113.0	43.157250	-95.082472
230	WQKD928	800/900	RACOM Corporation	113.0	43.603056	-95.703056
231	WNIP929	450-470	RIKANSRUD, KIRK	80.0	43.310528	-96.574750
232	WQRW523	150-174	RILEY, TOM D	32.0	43.613861	-95.477500
233	WQPK577	150-174	RISACHER FARMS	40.0	43.993056	-95.880556
234	KAJ643	150-174	ROCK, COUNTY OF	72.0	43.718861	-96.227528
235	WQBD644	150-174	ROCK, COUNTY OF	40.0	43.656083	-96.213361
236	WNRX906	450-470	ROGERS, MIKE R	89.0	43.624972	-95.578611
237	WPEN768	150-174	ROUND LAKE, CITY OF	40.0	43.538861	-95.469444
238	WPKT805	150-174	RUSHMORE, CITY OF	32.0	43.619417	-95.799194
239	WQRY370	450-470	RUSSELL TILING, LLC.	32.0	43.504000	-95.692722
240	KNAC902	450-470	RYSWYK, LARRY	48.0	43.865806	-96.023361
241	KAH642	450-470	SAGA COMMUNICATIONS OF IOWA, LLC	97.0	43.165806	-95.146389
242	WQYZ223	150-174	SANDBULTE TANK SERVICE INC.	32.0	43.662361	-96.212694
243	WQWW377	150-174	SANDBULTE, AARON	40.0	43.765389	-96.092694
244	WQOZ947	150-174	SANDBULTE, CURT	40.0	43.649444	-96.230917
245	KNHX328	150-174, 450-470	SANFORD HEALTH NETWORK-SANFORD LUVERNE	64.0	43.677194	-96.202083
246	WNGG480	450-470	SANFORD USD MEDICAL CENTER	322.0	43.524972	-96.739222
247	KNGC963	450-470	SAS, MARK	32.0	43.846083	-96.046694

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248	WQWL329	450-470	SCHMIDT, RONALD	79.0	43.527472	-96.727472
249	WRAE444	450-470	SCHNIEDERS, BRANDON	79.0	43.872917	-96.568444
250	WQTE665	450-470	SCHUTTE, JACOB	32.0	43.487667	-95.760139
251	WQNS895	150-174	SCHUTTE, NEIL	80.0	43.479139	-95.759528
252	KNEN631	150-174	SIBLEY OCHEYEDAN COMMUNITY SCHOOL	40.0	43.396778	-95.753250
253	WQNN230	450-470	Siemens Gamesa Renewable Energy, Inc.	32.0	43.906111	-96.031944
254	WNRR235	150-174	SIEMERS, LONNY	48.0	43.409694	-95.383611
255	WPGZ252	450-470	Sioux Center Community Schools	80.0	43.076361	-96.175306
256	WPGZ252	450-470	Sioux Center Community Schools	80.0	43.076361	-96.175306
257	WQPD414	450-470	SMITH TRUCKING INC.	32.0	43.649972	-95.675278
258	WQTI331	450-470	SODERHOLM, TOM	40.0	43.730306	-95.633306
259	WNBT779	450-470	Soehl Electronics Inc	80.0	43.532194	-96.739222
260	WNST485	450-470	Soehl Electronics Inc	121.0	43.567472	-97.078389
261	WPEY579	450-470	Soehl Electronics Inc	121.0	43.082500	-96.774500
262	WPHI802	450-470	Soehl Electronics Inc	121.0	43.550806	-97.095056
263	WPHP734	450-470	Soehl Electronics Inc	121.0	43.733056	-97.080278
264	WPQK819	800/900	Soehl Electronics Inc	113.0	43.733028	-97.080333
265	WQMM944	150-174	ST. MICHAELS CEMETARY ASSOCIATION	80.0	43.579167	-96.711111
266	WRED723	450-470	STAN KRAMER INC.	34.0	43.900944	-95.643611
267	WQCS661	450-470	STEVE HARRIS CONSTRUCTION	240.0	42.316667	-96.500000
268	WPBA875	450-470	STOTERAU, TERRY	64.0	43.780528	-96.550056
269	WQST315	150-174	SWAN, GORDON	34.0	44.015667	-95.862972
270	WPMR240	800/900	Sweetman Const. Co.	113.0	43.550250	-96.767000
271	KNFE356	450-470	SYBESMA, STUART E	48.0	43.783861	-96.266972
272	WNGH820	450-470	TERRAFACT INC	64.0	43.491083	-95.273889

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273	WQPJ664	450-470	THOMPSON, TROY	40.0	43.702306	-95.462722
274	KNBG448	450-470	Tilstra, Arlyn	48.0	43.571083	-96.253639
275	WQOJ719	450-470	TKC FARMS INC.	32.0	43.484639	-95.821306
276	WNWY815	150-174	TRAUTMAN, SCOTT	80.0	44.274972	-96.343639
277	WPCW944	800/900	TRI STATE COMMUNICATIONS INC	113.0	42.840278	-96.250556
278	WQNE561	450-470	TRI STATE TRUCK WASH OF WORTHINGTON, INC.	20.0	43.624694	-95.578889
279	WQTZ336	150-174	TUINSTRA, DEAN	48.0	43.935389	-96.301222
280	KFJ657	150-174, 450-470	TWO WAY SOLUTIONS INC	121.0	43.554139	-96.718944
281	WNYP706	450-470	TWO WAY SOLUTIONS INC.	32.0	43.632556	-95.569806
282	WQQR526	450-470	United Farmers Coop	32.0	43.504000	-95.692694
283	WQQR526	450-470	United Farmers Coop	32.0	43.618250	-95.801472
284	WQQZ892	800/900	VAN GELDER, JASON	30.0	43.476944	-95.599722
285	WPFC481	150-174	VAN HOECKE, JERRY	64.0	44.058306	-96.372528
286	KYQ779	150-174	VAN HULZEN FARMS	80.0	43.849694	-96.109194
287	WQMY793	450-470	VAN STELTEN, COREY	32.0	43.885500	-96.104028
288	WQVT953	150-174	VANDEKAMP, ARLYN	40.0	43.833611	-96.238583
289	WQQX256	150-174	VEENKER, SCOTT	60.0	43.949056	-95.152528
290	KNAW578	150-174	VELDKAMP, LEROY	56.0	43.599972	-96.425306
291	WQSG949	800/900	VERTICAL VENTURES II, LLC	113.0	43.555444	-96.718306
292	WQVX322	450-470	Vestas	32.0	43.639444	-95.751083
293	WQVX322	450-470	Vestas	32.0	43.639444	-95.751083
294	WQYD960	150-174	VT MANURE HANDLING, LLC	48.0	43.460028	-95.501278
295	WQOJ582	450-470	W & N CONSTRUCTION	32.0	43.590944	-96.190528
296	WQWQ286	450-470	WAGNER, MICHAEL	40.0	43.674611	-95.838028
297	WQZW372	450-470	WALTON, ZACHERY D	50.0	43.903667	-95.259278

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298	WRCM928	450-470	WASSENAAR, DUSTIN	80.0	43.714917	-95.137944
299	WNYW893	450-470	WEGS BLUE & WHITE DAIRY	40.0	43.548861	-95.713361
300	WPAG721	450-470	WEILAND, NATHAN	80.0	43.782472	-96.670611
301	WQSX350	150-174	WENDELL, STEVE	79.0	43.906472	-96.622750
302	KNNU904	450-470	WIENEKE, DALE	25.0	43.682194	-95.934194
303	WQTE666	450-470	WIENEKE, JOE	32.0	43.702056	-95.973472
304	WZK487	150-174	WILLIAMS, CHARLES E	64.0	43.824417	-95.502500
305	WQUX455	450-470	WINSEL, KEN	79.0	44.061417	-96.124444
306	WPJQ692	450-470	WORTHINGTON COUNTRY CLUB	32.0	43.632194	-95.628056
307	WPOX221	450-470	WORTHINGTON TAXI SERVICE	32.0	43.626694	-95.606389
308	KCW722	150-174, 450-470	WORTHINGTON, CITY OF	32.0	43.620250	-95.600000
309	WPFN876	150-174	Xcel Energy Services Inc.	40.0	43.781944	-95.873611
310	WQSY954	150-174	XCEL ENERGY SERVICES INC.	80.0	43.782222	-95.873333
311	WQXN436	150-174	XCEL ENERGY SERVICES INC.	80.0	43.782222	-95.873333
312	WQLL894	150-174	YORK, BRIAN	40.0	43.996667	-95.926389
313	WPLF903	450-470	ZINS, JEFFERY D	30.0	43.877750	-95.648056
314	WQYN234	450-470	ZWAAN, MONTE	34.0	43.572222	-96.153861
315	WQWR978	450-470	ZYLSTRA, KEVIN	34.0	43.891611	-96.162306

Table A: Mobile Licenses Intersecting Project Area

Wind Power GeoPlanner™

Microwave Study

Community Wind South

Prepared on Behalf of
Zephyr Wind, LLC

May 26, 2020

COMSEARCH®
A CommScope Company

Table of Contents

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 repowered wind turbines on licensed, proposed and applied non-federal government microwave systems.

2. Project Overview

Project Information

Name: Community Wind South

County: Nobles

State: Minnesota

Number of Turbines: 15

Blade Diameter: 110 meters

Hub Height: 105.5 meters

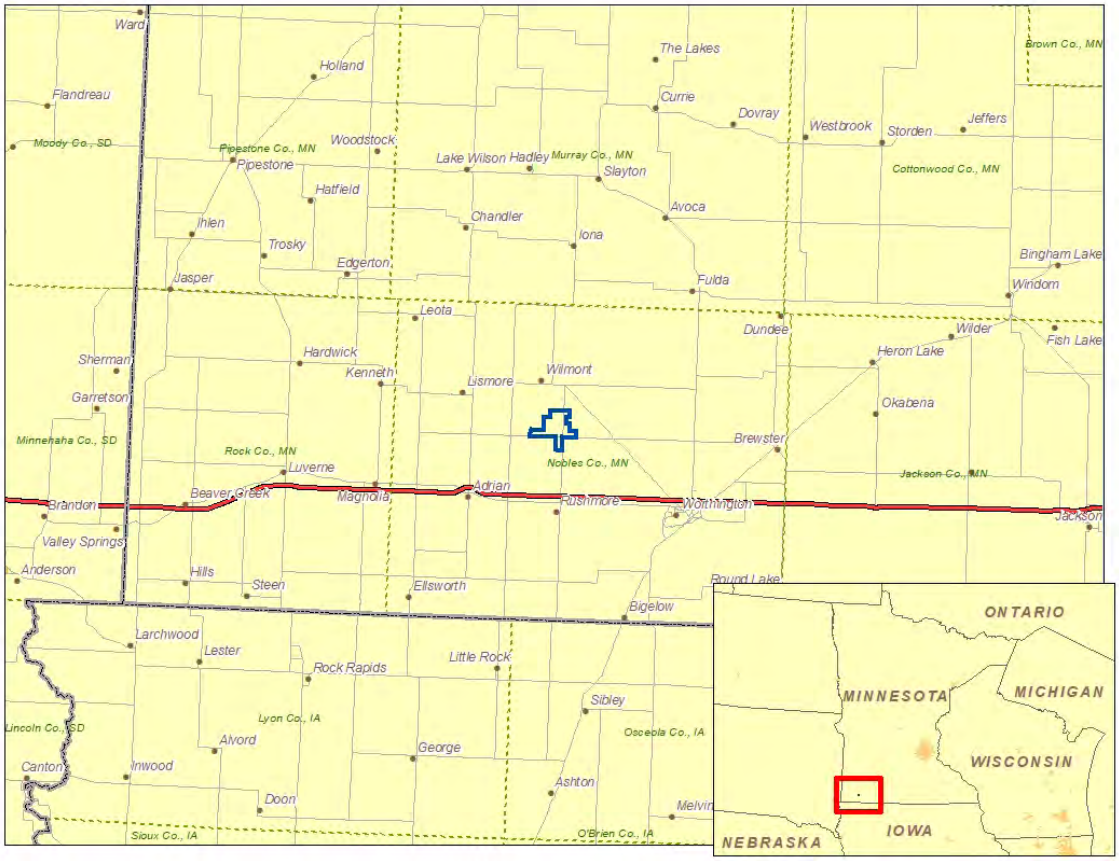


Figure 1: Area of Interest

3. Two-Dimensional Fresnel Zone Analysis

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 GHz[1]. First, we determined all microwave paths that intersect the area of interest[2] and listed them in Table 1. These paths and the area of interest that encompasses the repowered turbine locations are shown in Figure 2.

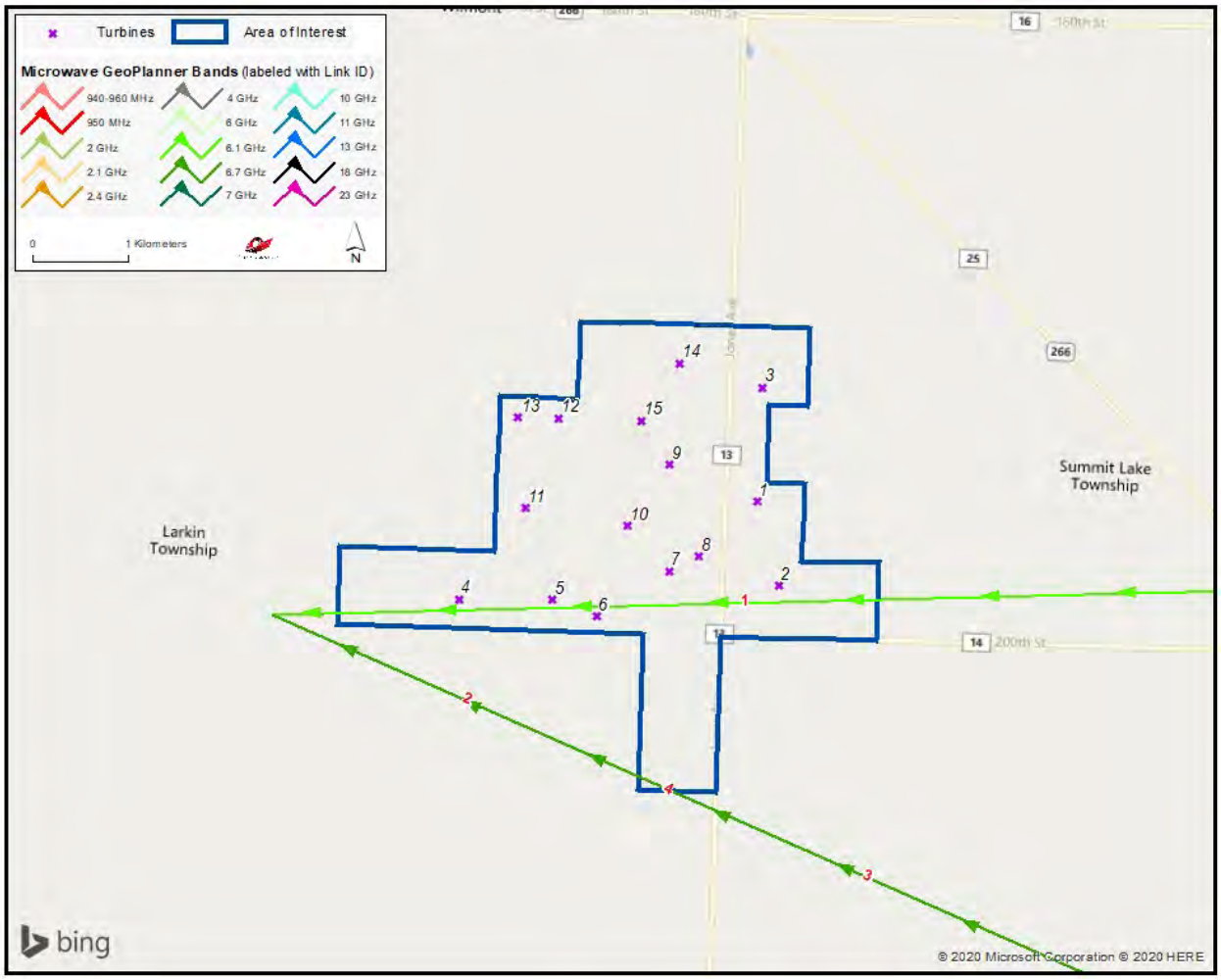


Figure 2: Microwave Paths that Intersect the Area of Interest

[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.

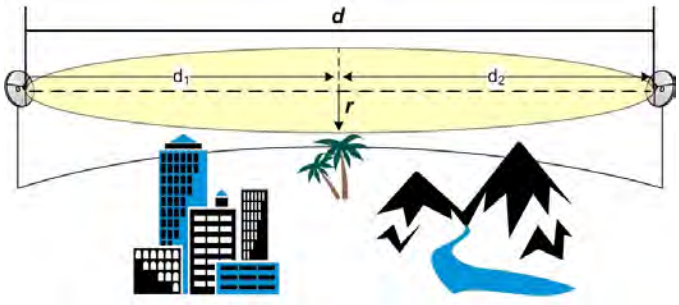
ID	Status	Callsign 1	Callsign 2	Band	Path Length (km)	Licensee
1	Licensed	WPYH767	WQAU442	6.1 GHz	33.22	Minnesota, State of (DOT)
2	Licensed	WQOZ385	WQAU442	6.7 GHz	15.32	Minnesota, State of (DOT)
3	Licensed	WQOZ385	WQAU442	6.7 GHz	15.32	Minnesota, State of (DOT)
4	Licensed	WRCK732	WQXT661	6.1 GHz	15.32	Minnesota Valley TV Improvement

Table 1: Summary of Microwave Paths that Intersect the Area of Interest
(See enclosed mw_geopl.xlsx for more information and
GP_dict_matrix_description.xls for detailed field descriptions)

Verification of Coordinate Accuracy
It is possible that as-built coordinates may differ from those on the FCC license. For this project, all four paths cross within close proximity of the repowered turbines and the tower locations for these paths will have a critical impact on the result. Therefore, we verified these locations using aerial photography. Some of the towers were found to be slightly off and were moved to their locations based on the aerial photos[3].

Next, we calculated a Fresnel Zone for each path based on the following formula:

$$r \cong 17.3\sqrt{\frac{n}{F_{GHz}}\left(\frac{d_1 d_2}{d_1 + d_2}\right)}$$



Where,
r = Fresnel Zone radius at a specific point in the microwave path, meters
n = Fresnel Zone number, 1
F_{GHz} = Frequency of microwave system, GHz
d_1 = Distance from antenna 1 to a specific point in the microwave path, kilometers
d_2 = Distance from antenna 2 to a specific point in the microwave path, kilometers

In general, this is the area where the repowered wind turbines should be avoided, if possible. Likewise, Comsearch recommends that an area directly in front of each microwave antenna

[3] See enclosed mw_geopl.shp (adjusted locations based on aerial photography/basis for report images and results) and mw_geopl_fcc.shp (locations solely based on FCC licensed information) for details.

should be avoided. This corresponds to the Consultation Zone which measures 1 kilometer along the main beam of the antenna and 24 ft (7.3 meters) wide. A depiction of the Fresnel Zones and Consultation Zones for each microwave path listed can be found in Figure 3, and is also included in the enclosed shapefiles[4,5].

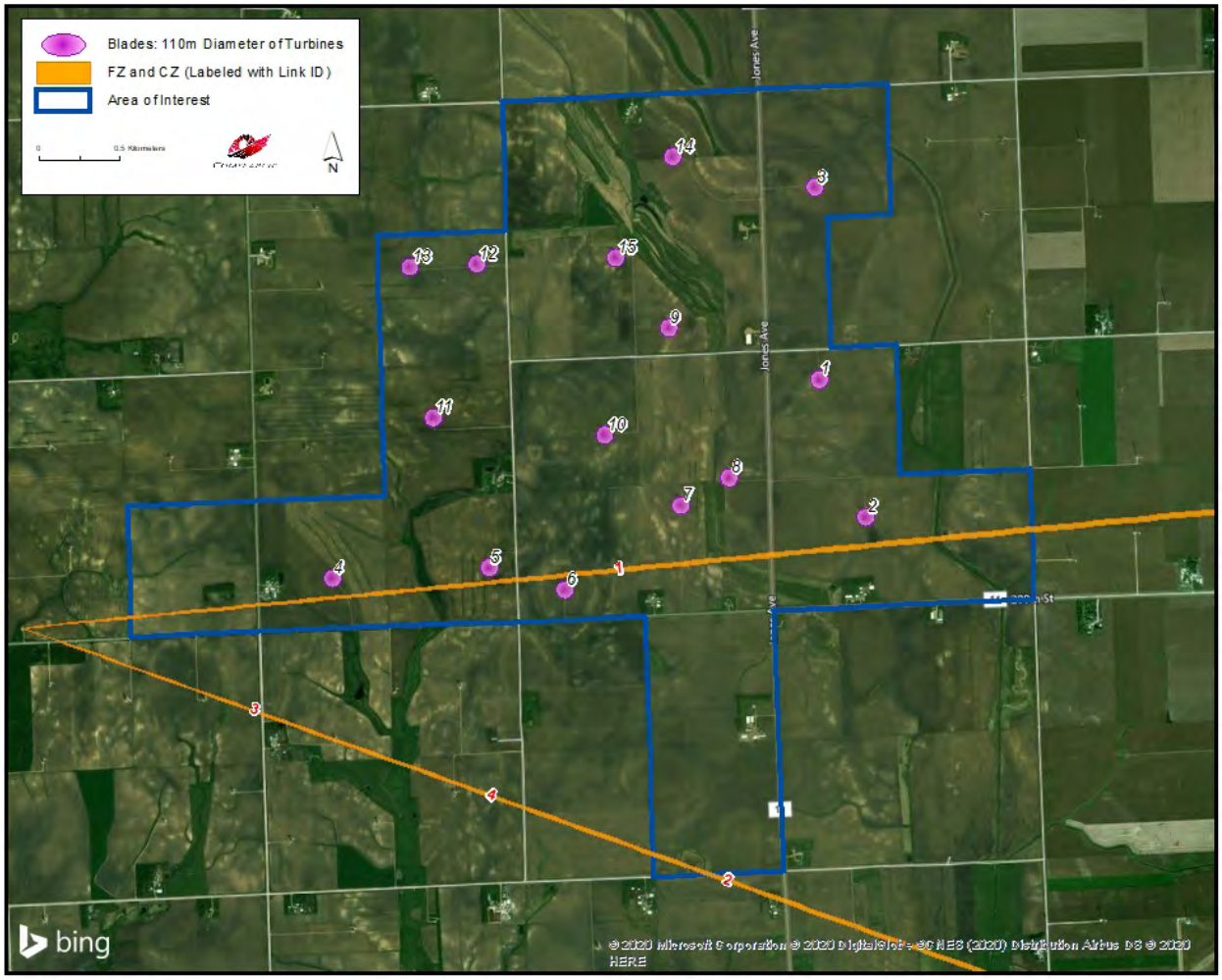


Figure 3: Microwave Paths with Fresnel Zones

[4] The ESRI® shapefiles enclosed are in NAD 83 UTM Zone 15 projected coordinate system.

[5] 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.

4. Conclusion

Total Microwave Paths	Paths with Affected Fresnel Zones	Total Turbines	Turbines intersecting the Fresnel Zones
4	0	15	0

Table 2: Fresnel Zone Analysis Result

Our study identified four microwave paths intersecting the Community Wind South area of interest. The Fresnel and Consultation Zones for these microwave paths were calculated and mapped in order to assess the potential impact from the turbines. A total of fifteen turbines were considered in the analysis, each with a blade diameter of 110 meters and a hub height of 105.5 meters. Of those turbines, none were found to have potential obstruction with the microwave systems in the area.

5. Contact

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

Contact person: David Meyer
Title: Senior Manager
Company: Comsearch
Address: 19700 Janelia Farm Blvd., Ashburn, VA 20147
Telephone: 703-726-5656
Fax: 703-726-5595
Email: dmeyer@comsearch.com
Web site: www.comsearch.com

Appendix: Turbine Locations

TURBINE #	LATITUDE	LONGITUDE	Hub Height (m)	Rotor Diameter (m)
1	N43°42'57.09"	W95°47'21.55"	105.5	110
2	N43°42'29.13"	W95°47'10.14"	105.5	110
3	N43°43'35.71"	W95°47'20.74"	105.5	110
4	N43°42'20.98"	W95°49'38.41"	105.5	110
5	N43°42'21.95"	W95°48'54.91"	105.5	110
6	N43°42'16.87"	W95°48'34.19"	105.5	110
7	N43°42'32.89"	W95°48'01.22"	105.5	110
8	N43°42'38.08"	W95°47'47.57"	105.5	110
9	N43°43'08.61"	W95°48'02.65"	105.5	110
10	N43°42'47.64"	W95°48'21.53"	105.5	110
11	N43°42'52.41"	W95°49'08.80"	105.5	110
12	N43°43'22.93"	W95°48'55.12"	105.5	110
13	N43°43'22.87"	W95°49'13.73"	105.5	110
14	N43°43'42.91"	W95°47'59.77"	105.5	110
15	N43°43'23.09"	W95°48'16.65"	105.5	110

Wind Power GeoPlanner™

Off-Air TV Analysis

Community Wind South

Prepared on Behalf of
Zephyr Wind, LLC

May 26, 2020

COMSEARCH®
A CommScope Company

Table of Contents

1. Introduction

Off-air television stations broadcast signals from terrestrial-based facilities directly to television receivers. Comsearch identified those off-air stations whose service could potentially be affected by the repowered Community Wind South wind project in Nobles County, Minnesota. 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 repowered wind turbines.

2. Summary of Results

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

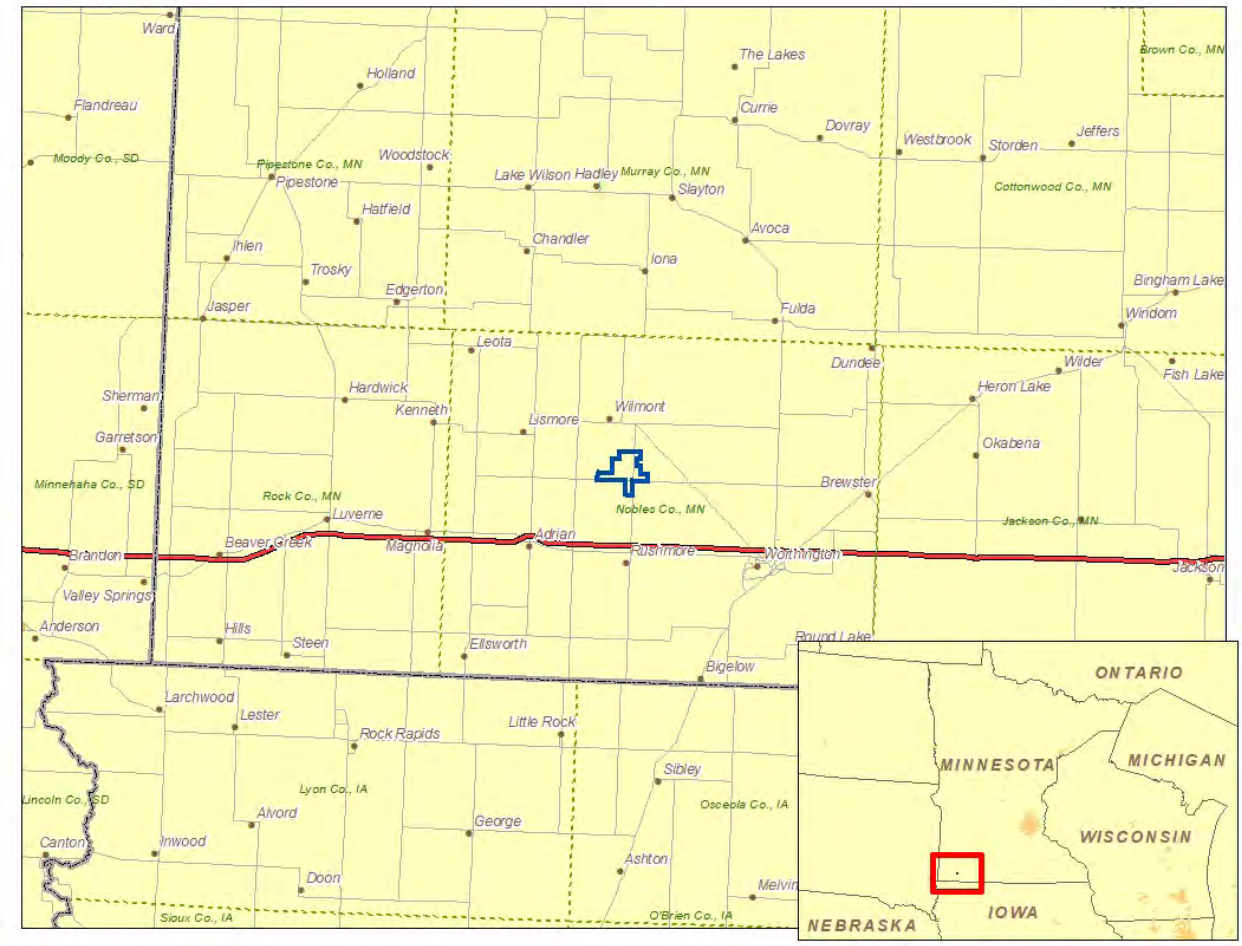


Figure 1: Wind Farm Project Area and Local Communities

To begin the analysis, Comsearch compiled all off-air television stations[1] within 150 kilometers of the repowered 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, below, and a plot depicting their locations is provided in Figure 2. There are a total of 156 database records for stations within approximately 150 kilometers of the repower turbines. Of these stations, only 99 stations are currently licensed and operating, 82 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.

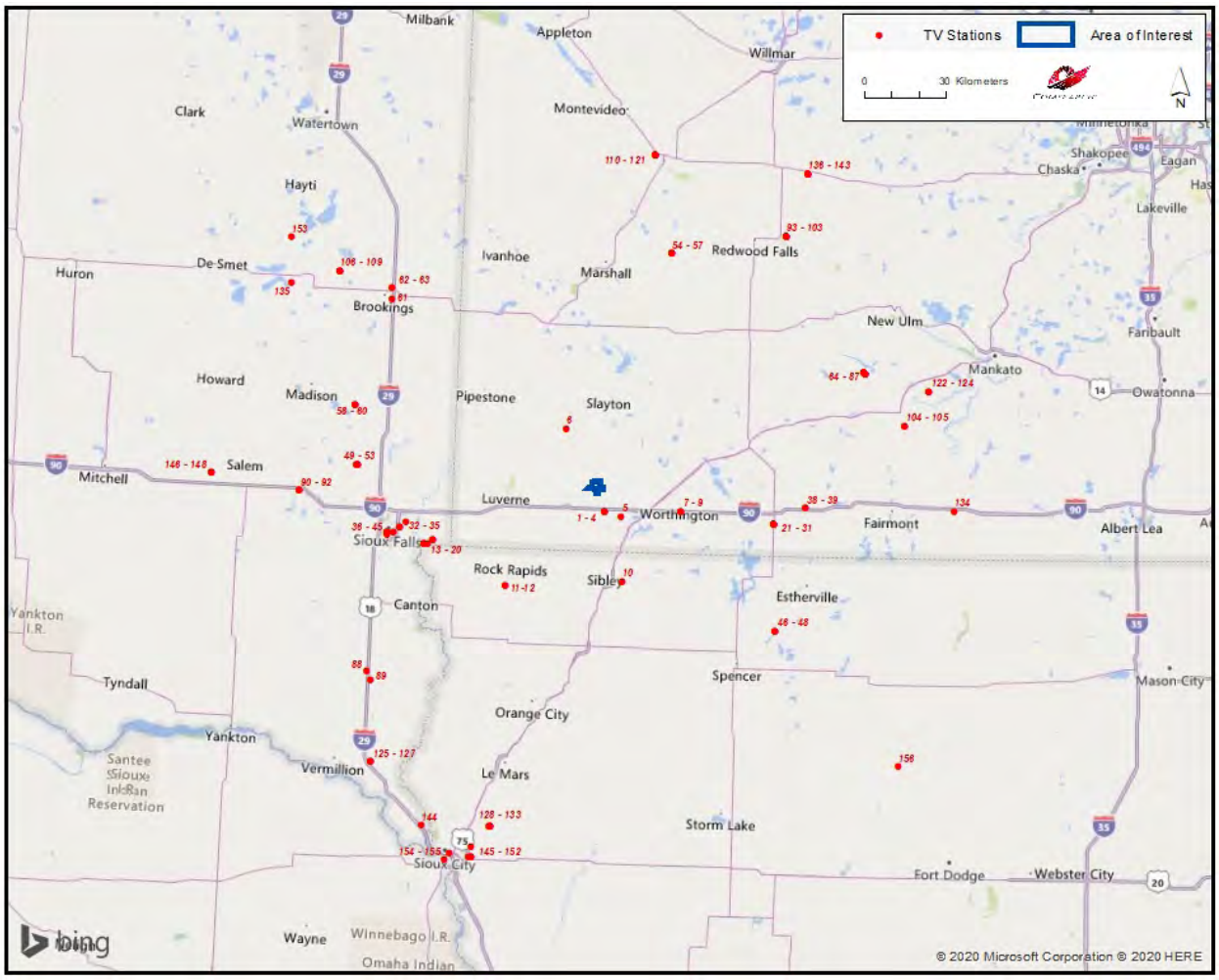


Figure 2: Plot of Off-Air TV Stations within 150 Kilometers of Proposed Turbines

[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	K17MA-D	CP	LPD	17	1.0	43.631861	-95.761861	8.70
2	K27ML-D	CP	LPD	27	1.0	43.631861	-95.761861	8.70
3	K42LR-D	CP	LPD	42	1.0	43.631861	-95.761861	8.70
4	K50NJ-D	CP	LPD	50	1.0	43.631861	-95.761861	8.70
5	K18MO-D	LIC	LPD	18	2.5	43.617111	-95.689056	12.79
6	KSMN	LIC	DTV	15	200.0	43.897778	-95.947500	21.95
7	K20LV-D	CP	LPD	20	1.0	43.639556	-95.414028	30.96
8	K24KZ-D	CP	LPD	24	1.0	43.639556	-95.414028	30.96
9	K44LS-D	CP	LPD	44	1.0	43.639556	-95.414028	30.96
10	K26JI-D	LIC	LPT	26	14.0	43.403333	-95.668611	35.17
11	K43LX-D	LIC	LPT	43	15.0	43.379167	-96.196667	47.01
12	K33PV-D	CP	LPT	33	15.0	43.376583	-96.196833	47.24
13	KELO-TV	LIC	DTV	11	30.0	43.518611	-96.535000	60.82
14	KSFY-TV	LIC	DTV	13	22.7	43.518611	-96.535000	60.82
15	K20MB-D	LIC	LPD	20	13.2	43.518611	-96.535000	60.82
16	KDLT-TV	LIC	DTV	21	589.0	43.505000	-96.556389	62.97
17	KWSD	LIC	DTV	36	36.9	43.505278	-96.572222	64.16
18	KWSD	APP	DTV	36	1000.0	43.505278	-96.572222	64.16
19	KWSD	STA	DTV	36	18.45	43.505278	-96.572222	64.16
20	KTTW	LIC	DTV	7	7.5	43.503889	-96.571889	64.19
21	K17MY-D	LIC	LPD	17	2.0	43.603333	-94.992778	65.05
22	K19HZ-D	LIC	LPT	19	3.1	43.603333	-94.992778	65.05
23	K22MY-D	LIC	LPD	22	1.9	43.603333	-94.992778	65.05

[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	K23FO-D	LIC	LPT	23	3.1	43.603333	-94.992778	65.05
25	K27NF-D	LIC	LPD	27	3.1	43.603333	-94.992778	65.05
26	K28OI-D	LIC	LPD	28	3.1	43.603333	-94.992778	65.05
27	K29LV-D	LIC	LPT	29	3.1	43.603333	-94.992778	65.05
28	K30KQ-D	LIC	LPD	30	2.1	43.603333	-94.992778	65.05
29	K31NT-D	LIC	LPT	31	3.1	43.603333	-94.992778	65.05
30	K34NU-D	LIC	LPD	34	3.1	43.603333	-94.992778	65.05
31	K35IZ-D	LIC	LPT	35	3.1	43.603333	-94.992778	65.05
32	KCSD-TV	LIC	DTV	24	80.9	43.574417	-96.655583	68.44
33	K22KD-D	CP	LPD	22	3.0	43.553889	-96.685000	71.28
34	K56GF	CP	LPD	23	15.0	43.553889	-96.685000	71.28
35	K56GF	LIC	LPX	56	10.1	43.553889	-96.685000	71.28
36	K04RR-D	CP	LPD	4	3.0	43.538083	-96.714306	74.01
37	K06QJ-D	CP	LPD	6	3.0	43.538083	-96.714306	74.01
38	K33MW-D	CP	LPD	33	2.0	43.661222	-94.853472	75.38
39	K39MD-D	CP	LPD	39	2.0	43.661222	-94.853472	75.38
40	KCPO-LD	CP	LPD	26	2.79	43.532222	-96.739167	76.12
41	KCPO-LP	LIC	LPA	26	7.57	43.526750	-96.738167	76.20
42	KAUN-LP	CP	LPA	25	0.88	43.535556	-96.743056	76.33
43	KCWS-LP	CP	LPA	27	0.68	43.535556	-96.743056	76.33
44	KAUN-LP	LIC	LPA	42	0.88	43.535528	-96.743083	76.33
45	KCWS-LP	LIC	LPA	44	0.68	43.535528	-96.743083	76.33
46	K18KG-D	LIC	LPD	18	6.9	43.255556	-94.976667	82.57
47	KBVK-LP	STA	LPD	20	6.8	43.255556	-94.976667	82.57
48	KBVK-LP	LIC	LPD	21	6.8	43.255556	-94.976667	82.57
49	K18IW-D	LIC	LPD	18	3.0	43.752278	-96.885389	85.45
50	K31KU-D	LIC	LPD	31	3.0	43.752278	-96.885389	85.45
51	K32JG-D	LIC	LPD	32	3.0	43.752278	-96.885389	85.45
52	K18IW-D	CP	LPD	18	3.0	43.751389	-96.889444	85.77
53	K32JG-D	CP	LPD	32	3.0	43.751389	-96.889444	85.77
54	KRWF	LIC	DTV	27	58.0	44.484167	-95.491111	87.51
55	K43MH-D	STA	LPD	34	5.0	44.484167	-95.491111	87.51
56	K34QF-D	CP	LPD	34	5.0	44.484167	-95.491111	87.51
57	K43MH-D	LIC	LPD	43	5.5	44.484167	-95.491111	87.51
58	K21LK-D	CP	LPD	21	2.0	43.949417	-96.909833	91.20
59	K30LV-D	CP	LPD	30	2.0	43.949417	-96.909833	91.20
60	K33LR-D	CP	LPD	33	2.0	43.949417	-96.909833	91.20
61	K25OU-D	LIC	LPD	25	4.5	44.300833	-96.766667	99.44
62	K17NF-D	CP	LPD	17	4.27	44.339444	-96.768889	102.38
63	K17NF-D	LIC	LPD	17	7.014	44.339444	-96.768889	102.38
64	K16CG-D	LIC	LPD	16	1.8	44.107778	-94.598889	104.56
65	K17MW-D	LIC	LPD	17	0.5	44.107778	-94.598889	104.56

ID	Call Sign	Status	Service[2]	Channel	Transmit ERP[3] (kW)	Latitude (NAD 83)	Longitude (NAD 83)	Distance to the Closest Turbine (km)
66	K18NE-D	LIC	LPT	18	0.6	44.107778	-94.598889	104.56
67	K19LI-D	LIC	LPD	19	0.5	44.107778	-94.598889	104.56
68	K20LP-D	LIC	LPD	20	1.3	44.107778	-94.598889	104.56
69	K21DG-D	CP	LPD	21	0.35	44.107778	-94.598889	104.56
70	K22MQ-D	LIC	LPD	22	0.5	44.107778	-94.598889	104.56
71	K23MF-D	CP	LPD	23	1.8	44.107778	-94.598889	104.56
72	K23MF-D	LIC	LPD	23	1.3	44.107778	-94.598889	104.56
73	K24JV-D	CP	LPD	24	0.35	44.107778	-94.598889	104.56
74	K24JV-D	LIC	LPD	24	1.8	44.107778	-94.598889	104.56
75	K29IE-D	LIC	LPT	29	3.0	44.107778	-94.598889	104.56
76	K31KV-D	LIC	LPD	31	1.8	44.107778	-94.598889	104.56
77	K35KI-D	LIC	LPD	35	1.8	44.107778	-94.598889	104.56
78	K14KE-D	LIC	LPD	14	1.5	44.106944	-94.595833	104.74
79	K14KE-D	CP	LPD	14	2.0	44.106944	-94.595833	104.74
80	K21DG-D	LIC	LPD	21	2.0	44.106944	-94.595833	104.74
81	K26CS-D	LIC	LPT	26	2.0	44.106944	-94.595833	104.74
82	K26CS-D	CP	LPT	26	1.7	44.106944	-94.595833	104.74
83	K28OH-D	LIC	LPD	28	0.5	44.106944	-94.595833	104.74
84	K30FN-D	LIC	LPD	30	12.0	44.106944	-94.595833	104.74
85	K30FN-D	CP	LPD	30	2.0	44.106944	-94.595833	104.74
86	K32GX-D	LIC	LPD	32	1.2	44.106944	-94.595833	104.74
87	K34JX-D	LIC	LPD	34	2.0	44.106944	-94.595833	104.74
88	K38NJ-D	CP	LPD	38	2.0	43.077000	-96.804861	105.66
89	KUSD-TV	LIC	DTV	34	277.0	43.050278	-96.783889	106.42
90	K33NF-D	CP	LPD	33	1.0	43.659861	-97.147444	106.63
91	K35LZ-D	CP	LPD	35	1.0	43.659861	-97.147444	106.63
92	K38OZ-D	CP	LPD	38	1.0	43.659861	-97.147444	106.63
93	K15LS-D	LIC	LPT	15	0.37	44.549694	-94.966944	112.67
94	K16MV-D	LIC	LPT	16	0.5	44.549694	-94.966944	112.67
95	K17BV-D	LIC	LPT	17	0.398	44.549694	-94.966944	112.67
96	K19CV-D	LIC	LPT	19	0.395	44.549694	-94.966944	112.67
97	K22KU-D	LIC	LPT	22	0.39	44.549694	-94.966944	112.67
98	K25II-D	LIC	LPT	25	0.387	44.549694	-94.966944	112.67
99	K28LL-D	LIC	LPT	28	0.382	44.549694	-94.966944	112.67
100	K29MQ-D	LIC	LPT	29	0.5	44.549694	-94.966944	112.67
101	K33LB-D	LIC	LPT	33	0.375	44.549694	-94.966944	112.67
102	K35NY-D	LIC	LPT	35	0.5	44.549694	-94.966944	112.67
103	K36KW-D	LIC	LPT	36	0.373	44.549694	-94.966944	112.67
104	KMNF-LD	LIC	LPT	7	3.0	43.936750	-94.410833	113.28
105	KEYC-TV	LIC	DTV	12	52.7	43.936944	-94.410833	113.29
106	K27LB-D	CP	LPD	27	2.0	44.383222	-97.010500	120.37
107	K38NI-D	CP	LPD	38	2.0	44.383222	-97.010500	120.37

ID	Call Sign	Status	Service[2]	Channel	Transmit ERP[3] (kW)	Latitude (NAD 83)	Longitude (NAD 83)	Distance to the Closest Turbine (km)
108	K42KO-D	CP	LPD	42	2.0	44.383222	-97.010500	120.37
109	K45LV-D	CP	LPD	45	2.0	44.383222	-97.010500	120.37
110	K14OL-D	LIC	LPD	14	1.8	44.804722	-95.580556	120.87
111	K16CP-D	LIC	LPD	16	1.8	44.804722	-95.580556	120.87
112	K19LX-D	LIC	LPD	19	1.8	44.804722	-95.580556	120.87
113	K22DO-D	LIC	LPD	22	1.7	44.804722	-95.580556	120.87
114	K24CS-D	LIC	LPD	24	1.8	44.804722	-95.580556	120.87
115	K26NT-D	LIC	LPD	26	1.8	44.804722	-95.580556	120.87
116	K29JW-D	LIC	LPT	29	1.8	44.804722	-95.580556	120.87
117	K31PG-D	LIC	LPT	31	1.8	44.804722	-95.580556	120.87
118	K32DR-D	LIC	LPD	32	1.8	44.804722	-95.580556	120.87
119	K33OS-D	LIC	LPT	33	1.8	44.804722	-95.580556	120.87
120	K35DK-D	LIC	LPD	35	1.8	44.804722	-95.580556	120.87
121	K36OK-D	LIC	LPD	36	1.8	44.804722	-95.580556	120.87
122	K25QC-D	CP	LPD	25	7.5	44.051500	-94.299972	124.98
123	K43JE-D	AMD	LPD	25	7.5	44.051500	-94.299972	124.98
124	K43JE-D	LIC	LPD	43	10.82	44.051500	-94.299972	124.98
125	K33LS-D	CP	LPD	33	1.0	42.782056	-96.767111	127.96
126	K35KT-D	CP	LPD	35	1.0	42.782056	-96.767111	127.96
127	K44KV-D	CP	LPD	44	1.0	42.782056	-96.767111	127.96
128	KTIV	LIC	DTV	14	1000.0	42.586667	-96.221944	128.45
129	KPTH	LIC	DTV	30	871.0	42.586667	-96.221944	128.45
130	KMEG	LIC	DTV	32	1000.0	42.586667	-96.221944	128.45
131	K03IS-D	CP	LPD	3	0.3	42.586667	-96.222222	128.46
132	K06QG-D	CP	LPD	6	0.3	42.586667	-96.222222	128.46
133	KCAU-TV	LIC	DTV	9	43.9	42.586389	-96.232500	128.70
134	K45MN-D	CP	LPD	45	1.0	43.658556	-94.176750	129.87
135	KESD-TV	LIC	DTV	8	15.0	44.337778	-97.228611	132.02
136	K15LT-D	CP	LPD	15	1.0	44.759139	-94.873333	136.07
137	K18IR-D	LIC	LPT	18	0.79	44.759139	-94.873333	136.07
138	K20JY-D	LIC	LPT	20	0.79	44.759139	-94.873333	136.07
139	K21NS-D	LIC	LPT	21	0.79	44.759139	-94.873333	136.07
140	K23FP-D	LIC	LPT	23	0.79	44.759139	-94.873333	136.07
141	K31OR-D	LIC	LPT	31	0.79	44.759139	-94.873333	136.07
142	K34OZ-D	LIC	LPT	34	0.79	44.759139	-94.873333	136.07
143	K47JE-D	LIC	LPD	47	0.62	44.759139	-94.873333	136.07
144	K22KJ-D	CP	LPD	22	1.0	42.579694	-96.527917	137.54
145	KSIN-TV	LIC	DTV	28	400.0	42.514722	-96.304444	137.96
146	K14QR-D	CP	LPD	14	1.0	43.703333	-97.548250	138.81
147	K30NS-D	CP	LPD	30	1.0	43.703333	-97.548250	138.81
148	K40NS-D	CP	LPD	40	1.0	43.703333	-97.548250	138.81
149	KSXC-LP	LIC	LPA	5	3.0	42.484861	-96.305556	141.17

ID	Call Sign	Status	Service[2]	Channel	Transmit ERP[3] (kW)	Latitude (NAD 83)	Longitude (NAD 83)	Distance to the Closest Turbine (km)
150	KEJK-LD	LIC	LPD	16	6.0	42.484861	-96.305556	141.17
151	KSXC-LD	LIC	LPD	26	15.0	42.484861	-96.305556	141.17
152	K31PP-D	CP	LPD	31	15.0	42.482056	-96.314194	141.67
153	K35GR-D	LIC	LPT	35	6.76	44.487500	-97.239167	141.92
154	KCAU-TV	APP	DRT	30	2.7	42.493861	-96.403083	142.62
155	KBWF-LD	LIC	LPD	29	15.0	42.472500	-96.422500	145.39
156	KTIN	LIC	DTV	25	600.0	42.817417	-94.411639	149.14

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 Community Wind South project, it was determined that twelve of the full-power digital stations, identified below in Table 2, along with four low-power digital stations, 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 repowered wind turbine but not to the respective station. After the wind turbines are repowered, 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. However, since this project is for a repower of an existing wind farm at the same tower locations with marginal height increases[4], it is expected that the impact due to the changes will be minimal.

ID	Call Sign	Status	Service	Channel	Transmit ERP (kW)	Latitude (NAD 83)	Longitude (NAD 83)	Distance to the Closest Turbine (km)
5	K18MO-D	LIC	LPD	18	2.5	43.617111	-95.689056	12.79
6	KSMN	LIC	DTV	15	200.0	43.897778	-95.947500	21.95
10	K26JI-D	LIC	LPT	26	14.0	43.403333	-95.668611	35.17
11	K43LX-D	LIC	LPT	43	15.0	43.379167	-96.196667	47.01
13	KELO-TV	LIC	DTV	11	30.0	43.518611	-96.535000	60.82
14	KSFY-TV	LIC	DTV	13	22.7	43.518611	-96.535000	60.82
15	K20MB-D	LIC	LPD	20	13.2	43.518611	-96.535000	60.82
16	KDLT-TV	LIC	DTV	21	589.0	43.505000	-96.556389	62.97
17	KWSD	LIC	DTV	36	36.9	43.505278	-96.572222	64.16
20	KTTW	LIC	DTV	7	7.5	43.503889	-96.571889	64.19
32	KCSD-TV	LIC	DTV	24	80.9	43.574417	-96.655583	68.44

[4] The repowered turbines will have a hub height of 105.5 meters and rotor diameter of 110 meters. The overall height increase of the repowered turbines will be a marginal 15.75 meters based on the existing turbine hub height of 98.5 meters and rotor diameter of 92.5 meters.

ID	Call Sign	Status	Service	Channel	Transmit ERP (kW)	Latitude (NAD 83)	Longitude (NAD 83)	Distance to the Closest Turbine (km)
105	KEYC-TV	LIC	DTV	12	52.7	43.936944	-94.410833	113.29
128	KTIV	LIC	DTV	14	1000.0	42.586667	-96.221944	128.45
129	KPTH	LIC	DTV	30	871.0	42.586667	-96.221944	128.45
130	KMEG	LIC	DTV	32	1000.0	42.586667	-96.221944	128.45
133	KCAU-TV	LIC	DTV	9	43.9	42.586389	-96.232500	128.70

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 repowered. However, since this project is for a repower of an existing wind farm at the same tower locations with a marginal increase in turbine size, it is expected that the impact due to the changes will be minimal.

5. Contact

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

Contact person: David Meyer
Title: Senior Manager
Company: Comsearch
Address: 19700 Janelia Farm Blvd., Ashburn, VA 20147
Telephone: 703-726-5656
Fax: 703-726-5595
Email: dmeyer@comsearch.com
Web site: www.comsearch.com

From: O'Brien, Frank <Frank.OBrien@commscope.com>
Sent: Wednesday, August 5, 2020 9:52 AM
To: David Weetman
Cc: Meyer, David; Jimeno, Dennis
Subject: **Turbine Response Letter** Community Wind South, Hawkeye, and Elk Wind
Attachments: Digital Final_Community Wind South Project_COMSEARCH_no concerns.pdf; Digital Final_Hawkeye Wind Farm_COMSEARCH_no concerns.pdf; Digital Final_Elk Wind Project_COMSEARCH_no concerns.pdf

David,

Attached please find the responses to your proposed Community Wind South, Hawkeye, and Elk Wind Projects. **No Issues were identified by the government agencies for these.** If you have any questions or concerns please contact Dennis Jimeno <DJimeno@comsearch.com>, 703-726-5858.

Regards,

Frank O'Brien
GIS Analyst

comsearch
A CommScope Company

19700 Janelia Farm Blvd | Ashburn VA 20147 USA
Office +1 703 726 5834

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

August 4, 2020

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

Re: Community Wind South Project: Nobles County, MN

Dear Mr. O'Brien:

In response to your request on July 17, 2020, the National Telecommunications and Information Administration provided to the federal agencies represented in the Interdepartment Radio Advisory Committee (IRAC) the plans for the Community Wind South Project, located in Nobles County, Minnesota.

After a 45+ day period of review, no agencies had issues with turbine placement in this area.

While the 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 these proposals.

Sincerely,

John R. McFall
Deputy Chief, Spectrum Services Division
Office of Spectrum Management