Appendix S:
SIGNAL INTERFERENCE STUDIES
(Exhibit A-7)

Wind Power GeoPlanner™

AM and FM Radio Report

Riverbend Wind Project

Prepared on Behalf of
REV Renewables

December 31, 2024

COMSEARCH®
A CommScope Company

Table of Contents

1. Introduction

Comsearch analyzed AM and FM radio broadcast stations whose service could potentially be affected by the proposed Riverbend Wind Project in Sanilac County, Michigan.

2. Summary of Results

AM Radio Analysis

Comsearch found two database records[1] for AM stations within approximately 30 kilometers of the project, as shown in Table 1 and Figure 1. The closest station, WMIC, which broadcasts out of Sandusky, Michigan, is located to the north of the project area of interest (AOI), 17.07 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 the Nearest Turbine Location (km)
1	WMIC	LIC	660	1.0	Daytime	43.392806	-82.834944	3.00	17.07
2	WHLS	LIC	1450	1.0	Unlimited	42.976972	-82.464361	0.21	26.32

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.

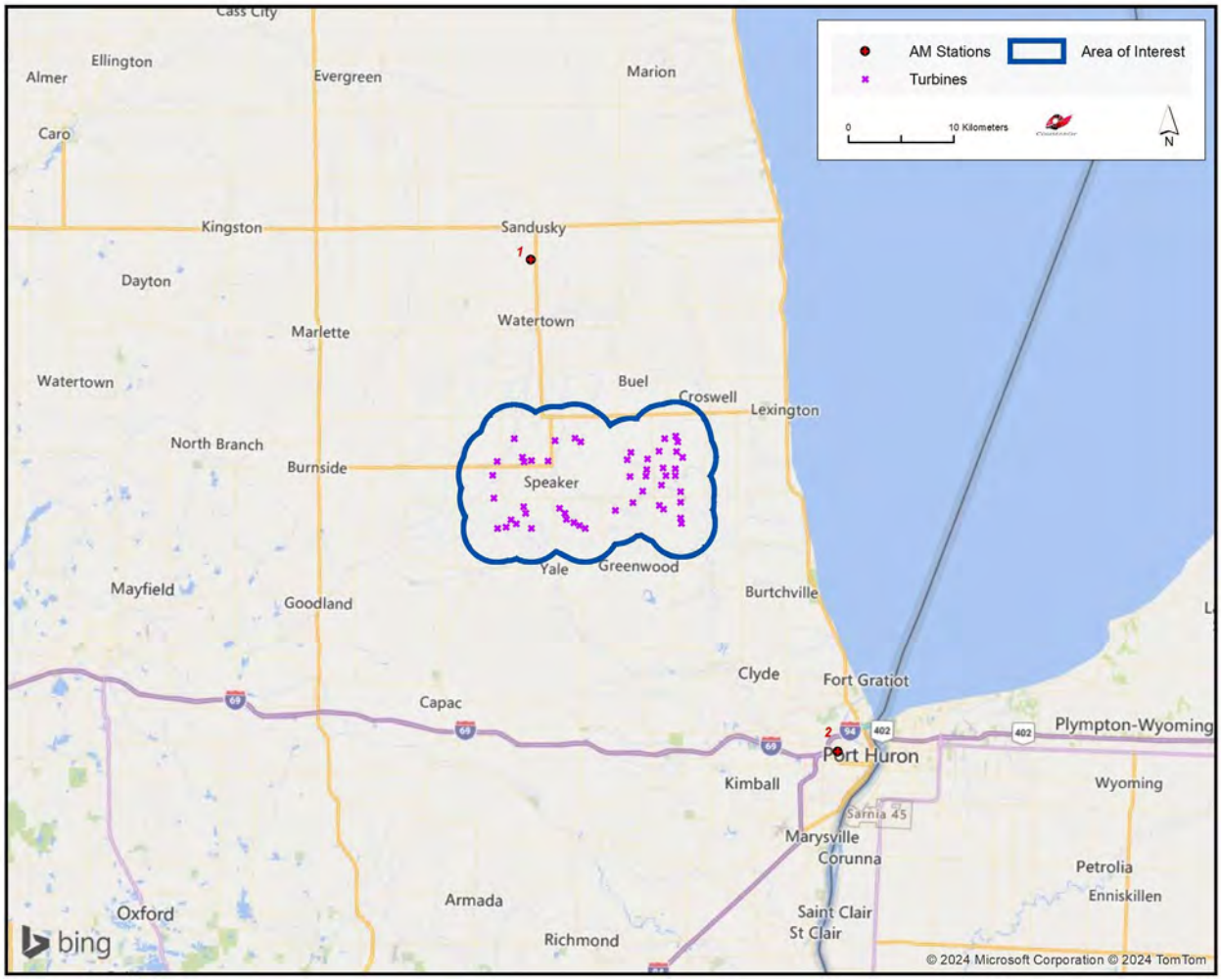

Figure 1: AM Radio Stations within 30 Kilometers of Project Area

FM Radio Analysis

Comsearch determined that there were twenty-two database records for FM stations within a 30-kilometer radius of the Riverbend Wind Project, as shown in Table 2 and Figure 2. Sixteen of these stations are currently licensed and operating, five of which are translator stations that operate with limited range and one that is a low power station. The closest station is WKKM, which is currently licensed in Speaker Township, Michigan, inside the project AOI but located 2.13 km from the nearest proposed turbine location.

ID	Call Sign	Service[5]	Status[6]	Frequency (MHz)	Transmit ERP[7] (kW)	Latitude (NAD 83)	Longitude (NAD 83)	Distance to the Nearest Turbine Location (km)
1	WKKM	FM	LIC	91.5	0.1	43.198917	-82.804111	2.13
2	WNFR	FM	LIC	90.7	42.0	43.174194	-82.600194	4.23
3	WBTI	FM	LIC	96.9	3.0	43.209472	-82.536028	9.64
4	WBGV	FM	LIC	92.5	3.0	43.286750	-82.971667	11.18
5	WHYT	FM	LIC	88.1		43.175028	-83.067167	15.93
6	WHYT	FM	CP	88.1		43.175528	-83.067333	15.93
7	WKKM	FM	CP	91.5	2.0	43.175528	-83.067333	15.93
8	WTGV-FM	FM	LIC	97.7	3.0	43.392444	-82.834833	17.03
9	W237EQ	FX	LIC	95.3	0.25	43.393361	-82.834944	17.13
10	WPHO	FM	CP	89.7	31.0	43.068889	-82.480000	17.94
11	W247CU	FX	CP	97.3	0.15	43.068889	-82.480000	17.94
12	W247CU	FX	LIC	97.3	0.025	43.068917	-82.479917	17.94
13	WGRT	FM	LIC	102.3	3.0	43.068917	-82.479917	17.94
14	WGNP	FM	CP	88.7	2.0	43.424722	-82.665556	20.00
15	NEW	FL	CP	94.3	0.1	43.051956	-83.075750	20.94
16	WORW	FM	LIC	91.9		43.025028	-82.436000	23.83
17	WNFA	FM	LIC	88.3	1.3	42.993361	-82.468250	24.66
18	W224DT	FX	LIC	92.7	0.125	42.976972	-82.464361	26.32
19	W288BT	FX	LIC	105.5	0.049	42.976972	-82.464361	26.32
20	WSAQ	FM	LIC	107.1	6.0	42.976972	-82.464333	26.32
21	WQUS	FM	LIC	103.1	2.6	43.078639	-83.189944	27.86
22	WRSX	FM	LIC	91.3	0.12	42.978639	-82.429056	27.94

Table 2: FM Radio Stations within 30 km of AOI

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

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

[7] ERP = Transmit Effective Radiated Power.

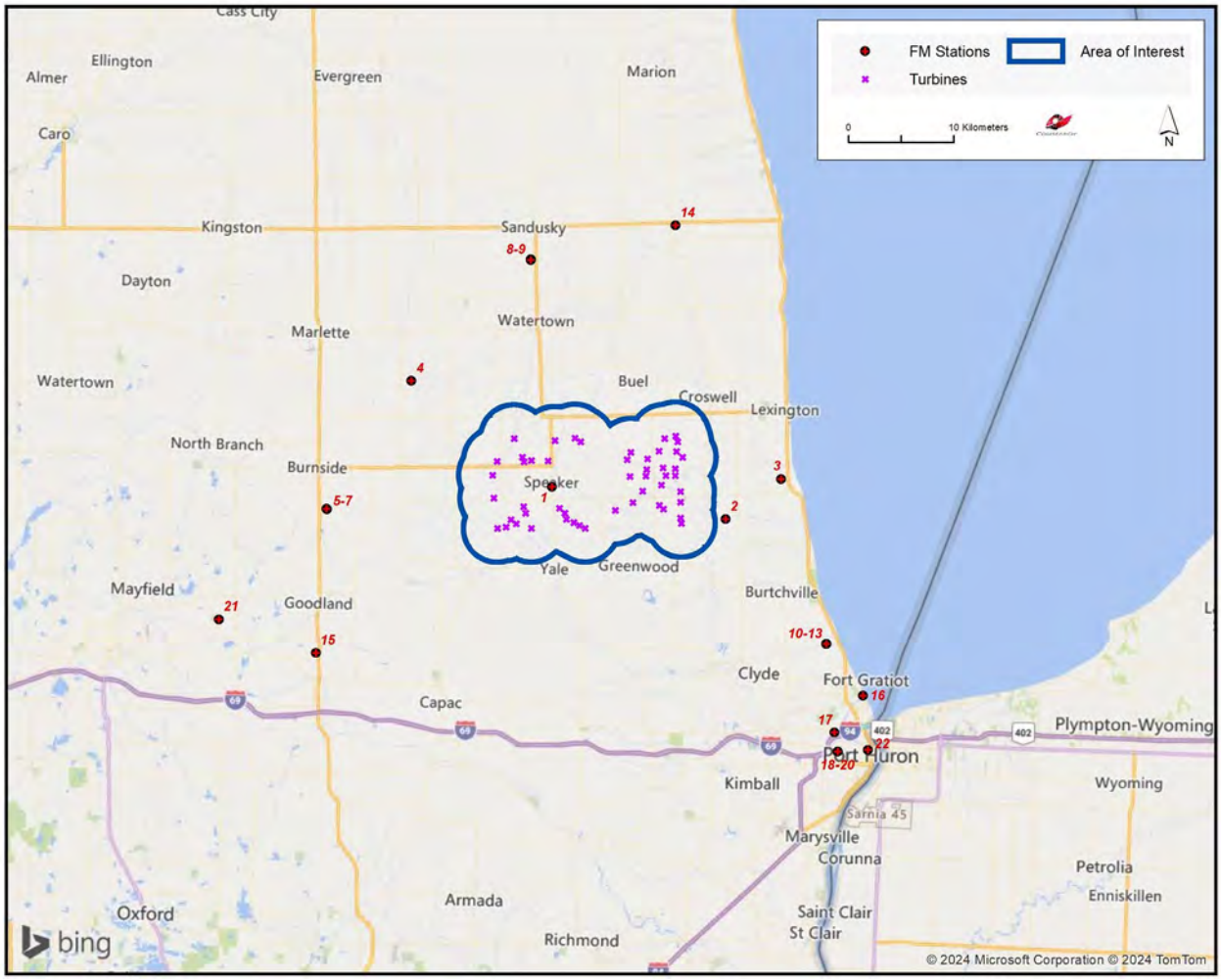

Figure 2: FM Radio Stations within 30 km

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 (WMIC) is located 17.07 km from the nearest turbine location. 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. Station WKKM is the nearest FM station to any given turbine at 2.13 km away. At this distance there should be adequate separation to avoid radiation pattern distortion. All other stations are located 4.23 km or further from the nearest turbine and would also not be impacted.

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

Riverbend Wind Project

Prepared on Behalf of
REV Renewables

December 23, 2024

COMSEARCH®
A CommScope Company

Table of Contents

1. Introduction

An assessment of the emergency services in the Riverbend 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 Sanilac County, Michigan, 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 within the project area of interest appears in Figure 2.

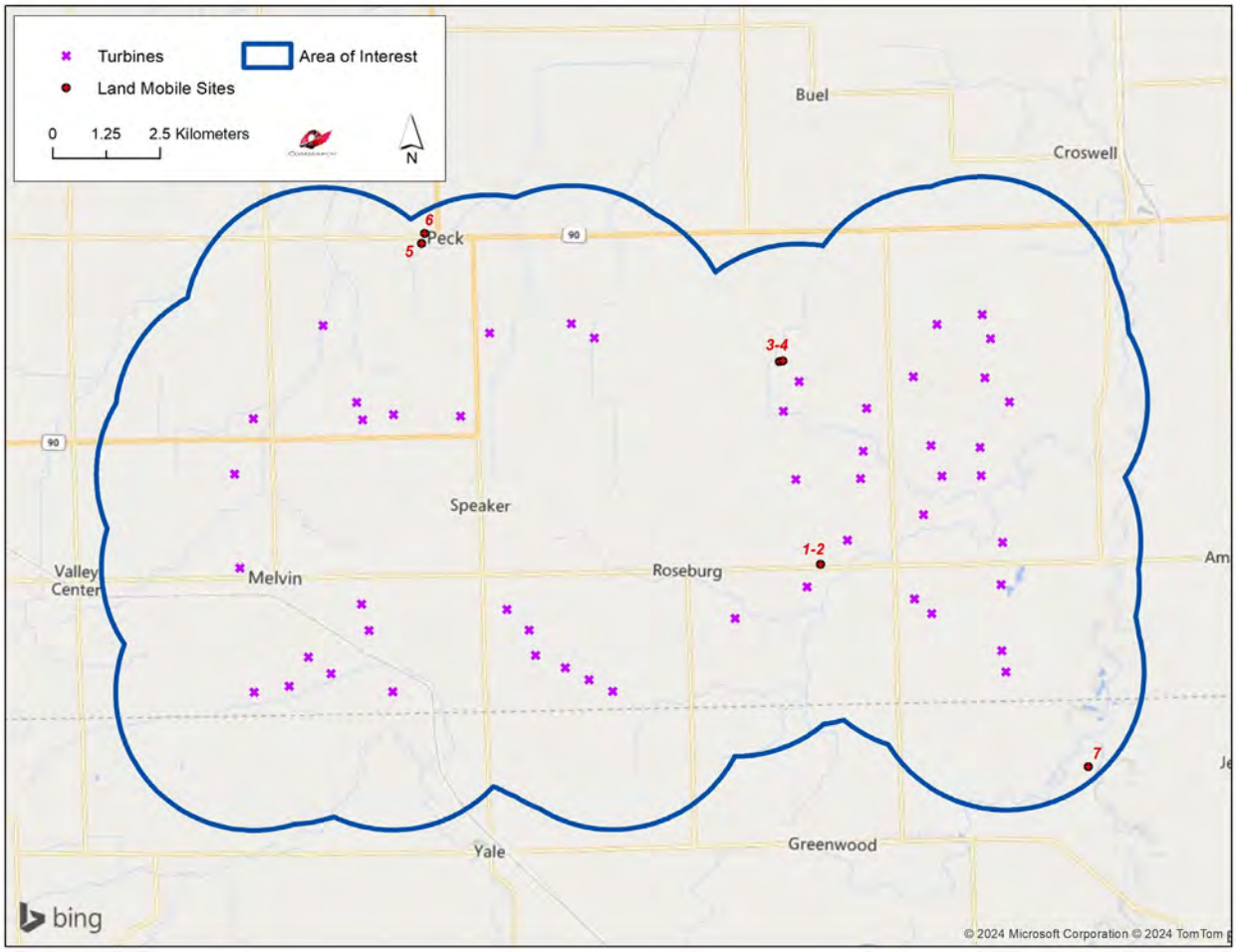

Figure 2: Land Mobile & Emergency Service Sites in Area of Interest

[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 seven site-based licenses within the Riverbend 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	WQZG559	150-174	Gardner Family Farming, LLC	14.0	43.19177778	-82.70569444	0.62
2	WRKB601	450-470	Gardner Family Farming, LLC	6.1	43.19177778	-82.70569444	0.62
3	WQUP424	150-174	GORDON, FREDERICK	9.1	43.23419444	-82.71769444	0.62
4	WQUP424	150-174	GORDON, FREDERICK	9.1	43.23402778	-82.71858333	0.66
5	WPSX374	150-174	Peck, Village of	13.0	43.25722222	-82.82194444	2.61
6	WRME554	450-470	KAMSTRUP WATER METERING, LLC	47.8	43.25938889	-82.82116667	2.77
7	WRCM481	450-470	SPECTRUM HOLDINGS INCORPORATED	60.0	43.15036111	-82.62777778	2.93

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

Mobile Licenses

In addition to the fixed-site licenses above, 286 mobile licenses defined by center point and radius were found to intersect the Riverbend 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 Riverbend Wind Project is located in Sanilac County, Michigan, part of Public Safety Region #21. The regional public safety operations are overseen by the entity listed below.

Keith M. Bradshaw - Chair
Address: 1200 North Telegraph Road
Pontiac MI 48341
Phone: 248-380-1080
Email: bradshawk@michigan.gov

The chairperson for Region #21 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, three licenses were found for the State of Michigan (IDs 6,7,14) and two for the County of Sanilac (IDs 12,13, 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: MI	25-50
2	BERRIEN COUNTY PUBLIC SAFETY COMMUNICATION CENTER	Statewide: MI	150-174
3	GRAND RAPIDS, CITY OF	Statewide: MI	150-174
4	LANSING, CITY OF	Statewide: MI	150-174
5	MARLETTE REGIONAL HOSPITAL	Countywide: SANILAC, MI	150-174
6	MICHIGAN DEPT OF Health and Human Services	Statewide: MI	450-470
7	MICHIGAN, STATE OF	Statewide: MI	0-10, 25-50, 150-174, 421-430, 450-470, 769-775/799-805, 800/900, 2450-2500, 4940-4990
8	Muskegon Central Dispatch 911	Statewide: MI	150-174
9	MUSKEGON, CITY OF	Statewide: MI	150-174
10	MUSKEGON, COUNTY OF	Statewide: MI	150-174
11	NATIONAL SKI PATROL SYSTEM INC	Statewide: MI	150-174
12	SANILAC CO ROAD COMMISSION	Countywide: SANILAC, MI	450-470
13	SANILAC, COUNTY OF	Countywide: SANILAC, MI	150-174
14	STATE OF MICHIGAN, DEPT OF HEALTH AND HUMAN SERVICES	Statewide: MI	150-174
15	UNIVERSITY OF MICHIGAN HOSPITALS	Statewide: MI	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 Sanilac County, Michigan, in Table 3.

Mobile Phone Carrier	Service[2]
AT&T	700 MHz, AWS, Cellular, PCS, WCS
DISH Network	700 MHz, AWS
TerreStar	AWS
Thumb Cellular	700 MHz, AWS, Cellular
T-Mobile	700 MHz, AWS, PCS
Verizon	700 MHz, AWS, 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 Riverbend Wind 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 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, very little, if any, change in their coverage should occur when the wind turbines are installed.

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

[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

emissions in the land mobile bands. All of the current turbine locations in this study comply with the recommended setback distance.

4. Recommendations

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:

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Company:	Comsearch
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Fax:	703-726-5595
Email:	David.Meyer@CommScope.com
Web site:	www.comsearch.com

Appendix A

ID	Call Sign	Frequency Band (MHz)	Licensee	Mobile Area Radius (km)	Latitude (NAD83)	Longitude (NAD83)
1	WPGI436	150-174	AL PARSCH OIL CO	40.0	43.050028	-83.111611
2	WQNE523	450-470	ALBERTSON, DANIEL	40.0	43.289722	-83.137500
3	WRPH637	450-470	Albrecht Sand and Gravel	32.0	43.418083	-82.982722
4	KNAZ541	450-470	ALLAN K SHAW INC	40.0	43.445583	-83.048556
5	KGL388	25-50	American National Red Cross	121.0	43.006139	-83.697444
6	WNJX618	150-174	ANCHOR BAY SCHOOL DISTRICT	121.0	42.742250	-82.685750
7	WNVT789	450-470	ARMADA AREA SCHOOLS	32.0	42.847806	-82.874639
8	WPFF288	800/900	ASHCROFT ITV INC	113.0	43.392528	-83.924139
9	KVU205	450-470	Auto Club Group	121.0	42.327528	-83.217417
10	KOS437	450-470	BEASLEY MEDIA GROUP LICENSES, LLC	80.0	42.453639	-83.163806
11	KPG474	150-174	BEASLEY MEDIA GROUP LICENSES, LLC	322.0	42.470861	-83.249917
12	WRVR939	450-470	BHIP VIGILANTE LLC DBA VIGILANTE SECURITY	80.0	42.540278	-83.180889
13	WRXJ340	450-470	Bloomfield Hills School District	80.0	42.533472	-83.293111
14	WRXN220	450-470	BLUE WATER SPORTSMAN ASSOCIATION	32.0	42.941694	-82.515139
15	WQSW395	450-470	Bordine Nursery, Ltd.	80.0	42.895333	-83.735389
16	KB91389	450-470	BRINK'S INCORPORATED	121.0	42.330028	-83.049083
17	KD28632	450-470	BRINK'S INCORPORATED	121.0	43.416694	-83.983306
18	WPZR706	150-174	BUSH, DONALD T	40.0	43.463361	-82.908000
19	WRYC392	450-470	CAPAC COMMUNITY SCHOOLS	32.0	43.017778	-82.933361
20	WQNU354	150-174	CARSONVILLE PORT SANILAC SCHOOLS	40.0	43.431139	-82.630194
21	WRYW645	450-470	CBS BROADCASTING INC.	80.5	42.483611	-83.312222
22	WNYB733	450-470	CENTRAL ALARM SIGNAL INC	120.0	42.431306	-83.177333
23	WPVL607	450-470	Central Alarm Signal, Inc	120.0	42.431306	-83.177333
24	WQMI622	450-470	CINTAS FIRE PROTECTION	80.0	42.640306	-82.834222

ID	Call Sign	Frequency Band (MHz)	Licensee	Mobile Area Radius (km)	Latitude (NAD83)	Longitude (NAD83)
25	WRFE944	450-470	City of Imlay City	32.0	43.021111	-83.066944
26	WQAE606	450-470	CITY OF TROY	80.0	42.562194	-83.154472
27	WRZA813	150-174	CLARK, HOWARD R	32.0	43.101417	-82.829111
28	KZD560	150-174	CONLEY SECURITY	161.0	43.472250	-83.941639
29	WQNR911	150-174	CONSTANCE A. KREGER FARM DBA KREGER FARMS LLC	32.0	43.497333	-82.975556
30	WQYB386	150-174	Country View Bulk Foods	30.0	43.421667	-83.009750
31	WPTP499	150-174	CRESTHILL FARMS	40.0	43.436111	-82.673056
32	WRUM980	150-174	Croswell Lexington Community Schools	32.0	43.266139	-82.602139
33	WQOU495	150-174	CSX Transportation Inc	40.0	42.828944	-82.497639
34	WPRW821	150-174	D AND G RICH FARMS INC	40.0	43.341694	-82.714917
35	WQQR909	450-470	D ARCY FARMS, INC.	40.0	43.421972	-83.098833
36	WPJV529	450-470	DAIRY QUEEN	121.0	42.828917	-83.268000
37	WNFS239	150-174	DAVID W. BRUSIE & SONS INC.	56.0	43.220028	-83.136056
38	WPFC689	450-470	DEARBORN PUBLIC SCHOOLS	121.0	42.338083	-83.163806
39	WSAK686	450-470	DECKERVILLE COMMUNITY SCHOOLS	32.0	43.537806	-82.736611
40	WPGS347	450-470	DeltaCom	113.0	42.371139	-83.076583
41	WQNI627	150-174, 450-470, 470-512	DETROIT TELEVISION STATION WKBD INC.	100.0	42.483361	-83.311306
42	WPXE752	800/900	Detroit Transportation Corporation	113.0	42.333333	-83.051389
43	WPXE752	800/900	Detroit Transportation Corporation	113.0	42.331972	-83.044917
44	WNVA932	450-470	DON MARTIN TRANSPORT & SONS INC	56.0	43.483917	-83.089944
45	KA5423	450-470	DTE Energy Company	113.0	42.736694	-83.035500
46	KQB279	150-174	DTE Energy Company	40.0	42.926417	-82.463806
47	KQB280	150-174	DTE Energy Company	40.0	43.416694	-82.837167
48	KQB283	150-174	DTE Energy Company	40.0	43.035583	-83.320778

ID	Call Sign	Frequency Band (MHz)	Licensee	Mobile Area Radius (km)	Latitude (NAD83)	Longitude (NAD83)
49	KZD60	150-174	DTE Energy Company	40.0	43.035583	-83.320778
50	KZD60	150-174	DTE Energy Company	40.0	43.416694	-82.837167
51	KZD60	150-174	DTE Energy Company	40.0	42.926417	-82.463806
52	WPME473	216-220	DTE Energy Company	200.0	42.333917	-83.057694
53	WQGE385	150-174	DTE Energy Company	40.0	43.196000	-82.514639
54	KB8150	25-50	DTE Gas Company	120.0	42.738889	-83.666667
55	KD29960	450-470	DTE Gas Company	120.7	42.487528	-83.497722
56	WRJA459	800/900	DTE Gas Company	113.0	43.410000	-83.368056
57	WRJA459	800/900	DTE Gas Company	113.0	42.453667	-83.298222
58	WRJA459	800/900	DTE Gas Company	113.0	43.794222	-83.112167
59	WRJA459	800/900	DTE Gas Company	113.0	42.802222	-83.110833
60	WRJA459	800/900	DTE Gas Company	113.0	43.417500	-82.815833
61	WRJA459	800/900	DTE Gas Company	113.0	43.809444	-82.788611
62	WRUL805	800/900	DTE Gas Company	113.0	42.552806	-83.874667
63	WRUL806	800/900	DTE Gas Company	113.0	42.357472	-83.666917
64	WPHY925	800/900	DURHAM SCHOOL SERVICES	80.0	42.458639	-83.121583
65	WPQJ741	450-470	DYCK SECURITY SERVICES INC	56.0	42.962528	-82.428806
66	KEF534	450-470	DYCK SECURITY SERVICES INC	40.0	42.988917	-82.486028
67	WRFY453	450-470	Eggink, Bette	34.0	43.531222	-82.663889
68	WRZP660	150-174	Eliason Dairy Farms, LLC	32.0	43.389000	-82.932611
69	KD3809	450-470	Enbridge Energy Company, Inc.	80.0	43.173056	-83.834444
70	KD3809	450-470	Enbridge Energy Company, Inc.	80.0	43.267222	-83.252500
71	WNVJ380	450-470	Enbridge Energy Company, Inc.	48.0	42.988917	-82.486028
72	KB78213	450-470	FCA US LLC	120.7	42.330028	-83.049083
73	WQAK831	150-174	Fischer, Allan P	40.0	43.357222	-83.050000

ID	Call Sign	Frequency Band (MHz)	Licensee	Mobile Area Radius (km)	Latitude (NAD83)	Longitude (NAD83)
74	WPHM830	450-470	FLINT INSTITUTE OF MUSIC	80.0	43.000028	-83.666611
75	BLP00677	25-50, 150-174, 450-470, 470-512	Flint TV License Company, LLC	129.0	43.013917	-83.692444
76	KR9978	150-174	Flint TV License Company, LLC	113.0	43.230028	-84.059694
77	KNAH775	450-470	Flint TV License Company, LLC	113.0	43.230278	-84.058889
78	KNAH775	450-470	Flint TV License Company, LLC	80.0	43.008333	-83.665556
79	WPNX785	150-174	Flint TV License Company, LLC	113.0	43.230306	-84.058861
80	WNVC224	450-470	Ford Motor Company	121.0	42.314472	-83.211306
81	WNYM575	421-430	Ford Motor Company	80.0	42.835306	-83.087444
82	KUG820	25-50	FREEPORT AGGREGATE INC	121.0	42.184194	-83.269361
83	WQZG559	150-174	Gardner Family Farming, LLC	40.0	43.191778	-82.705694
84	WRKB601	450-470	Gardner Family Farming, LLC	32.0	43.191778	-82.705694
85	KNNK720	800/900	GENERAL MOTORS RESEARCH CORPORATION	113.0	42.715861	-83.263278
86	WPJX865	800/900	GENERAL MOTORS RESEARCH CORPORATION	113.0	42.258083	-83.401056
87	WPMW871	800/900	GENERAL MOTORS RESEARCH CORPORATION	113.0	42.985028	-83.716056
88	WQTS357	800/900	General Motors Research Corporation	113.0	42.162028	-83.241833
89	WQTS451	800/900	General Motors Research Corporation	113.0	42.382528	-83.044083
90	WQTU702	800/900	GENERAL MOTORS RESEARCH CORPORATION	113.0	42.972472	-83.794194
91	WQTU703	800/900	GENERAL MOTORS RESEARCH CORPORATION	113.0	42.692111	-83.397944
92	WQTU708	800/900	GENERAL MOTORS RESEARCH CORPORATION	113.0	42.250389	-83.533667
93	WQTU730	800/900	GENERAL MOTORS RESEARCH CORPORATION	113.0	42.672111	-83.283917
94	WQUN819	800/900	GENERAL MOTORS RESEARCH CORPORATION	113.0	43.012361	-83.701083
95	KNBG218	150-174	GENESEE, COUNTY OF	161.0	43.191972	-83.864972
96	WNUI683	150-174	GENTNER, KEITH	64.0	43.686972	-82.711333
97	WSCJ349	450-470	GERSTENBERGER FARMS INC	32.0	43.478361	-82.825250

ID	Call Sign	Frequency Band (MHz)	Licensee	Mobile Area Radius (km)	Latitude (NAD83)	Longitude (NAD83)
98	WNPH624	150-174	Gordon, Blake	32.0	43.276417	-82.729083
99	WQUP424	150-174	GORDON, FREDERICK	32.0	43.234028	-82.718583
100	KLS622	150-174	GRAND TRUNK WESTERN RAILROAD COMPANY	40.0	42.963056	-82.462583
101	KNFX756	150-174	GRAND TRUNK WESTERN RAILROAD COMPANY	40.0	42.807250	-82.748639
102	KNHQ540	150-174	GRAND TRUNK WESTERN RAILROAD COMPANY	16.0	43.011889	-82.950389
103	KUP337	150-174	GRAND TRUNK WESTERN RAILROAD COMPANY	40.0	42.964083	-82.467917
104	KUS494	150-174	GRAND TRUNK WESTERN RAILROAD COMPANY	40.0	42.963056	-82.462583
105	WNFR225	150-174	GRAND TRUNK WESTERN RAILROAD COMPANY	24.0	42.961139	-82.484639
106	WNFZ924	150-174	GRAND TRUNK WESTERN RAILROAD COMPANY	16.0	42.994944	-82.807694
107	WQTE656	450-470	Grand Trunk Western Railroad Company	40.0	42.964278	-82.482944
108	WQVF982	150-174	GRAND TRUNK WESTERN RAILROAD COMPANY	40.0	42.966111	-82.502000
109	WQYT248	150-174	GRAND TRUNK WESTERN RAILROAD COMPANY	40.0	43.049056	-83.310667
110	WQYT248	150-174	GRAND TRUNK WESTERN RAILROAD COMPANY	40.0	43.009722	-82.929278
111	WREY776	150-174	GRAND TRUNK WESTERN RAILROAD COMPANY	40.0	42.912972	-82.602972
112	WPTS248	150-174	GRANT, TOWNSHIP OF	13.0	43.135167	-82.581028
113	BLP01056	25-50	Gray Television Licensee, LLC	121.0	43.433361	-83.938028
114	BLP01476	150-174, 450-470, 470-512	Gray Television Licensee, LLC	92.0	43.470556	-83.843333
115	WSFP298	450-470	Great Lakes Water Authority	16.0	43.079722	-82.494167
116	WPGZ715	150-174	GREENWOOD, TOWN OF	21.0	43.095028	-82.714639
117	WNQN802	150-174	GROUT, JEFF	56.0	43.277528	-82.677139
118	WQFG900	450-470	Guardian Alarm Co. of Michigan	80.0	42.524639	-83.223500
119	WQDB422	450-470	HARTUNG BROTHERS INC	32.0	43.022861	-83.086056
120	WQVY373	450-470	HEUSSNER, SCOTT M	30.0	43.416056	-83.043417
121	KC25111	450-470	HOLY FAMILY COMMUNICATIONS, INC	402.0	40.766167	-83.837167

ID	Call Sign	Frequency Band (MHz)	Licensee	Mobile Area Radius (km)	Latitude (NAD83)	Longitude (NAD83)
122	WQOP859	150-174	HURON & EASTERN RAILWAY CO.	30.0	43.212167	-82.989167
123	WQLA777	450-470	I-Q LIFE SAFETY SYSTEMS	80.0	42.672222	-83.341389
124	WQEH497	450-470	JCPENNEY SHARED SERVICES CENTER	32.0	43.036944	-82.456667
125	WNDU907	450-470	KIMMEL, JAMES L	64.0	43.404472	-83.473556
126	WPLV357	150-174	KOHLER OIL & PROPANE CO	40.0	43.211417	-83.003000
127	WQRJ692	150-174	KUBACKI, DANIEL	40.0	43.587889	-82.935944
128	WNWI452	450-470	LAKE SHORE PUBLIC SCHOOLS	121.0	42.523917	-82.879917
129	WPEN914	150-174	LAKE STATE RAILWAY COMPANY	128.0	44.265861	-83.491639
130	WRZQ761	450-470	Lions Bear Lake Camp	32.0	43.131861	-83.237222
131	WPJT364	800/900	Louchart Enterprises L.L.C.	113.0	43.704472	-84.010250
132	KNRT993	800/900	LOUCHART ENTERPRISES LLC	113.0	43.259750	-83.951361
133	WPAV933	450-470	Louchart Enterprises LLC	64.0	43.322806	-83.376333
134	WPAV933	450-470	Louchart Enterprises LLC	64.0	43.625028	-83.074944
135	WPBD347	800/900	Louchart Enterprises LLC	113.0	43.704472	-84.010250
136	WPGI852	800/900	LOUCHART ENTERPRISES LLC	113.0	43.259750	-83.951361
137	WQIP973	150-174	Lowe, Alan	40.0	43.560556	-83.016389
138	WRCE668	150-174	Maedel, Steven	32.0	43.330528	-82.773222
139	WRQF908	150-174	Maedel, Steven	32.0	43.330278	-82.773083
140	KTH457	450-470	MARLETTE COMMUNITY SCHOOLS	29.0	43.175028	-83.067167
141	WQZC207	450-470	Material Control Inc	16.0	43.285556	-82.616389
142	WNWD539	150-174	MAYVILLE COMMUNITY SCHOOLS	40.0	43.333361	-83.352722
143	WPXN209	150-174	MC KENZIE MEMORIAL HOSPITAL	40.0	43.334194	-82.830500
144	WRJC239	450-470	McConnachie, Jason	32.0	43.502472	-82.732778
145	WQVY260	150-174	MICHIGAN AGRICULTURAL COMMODITIES	32.0	43.321611	-83.080833
146	WQVY260	450-470	MICHIGAN AGRICULTURAL COMMODITIES	38.0	43.321611	-83.080833

ID	Call Sign	Frequency Band (MHz)	Licensee	Mobile Area Radius (km)	Latitude (NAD83)	Longitude (NAD83)
147	WQVY260	150-174	MICHIGAN AGRICULTURAL COMMODITIES	32.0	43.209472	-82.976861
148	WQVY260	450-470	MICHIGAN AGRICULTURAL COMMODITIES	38.0	43.209472	-82.976861
149	WPTX922	450-470	MICHIGAN SUGAR CO.	20.0	43.283889	-82.608056
150	WPTX922	450-470	MICHIGAN SUGAR CO.	32.0	43.283889	-82.608056
151	WNKT340	450-470	MID MICHIGAN REPEATERS	80.0	43.685583	-82.992167
152	WNNN685	450-470	MID MICHIGAN REPEATERS	80.0	43.175028	-83.067167
153	WNRC864	450-470	Mid Michigan Repeaters	80.0	43.175028	-83.067167
154	WNWB676	450-470	Mid Michigan Repeaters	56.0	43.686111	-82.994444
155	WPBW223	450-470	MID MICHIGAN REPEATERS	72.0	43.175028	-83.067167
156	WPDK943	450-470	MID MICHIGAN REPEATERS	80.0	43.685583	-82.992167
157	WPKT239	450-470	MID MICHIGAN REPEATERS	32.0	42.922528	-82.651028
158	WPKV292	450-470	MID MICHIGAN REPEATERS	80.0	43.175028	-83.067167
159	WPRL353	450-470	MID MICHIGAN REPEATERS	32.0	43.175028	-83.067167
160	WPXI676	450-470	Mid Michigan Repeaters	32.0	43.175000	-83.067222
161	WNXB460	450-470	Mobile Communications America, Inc.	115.0	42.555000	-83.687222
162	WPEA990	450-470	Mobile Communications America, Inc.	121.0	42.555000	-83.687222
163	WPGS686	450-470	Mobile Communications America, Inc.	121.0	42.555000	-83.687222
164	WRDZ634	800/900	Mobile Communications America, Inc.	113.0	42.701389	-83.253056
165	KLM573	150-174	NEW WORLD COMMUNICATIONS OF DETROIT, INC.	120.0	42.460583	-83.213806
166	KYY292	450-470	NEW WORLD COMMUNICATIONS OF DETROIT, INC.	120.0	42.460583	-83.213806
167	WNCG984	450-470	NORTH BRANCH SCHOOLS	32.0	43.270861	-83.222167
168	WRYF415	450-470	Ohio Semitronics of California, Inc.	80.0	43.306389	-83.358861
169	WPPA702	150-174	OPIFICIUS, GERALD	40.0	43.064194	-82.900222
170	WPPA702	450-470	OPIFICIUS, GERALD	65.0	43.064833	-82.899694
171	WNUY386	421-430	OXFORD EMERGENCY SAFETY AUTHORITY	80.0	42.820861	-83.259111

ID	Call Sign	Frequency Band (MHz)	Licensee	Mobile Area Radius (km)	Latitude (NAD83)	Longitude (NAD83)
172	WPIF912	800/900	PDV Spectrum Holding Company, LLC	113.0	42.437500	-83.474444
173	WPIF912	800/900	PDV Spectrum Holding Company, LLC	80.0	42.701417	-83.253000
174	WPIF912	800/900	PDV Spectrum Holding Company, LLC	113.0	42.331944	-83.045000
175	WPIM743	800/900	PDV Spectrum Holding Company, LLC	113.0	42.484194	-83.463000
176	WPIM743	800/900	PDV Spectrum Holding Company, LLC	113.0	42.331944	-83.045000
177	WPLP521	800/900	PDV Spectrum Holding Company, LLC	113.0	42.216972	-83.333278
178	WPLZ282	800/900	PDV Spectrum Holding Company, LLC	113.0	42.331972	-83.044917
179	WPMA468	800/900	PDV Spectrum Holding Company, LLC	113.0	42.437500	-83.474444
180	WPMA468	800/900	PDV Spectrum Holding Company, LLC	113.0	42.713083	-83.228833
181	WPMH625	800/900	PDV Spectrum Holding Company, LLC	113.0	42.330028	-83.049083
182	WPMV760	800/900	PDV Spectrum Holding Company, LLC	113.0	42.331944	-83.045000
183	WPPY535	800/900	PDV Spectrum Holding Company, LLC	113.0	42.713083	-83.228833
184	WPPZ808	800/900	PDV Spectrum Holding Company, LLC	113.0	42.713083	-83.228833
185	WPPZ905	800/900	PDV Spectrum Holding Company, LLC	113.0	42.713083	-83.228833
186	WPRV772	800/900	PDV Spectrum Holding Company, LLC	113.0	42.331944	-83.045000
187	WPSH867	800/900	PDV Spectrum Holding Company, LLC	113.0	42.331972	-83.044917
188	WPTM987	800/900	PDV Spectrum Holding Company, LLC	113.0	42.458639	-83.121583
189	WPVM619	800/900	PDV Spectrum Holding Company, LLC	113.0	42.683333	-83.552778
190	WPVM619	800/900	PDV Spectrum Holding Company, LLC	113.0	42.210833	-83.402778
191	WPVM619	800/900	PDV Spectrum Holding Company, LLC	113.0	42.331944	-83.045000
192	WPVT932	800/900	PDV Spectrum Holding Company, LLC	113.0	42.331944	-83.045000
193	WPYP818	800/900	PDV Spectrum Holding Company, LLC	113.0	42.331944	-83.045000
194	WQTD794	800/900	PDV Spectrum Holding Company, LLC	113.0	42.437778	-83.311667
195	WQTE377	800/900	PDV Spectrum Holding Company, LLC	113.0	42.437778	-83.311667
196	WPQD711	450-470	PHILLIPS, DALE	30.0	43.306139	-83.044111

ID	Call Sign	Frequency Band (MHz)	Licensee	Mobile Area Radius (km)	Latitude (NAD83)	Longitude (NAD83)
197	WQAC900	450-470	Pimela Development LLC	120.0	42.635583	-83.008611
198	WPGF913	450-470	PORT HURON HOSPITAL	40.0	42.986417	-82.429917
199	WPGF913	450-470	PORT HURON HOSPITAL	32.0	42.986778	-82.429722
200	KB94493	150-174	Port Huron Township Fire Department	56.0	42.980306	-82.478806
201	KNCA725	150-174	PORT HURON, CHARTER TOWNSHIP OF	24.0	42.980306	-82.478806
202	KQK500	150-174	PORT HURON, CHARTER TOWNSHIP OF	56.0	42.980306	-82.478806
203	WQEV221	450-470	PORTILLO'S HOT DOGS LLC	80.0	42.626306	-82.984778
204	WPCA219	150-174	QUANDT, DENNIS	56.0	43.303083	-82.851056
205	WRKB612	450-470	R & G Hooper Farms, Inc.	32.0	43.551889	-82.675972
206	WPQJ946	450-470	RC TOWERS INC	32.0	43.027250	-82.807972
207	WSCT455	450-470	RC TOWERS INC	32.0	43.027306	-82.807722
208	WQYH817	150-174	Rickett Jr, Don:Rickett Sr, Don DBA Rickett Farms	32.0	43.427806	-82.661028
209	KNNT443	800/900	Road Commission for Oakland County	113.0	42.742222	-83.391944
210	WREY660	450-470	Rodzos Family Farms, Inc.	80.0	42.932778	-82.840139
211	WNRW280	450-470	RUGGLES FARM	64.0	43.327250	-83.068000
212	WPMX834	150-174	SAINT CLAIR, COUNTY OF	32.0	43.010306	-82.933833
213	WPMX834	150-174	SAINT CLAIR, COUNTY OF	32.0	42.983639	-82.654639
214	WQCC275	150-174	Sanilac County Health Department	32.0	43.418639	-82.910778
215	KZF304	150-174	SANILAC INTERMEDIATE SCHOOL DISTRICT	40.0	43.421972	-82.826333
216	WRNN520	150-174	Sanilac Transportation Corporation	40.0	43.419000	-82.676972
217	KPF376	150-174	SCRIPPS BROADCASTING HOLDINGS LLC	354.0	42.470583	-83.250194
218	WPYC618	450-470	SCRIPPS BROADCASTING HOLDINGS LLC	100.0	42.470556	-83.250278
219	WQAC634	450-470	SCRIPPS BROADCASTING HOLDINGS LLC	100.0	42.470556	-83.250278
220	WYR216	450-470	SCRIPPS BROADCASTING HOLDINGS LLC	80.0	42.496139	-82.974361
221	WPNU316	450-470	Securitas Technology Corporation	120.0	42.283361	-83.746611

ID	Call Sign	Frequency Band (MHz)	Licensee	Mobile Area Radius (km)	Latitude (NAD83)	Longitude (NAD83)
222	WRWI799	800/900	Semco Energy Gas Company	113.0	43.417500	-82.815833
223	WRWI799	800/900	Semco Energy Gas Company	113.0	43.124444	-82.527222
224	WSBB613	800/900	SEMCO Energy Gas Company	113.0	42.495417	-83.048111
225	WSBB613	800/900	SEMCO Energy Gas Company	113.0	42.593972	-83.036500
226	WSBB613	800/900	SEMCO Energy Gas Company	113.0	42.551083	-82.996556
227	WSBB613	800/900	SEMCO Energy Gas Company	113.0	42.482750	-82.901972
228	WSBB613	800/900	SEMCO Energy Gas Company	113.0	42.616944	-82.887778
229	WSBB613	800/900	SEMCO Energy Gas Company	113.0	42.552389	-82.877278
230	WSBB614	800/900	SEMCO Energy Gas Company	113.0	42.671139	-83.048889
231	WSBB614	800/900	SEMCO Energy Gas Company	113.0	42.727722	-83.021944
232	WSBB614	800/900	SEMCO Energy Gas Company	113.0	42.761361	-82.925778
233	WSBB614	800/900	SEMCO Energy Gas Company	113.0	42.678250	-82.894861
234	WSBB614	800/900	SEMCO Energy Gas Company	113.0	42.851083	-82.881917
235	WSBB614	800/900	SEMCO Energy Gas Company	113.0	42.703111	-82.778250
236	WSBB615	800/900	SEMCO Energy Gas Company	113.0	42.810889	-83.012472
237	WSBB615	800/900	SEMCO Energy Gas Company	113.0	42.810750	-82.746556
238	WSCF249	800/900	SEMCO Energy Gas Company	113.0	43.008028	-82.916944
239	WSCF249	800/900	SEMCO Energy Gas Company	113.0	42.776389	-82.674444
240	WSCF249	800/900	SEMCO Energy Gas Company	113.0	42.986250	-82.646389
241	WSCF249	800/900	SEMCO Energy Gas Company	113.0	42.632000	-82.583306
242	WSCF249	800/900	SEMCO Energy Gas Company	113.0	42.826639	-82.495694
243	WSCF249	800/900	SEMCO Energy Gas Company	113.0	42.978889	-82.419444
244	WSCF258	800/900	SEMCO ENERGY GAS COMPANY	113.0	43.051667	-83.331667
245	WSCF258	800/900	SEMCO ENERGY GAS COMPANY	113.0	43.200556	-83.308333
246	WSCF258	800/900	SEMCO ENERGY GAS COMPANY	113.0	42.943917	-83.285500

ID	Call Sign	Frequency Band (MHz)	Licensee	Mobile Area Radius (km)	Latitude (NAD83)	Longitude (NAD83)
247	WSCF258	800/900	SEMCO ENERGY GAS COMPANY	113.0	43.181139	-83.068528
248	WSCF258	800/900	SEMCO ENERGY GAS COMPANY	113.0	43.021944	-83.065278
249	WSCF258	800/900	SEMCO ENERGY GAS COMPANY	113.0	42.929778	-83.047889
250	KRA523	25-50	SHELBY, TOWNSHIP OF	58.0	42.639472	-83.072417
251	WQVR331	450-470	SKS FARMS, LLC	32.0	43.444806	-83.059917
252	WRCM481	450-470	SPECTRUM HOLDINGS INCORPORATED	32.0	43.150361	-82.627778
253	WYQ292	150-174	SPENCER FARMS INC	72.0	42.951417	-83.023556
254	WQNP952	450-470	St. Clair County Regional Educational Service Agency	32.0	42.983639	-82.656306
255	WSP405	150-174	STEMPEL, WILLIAM O	32.0	43.306694	-82.986611
256	WPTW814	25-50, 150-174	T. & J. INC.	32.0	42.948056	-82.562500
257	WPII329	450-470	TANGLEWOOD GOLF COURSE	113.0	42.452806	-83.651611
258	WQSL616	150-174	THOM, DONALD	40.0	43.273361	-82.748556
259	WNGC872	450-470	THUMB RADIO INC	72.0	43.685583	-82.992167
260	WNNZ225	450-470	Thumb Radio Inc	72.0	43.273361	-82.616028
261	WPAL978	450-470	Thumb Radio Inc	56.0	42.922528	-82.651028
262	WPCA542	450-470	Thumb Radio Inc	56.0	42.922528	-82.651028
263	WPDI236	450-470	Thumb Radio Inc	64.0	43.175028	-83.067167
264	WSZ720	450-470	TINSEY, GILBERT:HASEN, FRED L DBA T & H FARMS	80.0	43.685583	-82.992167
265	WSBW378	150-174	Todd Farms LLC	24.0	43.247528	-82.679083
266	WQXU671	450-470	TTWN Networks, LLC	80.0	42.473056	-83.199722
267	WPGT417	800/900	Tuscola County Central Dispatch	113.0	43.503917	-83.391889
268	WPGN494	800/900	TUSCOLA, COUNTY OF Central Dispatch	113.0	43.505028	-83.395222
269	WNJV808	421-430	UNIVERSAL MACOMB AMBULANCE SERVICE INC	80.0	42.562528	-83.041583
270	WRAK751	450-470	Vandamme, Bill	12.0	43.214167	-82.922500
271	WQYC775	150-174	Vincent, James	32.0	43.129222	-82.701000

ID	Call Sign	Frequency Band (MHz)	Licensee	Mobile Area Radius (km)	Latitude (NAD83)	Longitude (NAD83)
272	WRUG234	25-50	Vobbe, Frederick R	212.0	43.798083	-84.092083
273	WRPR978	450-470	VON MAUR	79.0	42.685750	-83.193028
274	WRAU295	450-470	Walbro, LLC	80.0	43.595750	-83.180778
275	WNAA676	150-174	WALTON, NORMAN:WALTON, WARREN:WALTON, GA DBA NORMAN WALTON & SONS	48.0	43.084472	-83.110222
276	KNHB630	150-174	WASHINGTON, TOWNSHIP OF	48.0	42.725028	-83.034944
277	WQYC255	450-470	Weaverland Farms	32.0	43.437278	-82.869250
278	WQEZ435	150-174	WENGER, NEVIN	40.0	43.374833	-82.983806
279	WNVE229	150-174	WHITICAN, CLIFF	56.0	43.041694	-82.550194
280	WQHB974	450-470	Wood, Dale R	32.0	43.359444	-83.019444
281	WPMK809	25-50	YALE PUBLIC SCHOOLS	75.0	43.130028	-82.799083
282	WQXC352	450-470	YALE PUBLIC SCHOOLS	2.0	43.126389	-82.805194
283	WRUC317	450-470	Yale Public Schools	16.0	43.126944	-82.807222
284	WRUC317	450-470	Yale Public Schools	16.0	43.059444	-82.689722
285	WNPI529	450-470	ZIMBA FARMS	48.0	43.486972	-83.121333
286	WQVQ913	150-174	ZIMMERMAN, DARRELL	35.0	43.427889	-82.988889

Table A: Mobile Licenses Intersecting Project Area

Wind Power GeoPlanner™

Microwave Study

Riverbend Wind Project

Prepared on Behalf of
REV Renewables

December 23, 2024

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

2. Project Overview

Project Information

Name: Riverbend Wind Project
County: Sanilac
State: Michigan

Number of Turbines: 50
Blade Diameter: 162 / 169 meters
Hub Height: 119 / 112 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 planned turbine locations are shown in Figure 2.

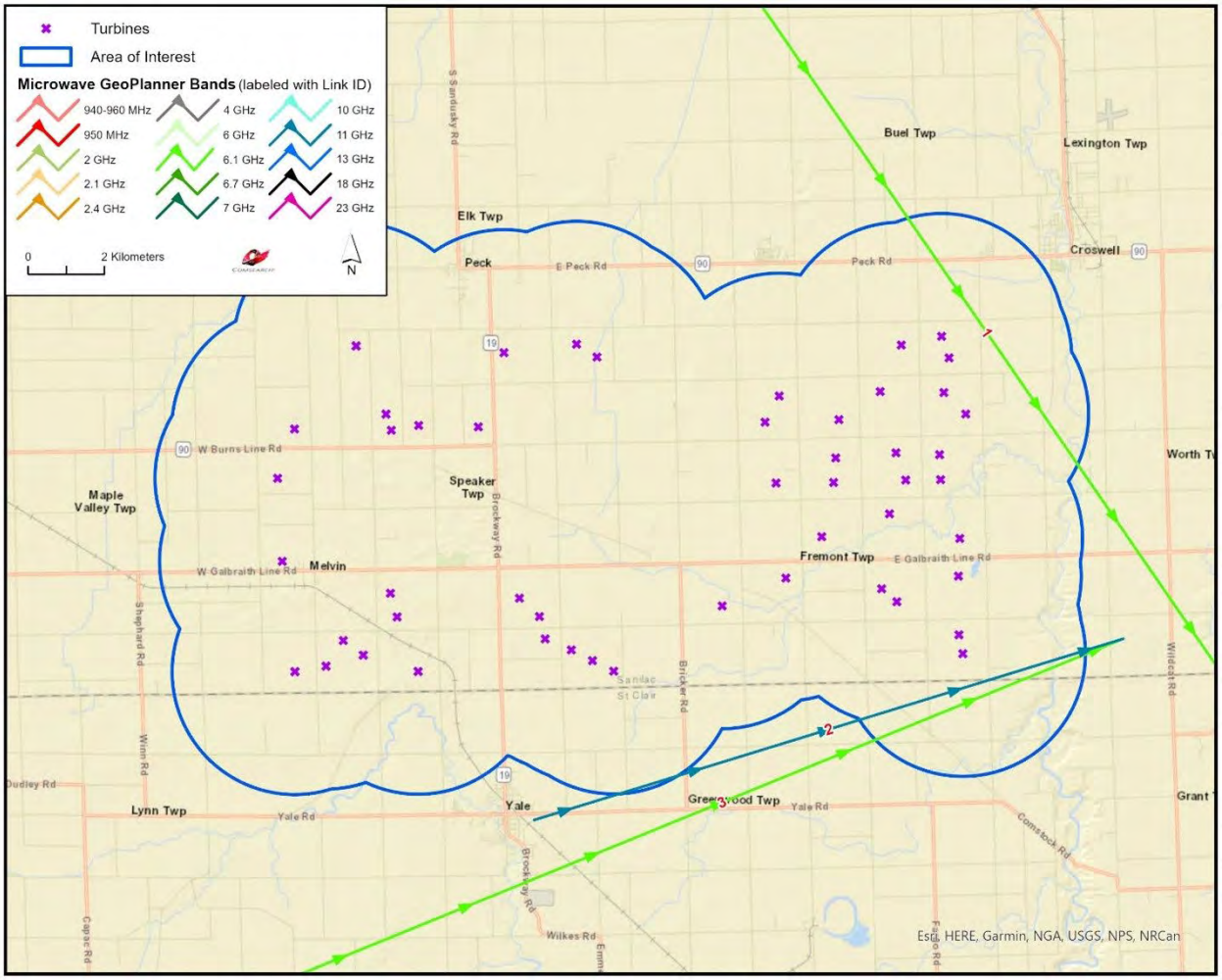


Figure 2: Microwave Paths that Intersect the Area of Interest

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

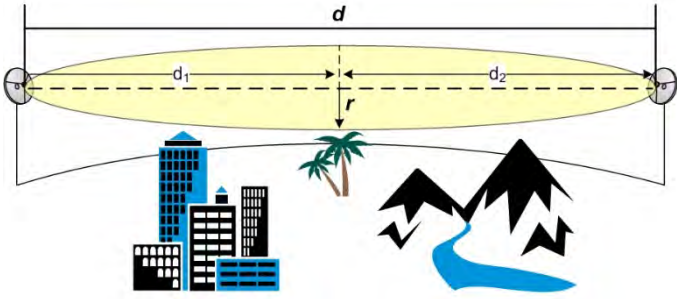
[2] We use FCC-licensed coordinates to determine which paths intersect the area of interest. It is possible that as-built coordinates may differ slightly from those on the FCC license.

ID	Status	Callsign 1	Callsign 2	Band	Path Length (km)	Licensee
1	Licensed	WPJD618	WPJD610	6.1 GHz	40.11	Michigan, State Of
2	Licensed	WRMT698	WRMT699	11 GHz	16.17	Air Advantage, LLC
3	Licensed	WRXQ615	WRYZ368	6.1 GHz	76.55	G&H Systems, LLC

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)

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 planned wind turbines should be avoided, if possible. Likewise, Comsearch recommends that an area directly in front of each microwave antenna 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[3,4].

[3] The ESRI® shapefiles enclosed are in NAD 83 UTM Zone 17 projected coordinate system.

[4] 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.

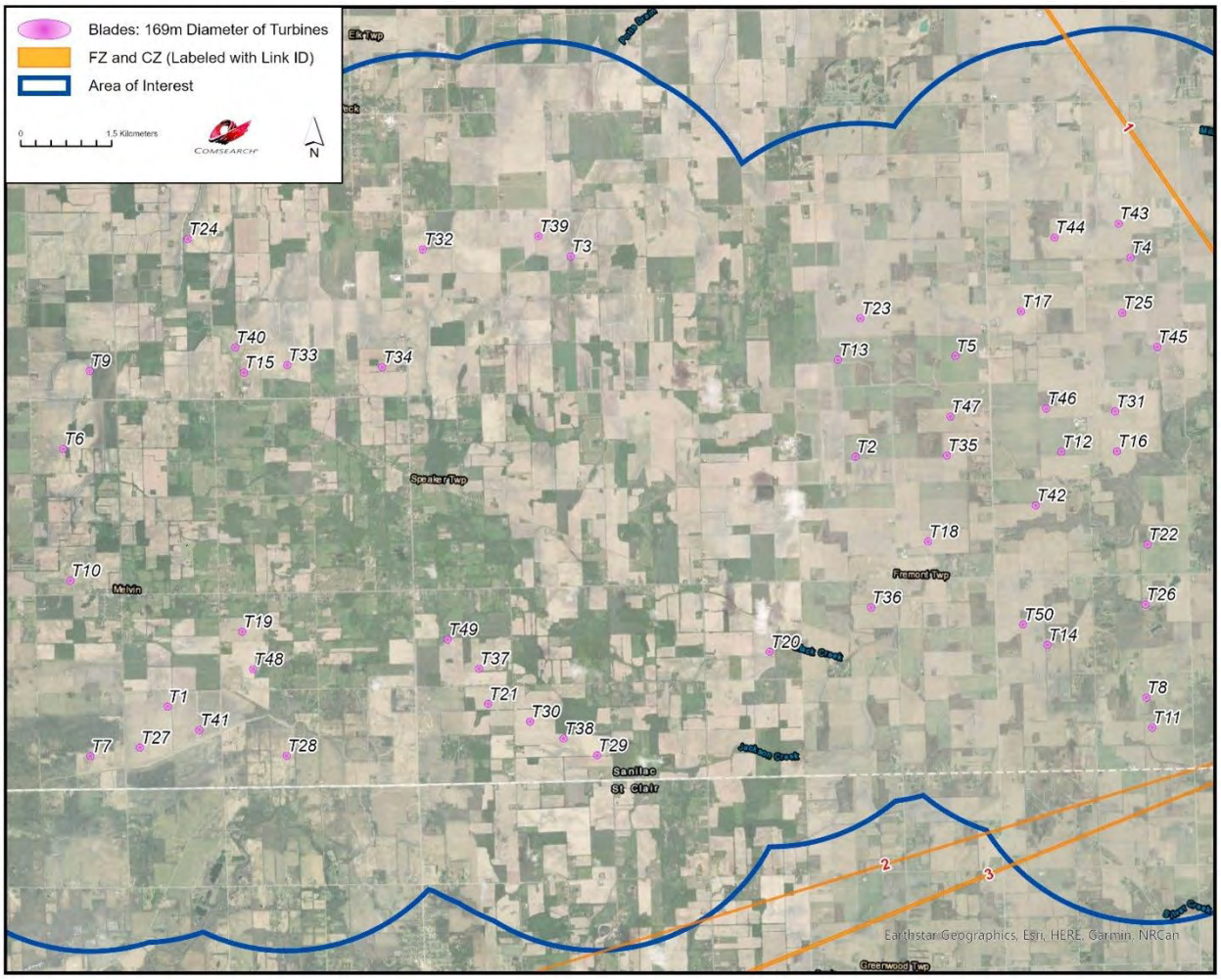


Figure 3: Microwave Paths with Fresnel Zones

4. Conclusion

Total Microwave Paths	Paths with Affected Fresnel Zones	Total Turbines	Turbines intersecting the Fresnel Zones
3	0	50	0

Table 2: Fresnel Zone Analysis Result

Our study identified three microwave paths intersecting the Riverbend Wind Project 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 fifty turbines were considered in the analysis, each with maximum blade diameter of 169 meters and a hub height of 119 or 112 meters. Of those turbines, none were found to have potential obstruction with the microwave systems in the area.

5. Contact

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Appendix: Turbine Locations

Turbine	Latitude	Longitude
T1	43.170002	-82.851811
T2	43.209314	-82.713255
T3	43.238188	-82.771950
T4	43.239696	-82.658227
T5	43.224575	-82.693403
T6	43.207925	-82.874156
T7	43.162358	-82.867227
T8	43.174386	-82.653235
T9	43.219614	-82.869109
T10	43.188383	-82.872106
T11	43.169948	-82.651922
T12	43.210662	-82.671450
T13	43.223626	-82.717215
T14	43.181898	-82.673519
T15	43.219869	-82.837831
T16	43.210898	-82.660167
T17	43.231388	-82.680218
T18	43.196906	-82.698151
T19	43.181370	-82.836996
T20	43.180052	-82.729835
T21	43.171433	-82.786762
T22	43.197144	-82.653591
T23	43.229867	-82.712830
T25	43.231481	-82.659655
T26	43.188219	-82.653782
T27	43.163809	-82.857221
T28	43.163073	-82.827431
T29	43.164137	-82.764426
T30	43.168946	-82.778188
T31	43.216807	-82.660685
T32	43.238754	-82.802005
T33	43.221126	-82.829041
T34	43.221109	-82.809759
T35	43.209752	-82.694691
T36	43.186940	-82.709454
T37	43.176651	-82.788759
T38	43.166522	-82.771315
T39	43.241092	-82.778611
T40	43.223576	-82.839679
T41	43.166623	-82.845263
T42	43.202610	-82.676486
T43	43.244719	-82.660803
T44	43.242468	-82.673723
T45	43.226507	-82.652439
T46	43.217034	-82.674714

Turbine	Latitude	Longitude
T47	43.215550	-82.694163
T48	43.175826	-82.834615
T49	43.180880	-82.795281
T50	43.184877	-82.678535
T24	43.239535	-82.849803

Wind Power GeoPlanner™

Mobile Phone Carrier Report

Riverbend Wind Project

Prepared on Behalf of
REV Renewables

December 23, 2024

COMSEARCH®
A CommScope Company

Table of Contents

1. Introduction

Comsearch has developed and maintains comprehensive technical databases containing information on licensed mobile phone carriers across the US. Mobile phone carriers operate in multiple frequency bands and are often referred to as Advanced Wireless Service (AWS), Personal Communication Service (PCS), 700 MHz Band, Wireless Communications Service (WCS), and Cellular. They hold licenses on an area-wide basis which are typically comprised of several counties.

This report focuses on the potential impact of wind turbines on mobile phone operations in and around the project area.

2. Summary of Results

Methodology

Our mobile phone analysis was performed using Comsearch's proprietary carrier database, which is derived from a variety of sources including the Federal Communications Commission (FCC). Since mobile phone market boundaries differ from service to service, we disaggregated the carriers' licensed areas down to the county level. Then we compiled a list of all mobile phone carriers in the main counties that intersect the area of interest. The area of interest was defined by the client and encompasses the planned turbine locations. A depiction of the wind project area and counties appears below.

Figure 1: Counties that intersect the Area of Interest

Results
The Riverbend Wind Project is located in Sanilac County, Michigan. The study area extended into St Clair County, Michigan and is included in the following results. We have identified the type of service, channel block, market ID and FCC callsign for each carrier in the county of interest. A description of the various service types and geographic market areas is below with a summary table on the following page.

AWS
AWS licensees won their spectrum in an auction that started in August 2006. The licensees are authorized by 734 Cellular Market Areas (CMA) for Block A, 176 Economic Areas (BEA) for Blocks B and C, and 12 Regional Economic Area Groupings (REAG) for Blocks D, E and F. This spectrum at 1.7 and 2.1 GHz was allocated for mobile broadband and advanced wireless services. Partitioning and leases are permitted in the band.

Cellular
Licensees are authorized by Metropolitan and Rural Statistical Areas, also known as CMAs. Unserved areas can be covered by licensees other than the original A or B block licensee. To determine the most realistic coverage, we compiled the Cellular Geographic Service Areas (CGSA) from the 32 dBu contours defined by Part 22.911(a) of the FCC rules. Mobile services are provided at 800 MHz and partitioning and leases are permitted in the band.

PCS
There have been nine auctions for this band, with the last one being held in August 2008. Licensees are authorized by 51 Major Trading Areas (MTA) for Blocks A and B, 493 Basic Trading Areas (BTA) for Blocks C through F, and 176 Economic Areas (EA) for Block G. This band has been heavily partitioned and disaggregated both by counties and by smaller polygons within counties (known as undefined areas or partial counties). The 1.9 GHz PCS carriers provide mobile services and leases are permitted in the band.

700 MHz Band
Originally used for analog television broadcasting, this band consists of an upper and lower band, each having its own set of frequency blocks. There have been three auctions in this band with the last one (Auction 73) being held in 2008 and mobile phone carriers eventually winning licenses for Blocks A, B, and C of the Lower 700 MHz band and Block C of the Upper 700 MHz band. Licensees are authorized by 176 Economic Areas (EA) for Lower Block A, 734 Cellular Market Areas (CMA) for Lower Blocks B and C, and 12 Regional Economic Area Groupings (REAG) for Upper Block C. Partitioning and leases are permitted in the band.

WCS
Mobile services provided in the 2.3 GHz band occupy frequency blocks above and below the spectrum allocated for Satellite Digital Audio Radio Service (SDARS) from 2320 MHz to 2345 MHz. WCS licensees are authorized by 52 Major Economic Areas (MEA) for Blocks A and B and 12 Regional Economic Area Groupings (REAG) for Blocks C and D. Partitioning and leases are permitted in the band.

Service[1]	Mobile Phone Carrier	Channel Block	County	ST	Market ID	Callsign
700 MHz	T-Mobile	Lower A	Sanilac	MI	BEA057	WQJQ705
700 MHz	T-Mobile	Lower A	St. Clair	MI	BEA057	WQJQ705
700 MHz	Thumb Cellular	Lower B	Sanilac	MI	CMA481	WQIZ357
700 MHz	AT&T	Lower B	St. Clair	MI	CMA005	WQJU426
700 MHz	Thumb Cellular	Lower C	Sanilac	MI	CMA481	WPWU888
700 MHz	AT&T	Lower C	St. Clair	MI	CMA005	WPWU991
700 MHz	AT&T	Lower D	Sanilac	MI	EAG704	WPZA238
700 MHz	AT&T	Lower D	St. Clair	MI	EAG704	WPZA238
700 MHz	DISH Network	Lower E	Sanilac	MI	BEA057	WQJY997
700 MHz	DISH Network	Lower E	St. Clair	MI	BEA057	WQJY997
700 MHz	Verizon	Upper C	Sanilac	MI	REA003	WQJQ691
700 MHz	Verizon	Upper C	St. Clair	MI	REA003	WQJQ691
AWS	Thumb Cellular	A	Sanilac	MI	CMA481	WQGL809
AWS	T-Mobile	A	St. Clair	MI	CMA005	WQGB265
AWS	T-Mobile	B	Sanilac	MI	BEA057	WQPZ989
AWS	T-Mobile	B	St. Clair	MI	BEA057	WQPZ989
AWS	T-Mobile	C	Sanilac	MI	BEA057	WQGA726
AWS	T-Mobile	C	St. Clair	MI	BEA057	WQGA726
AWS	Verizon	D	Sanilac	MI	REA003	WQPW450
AWS	Verizon	D	St. Clair	MI	REA003	WQPW450
AWS	Verizon	E	Sanilac	MI	REA003	WQPZ950
AWS	Verizon	E	St. Clair	MI	REA003	WQPZ950
AWS	Verizon	F	Sanilac	MI	REA003	WQGA717
AWS	Verizon	F	St. Clair	MI	REA003	WQGA717
Cellular	AT&T	A	Sanilac	MI	CMA481	KNKN711
Cellular	Verizon	A	St. Clair	MI	CMA005	KNKA244
Cellular	Thumb Cellular	B	Sanilac	MI	CMA481	KNKQ268
Cellular	AT&T	B	St. Clair	MI	CMA005	KNKA231
PCS	AT&T	A	Sanilac	MI	MTA005	KNLF210
PCS	AT&T	A	St. Clair	MI	MTA005	KNLF210

[1] AWS: Advanced Wireless Service at 1.7/2.1 GHz
CELL: Cellular Service at 800 MHz
PCS: Personal Communication Service at 1.9 GHz
700 MHz: Commercial Mobile Phone at 700 MHz
WCS: Wireless Communication Service at 2.3 GHz

Service[1]	Mobile Phone Carrier	Channel Block	County	ST	Market ID	Callsign
PCS	T-Mobile	B	Sanilac	MI	MTA005	KNLF211
PCS	Verizon	B	Sanilac	MI	MTA005	WQYH213
PCS	T-Mobile	B	Sanilac	MI	MTA005	WQYL209
PCS	T-Mobile	B	St. Clair	MI	MTA005	KNLF211
PCS	Verizon	B	St. Clair	MI	MTA005	WQYH213
PCS	T-Mobile	B	St. Clair	MI	MTA005	WQYL209
PCS	T-Mobile	C	Sanilac	MI	BTA112	WPOL262
PCS	AT&T	C	Sanilac	MI	BTA112	WQFA877
PCS	T-Mobile	C	St. Clair	MI	BTA112	WPOL262
PCS	Verizon	D	Sanilac	MI	BTA112	KNLH202
PCS	Verizon	D	St. Clair	MI	BTA112	KNLH202
PCS	T-Mobile	E	Sanilac	MI	BTA112	KNLH289
PCS	T-Mobile	E	St. Clair	MI	BTA112	KNLH289
PCS	AT&T	F	Sanilac	MI	BTA112	KNLF970
PCS	AT&T	F	St. Clair	MI	BTA112	KNLF970
PCS	T-Mobile	G	Sanilac	MI	BEA057	WQKT271
PCS	T-Mobile	G	St. Clair	MI	BEA057	WQKT271
WCS	AT&T	A	Sanilac	MI	MEA016	KNLB304
WCS	AT&T	A	St. Clair	MI	MEA016	KNLB304
WCS	AT&T	B	Sanilac	MI	MEA016	KNLB278
WCS	AT&T	B	St. Clair	MI	MEA016	KNLB278
WCS	AT&T	C	Sanilac	MI	REA003	WPQL632
WCS	AT&T	C	St. Clair	MI	REA003	WPQL632
WCS	AT&T	D	Sanilac	MI	REA003	KNLB325
WCS	AT&T	D	St. Clair	MI	REA003	KNLB325

Table 1: Mobile Phone Carriers in the Area of Interest

FCC-Licensed Sites

For competitive and confidentiality reasons, most mobile phone carriers' individual sites are not licensed with the FCC. However, in the cellular band, if a base station extends the existing Cellular Geographic Service Area (CGSA), then it must be recorded with the FCC. We identified three cellular sites within two miles of the proposed turbines. Figure 2 on the next page depicts their locations in relation to the area of interest and Table 2 contains the technical parameters on the FCC license.

Plot ID	Callsign	Licensee	ASR Number	Latitude (NAD83)	Longitude (NAD83)	Distance to the Nearest Turbine (km)
1	KNKN711	AT&T	1057269	43.214444	-82.845833	0.89
2	KNKQ268	Thumb Cellular	1057269	43.214444	-82.845833	0.89
3	KNKA231	AT&T	1225772	43.145944	-82.811306	2.31

Table 2: FCC-Licensed Mobile Phone Sites

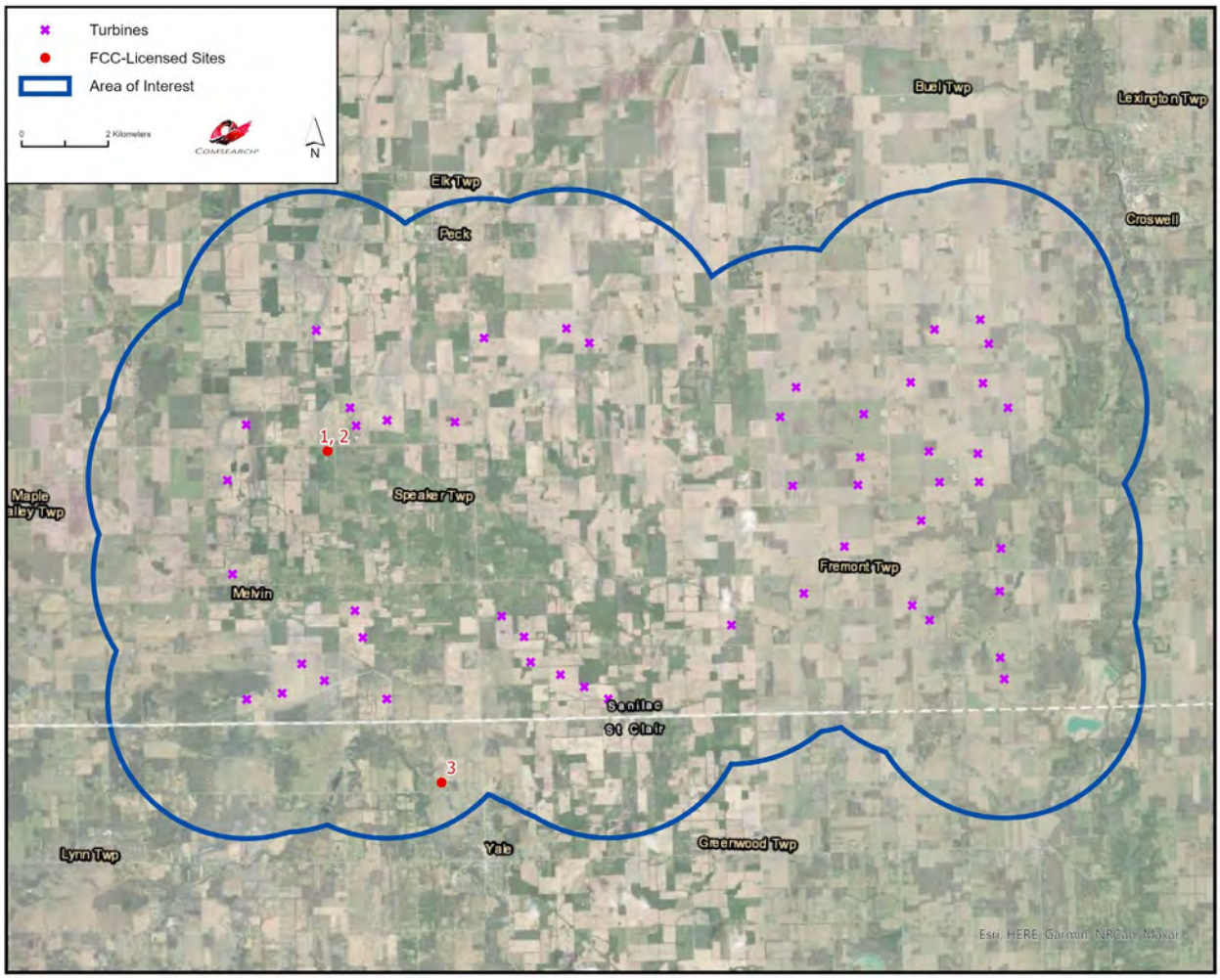

Figure 2: FCC-Licensed Mobile Phone Sites in the Area of Interest

Impact Assessment and Distance Setback Requirements

The cellular mobile phone signal propagation is typically not affected by physical structures because the beam widths of the radiated signal from the base stations and mobile units are very wide and the wavelength of the signal is long enough to wrap around objects such as wind turbine towers and blades. In addition, the cellular network consists of multiple base stations that are designed so that if the connection cannot be made to one base station it will shift to adjacent base stations to make the connection. This enables cellular mobile telephone systems to provide coverage in areas that are congested with physical structures such as downtown urban areas. Areas containing wind turbines have less of a coverage issue than urban areas, so the wind turbines presence does not require any special setback for signal obstruction consideration other than physical clearance of the blades. From an electromagnetic interference standpoint, the emissions from the wind turbines, which are specified by the FCC, should be taken into account to ensure they will not interfere with the base stations or the mobile units. Part 15 of the FCC regulations covers the emissions from unintentional radiating devices, such as wind turbines. The field strength limits for the emissions from unintentional radiators is given in paragraph 15.109 of Part 15 of the FCC rules. The emission limits are stated for a distance of 3 meters or approximately 10 feet and are shown below.

Radiated Emission Limits at 3 Meters

Frequency of Emission (MHz)	Field Strength (microVolts/meter)
30 – 88	100
88 – 216	150
216 – 960	200
> 960	500

From these limits and the receiver sensitivity of the cellular base stations and mobile units we can determine a setback requirement for wind turbines and cellular system. The typical sensitivity of mobile units is -90 dBm ($1X10^{-12}$ Watts) and the typical sensitivity of base stations is -93 dBm ($5X10^{-13}$ Watts). The gain of mobile unit antennas are -10dB or 0.1 and the gain of base station antennas are 17 dB or 50. The effective area (A) of the mobile unit and base station antennas are determined from the following formula.

$$A = G*\lambda^2 / 4*\pi$$

Where,
G = Antenna Gain, number
λ = Wavelength, 0.353 meters
π = 3.14

This gives us an effective area for the mobile unit antenna of $9.9X10^{-4}$ meter^2 and the effective area for the base station antenna of 0.496 meter^2. Using the typical receiver sensitivities of the mobile and base units above, we can determine their power flux density (P_D) from the following formula:

$$P_D = S/A$$

Where S is defined as the sensitivity for Mobile Unit or for the Base Station expressed in Watts

To calculate the electric field strength (E) we use the following formula:

$$E = (P_D * 377)^{½}$$

So for the mobile unit, $P_D = 1.01X10^{-9}$ Watts/meter^2 and E = 617 microVolts/meter. And, for the base station unit, $P_D = 1.008X10^{-12}$ Watts/meter^2 and E= 19.4 microVolts/meter.

These results show that the mobile units' sensitivity expressed as field strength is above the level allowed as an emission for the wind turbines at a distance of 3 meters. Therefore, no setback for the use of a mobile unit is needed beyond 3 meters. Since the base station has field strength sensitivity below the allowed emission level of the wind turbines a setback distance is needed to ensure that the base stations will not be affected. The field strength of the emission is inversely proportional to separation distance in meters. To determine the setback distance to reduce the field strength to 19.4 microVolts/meter the following formula is used.

D = (500 MicroVolts/meter)*(3 meters) / 19.4 MicroVolts/meter

Where,
D = Setback Distance for Base Station to avoid interference, meters

Thus the setback distance for the cellular tower base station from the wind turbines should be 77.3 meters or greater.

Summary

The telephone communications in the mobile phone carrier bands are typically unaffected by the presence of the wind turbines and we do not anticipate any significant harmful effect to mobile phone services in the Riverbend Wind Project. Mobile phone systems are designed with multiple base transmitter stations covering a specific area. Since mobile telephone signals are designed with overlap between adjacent base transmitter sites in order to provide handoff between cells, any signal blockage caused by the wind turbines does not materially degrade the reception because the end user may be receiving from multiple transmitter locations. For example, if a particular turbine attenuates the signal reception into a mobile phone, the phone may receive an alternate signal from a different transmit location, resulting in no disruption in service. Mobile phone systems that are implemented in urban areas near large structures and buildings often have to combat even more problematic signal attenuation and reflection conditions than rural areas containing a wind energy turbine facility.

For the cellular towers located within the project area, no setback distance is required from an interference standpoint other than physical clearance of the blades. From an electromagnetic

standpoint, a setback distance of 77.3 meters should be used to meet FCC emission requirements. All of the identified cellular towers meet the recommended separation distance.

In the unlikely event that a mobile phone carrier believes their coverage has been compromised by the presence of the wind energy facility, they have many options to improve their signal coverage to the area through optimization of a nearby base transmitter or even adding a new sector or cell site. Utility towers, meteorological towers or even the turbine towers within the wind project area can serve as the platform for a base transmit site or cell enhancer.

3. Contact Us

For questions or information regarding the Mobile Phone Carrier Report, please contact:

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Wind Power GeoPlanner™

Wireless Internet Services Report

Riverbend Wind Project

Prepared on Behalf of
REV Renewables

December 23, 2024

COMSEARCH®
A CommScope Company

Table of Contents

1. Introduction

Wireless internet providers, often called WISPs (Wireless Internet Service Providers), deliver internet services via radio transmission to business and/or residential subscribers. They compete with wired internet service providers such as the local phone and cable companies. Wireless internet providers can use various frequency bands in both licensed and unlicensed spectrum. Many rural community WISPs operate in the unlicensed spectrum since there is a lower barrier to entry without the costs associated with acquiring licensed spectrum. The most common unlicensed bands for this purpose are the 900 MHz, 2.4 GHz, and 5.8 GHz bands. There is also some recent activity in the "lite-licensed" 3.65 GHz band.

This report attempts to identify wireless internet providers in proximity to the Riverbend Wind Project and evaluates the potential impact of wind turbines on their operations in and around the project area.

Figure 1: Riverbend Wind Project Area

2. Summary of Results

Methodology

Our wireless internet service analysis uses searches of our own wireless databases and other reliable data sources such as the FCC's ULS database. However, most bands used for wireless internet services (primarily the unlicensed bands) have no reliable data source available since according to FCC rules, these systems are not required to license or register their transmitter locations. Therefore, the only band with a reliable data set to evaluate is the 3.65 GHz WBS (Wireless Broadband Systems) band, which by FCC rule requires registration of base and fixed transmitters. Our analysis will include any providers found in this band, but will not necessarily include providers with unlicensed systems. This is due to the lack of available data and the providers' lack of interference protection as a consequence of their unlicensed status.

Results

Comsearch performed a search of 3.65 GHz band and found no licenses within 50 km of the Riverbend Wind Project area. The closest license is filed under Live Nation Entertainment and is located 165 km to the southwest near Cement City, Michigan.

3. Recommendations / Conclusion

As there were no registered wireless broadband system (WBS) transmitters found within 50 km of the proposed Riverbend Wind Project, the project should not impact the coverage of wireless internet service providers in the 3.65 GHz WBS band.

In the event that a wireless internet service provider operating in one of the unlicensed bands believes that their coverage has been compromised by the presence of the wind energy facility, they have many options to improve their signal coverage to the area. This includes the optimization of surrounding base stations or the addition of a new sector or cell site. Utility towers, other communications towers, or even a turbine tower within the wind project area can serve as the platform for a new base station, cell enhancer, or repeater.

4. Contact

For questions or information regarding the Wireless Internet Services Report, please contact:

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August 1, 2025

Via U.S. Mail & email:
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MI Energy Developments, LLC, a subsidiary of REV Renewables (REV), headquartered in New York City, New York, proposes to construct the Riverbend Wind Energy Facility (Project) in Sanilac County, Michigan consisting of up to 50 wind turbines totaling 300 megawatts (MW). The Project will permit up to 26 turbines located within Fremont Township and up to 24 turbines located within Speaker Townships. Elk Township will only host a short section of underground collection lines, there are no turbines proposed within Elk Township. After completion of permitting approvals, the project team anticipates starting construction in Q3/Q4 of 2027 with operation in Q4 of 2028.

As a continuation of the Project's commitment to local communication regarding development of the Project, and pursuant to Public Act 233 (MCL460.1221, et seq.) (PA 233), site plans in alignment with the standards and requirements of the Michigan Public Service Commission (MPSC) are available via the following link: https://riverbendwind.com/ under the "Site Plan & Exhibits" tab. Consistent with the requirements of "MPSC Certificate for Solar Energy, Wind Energy, and Energy Storage Facilities – Pursuant to Public Act 233 of 2023 – Application Filing Instructions and Procedures", REV has conducted an assessment of the emergency services in the Project area to identify any potential impacts from the planned wind turbines. Registered frequencies for the following types of entities were evaluated: police, fire, emergency medical services, emergency management, hospitals, public works, transportation and other state, county, and municipal agencies, industrial and business land mobile radio (LMR) systems, and commercial E911 operators within the Project area. There are no interstate highways or active railways within 1.2 miles of the proposed turbines. The results concluded that the first responders, industrial/business land mobile sites, area-wide public safety, and commercial E-911 communications are typically unaffected by the presence of the wind turbines and REV does not anticipate any significant harmful effect to these services in the Project area. The turbines all meet the setback distance criteria for Federal Communications Commission (FCC) interference emissions in the land mobile bands.

As you oversee the public safety operations for Region #21, REV wanted to provide the information at Riverbend Wind Project webpage should you receive questions regarding the project. The project team would encourage comments directed to Feedback@RiverbendWind.com which can be found on the "Contact Us" tab of the Riverbend Wind Project webpage. Please reach out if you have any additional questions or require additional public information.

Sincerely,

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575 5th Ave., Suite 2501
New York, NY 10017

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Project Manager, Development
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stejada@revrenewables.com

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August 1, 2025

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888-887-7139

MI Energy Developments, LLC, a subsidiary of REV Renewables (REV), headquartered in New York City, New York, proposes to construct the Riverbend Wind Energy Facility (Project) in Sanilac County, Michigan consisting of up to 50 wind turbines totaling 300 megawatts (MW). The Project will permit up to 26 turbines located within Fremont Township and up to 24 turbines located within Speaker Townships. Elk Township will only host a short section of underground collection lines, there are no turbines proposed within Elk Township. After completion of permitting approvals, the project team anticipates starting construction in Q3/Q4 of 2027 with operation in Q4 of 2028.

As a continuation of the Project's commitment to local communication regarding development of the Project, and pursuant to Public Act 233 (MCL460.1221, et seq.) (PA 233), site plans in alignment with the standards and requirements of the Michigan Public Service Commission (MPSC) are available via the following link: https://riverbendwind.com/ under the "Site Plan & Exhibits" tab.

Consistent with the requirements of "MPSC Certificate for Solar Energy, Wind Energy, and Energy Storage Facilities – Pursuant to Public Act 233 of 2023 – Application Filing Instructions and Procedures", REV has conducted an assessment of AM and FM radio broadcast stations in proximity to the Project. This assessment identified WKKM (FM) approximately 2.13 km to the nearest wind turbine. The coverage for FM stations is generally not sensitive to interference due to wind turbines, especially when wind turbines are located in the far field region of the radiating antenna to avoid the risk of distorting its radiation pattern. At this distance there should be adequate separation to avoid radiation pattern distortion and the Project anticipates no impact on the WKKM station.

REV wanted to provide the information at Riverbend Wind Project webpage should you receive questions regarding the project. The project team would encourage comments directed to Feedback@RiverbendWind.com which can be found on the "Contact Us" tab of the Riverbend Wind Project webpage. Please reach out if you have any additional questions or require additional public information.

Sincerely,

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