Appendix W

Wind Power GEOPlanner

Communication Tower Study

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Philip Wind

Prepared on Behalf of
PHILIP WIND PARTNERS, LLC

September 20, 2024

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1. Introduction

This Communication Tower Study was performed for the Philip Wind project in Haakon County, South Dakota to identify the tower structures as well as FCC-licensed communication antennas that exist in and around the project area. This information is useful in the planning stages of the wind energy facilities to identify turbine setbacks and to prevent disruption to the services provided by the tenants on the towers. This data can be used in support of the wind energy facilities communications needs in addition to avoiding any potential impact to the current communications services provided in the region.

2. Summary of Results

The communication towers and antennas in the study area were derived from a variety of sources including the FCC's Antenna Structure Registration (ASR) database, Universal Licensing System (ULS), national and regional tower owner databases, and the local planning and zoning boards. The data[1] was imported into GIS software and the structures mapped in the wind energy area of interest. Each tower location is identified with a unique ID number associated with detailed structure and contact information provided in a spreadsheet attachment.

One tower structure and Nine communication antennas were identified within or near the Philip Wind project area using the data sources described in our methodology above. The structure found was registered with the FCC, which contains five of the nine communication antennas. The remaining antennas may be located on a variety of structure types such as guyed towers, monopoles, silos, rooftops or portable structures. The specific type of structure would normally need to be determined by an on-site visit.

Detailed information about the tower structures and communication antennas is provided in Table 1 and Table 2 including location coordinates, structure height above ground level, and owner-operator name[2].

A discussion of turbine setback distances is provided in section three.

[1] 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.

[2] Please note that this report analyzes all known operators on the towers from data sources available to Comsearch. Unidentified operators may exist on the towers due to unlicensed or federal government systems, mobile phone operators with proprietary locations, erroneous data on the FCC license, and other factors beyond our control.

Tower ID	ASR Number	Owner	Structure Height AGL (m)	Latitude (NAD83)	Longitude (NAD83)	Distance the Nearest Turbine (km)
Tower001	1041349	SOUTH DAKOTA, STATE OF	91.5	44.26488889	-101.66591667	1.06

Table 1: Summary of Tower Structures

ID	Tower ID	Callsign	Service Type	Licensee	Antenna Height AGL (m)	Latitude (NAD83)	Longitude (NAD83)	Distance the Nearest Turbine (km)
1		KNNG250	Land Mobile	West River Lyman Jones Rural Water Systems, Inc.	15.0	44.23580556	-101.96930556	2.95
2	Tower001	RXONLY	Microwave	South Dakota Brd of Dir of ED Telecom	18.2/52.7	44.26472222	-101.66638889	1.06
3	Tower001	WPUG503	Microwave	South Dakota Brd of Dir of ED Telecom	18.2	44.26472222	-101.66638889	1.06
4	Tower001	WPUG509	Microwave	South Dakota Brd of Dir of ED Telecom	52.7	44.26472222	-101.66638889	1.06
5	Tower001	WPWA674	Land Mobile	BIT/State Radio Communications Engineering	82.3	44.26472222	-101.66638889	1.06
6	Tower001	WPWA961	Land Mobile	BIT/State Radio Communications Engineering	82.3	44.26472222	-101.66638889	1.06
7		WQHH353	Land Mobile	HAAKON COUNTY HIGHWAY	18.0	44.26500000	-101.66527778	1.00
8		KNNG250	Land Mobile	West River Lyman Jones Rural Water Systems, Inc.	34.0	44.26580556	-101.66791667	1.01
9		WQLW355	Land Mobile	Roseth, Thor	43.0	44.27469444	-101.66958333	0.67

Table 2: Summary of Communication Antennas

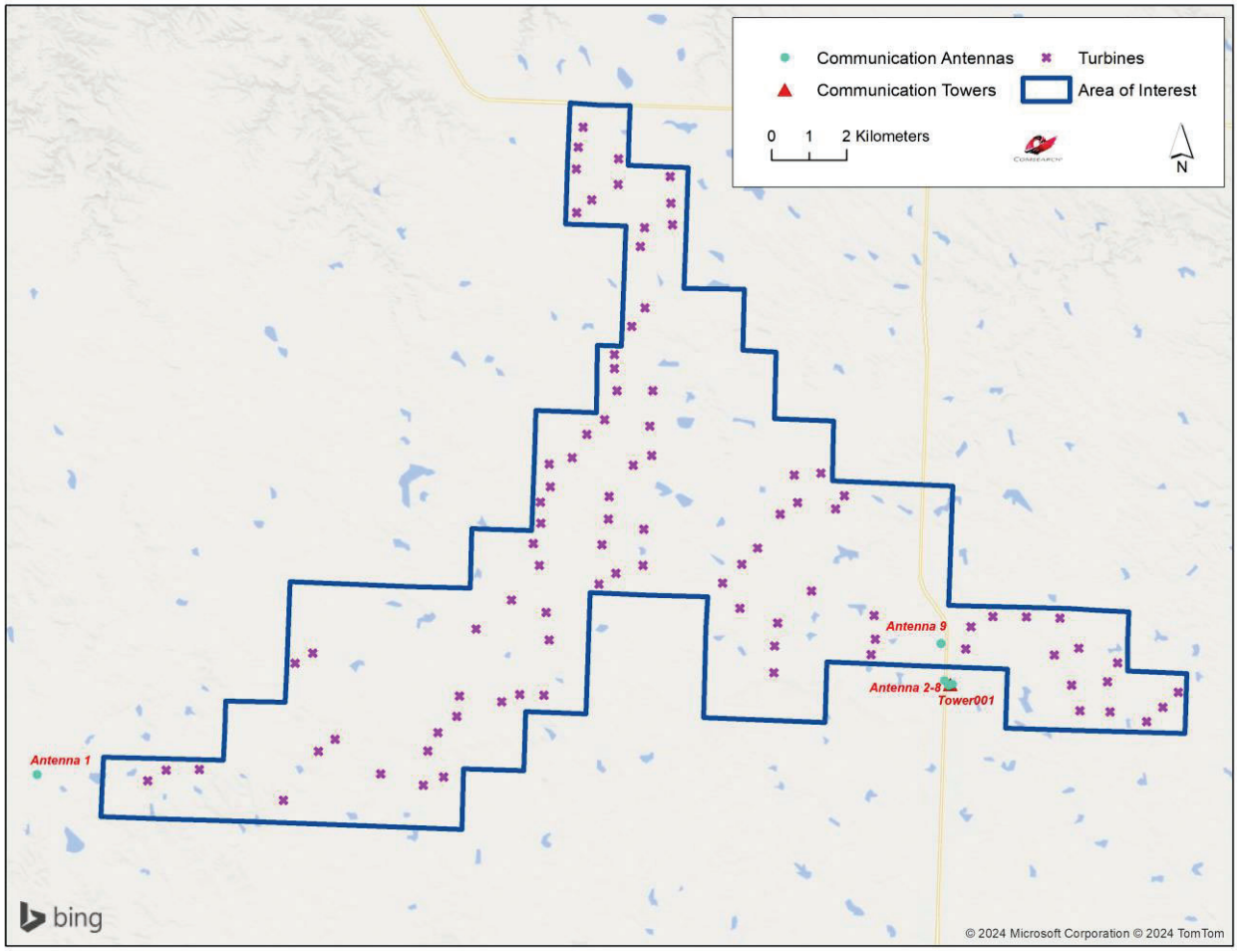

Figure 1: Communication Towers and Antennas within or near the Area of Interest

3. Discussion of Separation Distances

In planning the wind energy turbine locations, a conservative approach would dictate not locating any turbines in close proximity to existing tower structures to avoid any possible impact to the communications services provided by the structures. Reasonable distance between communication towers and wind turbine towers is a function of two things: (1) the physical turning radius of the wind turbine blades and (2) the characteristics of the communication systems on the communication tower.

Since wind turbine blades can rotate 360º in both the vertical and horizontal planes, the first consideration of separation distance to other structures is clearance of the rotating blades. If the blade radius is 80 meters, then a separation distance greater than 80 meters is necessary. From a practical standpoint, a setback distance greater than the maximum height of the turbine is necessary to ensure a “fall” safety zone in the unlikely event of a turbine tower failure. Setback requirements for “fall” safety are typically specified by the local zoning ordinances.

The separation distance required based on the characteristics of the communication systems will vary depending on the type(s) of communication antennas located on the tower. For example, AM, FM and TV communication antennas should be separated by distances that allow for normal coverage. For RADAR and microwave systems, line-of-sight (LOS) is used as the criteria for separation distance as well as the physical clearance necessary for the turbine blades. For land mobile, mobile phone, and wireless Internet systems, setback distances are based on FCC interference emissions from electrical devices according to their respective frequency bands.

4. Conclusions

Our study identified one tower structure and nine communication antennas within or near the project area. They are used for microwave and land mobile services in the area.

5. Contact Us

For questions or information regarding the Communication Tower Study, please contact:

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