Wind Power GeoPlanner™

Communication Tower Study

Crocker Wind Farm

Prepared on Behalf of
Crocker Wind Farm, LLC

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1. Introduction

This Communication Tower Study was performed for the Crocker Wind Farm in Clark 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.

Three tower structures and ten communication antennas were identified within or near the Crocker Wind Farm project area using the data sources described in our methodology above.. These three tower structures contain four of the ten 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)
Tower001	1037201	Northern Border Pipeline Company	73.0	45.06611111	-97.79861111
Tower002	N/A	Gray Television Group, Inc.	Unknown	45.10638889	-97.89944444
Tower003	1048745	Midcontinent Communications	98.4	45.11055556	-97.86380556

Table 1: Summary of Tower Structures

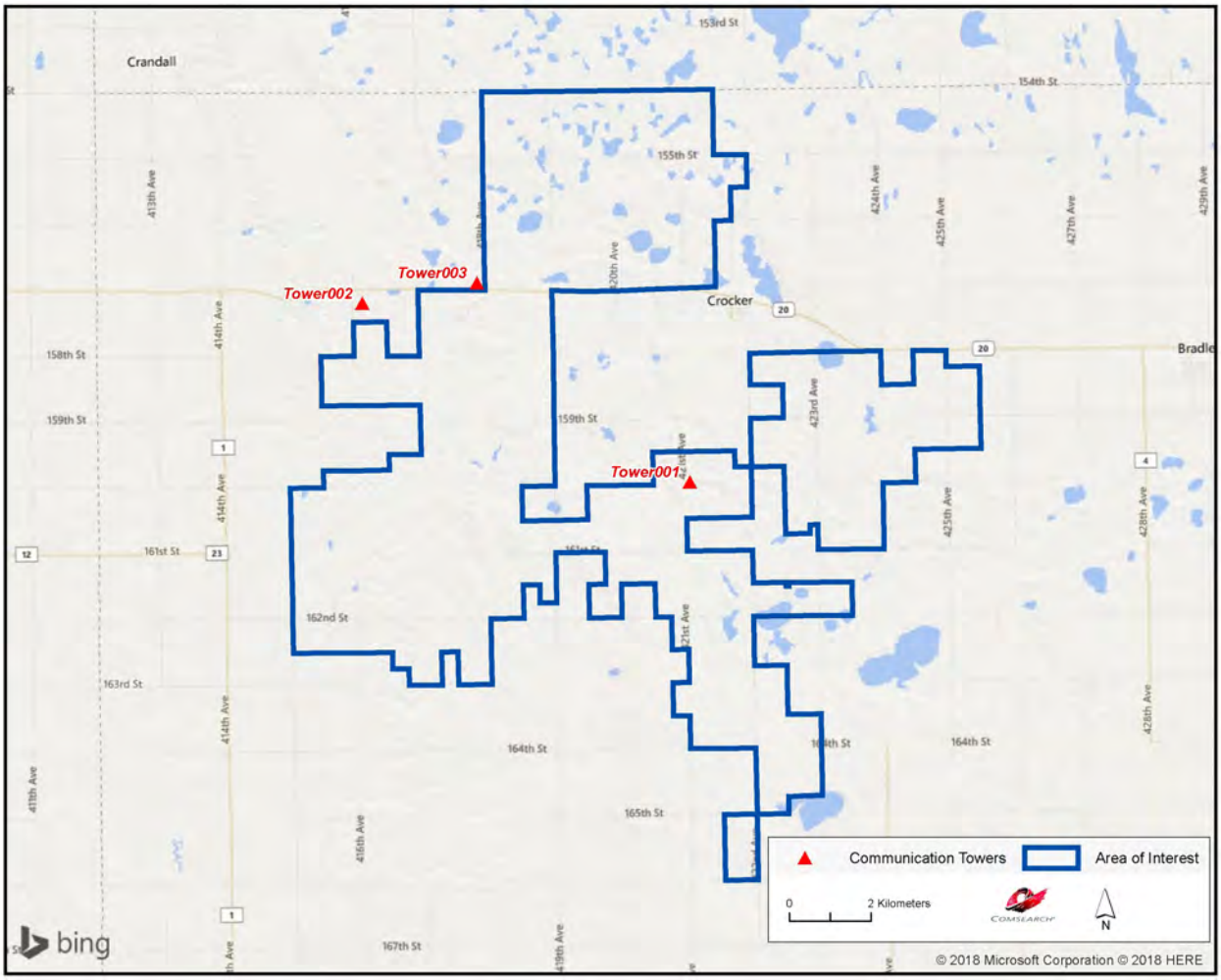

Figure 1: Towers within or near the Area of Interest

ID	Tower ID	Callsign	Service Type	Licensee	Antenna Height AGL (m)	Latitude (NAD83)	Longitude (NAD83)
1		WPRL543	Land Mobile	Clark Rural Water System Inc	5	45.05052778	-97.90508333
2	Tower001	WPJX963	Land Mobile	Northern Border Pipeline Company	73	45.06608333	-97.79869444
3	Tower001	WQDT284	Microwave	Northern Border Pipeline Company	56.7/71.93	45.06611111	-97.79861111
4		WQWC905	Land Mobile	Ormat Nevada Inc.	6	45.06733333	-97.79808333
5		WNWR458	Land Mobile	Huber, David	9	45.06663889	-97.85175000
6	Tower002	KABY-TV	TV	Gray Television Licensee, LLC	427	45.10638889	-97.89944444
7	Tower003	WMV705	Microwave	Red River Broadcast Co., LLC	30.48	45.11055556	-97.86380556
8		WPRL543	Land Mobile	Clark Rural Water System Inc	6	44.97830556	-97.80397222
9		WQTS234	Land Mobile	Mudgett, Troy	18.3	45.01344444	-97.84155556
10		WRAN383	Land Mobile	Tarbox, Paul	15.8	45.05011111	-97.71691667

Table 2: Summary of Communication Antennas

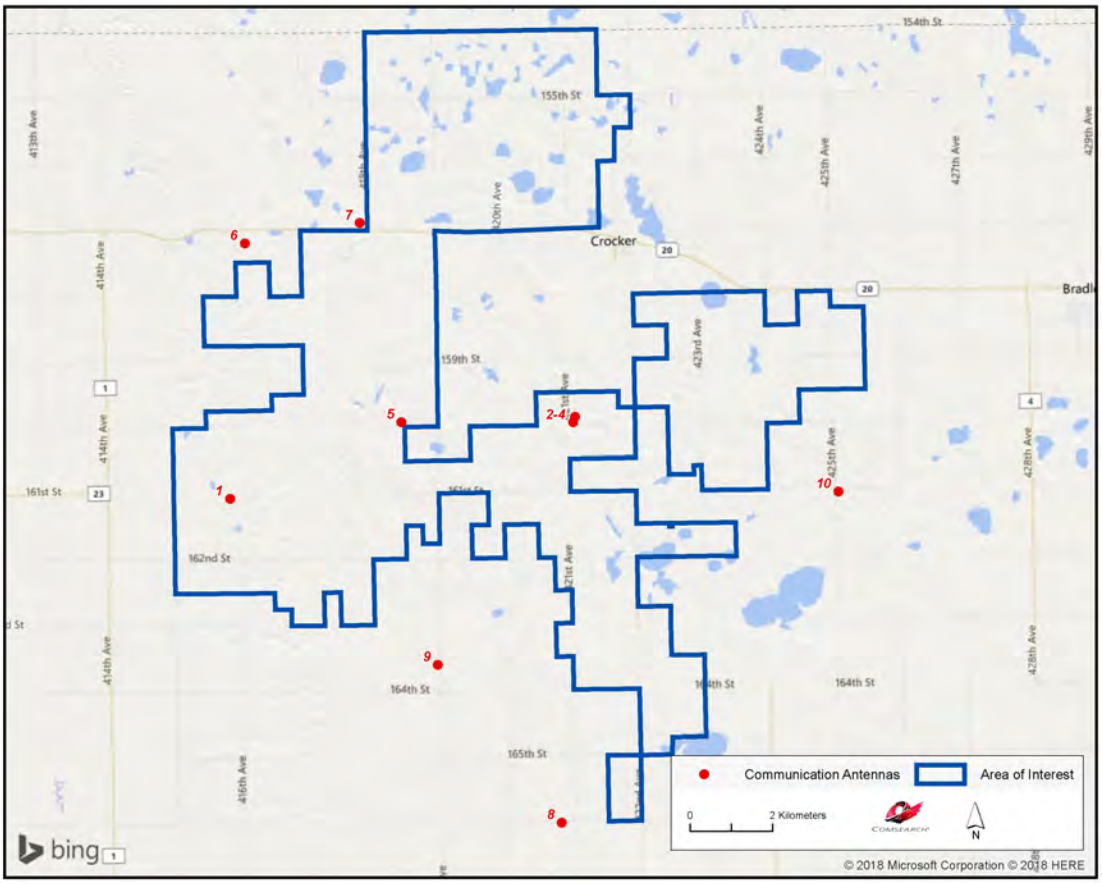

Figure 2: Communication Antennas within or near the Area of Interest

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, the first consideration of separation distance to other structures is clearance of the blades. If the blade radius is 50 meters, then a separation distance greater than 50 meters is necessary. From a practical standpoint, a setback distance greater than the maximum height of the turbine is necessary to insure 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 required separation distance based on the characteristics of the communication systems will vary depending on the type of communication antennas that are installed on the tower. For example, AM broadcast antennas should be separated by distances that allow for normal coverage which can extend up to 3 kilometers. For land mobile and mobile phone systems, setback distances are based on FCC interference emission limits from electrical devices in the land mobile and mobile phone frequency bands.

Finally, the tower structures identified could be a potential benefit in support of communications network needs for the wind energy facility. An example would be the implementation of a Supervisory Control and Data Acquisition (SCADA) system that monitors and provides communications access to the wind energy facility.

4. Conclusions

Our study identified three tower structures and ten communication antennas within or near the project area. They are used for microwave, TV and land mobile services in the area. Detailed impact assessments should be performed for each service type.

5. Contact Us

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

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