

Wind Power GeoPlanner™

Communication Tower Study

TGE Illinois



Prepared on Behalf of
Tri Global Energy, LLC

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1. Introduction

This Communication Tower Study was performed for the TGE Illinois 181 project in Woodford County, Illinois to identify the tower structures as well as FCC-licensed communication antennas that exist within 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 data¹ 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.

Five tower structures and thirty-nine communication antennas were identified within the TGE Illinois 181 project area using the data sources described in our methodology above. All five of the structures found were registered with the FCC, four of which contain twelve of the thirty-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 name².

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	1266504	United States Cellular Corporation	69.5	40.882611	-89.128417
Tower002	1267953	Commonwealth Edison Company	60.6	40.851861	-89.090639
Tower003	1008764	Cellco Partnership	80.8	40.822778	-89.118611
Tower004	1009261	United States Cellular Corporation	119.8	40.811944	-89.139167
Tower005	1209203	SpectraSite Communications, LLC. through American Towers, LLC.	96.6	40.751389	-89.043500

Table 1: Summary of Tower Structures

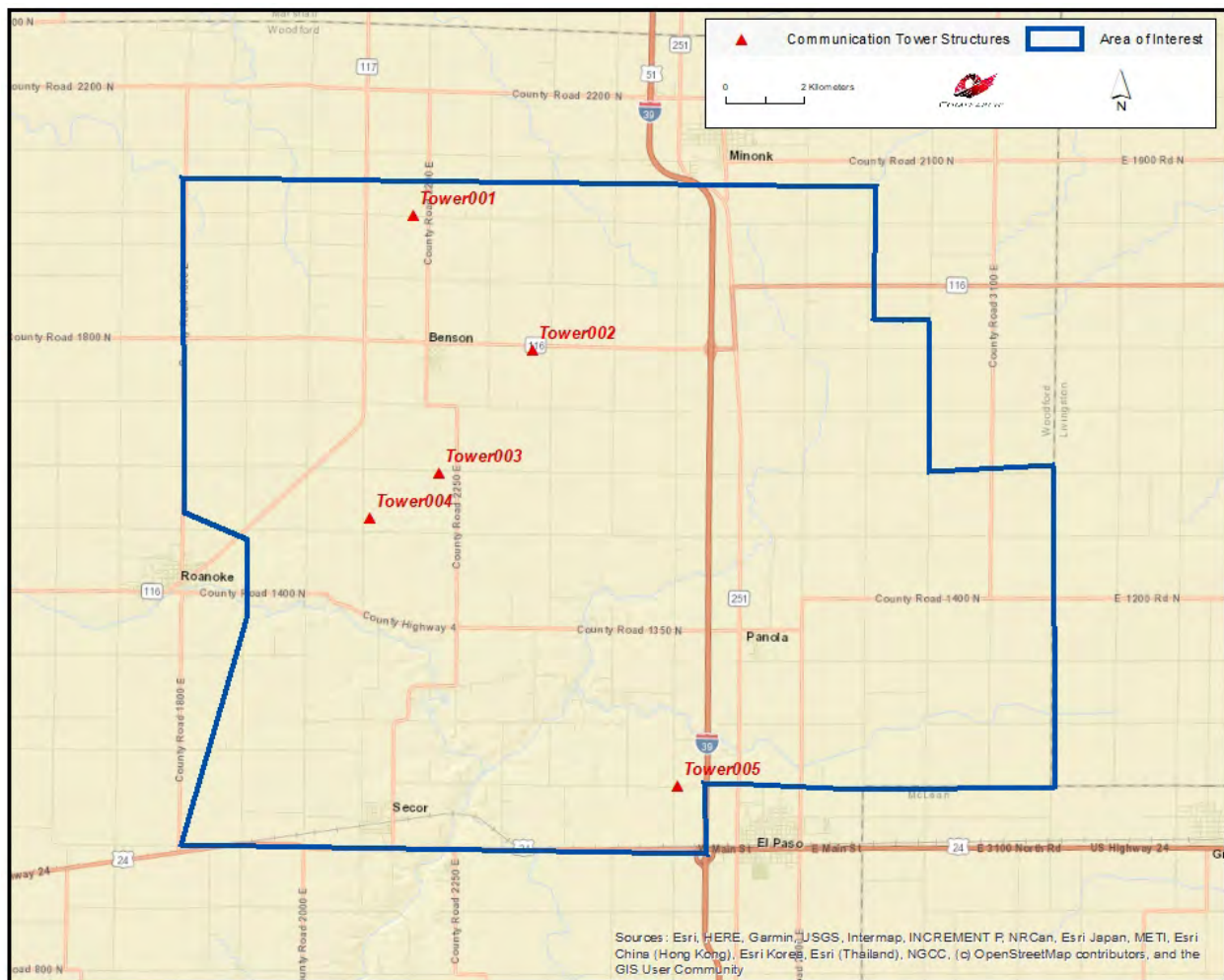


Figure 1: Towers within the Area of Interest



ID	Tower ID	Callsign	Service Type	Licensee	Antenna Height AGL (m)	Latitude (NAD83)	Longitude (NAD83)
1		WLT577	Microwave	USCOC of Central Illinois, LLC	30.5	40.889028	-89.048139
2		WQTI563	Microwave	USCOC of Central Illinois, LLC	30.5	40.889028	-89.048139
3	Tower001	WLT577	Microwave	USCOC of Central Illinois, LLC	30.5	40.882611	-89.128417
4	Tower001	WQRP809	Microwave	USCOC of Central Illinois, LLC	35.1	40.882611	-89.128417
5	Tower001	WQRY353	Microwave	USCOC of Central Illinois, LLC	30.5, 35.1	40.882611	-89.128417
6		WQPD704	Land Mobile	Siemens Gamesa Renewable Energy, Inc.	20	40.878056	-89.008056
7		WNBL422	Land Mobile	MINONK, TOWNSHIP OF	12	40.865861	-88.988139
8		WPAL346	Land Mobile	Roanoke Benson Unit District No 60	13	40.852972	-89.123444
9	Tower002	WQKM477	Microwave	Commonwealth Edison Company	45.7	40.851861	-89.090639
10	Tower002	WRDY823	Microwave	Commonwealth Edison Company	45.7	40.851861	-89.090639
11	Tower002	WSI46	Microwave	Commonwealth Edison Company	0	40.851861	-89.090639
12		WPTN613	Land Mobile	Benson Community Fire Protection District	12.1	40.842250	-89.101472
13		WQB812	Land Mobile	Benson Community Fire Prot Dist	18	40.842250	-89.101472
14		WQLX341	CBRS ³	Essex Telecom, Inc	19	40.831806	-89.179639
15		KNBC405	Land Mobile	GREENE, TOWNSHIP OF	12	40.823917	-89.073972
16	Tower003	KNKA443	Cellular	Cellco Partnership	76.2	40.822778	-89.118611
17	Tower003	WQPS797	Microwave	PEG Bandwidth IL, LLC	50.3	40.822778	-89.118611
18	Tower003	WQPS801	Microwave	PEG Bandwidth IL, LLC	50.3	40.822778	-89.118611
19		WQJC234	CBRS	Digis, LLC.	6	40.814917	-89.177833
20		KNKA450	Cellular	USCOC of Central Illinois, LLC	118.9	40.811972	-89.139250
21	Tower004	WLT577	Microwave	USCOC of Central Illinois, LLC	28.9, 30.5	40.811944	-89.139167
22	Tower004	WQRY353	Microwave	USCOC of Central Illinois, LLC	28.9	40.811944	-89.139167
23	Tower004	WQTI563	Microwave	USCOC of Central Illinois, LLC	30.5	40.811944	-89.139167
24		WQLX341	CBRS	Essex Telecom, Inc	18, 22	40.809694	-89.054444
25		WQXD817	Land Mobile	Harbison, Brandon	28	40.784333	-89.087528
26		KNAQ578	Land Mobile	PANOLA, TOWNSHIP OF	15	40.783639	-89.018972
27		WQLX341	CBRS	Essex Telecom, Inc	7.9	40.780556	-88.976056
28		KBE854	Land Mobile	BECKS SUPERIOR HYBRIDS INC	30.5	40.773333	-88.985361
29		WQLX341	CBRS	Essex Telecom, Inc	15, 22	40.770333	-89.055333
30		WPZE770	Land Mobile	FURROW FARMS	60	40.761139	-89.030639
31		WQLD452	Land Mobile	Sun Ag, Inc.	53.3	40.761139	-89.030639
32		WQJC234	CBRS	Digis, LLC.	6	40.756694	-89.180611
33		WQLX341	CBRS	Essex Telecom, Inc	18	40.750306	-89.077083
34		WPGH577	Land Mobile	GRAINLAND COOPERATIVE	55	40.744472	-89.134806
35		WQLX341	CBRS	Essex Telecom, Inc	12	40.743389	-89.077444
36		WQQA326	Land Mobile	Secor Fire Protection District	20.7	40.741333	-89.137389

³ Point-to-Multi-Point Citizen Band Radio Service (3650-3700 MHz)

ID	Tower ID	Callsign	Service Type	Licensee	Antenna Height AGL (m)	Latitude (NAD83)	Longitude (NAD83)
37		WQLX341	CBRS	Essex Telecom, Inc	12	40.739861	-89.095722
38		WQZN274	Land Mobile	BRADLE, NATHAN D	67.1	40.739778	-89.138833
39		WQLX341	CBRS	Essex Telecom, Inc	22	40.737056	-89.091222

Table 2: Summary of Communication Antennas

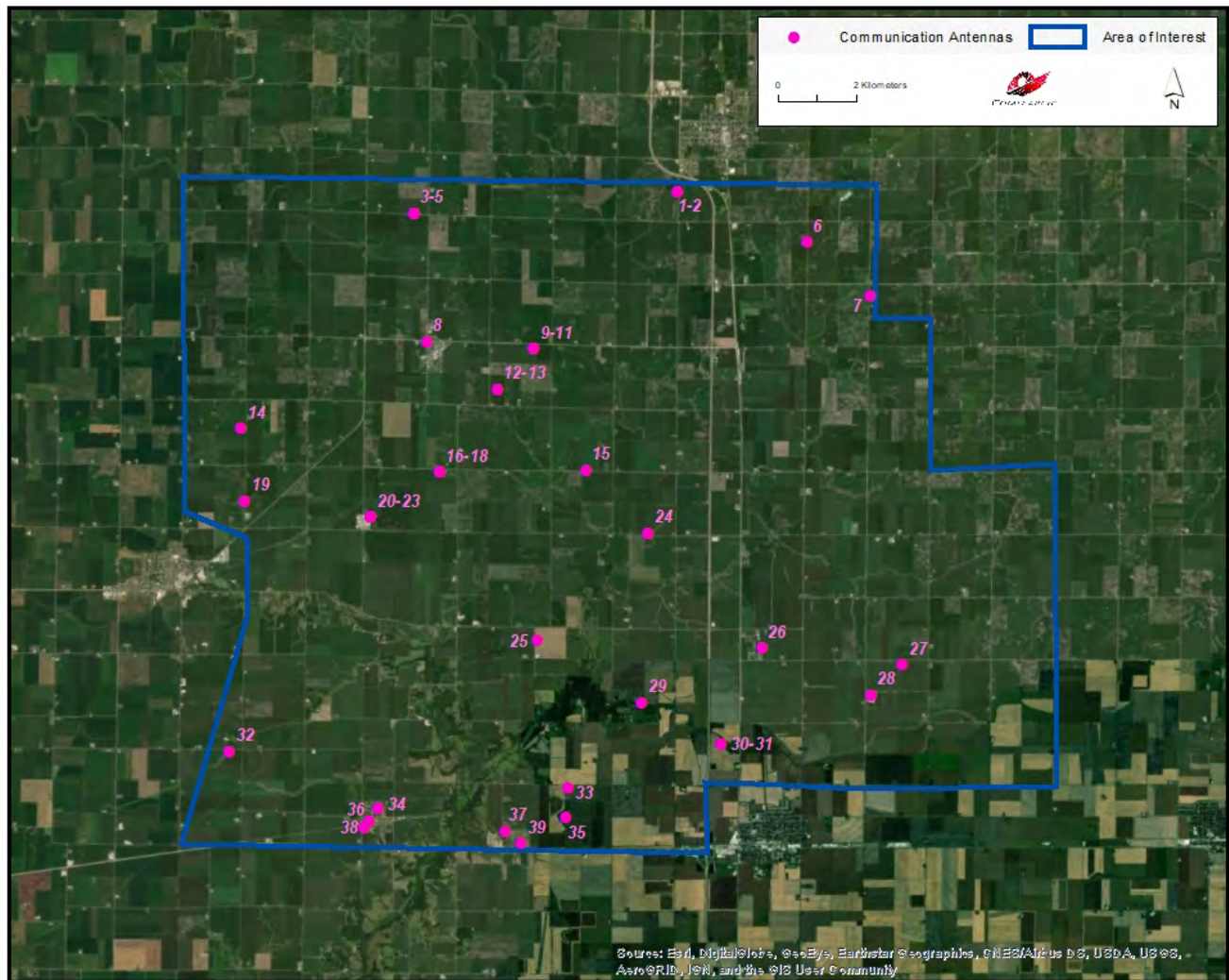


Figure 2: Communication Antennas within the Area of Interest

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 360°, 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 five tower structures and thirty-nine communication antennas within the project area. They are used for microwave, cellular, CBRS, and land mobile services in the project area. The microwave paths associated with the noted microwave antennas will not be impacted as long as the Fresnel zone areas are avoided⁴. The cellular⁵ and land mobile⁶ antennas have separation distance recommendations of 77.3 meters and 77.5 meters respectively and will not be impacted as long as these distances are met. The CBRS service licenses generally are base stations using sectorized antennas to cover a 360-degree view from their locations. With multiple base stations in place for a typical network, there are multiple base stations reaching individual subscribers allowing shifting between sites to eliminate any potential signal impacts.

⁴ See the Comsearch Microwave Report for the project.

⁵ See the Comsearch Mobile Phone Report for the project.

⁶ See the Comsearch Land Mobile & Emergency Services Report for the project.



5. Contact Us

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

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