

Wind Power GeoPlanner™

Communication Tower Study

Bluestone Wind Project



Prepared on Behalf of
Bluestone Wind, LLC

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1. Introduction

This Communication Tower Study was performed for the Bluestone Wind Project in Broome County, New York to identify the tower structures as well as FCC-licensed communication antennas that fall within the project area plus an extended 2-mile buffer from the project boundary. 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.

Six tower structures and thirty-nine communication antennas were identified within the project area plus an extended 2-mile buffer from the project boundary using the data sources described in our methodology above. The structures identified contain six 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 | N/A | American Tower | 60.4 | 42.04060278 | -75.52681944 |
| Tower002 | N/A | American Tower | 36.1 | 42.04630083 | -75.54440000 |
| Tower003 | N/A | SBA | 30.8 | 42.05972222 | -75.42202433 |
| Tower004 | N/A | Crown Castle | 54.9 | 42.07565000 | -75.60605800 |
| Tower005 | 1006147 | Crown Castle | 76.8 | 42.09600000 | -75.60350000 |
| Tower006 | 1005517 | American Tower | 95.4 | 42.13083333 | -75.42947222 |

Table 1: Summary of Tower Structures

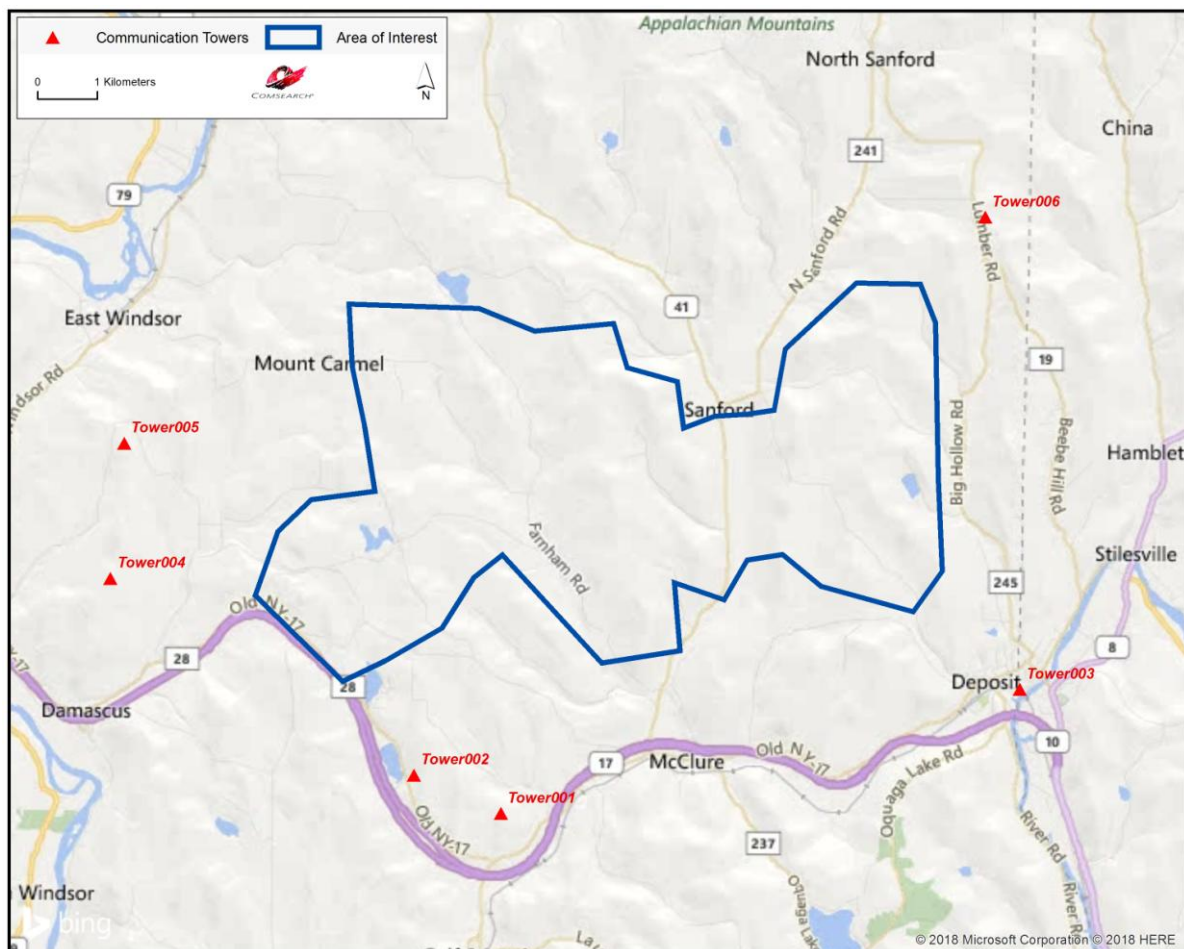


Figure 1: Towers within or near the Area of Interest

| ID | Tower ID | Callsign | Service Type | Licensee | Antenna Height AGL (m) | Latitude (NAD83) | Longitude (NAD83) |
|----|----------|----------|--------------|--|------------------------|------------------|-------------------|
| 1 | | WQXL756 | Land Mobile | DELAWARE OTSEGO CORPORATION/ NEW YORK SUSQUEHANNA & WESTERN RAILROAD | 12.2 | 42.05166667 | -75.44194444 |
| 2 | | WNVD201 | Land Mobile | New York, State of | 4.0 | 42.05758333 | -75.49016667 |
| 3 | Tower003 | WQVY853 | Microwave | T-Mobile License LLC | 24.38 | 42.05972222 | -75.42202778 |
| 4 | Tower003 | WQDB435 | Land Mobile | NPCR, Inc. | 31.1 | 42.05972222 | -75.42202778 |
| 5 | | KIR720 | Land Mobile | DEPOSIT, VILLAGE OF | 12.0 | 42.06063889 | -75.42488889 |
| 6 | | WQYD776 | Microwave | T-Mobile License LLC | 57.91 | 42.06197222 | -75.56991667 |
| 7 | | WQDX581 | Land Mobile | Deposit Central Schools | 33.5 | 42.06197222 | -75.56994444 |
| 8 | | WQIW290 | Land Mobile | NEW YORK STATE ELECTRIC & GAS CORPORATION | 61.0 | 42.06197222 | -75.56994444 |
| 9 | | WQPV652 | Land Mobile | BROOME, COUNTY OF | 31.0 | 42.06202778 | -75.57000000 |
| 10 | | WQRN496 | Land Mobile | BROOME, COUNTY OF | 31.0 | 42.06202778 | -75.57000000 |
| 11 | | WQZF733 | Land Mobile | Broome County Emergency Services | 33.5 | 42.06205556 | -75.56994444 |
| 12 | | WQZF734 | Land Mobile | Broome County Emergency Services | 33.5 | 42.06205556 | -75.56994444 |
| 13 | | WQZF733 | Microwave | Broome County Emergency Services | 33.53 | 42.06205556 | -75.56994444 |
| 14 | | WPLY807 | Land Mobile | BROOME, COUNTY OF | 46.0 | 42.06230556 | -75.56936111 |
| 15 | | KKL552 | Land Mobile | BROOME, COUNTY OF | 31.0 | 42.06230556 | -75.56908333 |
| 16 | | KKL552 | Land Mobile | BROOME, COUNTY OF | 23.0 | 42.06230556 | -75.56908333 |
| 17 | | KKL552 | Land Mobile | BROOME, COUNTY OF | 3.1 | 42.06230556 | -75.56908333 |
| 18 | | WDT328 | Land Mobile | BROOME, COUNTY OF | 18.0 | 42.06230556 | -75.56908333 |
| 19 | | WNVC996 | Land Mobile | New York, State of | 6.0 | 42.06230556 | -75.56908333 |
| 20 | | KED639 | Land Mobile | BROOME, COUNTY OF | 31.0 | 42.06230556 | -75.56908333 |
| 21 | | KSJ590 | Land Mobile | STATE OF NEW YORK DIVISION OF STATE POLICE | 47.0 | 42.06230556 | -75.56908333 |
| 22 | | WNAZ708 | Land Mobile | BROOME, COUNTY OF | 24.0 | 42.06230556 | -75.56908333 |
| 23 | | WNQR312 | Land Mobile | WINDSOR CENTRAL SCHOOL DISTRICT | 43.3 | 42.06230556 | -75.56908333 |
| 24 | | WPIW501 | Land Mobile | New York State Electric & Gas Corporation | 30.0 | 42.06230556 | -75.56908333 |
| 25 | | WPIZ922 | Land Mobile | New York State Electric & Gas Corporation | 30.0 | 42.06230556 | -75.56908333 |
| 26 | | WQXU815 | Land Mobile | Broome, County of | 54.9 | 42.06230556 | -75.56908333 |
| 27 | | WQRY386 | Land Mobile | CONWAY, ROBERT, J: CONWAY, THOMAS, J | 59.4 | 42.06233333 | -75.56894444 |
| 28 | | WQXU815 | Land Mobile | Broome, County of | 12.2 | 42.06269444 | -75.42255556 |
| 29 | | WQDX581 | Land Mobile | Deposit Central Schools | 18.3 | 42.06663889 | -75.41891667 |
| 30 | | KEG470 | Land Mobile | BINGHAMTON VOLUNTEER FIRE CO INC | 21.0 | 42.06675000 | -75.54963889 |
| 31 | | KBL394 | Land Mobile | DELAWARE COUNTY | 18.0 | 42.07258333 | -75.40294444 |

| ID | Tower ID | Callsign | Service Type | Licensee | Antenna Height AGL (m) | Latitude (NAD83) | Longitude (NAD83) |
|----|----------|----------|--------------|---|------------------------|------------------|-------------------|
| 32 | Tower004 | WQTG897 | Microwave | Uniti Fiber PEG, LLC | 32 | 42.07613889 | -75.60583333 |
| 33 | | WNZS287 | Land Mobile | DEPOSIT, VILLAGE OF | 18.0 | 42.09452778 | -75.44655556 |
| 34 | Tower005 | KNKA578 | Cellular | Bell Atlantic Mobile Systems of Allentown, Inc. | | 42.09600000 | -75.60350000 |
| 35 | Tower005 | WMM872 | Microwave | Binghamton MSA Limited Partnership(NY) | 74.98 | 42.09600000 | -75.60350000 |
| 36 | | WQPV652 | Land Mobile | BROOME, COUNTY OF | 54.9 | 42.12913889 | -75.42950000 |
| 37 | | WQRN496 | Land Mobile | BROOME, COUNTY OF | 54.9 | 42.12913889 | -75.42950000 |
| 38 | Tower006 | WRAK568 | Land Mobile | REPEATER NETWORK LLC | 94.5 | 42.13083333 | -75.42947222 |
| 39 | | WQUI560 | Land Mobile | Binghamton Psychiatric Center | 21.0 | 42.13341667 | -75.54963889 |

Table 2: Summary of Communication Antennas

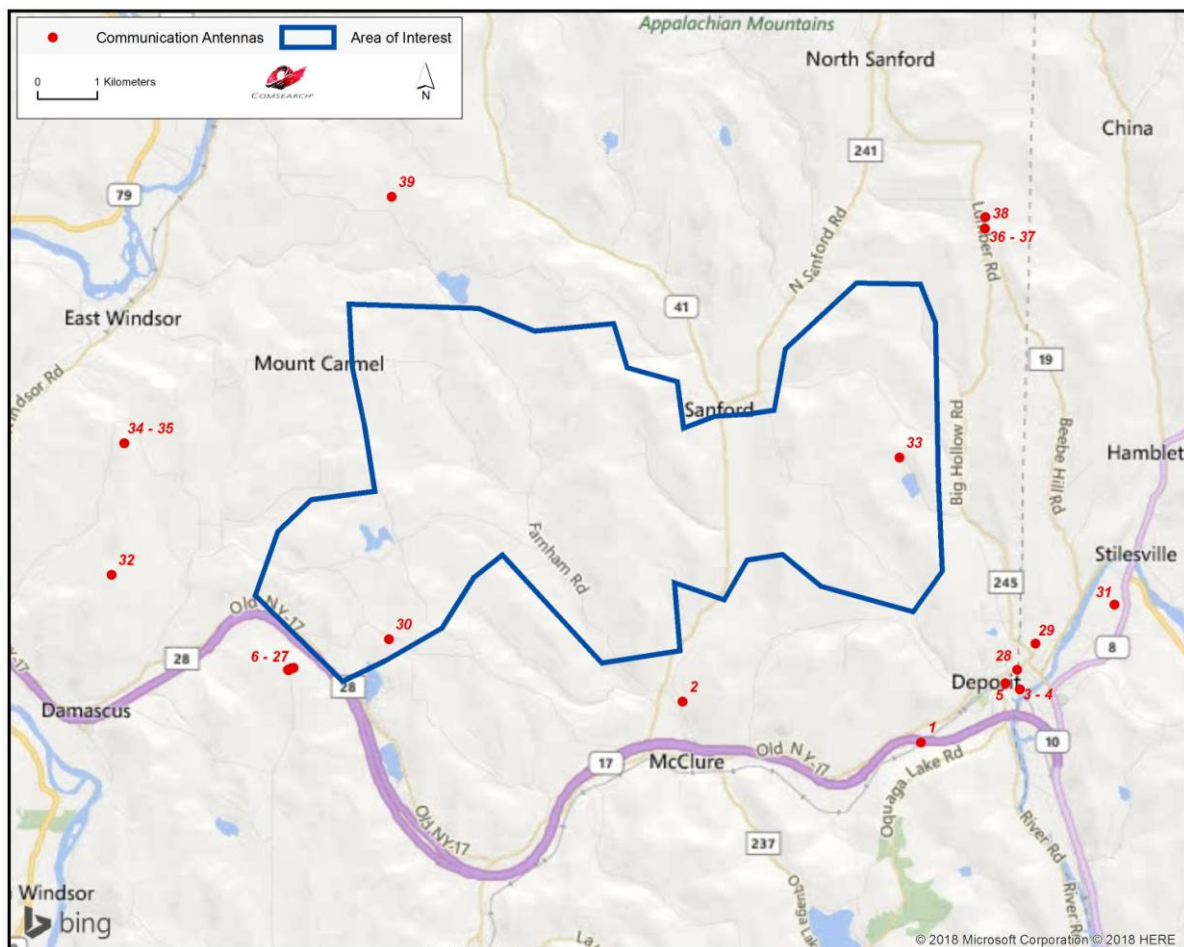


Figure 2: Communication Antennas within or near the Area of Interest

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 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 six tower structures and thirty-nine communication antennas within the project area plus an extended 2-mile buffer from the project boundary. They are used for microwave, land mobile and cellular services in the area.



5. Contact Us

For questions or information regarding the Communication Tower 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 |