

Wind Power GeoPlanner™

Land Mobile & Emergency Services Report

Bluestone Wind Project



Prepared on Behalf of
Bluestone Wind, LLC

May 4, 2018



Table of Contents

1. Introduction	- 1 -
2. Summary of Results	- 2 -
3. Impact Assessment	- 7 -
4. Recommendations	- 8 -
5. Contact	- 8 -

1. Introduction

An assessment of the emergency services in the Bluestone Wind Project area¹ 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 Broome and Delaware Counties, New York, appears in Figure 1.



Figure 1: Area of Interest (AOI)

¹ For this purposes of this study, the area considered includes a two-mile buffer around the project boundary.

2. Summary of Results

Our land mobile and emergency services incumbent data² 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 in and around the project area appears in Figure 2.

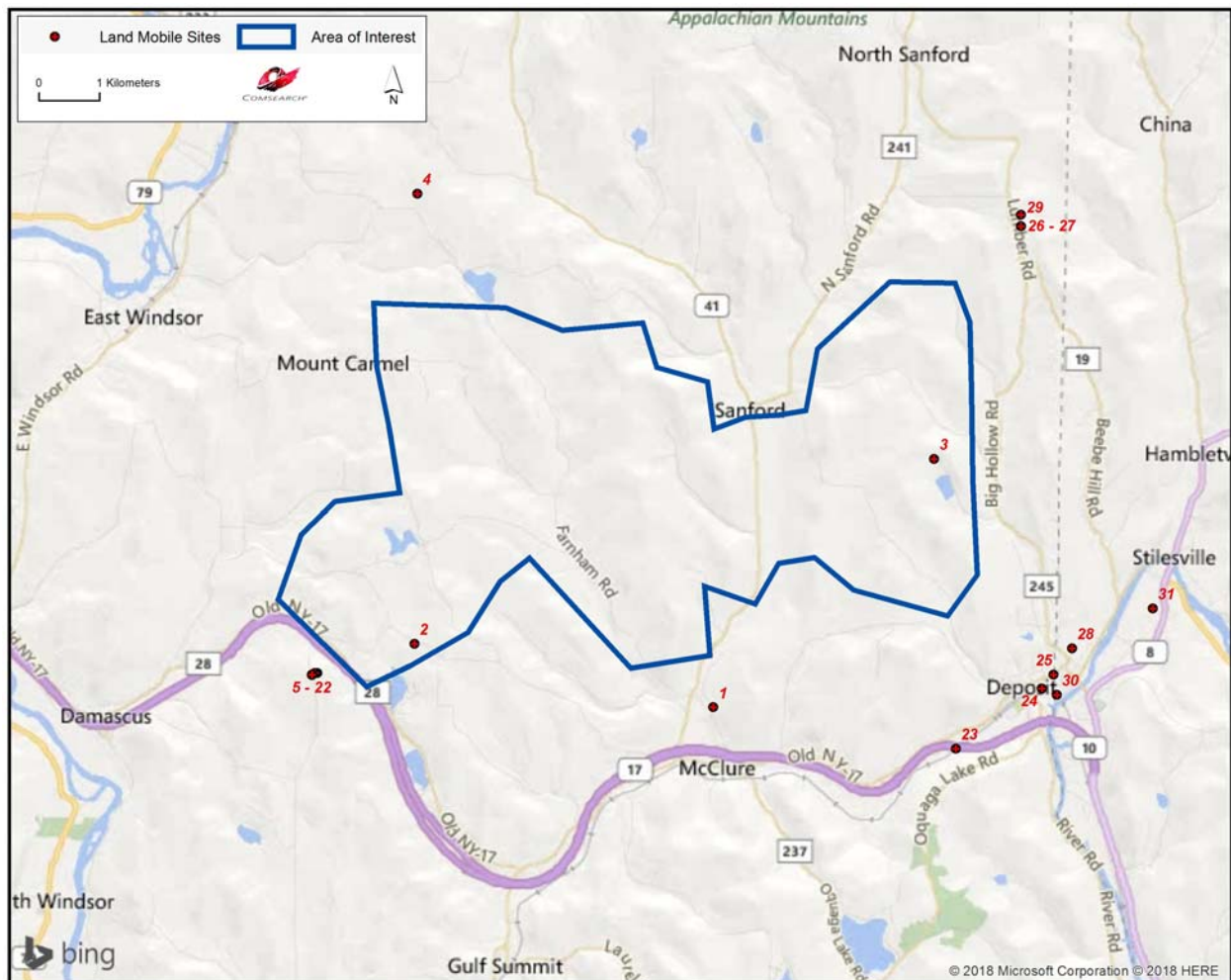


Figure 2: Land Mobile & Emergency Service Sites in Area of Interest

Figure 2 identifies thirty-one site-based licenses in and around the Bluestone 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 Center of AOI (km)
1	WNVD201	150-174	New York, State of	4.0	42.057583	-75.490167	3.90
2	KEG470	25-50	Binghamton Volunteer Fire Co., Inc.	21.0	42.066750	-75.549639	4.60
3	WNZS287	150-174	Deposit, Village of	18.0	42.094528	-75.446556	4.81
4	WQUI560	450-470	Binghamton Psychiatric Center	21.0	42.133417	-75.549639	6.01
5	WQRY386	450-470	Conway, Robert, J: Conway, Thomas, J	59.4	42.062333	-75.568944	6.21
6	WPIZ922	150-174	New York State Electric & Gas Corporation	30.0	42.062306	-75.569083	6.22
7	KED639	150-174	Broome, County of	31.0	42.062306	-75.569083	6.22
8	KKL552	450-470	Broome, County of	3.1	42.062306	-75.569083	6.22
9	KKL552	150-174	Broome, County of	23.0	42.062306	-75.569083	6.22
10	KKL552	25-50	Broome, County of	31.0	42.062306	-75.569083	6.22
11	KSJ590	150-174	New York Division of State Police	47.0	42.062306	-75.569083	6.22
12	WDT328	450-470	Broome, County of	18.0	42.062306	-75.569083	6.22
13	WNAZ708	450-470	Broome, County of	24.0	42.062306	-75.569083	6.22
14	WNQR312	450-470	Windsor Central School District	43.3	42.062306	-75.569083	6.22
15	WPIW501	150-174	New York State Electric & Gas Corporation	30.0	42.062306	-75.569083	6.22
16	WQXU815	150-174	Broome, County of	54.9	42.062306	-75.569083	6.22
17	WNVC996	150-174	New York, State of	6.0	42.062306	-75.569083	6.22
18	WPLY807	800/900	Broome, County of	46.0	42.062306	-75.569361	6.24
19	WQDX581	450-470	Deposit Central Schools	33.5	42.061972	-75.569944	6.30
20	WQIW290	150-174	New York State Electric & Gas Corporation	61.0	42.061972	-75.569944	6.30
21	WQPV652	450-470	Broome, County of	31.0	42.062028	-75.570000	6.30
22	WQRN496	450-470	Broome, County of	31.0	42.062028	-75.570000	6.30

² 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

ID	Call Sign	Frequency Band (MHz)	Licensee	Antenna Height AGL (m)	Latitude (NAD83)	Longitude (NAD83)	Distance to Center of AOI (km)
23	WQXL756	150-174	Delaware Otsego Corporation	12.2	42.051667	-75.441944	6.78
24	KIR720	150-174	Deposit, Village of	12.0	42.060639	-75.424889	7.40
25	WQXU815	150-174	Broome, County of	12.2	42.062694	-75.422556	7.48
26	WQPV652	450-470	Broome, County of	54.9	42.129139	-75.429500	7.51
27	WQRN496	450-470	Broome, County of	54.9	42.129139	-75.429500	7.51
28	WQDX581	450-470	Deposit Central Schools	18.3	42.066639	-75.418917	7.58
29	WRAK568	450-470	Repeater Network, LLC	94.5	42.130833	-75.429472	7.62
30	WQDB435	800/900	NPCR, Inc.	31.1	42.059722	-75.421944	7.67
31	KBL394	25-50	Delaware, County of	18.0	42.072583	-75.402944	8.65

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

Area-Wide Licenses

The regional area-wide licenses were compiled from FCC data sources and identified for each county in the wind energy project area. The Bluestone Wind Project is located in Broome and Delaware Counties, New York, part of Public Safety Region #30, which contains all of the counties in central and eastern Upstate New York. Regional public safety operations are overseen by the entity listed below.

Lee Shurtleff

Chairperson, Public Safety Region #30
Tompkins County Department of Emergency Response
92 Brown Road
Ithaca, NY 14850
phone: 607-257-3888
email: lshurtleff@tomkins-co.org

The chairperson for Region #30 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, twenty-seven licenses were found for the State of New York, nine for the County of Broome, and two for the County of Delaware (see Table 2). These area-wide licenses are designated for mobile use only.

ID	Licensee	Area of Operation	Frequency Band (MHz)
1	A O Fox Memorial Hospital	Countywide: Delaware	150-174
2	American National Red Cross	Countywide: Broome	450-470
3	American National Red Cross	Statewide: New York	25-50, 450-470, 800/900
4	Bergen Volunteer Fire Department	Statewide: New York	150-174
5	Broome, County of	Countywide: Broome	150-174, 450-470
6	Broome County Emergency Service	Countywide: Broome	4940-4990
7	Central Islip Hauppauge Volunteer Ambulance, Inc.	Statewide: New York	150-174
8	Delaware, County of	Countywide: Delaware	25-50, 150-174, 450-470, 800/900
9	Endwell Fire District	Countywide: Broome	25-50, 150-174
10	Erie, County of	Statewide: New York	25-50, 150-174, 421-430, 450-470
11	Massasauga Search and Rescue, Inc.	Statewide: New York	150-174
12	National Ski Patrol System, Inc.	Statewide: New York	150-174
13	New York, City of	Statewide: New York	450-470, 800/900, 4940-4990
14	New York City Police Department	Statewide: New York	150-174
15	New York, State of	Statewide: New York	0-10, 25-50, 150-174, 220-222, 450-470, 800/900, 4940-4990
16	New York State Department of Corrections and Community Supervision	Statewide: New York	150-174, 450-470, 4940-4990
17	New York State Department of Environmental Conservation	Statewide: New York	25-50, 150-174, 450-470
18	New York State Department of Health Bureau of Emergency Medical Services	Statewide: New York	25-50, 150-174, 450-470
19	New York State Department of Labor	Statewide: New York	150-174
20	New York State Department of Transportation	Statewide: New York	0-10, 4940-4990
21	New York State Division of State Police	Statewide: New York	25-50, 150-174, 220-222, 450-470, 800/900, 2450-2500, 4940-4990
22	New York State Emergency Management Office	Statewide: New York	25-50, 150-174
23	New York State Office of Parks, Recreation, and Historic Preservation	Statewide: New York	450-470
24	New York State OPRHP - Albany Region	Statewide: New York	150-174

ID	Licensee	Area of Operation	Frequency Band (MHz)
25	New York State OPRHP - Long Island Region	Statewide: New York	150-174
26	New York State OPRHP - Niagara Region	Statewide: New York	150-174
27	Niagara Frontier Search and Rescue	Statewide: New York	150-174
28	Northeast Mobile Search and Rescue, Inc.	Statewide: New York	150-174
29	Northeastern Forest Fire Protection Compact	Statewide: New York	25-50, 150-174
30	Ossining, Village of	Statewide: New York	25-50, 450-470
31	Ouaquaga Fire Company, Inc.	Countywide: Broome	25-50
32	Triborough Bridge and Tunnel Authority	Statewide: New York	4940-4990
33	Vestal Volunteer Emergency Squad, Inc.	Countywide: Broome	150-174
34	West Endicott Hose Co., Inc.	Countywide: Broome	25-50
35	Western New York Search Dogs Inc	Statewide: New York	150-174
36	Windsor, Village of	Countywide: Broome	25-50, 150-174
37	Windsor-Colesville Fire District	Countywide: Broome	450-470
38	Woodbury, Town of	Statewide: New York	4940-4990

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 Broome and Delaware Counties, New York in Table 3.

Mobile Phone Carrier	Service ³	
	Broome County, New York	Delaware County, New York
AT&T	AWS, Cellular, PCS, WCS, 700 MHz	AWS, Cellular, PCS, WCS, 700 MHz
Blue Wireless	PCS	-
Delaware PCS Limited Partnership	-	WCS
DISH Network	AWS, 700 MHz	AWS, 700 MHz
Sprint	PCS	PCS
T-Mobile	AWS, PCS, 700 MHz	AWS, PCS, 700 MHz
Verizon	AWS, Cellular, PCS, 700 MHz	AWS, Cellular, PCS, 700 MHz

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 Bluestone 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 in regards 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

³ 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

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 emissions in the land mobile bands.

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:

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