Wind Power GeoPlanner™

Land Mobile & Emergency Services Report

High Bridge Wind Farm

Prepared on Behalf of
Calpine Corporation

February 19, 2019

COMSEARCH®
A CommScope Company

Table of Contents

1. Introduction - 1 -

2. Summary of Results - 2 -

3. Impact Assessment - 7 -

4. Recommendations - 7 -

5. Contact - 8 -

1. Introduction

An assessment of the emergency services in the High Bridge Wind Farm project area 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 two miles of 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 Chenango and Otsego Counties, New York, appears below in Figure 1.

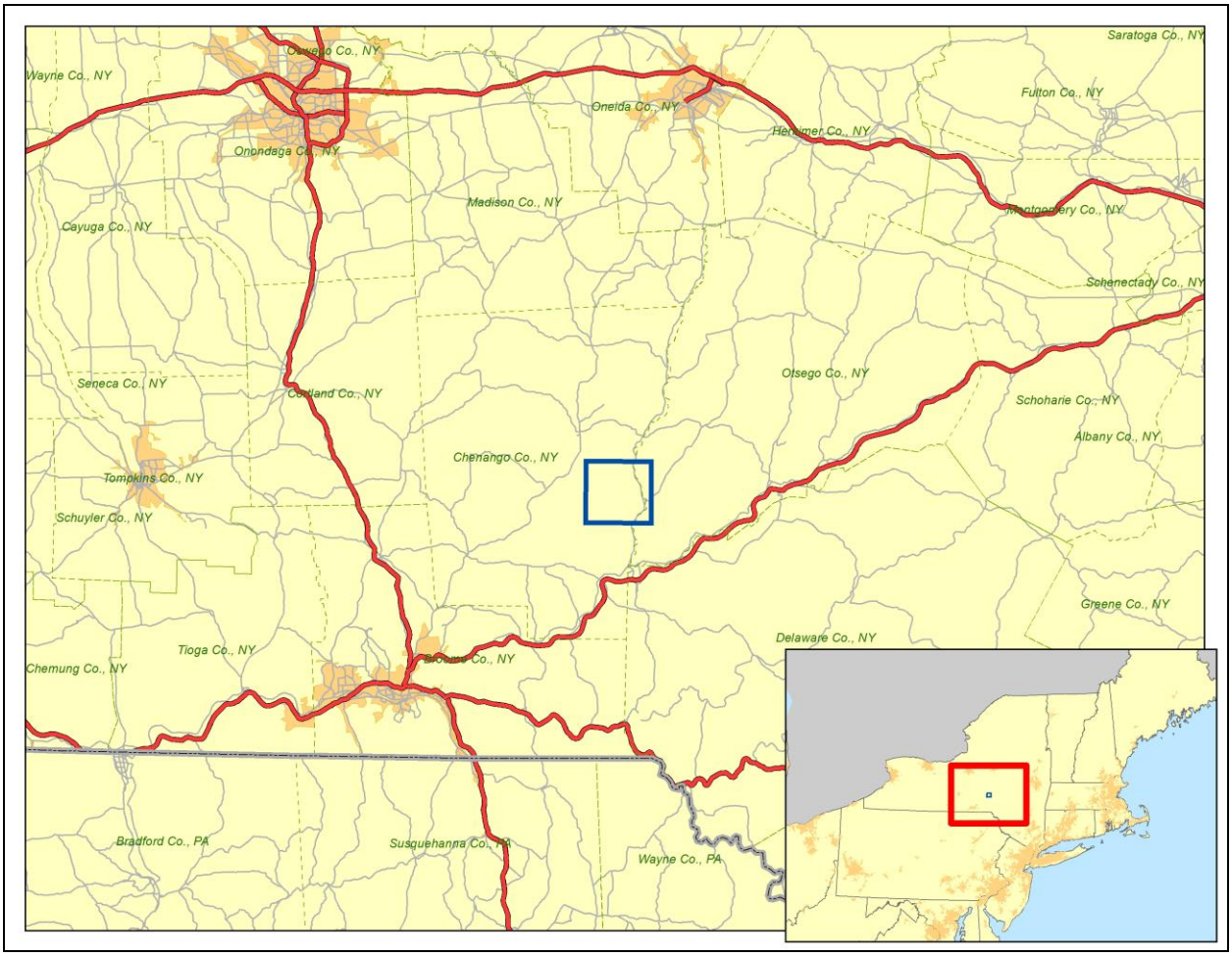

Figure 1: Area of Interest (AOI)

2. Summary of Results

Our land mobile and emergency services incumbent data[1] 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.

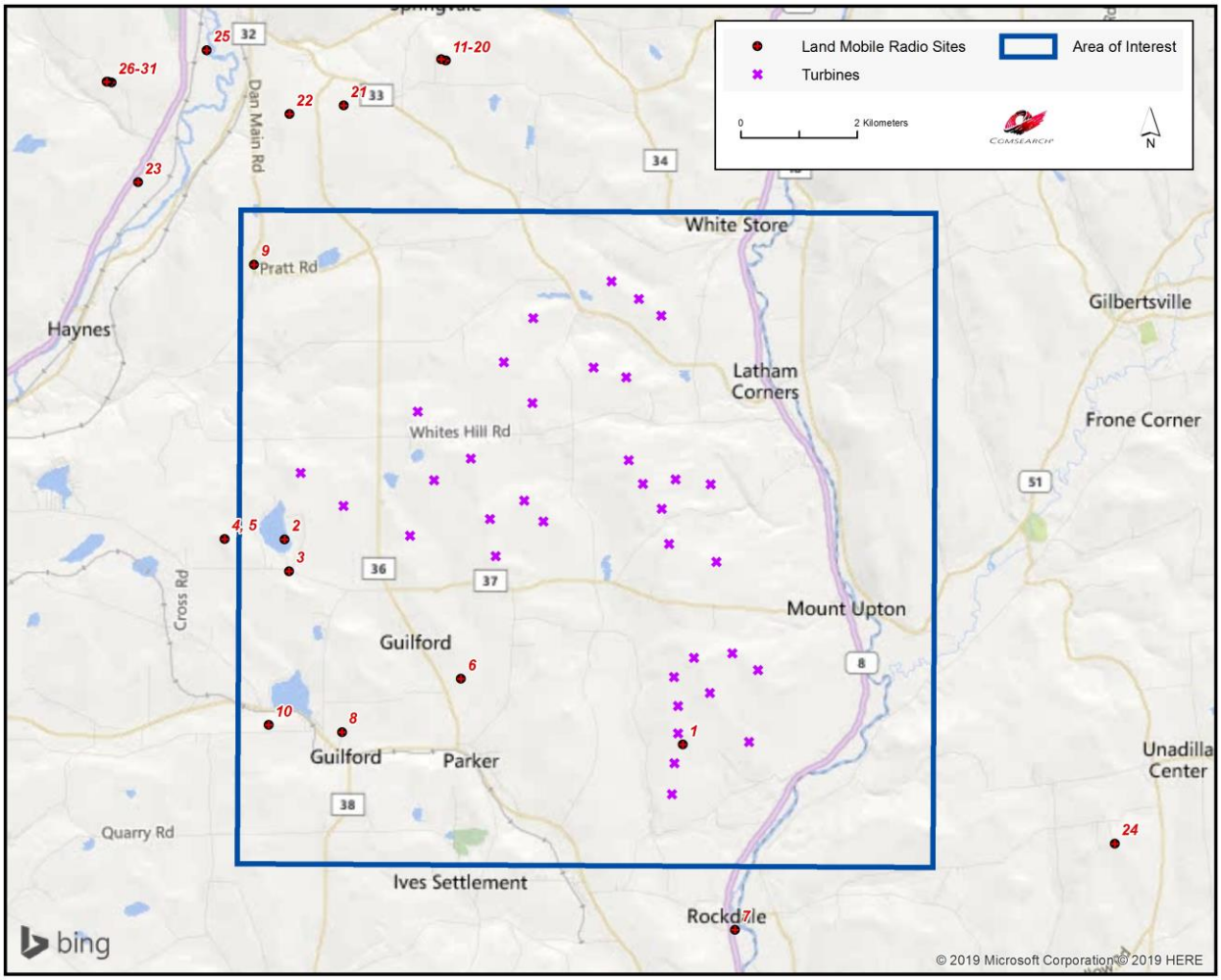

Figure 2: Land Mobile & Emergency Service Sites within two miles of Area of Interest

Figure 2 identifies thirty-one site-based licenses within two miles of the High Bridge Wind Farm 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 Nearest Turbine (km)
1	KNFP343	25-50	Chenango, County of	12	42.405639	-75.417667	0.21
2	WPQE541	450-470	Tri County Communications Inc	37	42.437028	-75.501028	1.16
3	WQVT310	450-470	Mesorah Co, LLC DBA Camp Mesorah	4	42.432111	-75.500056	1.46
4	WNRH607	450-470	Tri County Communications Inc	37	42.437028	-75.513528	1.73
5	WPTV351	450-470	Burrells Excavating Inc	36.5	42.437028	-75.513528	1.73
6	KNFP344	25-50	Chenango, County of	12	42.415639	-75.464056	2.19
7	KDO310	25-50	Chenango, County of	8	42.377028	-75.406556	2.57
8	WNVC997	150-174	New York, State of	4	42.407306	-75.488806	3.56
9	WPNU291	150-174	AA Taxi	7.6	42.479500	-75.507750	3.66
10	WPMT311	450-470	Guilford, Town of	30	42.408333	-75.504167	3.97
11	KLG423	25-50	New York, State of DOT	31	42.511194	-75.467944	4.67
12	WQY607	150-174	Chenango, County of	61	42.511194	-75.467944	4.67
13	WPNQ427	150-174	Creative Electronics, LLC	47	42.511194	-75.467944	4.67
14	WPUE572	25-50	Chenango County of	47	42.511194	-75.467944	4.67
15	WNVC996	150-174	New York, State of	6	42.511194	-75.467944	4.67
16	WQJN438	450-470	Chenango, County of	30.5	42.511194	-75.467944	4.67
17	WQJQ401	450-470	Chenango, County of	51.8	42.511194	-75.467944	4.67
18	WQJN438	450-470	Chenango, County of	51.8	42.511194	-75.467944	4.67
19	WQBE823	150-174	Chenango, County of	48.7	42.511389	-75.468889	4.71
20	WNNJ301	450-470	Board of Cooperative Educational Services	45.7	42.511389	-75.468889	4.71
21	WQFV264	150-174	Mobiletech Communications Corp	30.5	42.504167	-75.489167	4.89

[1] 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 Nearest Turbine (km)
22	WPTL804	800	Nextel West Corp.	47.9	42.502778	-75.500556	5.46
23	WPZN324	150-174	State of New York, Division of State Police	12	42.492111	-75.532111	5.72
24	WPEY853	450-470	Delaware Chenango Board of Cooperative Educational Services	30	42.390639	-75.327389	6.52
25	WPKW917	150-174	Norwich, City of	9	42.512583	-75.517972	7.18
26	WPUL240	150-174	Valley Ridge Cit	10.7	42.507500	-75.537778	7.45
27	WQDI624	25-50	New York, State of	26	42.507583	-75.538528	7.48
28	WQY607	150-174	Chenango, County of	36.5	42.507583	-75.538528	7.48
29	WQBE823	150-174	Chenango, County of	24.3	42.507583	-75.538528	7.48
30	WQJN438	450-470	Chenango, County of	36.6	42.507583	-75.538778	7.49
31	WQJQ401	450-470	Chenango, County of	36.6	42.507583	-75.538778	7.49

Table 1: Land Mobile & Emergency Service Sites Within Two Miles of the Area of Interest

Area-Wide Licenses

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

Lee Shurtleff
Chairperson, Public Safety Region #30
92 Brown Road
Ithaca, NY 14850
phone: 607-257-3888
email: lshurtleff@tompkins-co.org

The chairperson for Region #30 serves as the representatives 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-eight licenses were found for the State of New York and three for the County of Chenango (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: Chenango	150-174
2	American National Red Cross	Statewide: New York	25-50, 450-470
3	Bergen Volunteer Fire Department	Statewide: New York	150-174
4	Central Islip Hauppauge Volunteer Ambulance, Inc.	Statewide: New York	150-174
5	Chenango, County of	Countywide: Chenango	25-50, 150-174, 450-470
6	Chenango County Bureau of Fire	Countywide: Chenango	4940-4990
7	Erie, County of	Statewide: New York	450-470
8	Massasauga Search and Rescue, Inc.	Statewide: New York	150-174
9	National Ski Patrol System, Inc.	Statewide: New York	150-174
10	New York, City of	Statewide: New York	4940-4990
11	New York City Police Department	Statewide: New York	150-174
12	New York, State of	Statewide: New York	0-10, 25-50, 150-174, 220-222, 4940-4990
13	New York State Department of Corrections and Community Supervision	Statewide: New York	150-174, 450-470, 4940-4990
14	New York State Department of Environmental Conservation	Statewide: New York	25-50, 150-174, 450-470
15	New York State Department of Health	Statewide: New York	25-50, 150-174, 450-470
16	New York State Department of Labor	Statewide: New York	150-174
17	New York State Department of Transportation	Statewide: New York	0-10, 4940-4990
18	New York State Division of State Police	Statewide: New York	150-174, 450-470, 800/900, 2450-2500, 4940-4990
19	New York State Emergency Management Office	Statewide: New York	25-50
20	New York State Office of Parks, Recreation and Historic Preservation (OPRHP)	Statewide: New York	450-470
21	New York State (OPRHP) - Albany Region	Statewide: New York	150-174
22	New York State (OPRHP) - Long Island Region	Statewide: New York	150-174
23	New York State (OPRHP) - Niagara Region	Statewide: New York	150-174
24	Niagara Frontier Search and Rescue	Statewide: New York	150-174
25	Northeast Mobile Search and Rescue, Inc.	Statewide: New York	150-174

ID	Licensee	Area of Operation	Frequency Band (MHz)
26	Northeastern Forest Fire Protection Compact	Statewide: New York	25-50
27	Orleans, County of	Statewide: New York	150-174, 450-470
28	Ossining, Village of	Statewide: New York	25-50
29	Town of Woodbury	Statewide: New York	4940-4990
30	Triborough Bridge and Tunnel Authority	Statewide: New York	4940-4990
31	Western New York Search Dogs, Inc.	Statewide: New York	150-174

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 Chenango and Otsego Counties, New York in Table 3.

Mobile Phone Carrier	Service[2]
AT&T	AWS, Cellular, PCS, WCS, 700 MHz
Blue Wireless	PCS
DISH Network	AWS, 700 MHz
Sprint	PCS
T-Mobile	AWS, PCS, 700 MHz
Verizon	AWS, Cellular, PCS, 700 MHz

Table 3: Mobile Phone Carriers with E911 Service

[2] 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

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 High Bridge Wind Farm 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 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