

Wind Power GeoPlanner™

Land Mobile and Emergency Services Report

Copenhagen Wind Farm, LLC



Prepared on Behalf of
OwnEnergy

January 11, 2013



COMSEARCH
A CommScope Company

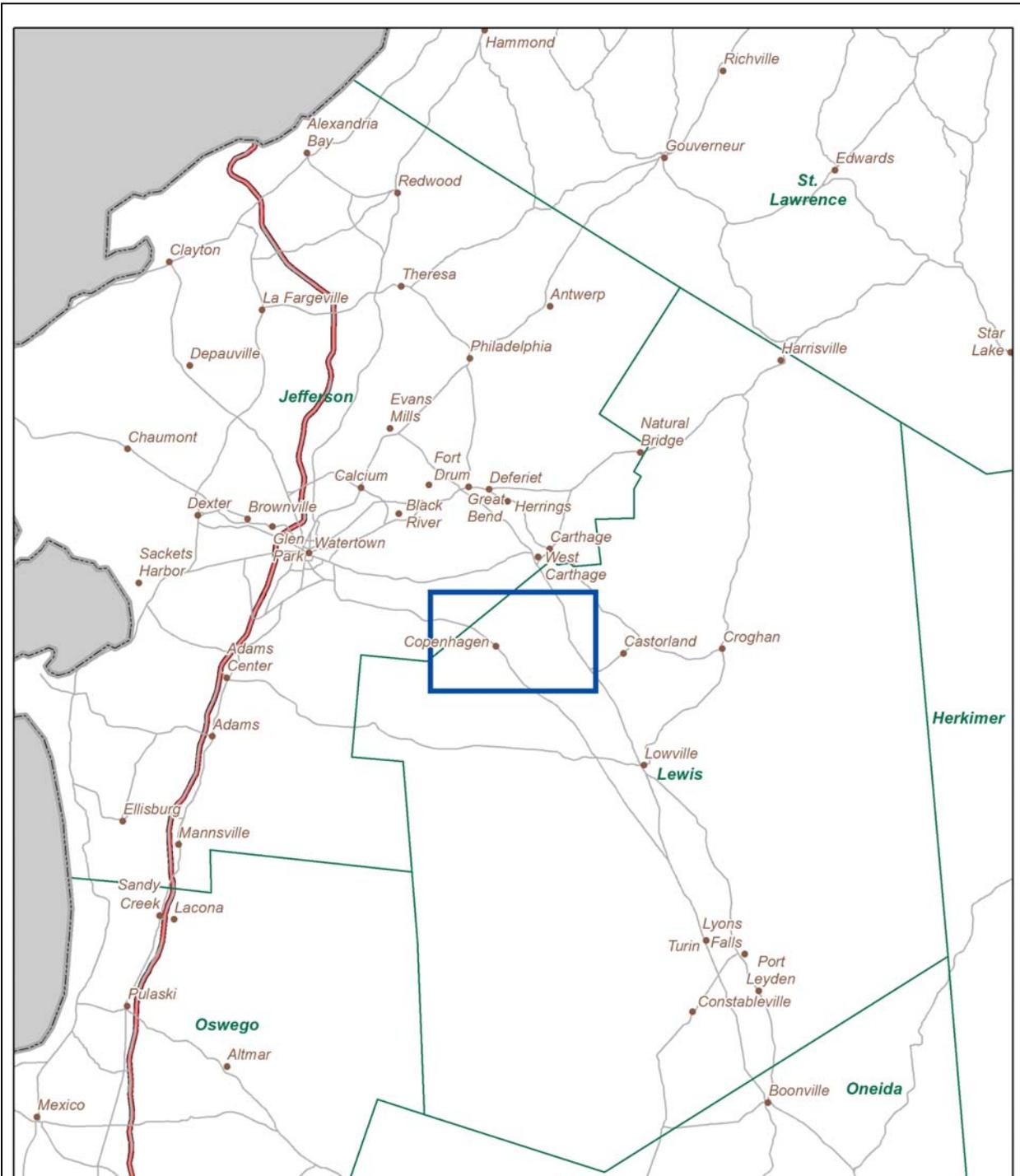
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1. Introduction

An assessment of the emergency services in the Copenhagen 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 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 Lewis County, New York, appears below.

This study was performed on behalf of OwnEnergy.



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- Legend**
-  Area of Interest
 -  Counties
 -  Urban Areas

2. Summary of Results

Our land mobile and emergency services incumbent data¹ 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. The site-based licenses were imported into GIS software and geographically mapped within 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 provided in a data table. A depiction of the fixed-site licenses in the project area appears in Figure 1, below.

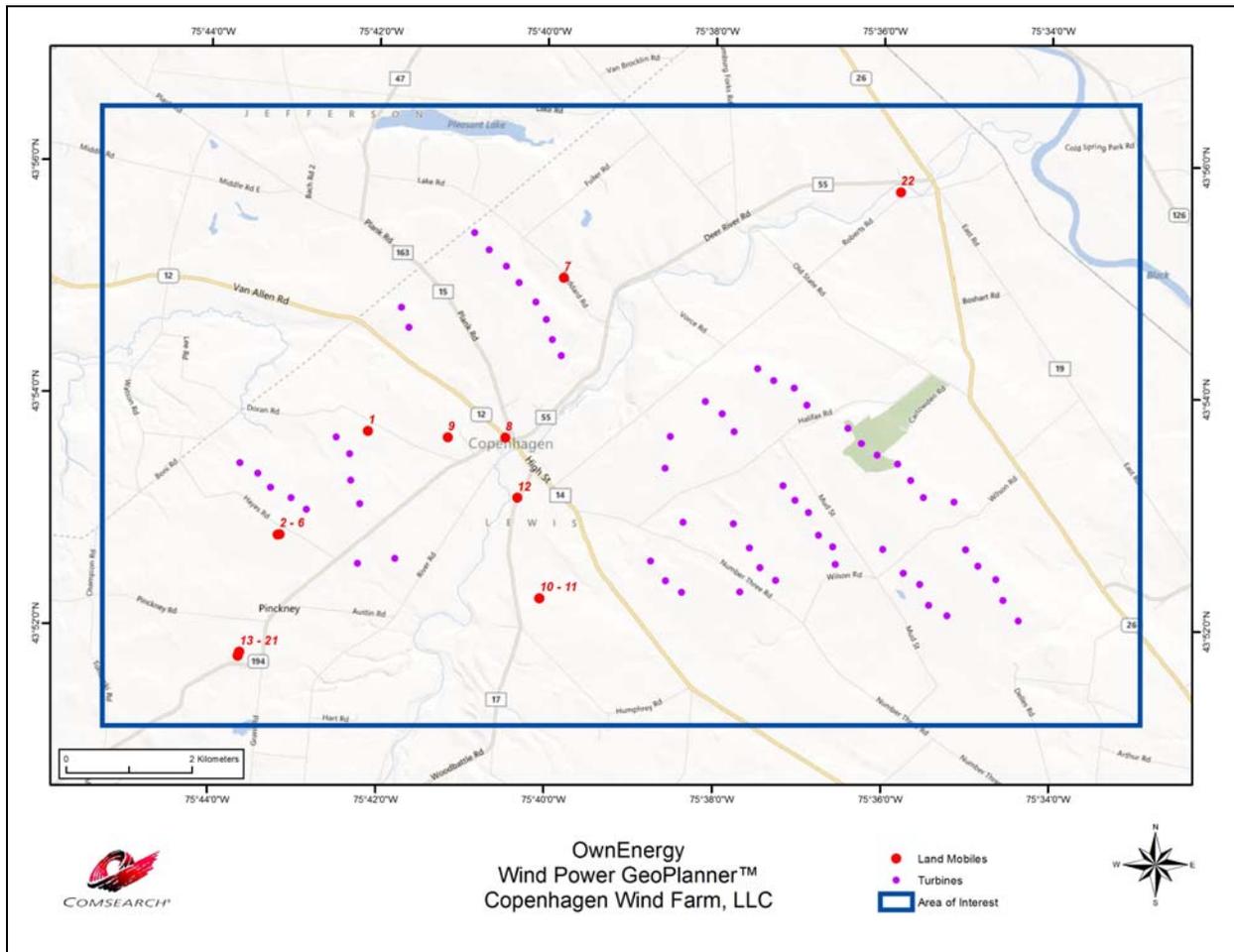


Figure 1: Land Mobile & Emergency Service Sites in the Project Area of Interest

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

Site-Based Licenses

Figure 1 identifies twenty-two site-based licenses in the project area of interest. Some of these sites are licensed to first responder entities that provide critical public safety and emergency communications to the Copenhagen Wind Farm project area. Specific information about these sites is provided in Table 1, including location coordinates, frequency band, antenna height above ground level, and licensee name.

ID	Call Sign	Frequency Band (MHz)	Licensee	Antenna Height AGL (m)	City/State	Latitude (NAD83)	Longitude (NAD83)	Distance to Nearest Turbine (km)
1	WPVJ573	800/900	Nextel WIP License Corp.	57.9	Denmark, NY	43.894722	-75.701944	0.47
2	KNNK941	150-174	Delta Communications of Watertown	49.0	Copenhagen, NY	43.879778	-75.719361	0.59
3	KPH957	450-470	Nexstar Broadcasting, Inc.	41.0	Denmark, NY	43.879778	-75.719361	0.59
4	WNQD392	450-470	Delta Communications of Watertown	137.0	Copenhagen, NY	43.879778	-75.719361	0.59
5	WPKI850	150-174	Lewis County Sheriff Dept.	43.0	Copenhagen, NY	43.879778	-75.719361	0.59
6	WXF827	25-50	Lewis, County of	76.0	Denmark, NY	43.879722	-75.719722	0.61
7	WQND534	450-470	Copenhagen, Village of	16.8	Copenhagen, NY	43.916944	-75.663333	0.59
8	WQND534	450-470	Copenhagen, Village of	10.1	Copenhagen, NY	43.893889	-75.674722	1.58
9	WQND534	450-470	Copenhagen, Village of	16.8	Copenhagen, NY	43.893889	-75.686111	1.59
10	WPJK328	25-50	Lewis, County of	14.0	Copenhagen, NY	43.870889	-75.667694	1.87
11	WZJ576	150-174	Copenhagen Central School	26.0	Copenhagen, NY	43.870889	-75.667694	1.87
12	WQND534	450-470	Copenhagen, Village of	5.5	Copenhagen, NY	43.885278	-75.672222	2.18
13	WPMP795	150-174	Wells Communication Service, Inc.	46.0	Copenhagen, NY	43.862833	-75.727139	2.36
14	WPPH817	150-174	Wells Communication Service, Inc.	122.0	Copenhagen, NY	43.862833	-75.727139	2.36
15	WQK455	450-470	Wells Communication Service, Inc.	-	Copenhagen, NY	43.862833	-75.727139	2.36

ID	Call Sign	Frequency Band (MHz)	Licensee	Antenna Height AGL (m)	City/State	Latitude (NAD83)	Longitude (NAD83)	Distance to Nearest Turbine (km)
16	WQK455	450-470	Wells Communication Service, Inc.	145.0	Copenhagen, NY	43.862833	-75.727139	2.36
17	WPYT789	450-470	Wells Communication Service, Inc.	45.0	Copenhagen, NY	43.862778	-75.727222	2.37
18	KED888	25-50, 150-174	Ney York State Division of State Police	82.0	Copenhagen, NY	43.862278	-75.727417	2.42
19	KNAD980	450-470	R G King General Construction, Inc.	122.0	Copenhagen, NY	43.862278	-75.727417	2.42
20	KPH384	450-470	St. Lawrence Valley Educational TV Council	98.0	Watertown, NY	43.862278	-75.727417	2.42
21	WPMM920	220-222	New York, State of	82.0	Copenhagen, NY	43.862278	-75.727417	2.42
22	KNCR739	150-174	Denmark, Town of	15.0	Carthage, NY	43.929583	-75.596611	3.56

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

Area-Wide Licenses

The regional area-wide licenses are compiled from FCC data sources and identified for each county in the wind project area. The Copenhagen Wind Farm project is located in Lewis County, New York, part of Public Safety Region #30, which contains all of the counties in northern and central Upstate New York. The regional public safety operation is overseen by the entity listed below.

Chief David Cook, Chairperson

East Greenbush Fire Company
2813 Phillips Road
Castleton, NY 12033
phone: 518-956-2812
fax: 518-477-6085
email: dcook@nycap.rr.com

The chairperson for Region #30 is a representative for all public safety entities in the region 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-four licenses were found for the State of New York and two for the County of Lewis (see Table 2). These area-wide licenses are designated for mobile use only.

ID	Frequency Band (MHz)	Licensee	Area of Operation
1	25-50, 450-470	American National Red Cross	Statewide: NY
2	150-174	Bergen Volunteer Fire Department	Statewide: NY
3	150-174	Central Islip Hauppauge Volunteer Ambulance, Inc.	Statewide: NY
4	25-50, 150-174, 421-430, 450-470	Erie, County of	Statewide: NY
5	25-50, 4940-4990	Lewis, County of	Countywide: Lewis
6	150-174	Lewis County General Hospital	Countywide: Lewis
7	150-174	Massasauga Search and Rescue, Inc.	Statewide: NY
8	150-174	Mohawk Valley Psychiatric Center	Statewide: NY
9	150-174	National Ski Patrol System, Inc.	Statewide: NY
10	150-174, 450-470, 769-775/799-805, 800/900, 4940-4990	New York, City of	Statewide: NY
11	150-174	New York City Police Department	Statewide: NY
12	0-10, 25-50, 150-174, 220-222, 450-470, 800/900, 2450-2500, 4940-4990	New York, State of	Statewide: NY

ID	Frequency Band (MHz)	Licensee	Area of Operation
13	150-174, 450-470, 4940-4990	New York State Department of Corrections and Community Supervision	Statewide: NY
14	25-50, 150-174, 450-470	New York State Department of Health, Bureau of EMS	Statewide: NY
15	25-50, 150-174	New York State Department of Environmental Conservation, Office of Public Protection	Statewide: NY
16	4940-4990	New York State Department of Transportation	Statewide: NY
17	25-50, 150-174, 450-470, 800/900, 2450-2500	New York State Division of State Police	Statewide: NY
18	0-10, 25-50, 150-174, 220-222, 4940-4990	New York State Emergency Management Office	Statewide: NY
19	150-174, 450-470	New York State Office of Parks, Recreation & Historic Preservation	Statewide: NY
20	150-174	Niagara Frontier Search and Rescue	Statewide: NY
21	150-174	Northeast Mobile Search and Rescue, Inc.	Statewide: NY
22	25-50, 150-174	Northeastern Forest Fire Protection Compact	Statewide: NY
23	25-50, 450-470	Ossining, Village of	Statewide: NY
24	4940-4990	Triborough Bridge and Tunnel Authority	Statewide: NY
25	150-174	Western New York Search Dogs, Inc.	Statewide: NY
26	4940-4990	Woodbury, Town of	Statewide: NY

Table 2: Summary of 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 Lewis County in Table 3, below.

Service ²	Mobile Phone Carrier	County	State
AWS / CELL / PCS	AT&T	Lewis	NY
PCS	MCG PCS	Lewis	NY
AWS	MetroPCS	Lewis	NY
PCS	Sprint Nextel	Lewis	NY
AWS / PCS	T-Mobile	Lewis	NY
AWS / CELL / PCS	Verizon	Lewis	NY

Table 3: Mobile Phone Carriers in the Area of Interest 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

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 Copenhagen 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, and 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 & Mitigation Measures

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 Us

For questions or information regarding the Emergency Services Report, please contact:

Contact person:	Denise Finney
Title:	Account Manager
Company:	Comsearch
Address:	19700 Janelia Farm Blvd., Ashburn, VA 20147
Telephone:	703-726-5650
Fax:	703-726-5595
Email:	dfinney@comsearch.com
Web site:	www.comsearch.com