

# Wind Power GeoPlanner™

## Mobile Phone Carrier Report

Copenhagen Wind Farm, LLC



Prepared on Behalf of  
OwnEnergy

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**COMSEARCH**  
A CommScope Company

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## **1. Introduction**

Comsearch has developed and maintains comprehensive technical databases containing information on licensed mobile phone carriers across the US. Mobile phone carriers operate in multiple frequency bands and are often referred to as Advanced Wireless Service (AWS), Personal Communication Service (PCS), and Cellular. They hold licenses on an area-wide basis which are typically comprised of several counties.

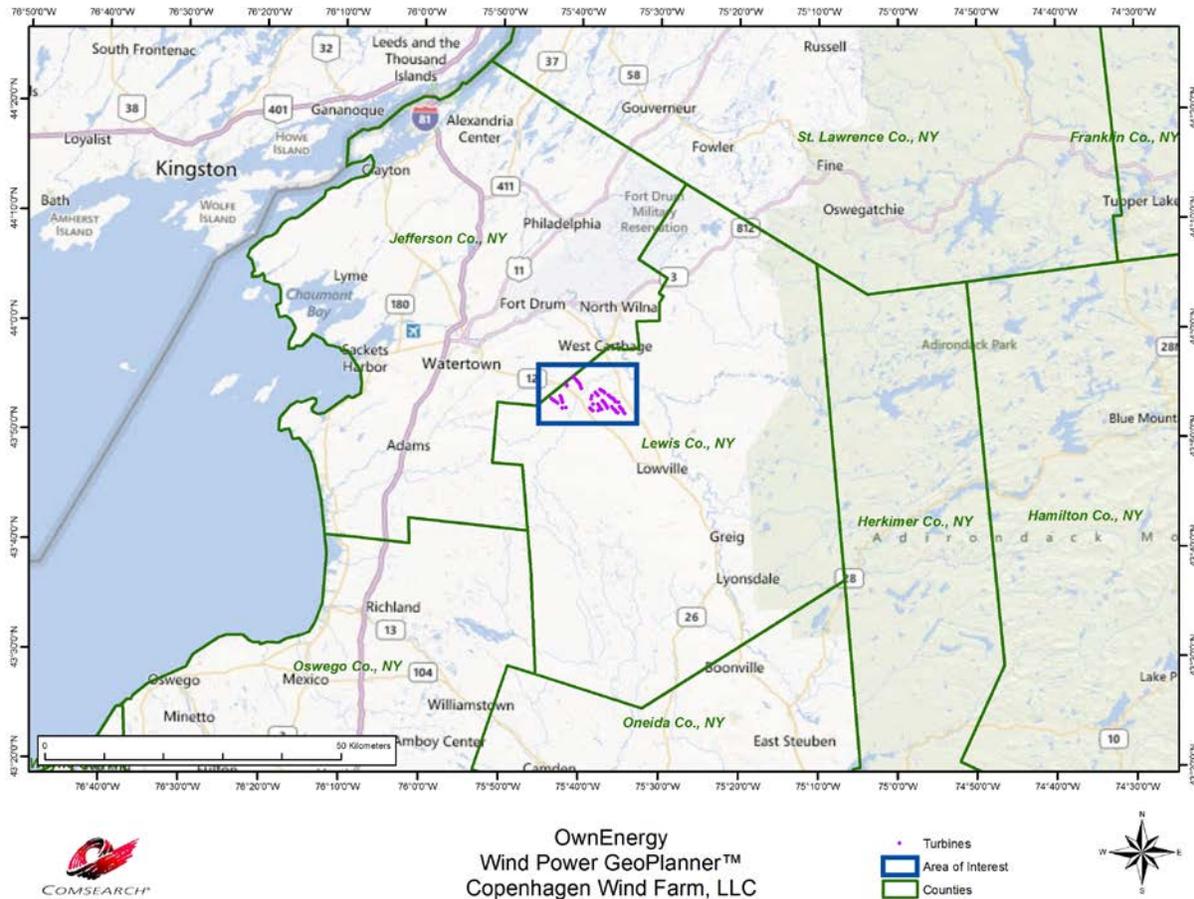
This report focuses on the potential impact of wind turbines on mobile phone operations in and around the project area. Comsearch provides additional wind energy services, a description of which is available upon request.

## **2. Summary of Results**

Our mobile phone analysis was performed using Comsearch's proprietary carrier database, which is derived from a variety of sources including the Federal Communications Commission (FCC)<sup>1</sup>. Since mobile phone market boundaries differ from service to service, we disaggregated the carriers' licensed areas down to the county level. Then we compiled a list of all mobile phone carriers in the main counties that intersect the area of interest. The area of interest was defined by the client and encompasses the planned turbine locations. A depiction of the wind project area and counties appears below.

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<sup>1</sup> 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](http://www.comsearch.com/files/data_license.pdf).



*Figure 1: Counties that intersect the Area of Interest*

The Copenhagen Wind Farm is located in Lewis County and Jefferson County, New York. We have identified the type of service, channel block, market ID and FCC callsign for each carrier in the county of interest. A description of the various service types and geographic market areas is provided below with a summary table following.

**AWS**

AWS licensees won their spectrum in an auction that started in August 2006. The licenses are authorized by 734 Cellular Market Areas (CMA) for Block A, 176 Economic Areas (BEA) for Blocks B and C, and 12 Regional Economic Area Groupings (REA) for Blocks D, E and F. This spectrum at 1.7 and 2.1 GHz was allocated for mobile broadband and advanced wireless services. Partitioning and leases are permitted in the band.

**Cellular**

Licensees are authorized by Metropolitan and Rural Statistical Areas, also known as CMAs. Unserved areas can be covered by licensees other than the original A or B block licensee. To determine the most realistic coverage, we compiled the Cellular Geographic Service Areas

(CGSA) from the 32 dBu contours defined by Part 22.911(a) of the FCC rules. Mobile services are provided at 800 MHz and partitioning and leases are permitted in the band.

### PCS

There have been nine auctions for this band, with the last one being held in August 2008. Licensees are authorized by 51 Major Trading Areas (MTA) for Blocks A and B, and 493 Basic Trading Areas (BTA) for Blocks C through F. This band has been heavily partitioned and disaggregated both by counties and by smaller polygons within counties (known as undefined areas or partial counties). The 1.9 GHz PCS carriers provide mobile services and leases are permitted in the band.

Service	Mobile Phone Carrier	Channel Block	County	ST	Market ID	Callsign
AWS	Verizon Wireless	F	Lewis/Jefferson	NY	REA001	WQGA715
AWS	MetroPCS	D	Lewis/Jefferson	NY	REA001	WQGA731
AWS	AT&T	A	Lewis/Jefferson	NY	CMA559	WQGA830
AWS	SpectrumCo	B	Lewis/Jefferson	NY	BEA006	WQGA903
AWS	T-Mobile	E	Lewis/Jefferson	NY	REA001	WQGB373
AWS	T-Mobile	C	Lewis/Jefferson	NY	BEA006	WQPG223
CELL	Verizon Wireless	B	Lewis/Jefferson	NY	CMA559	KNKN766
CELL	AT&T	A	Lewis/Jefferson	NY	CMA559	KNKN856
PCS	T-Mobile	A	Lewis/Jefferson	NY	MTA001	KNLF202
PCS	Sprint Nextel	B	Lewis/Jefferson	NY	MTA001	KNLF204
PCS	AT&T	D	Lewis/Jefferson	NY	BTA463	KNLG576
PCS	AT&T	E	Lewis/Jefferson	NY	BTA463	KNLG577
PCS	AT&T	F	Lewis/Jefferson	NY	BTA463	KNLH455
PCS	Verizon Wireless	C	Lewis/Jefferson	NY	BTA463	WPSJ989
PCS	AT&T	A	Lewis/Jefferson	NY	MTA001	WPSL626
PCS	MCG PCS	C	Lewis/Jefferson	NY	BTA463	WPTF728
PCS	Sprint Nextel	G	Lewis/Jefferson	NY	BEA006	WQKS996

*Table 1: Mobile Phone Carriers in the Area of Interest*

### 3. Impact Assessment

Cellular mobile phone signal propagation is typically not affected by physical structures because the beam widths of the radiated signal from the base stations and mobile units are very wide and the wavelength of the signal is long enough to wrap around objects such as wind turbine towers and blades. In addition, the cellular network consists of multiple base stations that are designed so that if the connection cannot be made to one base station it will shift to adjacent

base stations to make the connection. This enables cellular mobile telephone systems to provide coverage in areas that are congested with physical structures such as downtown urban areas. Areas containing wind turbines have less of a coverage issue than urban areas, so the wind turbines presence should not significantly impact mobile phone services.

## **4. Conclusions**

The telephone communications in the mobile phone carrier bands are typically unaffected by the presence of the wind turbines and we do not anticipate any harmful effect to mobile phone services in the Copenhagen Wind Farm area. Mobile phone systems are designed with multiple base transmitter stations covering a specific area. Since mobile telephone signals are designed with overlap between adjacent base transmitter sites in order to provide handoff between cells, any signal blockage caused by the wind turbines does not materially degrade the reception because the end user may be receiving from multiple transmitter locations.

For example, if a particular turbine attenuates the signal reception into a mobile phone, the phone may receive an alternate signal from a different transmit location, resulting in no disruption in service. Mobile phone systems that are implemented in urban areas near large structures and buildings often have to combat even more problematic signal attenuation and reflection conditions than rural areas containing a wind energy turbine facility.

## **5. Recommendations & Mitigation Measures**

In the unlikely event that a mobile phone carrier believes their coverage has been compromised by the presence of the wind energy facility, coverage may be restored by adding an additional cell site or an additional sector antenna to an existing cell.

## **6. Contact Us**

For questions or information regarding the Mobile Phone Carrier Report, please contact:

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