



# Wind Energy Services

The expertise to assess impact to communications systems

The use of wind energy, one of the oldest forms of harnessing a natural energy source, is now one of the fastest growing alternative energy sources. However, as new wind turbines are installed around the country, it is important to note that they may pose an obstruction and/or interference threat and hence a reliability reduction to the existing telecommunication systems in the area. These systems include all classes of equipment: microwave links, broadcast stations, mobile telephone, emergency hook-ups, maintenance services, utility and railroad controls and vital strategic data transfers.

Wind turbines can obstruct microwave paths by physically blocking the line-of-sight between two microwave transceivers. Additionally, wind turbines have the potential to cause signal attenuation and reflections. Other communication systems such as AM and FM radio, mobile telephone and other communication services, may also be impacted by the presence of wind turbines.

Many states and other jurisdictions recognize the need for regulations addressing obstruction to radio signal transmissions from the wind turbine installations. Specifically, local planning authorities typically require project developers to ensure wind turbines will not cause problems to existing

communications. In some cases they require developers to notify the telecommunication operators in the area of the proposed wind turbine installation. Other factors prompting developers to undertake proactive conflict mitigation include the need to prevent legal and regulatory/zoning problems and the desire to promote goodwill within the community—a good neighbor approach.

Comsearch has developed and maintains comprehensive technical databases containing information on licensed microwave and other communications networks throughout the United States. Many of these systems are the telecommunication backbone of the country, providing long-distance and local telephone service, backhaul for mobile phone service, data interconnects for mainframe computers and the Internet, network controls for utilities and railroads, and various video services.

### [Microwave GeoPlanner™ Report \(or beam study\)](#)

We assess all licensed non-Federal Government microwave paths by first evaluating worst case Fresnel Zones (beam paths) that intersect the wind energy project area. If any potential obstruction exists, we perform a 3-D Detailed Fresnel Zone Analysis to define the actual horizontal and vertical Fresnel Zone beam clearances.

### Coordination with Federal Government Systems

We coordinate with NTIA, the agency that manages Federal government spectrum, to determine if the proposed wind energy project will impact Federal Government links or other telecommunication assets.

### Communication Tower and Structures Identification

This study defines what commercial telecommunication systems are present in the vicinity of the proposed wind energy project. The study involves using a broad set of database resources so that the results can be relied on and used to decide what additional communication studies should be scheduled for the project.

### Television Broadcast Analysis

We identify television broadcasters within 150 km of the project area to determine which communities in the vicinity of the project may experience television signal reception issues.

### AM and FM Radio Broadcast Analysis

We identify the AM and FM broadcasters in the area and determine if their coverage will be affected by the project's wind turbines. FM stations are subject to line-of-sight coverage reduction. If this condition is found, the station(s) with this issue will be identified.

### Emergency Service Analysis Including E911

We identify site based and area-wide public safety and first responders licenses. All FCC licensed frequencies are included as well as mobile carriers that provide E911 services to the public.

### Mobile Telephone Analysis (Cellular, PCS and AWS)

We identify the cellular, PCS, and AWS operators that provide service in the vicinity of the project area.



### Radar Obstruction Analysis—Government and Commercial

We determine proximity to identified government and commercial Radar systems and assess obstruction impact from the project's wind turbines on the coverage of the Radar systems.

### Detailed Television Broadcast Analysis

We perform coverage analysis to identify impacted areas for lost TV system coverage caused by the presence of wind turbines. Additionally, we perform demographic analysis to estimate the number of affected households. Based on the analysis we recommend mitigation and cost trade-offs.

### Field Measurements—Baseline and Post Installation

AM, FM and TV Signal measurements to determine signal strengths and reception quality before and after the installation of the wind energy project's wind turbines.

Fixed measurements to determine the presence of Federal government and unlicensed signal in the project area. Signal strength and quality of reception before and after project installation will indicate impact. Interference emission measurements post installation at wind turbines and associated substations will identify if any conflicts are created.

Drive testing to determine signal strength and reception quality of all mobile telephone carriers in the vicinity of the project area. This same method can be applied to any land mobile communication system.



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