

Reliable Connectivity for Wind Farming Operations

Renewable Energy Company Remotely Monitors Wind Farms

For nearly thirty years, one of the largest and most successful wind energy companies in the world has continually led the charge within the renewables industry. They have been intimately involved in every aspect of sustainable wind energy projects; including research, development, engineering, construction, maintenance, electricity generation, and sales.

They've assisted governments, electric utilities, and investors with the design and construction of wind farms that are successfully and sympathetically integrated into the environment while providing a financially attractive source of renewable and sustainable energy production.

As of today, they've built over 1100 megawatts of wind plant energy capacity across the United States with over 800 wind turbines, including one of the world's largest mobilization wind farms.



Industry Profile

- Renewable Energy
- Rural Wind and Solar

Technology Solutions

- AirLink RV50X Gateways
- AirLink Management Service
- Custom Solar NEMA Boxes
- Poynting LPDA-92

Targeted Results

- Increased Bandwidth
- Lower Power Consumption
- Remote Management
- Improved Uptime
- Reliable Rural Connectivity



The Challenge | Finding A Reliable Wireless Connection for Remote Management

Every wind farm project has a research phase in which data is collected at potential wind farm sites to assess their suitability for wind production. Once a site is identified for evaluation, the company sends a team of wind data specialists to collect environmental information such as wind speed, wind direction, and temperature. The wind data is used to calculate the potential usable energy that can be generated by harnessing this natural energy source at the location.

Data is collected by erecting 200-foot meteorological towers on the proposed site. Traditionally, contracted field technicians retrieve and switch the data collection cards from each of the towers every month. The field technicians would then mail the data card to the wind data specialists back at the company's regional offices, where the data would be downloaded and analyzed. Since many of the sites are located in remote areas, sending technicians to the field every month was both a time-consuming and costly process.

In addition, there was a substantial delay between information gathering on-site and analysis back at the regional offices. Due to these delays, the organization would be unaware of any on-site equipment malfunctions or technical issues until after data cards had been analyzed, which created an unacceptable lag in technical response time to repair and maintain the wind monitoring equipment.

The company had previously tried an analog modem solution connected by wire-line service and powered by a solar battery. This proved to be too high in energy consumption, and the wire-line coverage was not broad enough to cover the desired geographic areas. They needed to find a reliable wireless solution to remotely manage the wind monitoring equipment and provide real-time, two-way communication for data collection and analysis.

The Solution | AirLink RV50X Gateways and Long Range LPDA Antennas

When they first began researching wireless monitoring solutions, the organization was looking for a solution that would provide an entry-level, low-cost, rugged wireless data solution that enabled two-way communication between the wind farm equipment and their regional offices. The initial solution they uncovered, from Sierra Wireless (*The Raven X*), provided great coverage and improved power consumption. However, as time passed and technologies advanced, they realized they needed a more powerful and intelligent wireless data solution. That's when they consulted with the team at USAT who recommended the newer AirLink RV50X gateway.

When used along with the AirLink Management Service (ALMS), they gained more extensive capabilities like remote monitoring and configuration, packet-level diagnostics, and over-the-air firmware updates. The comprehensive suite of tools and utilities provided by ALMS, simplifies integration, installation, operation, and maintenance of any wireless data solution.

USAT delivers renewable energy organizations the end-to-end 4G and 5G communications solutions they need to support their mission-critical fixed and mobile operations.



AirLink RV50X Gateway



In addition to recommending the RV50X modem, the USAT team provided turn-key integration and consulting services, including wireless RF propagation analysis to select the best wireless operator for each location and provisioning each modem with static IP addresses for always-on connectivity. To ensure reliable long range connectivity USAT recommended devices from their top antenna manufacturing partners like Poynting, ultimately helping them select the LPDA-92 to ensure maximum signal strength and reliability (even when their sites were located 25 miles away from the nearest local cell tower). And for locations that lacked access to reliable power sources, our team was able to engineer customized NEMA enclosures with photovoltaic solar arrays to supplement their power needs.

Poynting LPDA-92



The Results | Simplified Remote Monitoring and Immediate ROI

- **Simplified remote monitoring solution:** The company completely automated the collection and retrieval of critical data from its sites.
- **Improved communications:** The company now has persistent, real-time two-way connectivity and communications between its remote wind farm equipment and its regional offices.
- **Improved operations:** Any technical issues with the wind monitoring equipment can be identified and relayed immediately.
- **Decreased operational expenses:** The wireless solution has eliminated the need for the field technicians to travel on-site to retrieve the data cards.
- **Better strategic planning:** The organization now has more power and control to effectively analyze wind farm sites, enabling this company and their clients to make better business and financial decisions.
- **Immediate ROI:** The business reports that they recovered the cost of the modems within six months from initial deployment.

The Team | Device Provisioning, Activation and Installation Services

USAT serves the nation's critical infrastructure by creating secure communication networks that pass data wirelessly between key systems - linking remote facilities, personnel, and machine assets. USAT sells, designs, configures, and installs 4G and 5G wireless data communications hardware and software, providing targeted IoT connectivity solutions to fit each of our clients' exacting needs.

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