

CASE STUDY

SIERRA WIRELESS AirLink™ Products

Renewable Energy Systems

Renewable Energy Systems (RES) is one of the largest and most successful wind energy companies in the world and has been at the forefront of the industry for over 20 years. The company is intimately involved in most aspects of wind energy projects, including research, development, engineering, construction, maintenance, electricity generation and sales. RES has assisted governments, utility companies and investors to design and construct wind farms that are successfully and sympathetically integrated into the environment, while providing a financially attractive source of renewable and sustainable energy production. To date, RES has built over 1100 megawatts of wind plant energy capacity across the United States comprising over 800 wind turbines, including the world's largest mobilization wind farm at King Mountain, Texas.

Business Challenge

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 has been identified for evaluation, RES 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, RES contracted field technicians to 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 RES 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, RES would be unaware of any equipment malfunctions or technical issues on-site until after the data cards had been analyzed, which created an unacceptable lag in technical response time to repair and maintain the wind monitoring equipment.

According to the American Wind Energy Association (AWEA), wind power development is beneficially impacting the USA economically and environmentally.

In 2005, wind power was the second largest source of new power generation in the United States after natural gas..



RES had previously tried an analog modem solution connected by wireline service and powered by a solar battery. This proved to be too high in energy consumption, and the wireline coverage was not broad enough to cover the desired geographic areas. The company 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.

Sierra Wireless AirLink™ Solution

RES first began researching wireless monitoring solutions in early 2005 and discovered the Sierra Wireless AirLink Redwing modem, an entry-level, low cost, rugged wireless data solution that enabled two-way communication between the wind farm equipment and RES regional offices. The company found that the AirLink Redwing had better coverage and improved power consumption. RES, however, soon realized they needed a more powerful and intelligent wireless data solution and discovered Sierra Wireless' AirLink Raven Ethernet (Raven-E) modem.

Equipped with ALEOSTM, the embedded core technology available only from Sierra Wireless, AirLink Raven-E modems are powerful and versatile communications devices enabling pervasive connectivity to fixed and mobile assets. ALEOS provides extensive capabilities like remote monitoring and configuration, packet-level diagnostics and over-the-air firmware updates, while AceWareTM, the Sierra Wireless comprehensive suite of tools and utilities, simplifies integration, installation, operation and maintenance of any wireless data solution.



CASE STUDY: Renewable Energy Systems

Sierra Wireless Solution, continued

Given the complexity of the solution, RES called on Sierra Wireless partner Mobile Electron, an award-winning wireless data systems integration and consulting company that specializes in crafting remote telemetry and data collection solutions. After assessing RES' current capabilities and future needs, Mobile Electron recommended the AirLink Raven-E intelligent modems as the platform for both GSM and CDMA wireless data communication over public carrier networks, with emphasis focused on enabling an IP-based solution.

In addition to recommending the Raven-E modems, Mobile Electron provided turnkey integration and consulting services to RES, including wireless RF propagation analysis to select the best wireless operator in a given market; negotiating wireless data agreements with numerous operators and provisioning the modems with static IP addresses for always-on connectivity.



"The Sierra Wireless AirLink modems are very straightforward and easy to use," said Cody Cox, wind data specialist at Renewable Energy Systems Ltd. "With the help of Mobile Electron, which provided excellent technical support and handled all our questions, we have been able to deploy a wireless remote monitoring solution in a phased rollout to multiple wind farm sites around the country."

Results

RES has completed the first phase of its deployment across North America, with more rollouts planned over the next few years. The company estimates that it has taken a mere 5-6 months for the modems to pay for themselves in terms of increasing operational efficiencies and lowering overhead costs.

The new wireless data solution employing AirLink Raven-E devices has resulted in significant benefits to RES and the many diverse clients served by the company:

- **Simplified remote monitoring solution** - RES 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** - RES has more power and control to effectively analyze wind farm sites, enabling RES and its clients to make better business and financial decisions.
- **Immediate ROI** - RES estimates that it will recover the cost of the modems within six months from initial deployment. "The Sierra Wireless AirLink solution has provided very reliable, real-time data to help us streamline our operations and overhead. Armed with this valuable information, we can help our clients and investors make sound business decisions about whether to invest millions of dollars to build a wind farm in a given area," remarked Craig Matizinsky, president of RES. "This innovative use of wireless data technology allows us to continue our mission of harnessing an inexhaustible energy source for North America."

The continuation of development of wind energy by RES will have a significant impact on the future of global warming. AWEA claims that today's wind energy is keeping 16 million tons of carbon dioxide (CO₂), the leading greenhouse gas associated with global warming, out of the air every year.

Sierra Wireless - Connecting people and systems to mobile broadband networks around the world

Sierra Wireless modems and software connect people all over the world with mobile broadband networks that keep them in touch, informed, and productive from wherever they need to be. The Company offers a diverse product portfolio addressing enterprise, consumer, original equipment manufacturer, machine-to-machine, and specialized vertical industry markets. Sierra Wireless also provides professional services to customers requiring expertise in wireless design, integration, and carrier certification. For more information, please visit our website, www.sierrawireless.com