

Customer Profile:

The Fort Peck Reservation homelands, located in the northeast corner of Montana, has almost 12,000 Assiniboine and Sioux tribal members. Approximately 6,000 reside on or near the Fort Peck Reservation. The reservation maintains several wind turbines for power generation, and they needed a way to remotely monitor and manage the turbine towers. D-Link and D-Link VAR Gaffaney's of Williston, Plentywood, and Glasgow offered the tribes a wireless solution. Gaffaney's has been providing office solutions to the region since 1943. Their customers order everything from pens and paper to new IT infrastructures.

"The D-Link DWL-7700AP can operate in very harsh conditions. This was the only product we found that could withstand -40° Fahrenheit. We could have gone with another access point, but then we'd need to build a heated building to house it."

- Paul Weyrauch, Owner -
Gaffaney's of Williston,
Plentywood, and Glasgow

Native American Tribes Manage Wind Power Generation Turbines in Brutal Sub-Zero Conditions with D-Link Wireless Solution

The Challenge

The northeast section of Montana, which borders North Dakota and Canada, features one of the coldest wind corridors in the country. A stiff wind blows almost 24 hours a day, 365 days a year. The area is also home to one of the nation's honored Native American societies – the Assiniboine and Sioux tribes of the Fort Peck Reservation.

Fort Peck generates power for the reservation with a progressive, environmentally conscious wind farm project. The installation features two 660-kilowatt wind turbines that take advantage of the consistent winds.

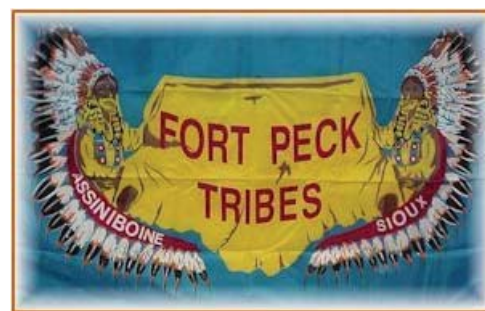
The turbines are located at the headquarter of the Fort Peck Tribes, about a mile away from town, but near the high winds. While the power lines from turbines carry power to the reservation, there was no way to efficiently monitor turbine operations on an intelligent network.

"We needed a way to control the wind generation towers," said Paul Weyrauch, owner Gaffaney's of Williston, Plentywood, and Glasgow. "We didn't want



Development of Wind Energy at Fort Peck

to run extra cables because of the expense involved, but we needed to monitor performance levels and be able to shut down the turbines in extremely windy conditions. We also had to consider the harsh weather conditions up here. It's very windy, and



Fort Peck Reservation, the ninth-largest Indian reservation in the United States, comprising parts of four counties, installed D-Link business class wireless solutions to control wind generation towers.

temperatures can drop to -40° Fahrenheit." The turbines were already installed, but there was no control network in place. "We needed to get it done right away to start realizing the value of the project," said Weyrauch. "All the specifications and research we looked at indicated that a wireless network would offer the most efficient, cost-effective solution. We proposed the project to the tribes, and they said, 'get it done.'"

The Solution

Gaffaney's of Williston, Plentywood, and Glasgow, a D-Link Value Added Reseller (VAR) offered the tribes a wireless solution. Gaffaney's helped the reservation install three DWL-7700AP Wireless AG Outdoor AP/BridgeAPs. One AP is mounted to the control facility, the second is mounted on a turbine 100 yards away and the third is mounted on a turbine 50 yards away.

The access points deliver feedback on how much power is being generated by each turbine and enable operations personnel to control the turbines remotely. Software from the turbine manufacturer controls each turbine over the wireless network.

Business Class Wireless



**D-Link DWL-7700AP Wireless AG
Outdoor AP/BridgeAPcrossoft®
Response Point™**

- Simultaneous 802.11a/g Connectivity
- Supports Integrated 802.3af Power over Ethernet
- Supports Multiple Operation Modes: Access Point (AP), Wireless Distribution System (WDS), and WDS with AP

“The D-Link DWL-7700AP operates in very harsh conditions,” said Weyrauch. “This was the only product we found that could withstand -40° Fahrenheit. Transmission capability over long distances was important, too. We could have gone with another access point, but then we’d need to build a heated building to house it.”

Each D-Link DWL-7700AP is enclosed in a die cast watertight housing and comes equipped with a built-in heater monitored by a temperature sensor. “It’s designed with heat sinking, so heat is dissipated during the summer, too,” said Weyrauch. The units also feature Power over Ethernet (PoE), which enabled the reservation to install the units where power outlets are not readily available.

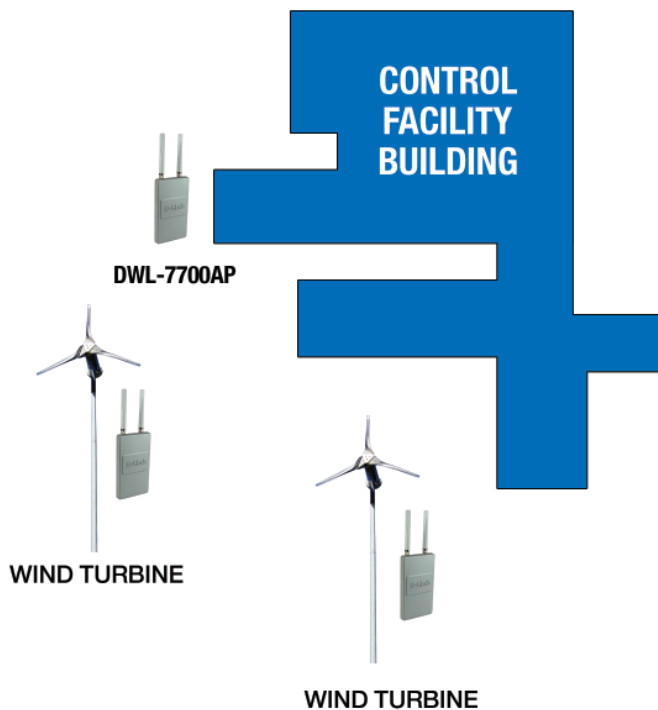
The installation went smoothly. “Everything went really well,” said Weyrauch. “It took two days – mostly mounting tasks.” Gaffaney’s recommended D-Link omni-directional antennas to extend

coverage through dead spots. They installed a D-Link 2.4GHz Omni-Directional Outdoor Antenna (ANT24-0800), which offers 360° expanded coverage and extends data throughput at farther distances. The ANT24-0800 includes a sturdy base for wall installation and a waterproof design to resist harsh weather conditions.

No Need for Support

Gaffaney’s had just installed the same D-Link access points at a nearby school district, so they were very familiar with the products. “We received great support on the school installation,” said Weyrauch. “The engineers we were put in touch with had excellent real-world experience. But we didn’t need support for this job.”

“We use these access points because they perform under harsh conditions,” reiterated Weyrauch. “The built-in heaters enable a wide range of operation. That’s the key.”



Gaffaney’s helped Fort Peck Reservation install D-Link wireless outdoor access points to deliver feedback on how much power is being generated by each turbine and enable operations personnel to control the turbines remotely