OutBack POWER™
an EnerSys company

Sacred Power

OFF-GRID CASE STUDY

SYSTEM SPECIFICATIONS	
Location	Navajo Nation, New Mexico
System Power	2.6 to 3.6kW systems
Components	FLEXpower ONE (FX inverter/charger, FLEXmax charge controller and MATE3)

OVERVIEW

For hundreds of years, Native American ancestors lived close to the earth in balance with nature. That tradition continues today with their descendants, with many modern tribal citizens working to preserve their ancestors' way of life and closeness to the earth while also enhancing their lives with technology and amenities. There are presently over 18,000 Native American homes without power. Many of them are located in remote, rural areas too far for power lines to reach—in some cases, only reachable by helicopter. Homes are usually on dirt roads 20 to 30 miles apart, and if it snows or rains, roads become impassible. Usually, it is too costly and not beneficial for utilities and infrastructure to expand power lines to their area; utilities don't see the potential to recoup their investment from the sparse profits.

In the past, Native Americans in these remote areas might have access to refrigeration only by storing ice in ice chests. Most appliances in hogans, traditional Navajo homes, or ranch homes would run on kerosene—from kerosene heaters and lanterns to kerosene-powered refrigerators. Any fuel must be transported to the point of use, adding to cost and complexity. A person living on a ranch might run a 5000W generator to power a 200W television, which wasn't very efficient and required a propane tank that could hold hundreds of gallons of propane. Native American children attend school, and today need lighting at home to read and study. Senior citizens' prescriptions require cool refrigeration, power for oxygen tanks or other medical devices. Tribal citizens required a clean source of energy that would provide reliable power for modern conveniences.

CHALLENGE

- Install a solar energy generation system to bring power to inaccessible, remote rural areas that had none before
- Mitigate greenhouse gases and fume inhalation of Navajo residents from a diesel generator and kerosene appliance operation
- Ensure uninterrupted power supply for food and supply refrigeration and preservation

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SOLUTION

According to the US Department of Agriculture, access to reliable, affordable electricity is paramount for the economic well-being and quality of life for all of the United States' rural residents. The USDA's move to provide electricity to rural inhabitants traces its roots to the Rural Electrification Act of 1936, which encourages energy service to customers in rural areas. Sacred Power, an OutBack Power integration partner and Native American-owned and operated provider of renewable and distributive energy systems, designed, manufactured and installed the 650 fully-assembled patented energy systems for the Navajo Nation in New Mexico, in cooperation with the USDA Rural Utility Service.

Since Sacred Power works with other US agencies beyond the USDA, such as the US Department of the Interior and the Bureau of Indian Affairs, the default choice for keeping its installations online with solar energy are OutBack Power's components that are designed, manufactured and tested in America. Each of these systems is powered by an OutBack FLEXpower ONE single inverter system due to their weather-resistant and rainproof engineering, as well as flexible capacity to support small hogans or large village energy demands within a compact design.

The Navajo homes now have access to electricity where they previously only used diesel or kerosene power. Electricity affords them the new ability to store more supplies, preserve food in refrigeration, read books and study at night. In addition, the Native Americans have better health because they aren't breathing fumes from kerosene-powered devices. In some cases, Native American artisans with new access to electricity can generate better income from e-commerce. They have started a company on the Internet and market their livestock, pottery, weaving or other skills from their remote villages.

OUTCOME

- Clean, economical solar electricity produced on-site at remote villages and homes, yielding refrigeration for preservation of supplies, medicine and lighting to homes while reducing or eliminating the need to import fuel
- Improved quality of life and better health enjoyed by rural residents
- Native American artisans take advantage of the new source of income from an access to reliable Internet and e-commerce
- Elimination of hundreds of gallons of kerosene as well as equipment maintenance, carbon emissions and greenhouse gases from operation of generators

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