

Program Highlights

- ▶ The payback period for the remote kits is 10-15 years.
- ▶ Each remote kit can reduce coal-based consumption by 2,245 kWh per year and carbon dioxide emissions by 4,500 pounds per year.
- ▶ WCTA has developed custom kits for the telecom industry.
- ▶ The project has been recognized by U.S. Senator Amy Klobuchar during the Green Jobs Tour and received recognition through the Carbon Buster Award.



Renewable Energy Kit for Remote Telecom Equipment

XCEL ENERGY RENEWABLE DEVELOPMENT FUND

With funding from Xcel Energy's Renewable Development Fund (RDF), West Central Telephone Association (WCTA), a rural Minnesota telephone provider servicing a 600-square-mile service area with phone, internet, and IPTV services, has developed a small wind/solar hybrid renewable energy kit for distributed generation. The kits can provide reliable electricity in remote areas that need essential services such as telecommunications. WCTA developed a monitoring system, installed five test systems, and optimized equipment settings and configurations to find the "sweet spot" for power production. Data were analyzed to verify the kit's technical, financial, and market feasibility as an electrical power solution for challenging, remote applications.

The Need for Renewable, Remote Power Kits

WCTA, a small rural telecom, has more than 100 remote equipment nodes that require constant power. WCTA recognized that the future demand on energy was not going to be met by current transmission lines and the current electricity industry. It approached the distributed generation system as a viable alternative for providing clean energy. Furthermore, WCTA seized the opportunity to create a hybrid kit to meet its energy needs, while helping manufacturers develop new and innovative products that can address a variety of applications, from highway department signals and lights to power at cabins and other off-grid locations.

The remote power kits can each reduce coal-based electricity consumption by an estimated 2,245 kWh/year. Additionally, the kits have the potential to fortify telecommunications infrastructure during power outages, help the U.S. meet the goals set in the FCC's 2010 National Broadband Plan to create sustainable infrastructure, provide a new market opportunity and green jobs in rural areas, and provide renewable energy and carbon credits to





utilities to help reach federal and state mandates.

The renewable power remote kits help WCTA provide energy independence, create local jobs, and participate in a green economy. WCTA's kits are a sound financial investment with an expected payback of 10-15 years, using current rebates and incentives. Grants from Xcel Energy's Renewable Development

Fund and other foundations greatly reduced WCTA's financial risk.

The West Central Telephone Association Solution

The lack of standardization in small wind turbine power ratings, the lack of a governing body to verify turbine and component claims, the incompatibility of various system components, and a high degree of technical complexity without decipherable user interfaces and/or documentation made it necessary for WCTA to create its own solution. Working with developers of solar monitoring software, WCTA created a cost-effective, customized solution to remotely monitor and record wind data and to pair solar, wind, and battery storage technologies. This independent solution enabled WCTA to keep track of wind data and optimize system configurations. The custom-designed kit is now available for other companies and can be used for both solar and wind.

The project consisted of two phases: preliminary research and development; and demonstration and testing. Phase I was funded by WCTA; Phase II was funded through Xcel Energy's RDF and consisted of setting up five test sites and demonstrating the kits.

Recipe for Success

This project was successful in part due to WCTA's ability to work the project into a business plan and develop future plans for franchising. A full economic feasibility study was done to determine cost-effectiveness. Even without the Xcel Energy RDF funding, the payback period of the kits remains within the life expectancy of the equipment.

Distributed generation appeared to be the best alternative for building and maintaining a reliable rural communications system, with clear ancillary public and environmental benefits. WCTA realized during this effort that there is real demand for the kits *when they are offered by credible installers*, a role rural telcos are well suited to serve. And, now that the kits have been custom-designed to meet the needs of the telecom industry, other companies with similar needs can benefit from the groundwork laid by WCTA and Xcel Energy.

Judges' Comments

There are many renewable energy installations across the U.S. where the economics only work because of subsidies; yet, there's a whole sector of the economy involving critical infrastructure where these technologies are not only cost effective but also have immense public benefit—think of Hurricane Katrina, for example. This highly replicable program is encouraging both innovation and the potential development of new products and businesses.



About the Xcel Energy Renewable Development Fund

The Xcel Energy Renewable Development Fund (RDF) is financed by Xcel Energy ratepayers to promote the startup, expansion, and attraction of renewable energy projects and companies in the Xcel Energy service area. It also stimulates research and development into renewable energy technologies. Both efforts are designed to increase the market penetration of renewable energy resources at reasonable costs.

Project funding to date has been in the form of grants and renewable production incentive (REPI) payments. RDF grants have been awarded to research universities, nonprofit organizations, commercial businesses, and governmental agencies. Grants support commercial technologies and research and development. REPI payments are made to qualifying small wind, biogas, and hydroelectric projects operating and generating electricity in Minnesota.

For more information

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