

Why Siemens and a California tribe are building a microgrid

Mike Hower

Friday, August 28, 2015 - 1:41am



Inside the workings of the Siemens Blue Lake Rancheria microgrid

A community's ability to "island" itself by quickly and seamlessly disconnecting from the electrical grid and autonomously generating power increasingly is becoming a pillar of resilience in the face of mounting climate impacts.

Just as extreme weather events such as Hurricane Sandy have exposed the vulnerability of the traditional electrical grid, they also have shown the resilience [potential of microgrids](#). Although the 2012 [superstorm knocked](#) out power at millions of locations across the East Coast, several microgrids famously were able to remain online and provide electricity.

By offering on-site energy generation that can operate both connected to and independently from the grid, microgrids give communities the option to become self-sufficient "energy islands" during times of grid disruption.

However, a community's ability to isolate itself from the grid isn't the same as simply being cut off from it, which is the case for many Native American reservations around the country. Extending utility distribution lines to remote locations can cost as much as \$60,000 a mile, according to the U.S. Department of Energy, which means that solar energy and battery storage often is the most cost-effective option for many.

Spread out over large, isolated areas, many Native American homes can't benefit from the electric grid. According to the Energy Information Administration, around 14 percent of households on Native American reservations lack access to electricity, 10 times higher than the national average.

A microgrid at Blue Lake Rancheria

Because they are responsible for serving all the needs of a community in typically very remote locations, reservations could be the perfect [proving ground for microgrids](#).

"Reservations across the country are looking for ways to increase renewable adoption to become more sustainable as well as to provide their communities with more efficient, cost-effective and resilient power," Pat Wilkinson, head of Siemens Energy Automation, told GreenBiz.

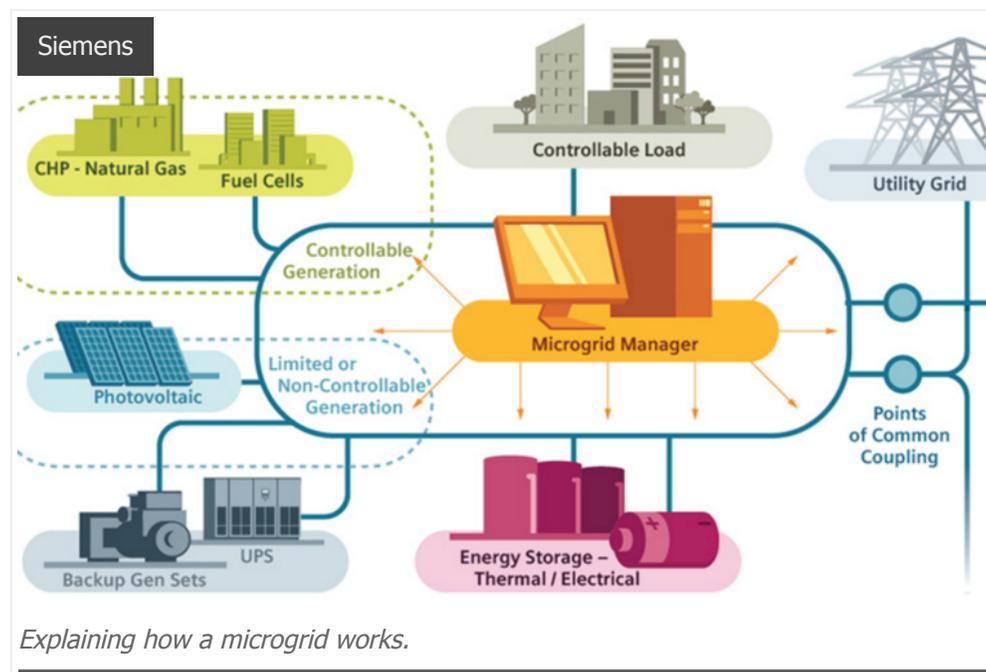
[Siemens](#), a German engineering conglomerate, on Monday announced a partnership with Blue Lake Rancheria, a Native American reservation in Northern California, and Humboldt State University's [Schatz Energy Research Center](#) to build a low-carbon community microgrid to power the government offices, economic enterprises and critical Red Cross safety shelter-in-place facilities across 100 acres.

Funded in part through a \$5 million grant from the California Energy Commission's Electric Program Investment Charge (EPIC) initiative, the microgrid will be powered by a 0.5 MW solar photovoltaic installation, 950 kWh battery storage system, a biomass fuel cell system and diesel generators. It constitutes the largest solar array in Humboldt County, California, and is estimated to reduce 150 tons of carbon per year.

Employing microgrid software

This will be the first commercial implementation of Siemens' Microgrid Management software (MGMS) technology, launched in February, which enables a microgrid operator to predict power load needs and manage and control distributed power generation through integrated weather and load forecasting.

The microgrid will allow the reservation to operate independently of the power grid in coordination with the local utility, Pacific Gas & Electric.



"With Siemens' intelligent software, the Rancheria will be able to rely on a complex mix of generation and storage to work together to deliver efficient, reliable power," Wilkinson said. "The software provides users a detailed view of their power system and is scalable to allow them to add sustainable power sources, like renewables, into an energy mix without fear of outages or power interruption."

The software also manages the priority areas where power is needed in real-time. Wilkinson added. If the power were to go out at the Rancheria, for example, its critical facilities such as the Red Cross Safety Shelter need to be operational. The software allows the Rancheria to send power where it's most needed to keep people in the community safe.

[Learn more about microgrids at [VERGE San Jose, Oct. 26 to 29.](#)]

The Rancheria is one of the [leading reservations](#) for clean energy and climate action in the country. It has been recognized by the

Obama administration as one of 16 communities to be named "Climate Action Champions."

"The microgrid project will not only help demonstrate the [next generation of energy technology](#), but will help the Rancheria further reduce greenhouse gas emissions and provide reliable power for the 100-acre reservation," Wilkinson said. "The new system will also allow the reservation to operate independently of the grid as needed in emergency situations."

This capability is important to the reservation, as it is a federally recognized Red Cross emergency shelter for the Humboldt community.

Helping the grid evolve

Siemens has a strong focus on microgrids, Wilkinson said, because they will be an important piece of the country's energy mix. The company already is working with New York and Hawaii to help communities build microgrid implementation plans.

"As the demands we place on our power systems continue to evolve, whether in relation to sustainability and environmental impacts or how we ride through catastrophic weather events, for example, our grids need to adapt," Wilkinson said. "[Microgrid solutions are the complementary](#) part of an evolving grid that offer communities, like Blue Lake, an innovative way to manage energy."

share this article



[Mike Hower](#)

Business + Social Purpose
Edelman