

Community Energy Storage helps Smooth Solar Power in California



California utility companies are required to meet one-third of the state's electricity needs with power produced by renewable generation sources by 2020. But the high penetration of renewable generation has created concerns regarding grid stability, power quality and safety.

One California desert city is a primary example. It is served by a utility substation located 20 miles out on a 69-kV transmission radial tap that crosses high, windy terrain. The challenging environment and unique design constraints led the utility to consider a pilot microgrid project in which photovoltaic-generated energy would power the city if an outage occurs on the utility source.

The utility was concerned about reverse power flow from the photovoltaic-generated energy during low-load periods that can create safety issues for the system and the people working on it. It was also concerned about the time required for the microgrid to form an island in response to an outage. The utility sought an energy storage expert to help determine the most effective and reliable means for storing renewable energy at the microgrid and contacted Council member S&C Electric Company.

Quick win from a smarter grid. The payback from a smarter grid is not necessarily in lower electric rates. Rather, it may come in the form of reduced outages and greater reliability as a California utility found after deploying a microgrid with S&C's energy storage system.

S&C proposed its PureWave® CES Community Energy Storage System for the pilot project. The

three PureWave CES units were installed in close proximity to the solar generators. The batteries store excess solar generation, eliminating the possibility of reverse power flow locally and at the feeder level.

During an outage soon after deployment, the energy storage units provided [uninterrupted service](#) [1] to utility customers for the entire 25-hour outage duration. In an ideally balanced case, wherein daily photovoltaic generation and consumption are equal,, islanding could be extended almost without limit.

Readiness Guide Chapter: [Ideas to Action](#) [2]

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Associated Company: [S&C Electric Co.](#) [4]

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