CASE STUDY
POWER SYSTEMS SERVICES

S&C ELECTRIC COMPANY
Excellence Through Innovation

Island Energy Storage Reduces Air Pollution Emissions

S&C Featured Solution: Energy Storage

Location: Catalina Island, California

CUSTOMER CHALLENGE

Catalina Island—a historic landmark 22 miles off the coast of Long Beach, California—has a population of approximately 3,700 people. There's no utility tie to the mainland. The island microgrid has a peak load of 5 MW which is served by Southern California Edison (SCE) through a combination of six diesel generators and 1.4 MW of micro-turbines.

The diesel generators were deemed to be high emitters of mono-nitrogen oxide (NOx) gases by the South Coast Air Quality Management District. To mitigate these smog causing emissions, SCE installed emissions control systems which convert the gases into water. But the catalyst for this conversion is only effective at a specific temperature range, which is reached when the generators are run above 80% load.

SCE needed a solution that would allow the generators to run more efficiently, and thus reduce NOx emissions on the island.

S&C SOLUTION

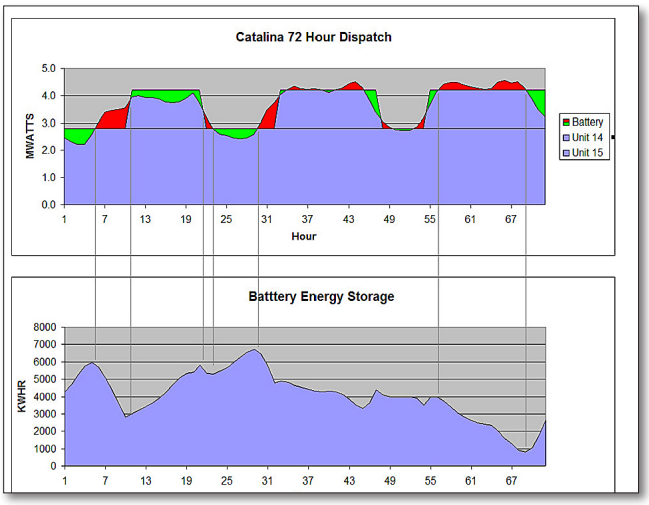
S&C was contracted by SCE to design, install, and commission a 1-MW PureWave® Storage Management System to efficiently store and release power from the island's generators. This fast-responding automatic controller uses built-in intelligence to control charging and discharging of sodium-sulfur (NaS) batteries. The batteries provide large energy output over a long period of time.

Placement of PureWave Storage Management System during construction.

"The PureWave Storage Management System has been very effective in enabling SCE to continue to provide the single source of stable, reliable power generation for the island while meeting our strict air quality requirements."

Ron Hite—SCE—District Manager—Catalina Island

Load profile of PureWave Storage Management System over a 72-hour period.



S&C delivered a 1-MW PureWave Storage Management System to help reduce the NOx emissions on Catalina Island, California.

The PureWave System allows the batteries to serve as both a load and a generator. In the morning, SCE runs the generators at peak efficiency; the PureWave System uses the excess power being generated to charge the batteries. Later in the day, as the load increases, SCE discharges the batteries to support the need. System output is ramped up as additional generation capacity is placed on-line.

The PureWave System can also provide power to the microgrid (up to the capacity of the batteries) if there is an issue with a diesel generator which prevents it from being brought on-line.

Working with local California contractors, S&C started construction in July 2011. S&C worked with SCE to provide centralized control of the PureWave System functions by the utility's system operators, allowing them to remotely control charging and discharging of the batteries.

VALUED OUTCOME

The NaS batteries were brought on-line in the spring of 2012, with full project completion in July 2012. The project was delivered under SCE's expected budget. Today, the PureWave Storage Management System is helping SCE reduce air pollution emissions on Catalina Island as well as the south coast region of California.

Completed PureWave Storage Management System.

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