



# PureWave® Storage Management System Fortifies California Jail's Microgrid

**S&C Featured Solution:** Energy Storage

**Location:** Dublin, California

## CUSTOMER CHALLENGE

Santa Rita Jail is one of the United States' largest correctional facilities, spanning 113 acres near San Francisco. The jail's power infrastructure was recently upgraded to function as a microgrid using onsite generation. This microgrid system allows the facility to operate indefinitely without a connection to the local utility grid, a capability called "islanding." Their onsite power sources include diesel generators, fuel cells, lithium-ion batteries, and renewable resources, such as a 500-kW solar array and microturbines.

With an average daily power demand of 3 MW, Santa Rita Jail faced two major challenges. They needed a way to store excess energy produced by onsite generation during islanding to ensure microgrid stability and security. They also needed a system to help manage energy consumption charges by allowing them to purchase power during non-peak hours, store it, and then use it during high-cost peak demand periods.



The first "green" jail in the U.S., Santa Rita uses a microgrid and onsite renewable generation.

## S&C SOLUTION

S&C engineered and commissioned a highly reliable energy storage solution. They supplied and integrated a 2-MW PureWave® Storage Management System (SMS) into the jail's microgrid. Originally engineered by S&C for a sodium-sulfur (NaS) battery, the system was re-engineered for a

2-MW/4-MWh lithium-ion battery by S&C's project team, which coordinated with both battery suppliers to ensure proper operation of the system. S&C provided engineering services and project management for the PureWave SMS and battery installation.

*The entire microgrid, including S&C's energy storage solution, is projected to save the County nearly \$100,000 per year.*



S&C's SMS controls the charging and discharging of the large-scale battery system to help meet the jail's energy needs. When the facility is islanded from the grid, the SMS balances the generation sources through its energy storage and CERTS algorithm. It does this by automatically and instantly storing excess energy when the facility's onsite generation exceeds demand and dispatching stored energy to the microgrid when demand exceeds generation.

S&C's PureWave® SMS has advanced control algorithms, which allow for the jail's microgrid to island automatically when their utility source is lost. This capability ensures that the intermittent renewable resources provide reliable, stable power generation for the jail for up to eight hours . . . ample time for utility power to be restored or to bring diesel generators online.

## VALUED OUTCOME

S&C completed engineering delivery and commissioning of the SMS on schedule and within budget in early 2012. Using S&C's PureWave Storage Management System, Santa Rita Jail can now optimally manage energy use and costs. The facility can charge its 2-MW battery system using onsite renewable resources when grid electricity is more expensive. Upon receiving a signal from Chevron's Control System,

the batteries can be dispatched and used during high-cost peak hours—capabilities projected to save nearly \$100,000 annually. S&C's SMS also bolsters the security and reliability of the jail's power infrastructure. In addition, by enabling more efficient use of onsite renewables, the SMS helps the facility offset the use of diesel generators . . . and reduce carbon emissions.



S&C's PureWave® SMS ensures 24x7 power availability and reliability at Santa Rita.

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