



# Alameda County

## Comprehensive Program



### The Opportunity

Alameda County officials saw an opportunity to save money by saving energy. They sought energy-efficient solutions for the Santa Rita Jail, the Hayward Hall of Justice, the Fremont Hall of Justice, the Fallon Street Courthouse and the Wiley Manuel County Courthouse. OpTerra Energy Services was entrusted with retrofitting several buildings covering more than four acres of interior space.

### The Partnership

Alameda County partnered with OpTerra Energy Services to build a program that combined solar electric power and other energy efficiency solutions. Solar electric generation, web-based utility monitoring and new cost-reducing energy equipment was installed. This cost-reducing energy equipment specifically reduced purchases of expensive, peak energy from the local utility.

Additionally, in 2011, OpTerra installed a 2-MW advanced energy storage system and an automatic disconnect switch at the Santa Rita jail facility. The facility evolved into a complete smart grid with congestion, and helped Alameda County meet its energy and environmental goals. The Santa Rita Jail smart grid reduces utility grid peak demand while improving power quality and reliability, increasing grid security, reducing grid full Consortium for Electric Reliability Technology Solutions (CERTS) functionality—meaning, it now has the capability to “island” itself off of the main utility grid and independently generate and store its own energy. The distributed energy control system also serves to dramatically reduce peak demand during normal grid-connected operations or during a demand response event.

### The Impact

The new solar powered installation, the equivalent of powering 1,000 homes, spares the environment thousands of tons of harmful emissions of CO<sub>2</sub>, NO<sub>x</sub> and SO<sub>x</sub>, which are major contributors to smog, acid rain and global warming.

Each year, over 2.5 million kilowatt-hours of electricity are diverted from California’s electric grid by the Santa Rita Jail project. These savings benefit all state consumers by reducing grid power purchases, most of which occur during peak electrical demand hours—at times when state transmission lines are the most constrained.

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### Program Highlights

- \$15MM net savings over the 25-year life of the projects
- Provides the solar power equivalent of powering 1,000 homes
- Reduced peak summer demand of grid-generated electricity by 35%
- Total solar project savings of about \$425,000 in the first year



## Technical Scope

### Santa Rita Jail

- VFDs on cooling towers
- High efficiency chiller replacement
- Variable flow pumping conversion
- Energy Management System upgrade
- UtilityVision® real-time metering platform
- Real-time load shedding
- 1.2 MW rooftop solar PV system
- 1 MW fuel cell power plant with heat recovery for facility hot water and space heating
- Five 2.3 kW wind turbines
- Two 1.2 MW emergency backup diesel generators
- 2 MW advanced energy storage system
- 12 kV sub-cycle static disconnect switch
- "Islanding" capability
- Electric power export and import capability
- CERTS smart grid control logic

The project will save the County \$15 million over 25 years. Funding partnerships fostered by OpTerra meant that Alameda County did not have to authorize any general fund revenues to finance the upgrades. The County's foresight in saving energy not only protects our environment, it also creates job opportunities in California for the growing energy efficiency industry.

