Santa Rita Jail gets a ‘green’ makeover from Chevron, Berkeley Lab

San Francisco Business Times by Steven E.F. Brown, Web Editor 

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Santa Rita Jail in Dublin -- the fifth largest jail in the United States, with up to 4,000 prisoners -- is working with **Lawrence Berkeley National Laboratory** to become more energy efficient and to protect its power supply during an earthquake.

Chevron Energy Solutions, part of the San Ramon oil giant (NYSE: CVX), is leading the project, which is partly paid for by $6.9 million from the U.S. Department of Energy.

Berkeley Lab scientists have created special software, called “DER-CAM” (for Distributed Energy Resources-Customer Adoption Model) used to analyze the jail’s electric power and heat requirements and to figure out the cheapest way to meet them.

Santa Rita, which refers to itself as a “mega-jail,” has peak electricity demand of about 3 megawatts, though it has lowered its requirements already by 40 percent over 20 years. The jail uses a 1.2 megawatt rooftop solar system, and it has five small wind turbines, too.

Lawrence Berkeley Lab researchers have helped the jail set up a “microgrid,” which uses a 2 megawatt lithium ferrous phosphate battery that can carry the jail’s entire electrical load during a power failure without the need for backup generators. The microgrid has been online since the end of 2011, but will be “unveiled” in a ceremony March 22.

Santa Rita Jail can also use the battery to store cheap electricity bought when rates are low so it can be used in place of power off the public grid when rates are higher.

The DER-CAM software helped the jail work out the most efficient way to charge and discharge this big battery. If a power failure persists beyond the battery’s limits, it will automatically switch on backup generators that will both provide power and recharge the battery.

The California Energy Commission and the **California Public Utilities Commission** also helped pay for the work.

Besides Lawrence Berkeley National Laboratory, others working on the project include **Pacific Gas & Electric** (NYSE: PCG), Alameda County (Santa Rita is the county’s primary jail), the **University of Wisconsin**, and the National Renewable Energy Laboratory.

Hospitals, in particular, are interested in this sort of technology, since they need to protect themselves from power failures, especially during natural disasters.

The military is also “very interested” in the technology, Berkeley Lab said.

Chris Marnay, the lab researcher in charge of the jail project, will work next on a demonstration project at the Los Angeles Air Force Base.