

Santa Rosa Junior College Goes Solar + Storage to Achieve Sustainability Goals



Location

Santa Rosa, California

Building Type

Community College

Activation Date

June 2019

Storage system size

1.3 MW

Solar system size

2.6 MW

Applications

Solar + Storage, Utility Bill Optimization, Demand Response, Backup Power

Over 100 years old, Santa Rosa Junior College (SRJC) is part of the California Community Colleges System, the largest system of higher education in the U.S. SRJC's mission includes serving California's low-income and underrepresented student populations, providing them with the best possible services in the highest-quality environment at the lowest cost. To do this, SRJC is always looking for sustainable and innovative ways to reduce operating costs, so it can put more funds into student programs.

With sustainability at the core of its vision, by 2030 SRJC plans to be:

- Carbon neutral across all sites and including electricity purchased, other fuels used, chemical fertilizers, refrigerants.
- A zero net energy source across all buildings at all sites.

SRJC's sustainability strategy also includes resilience. PG&E, the local utility, has announced the possibility of power shutdowns during fire season, and SRJC needs a way to minimize any disruption.

A Comprehensive Solar + Storage Strategy

David Liebman, Manager of Sustainability & Energy Programs, developed a Facilities Master Plan that included a solar + storage strategy. Intelligent storage is a natural complement to solar generation, enabling organizations to turn variable, intermittent solar generation into a flexible, responsive and always available resource. This leads directly to a greater return on solar energy projects and lower overall energy costs by enabling a shift to battery power when utility prices spike. Energy storage can also drive added value by 1) Future-proofing solar projects from changing rates and 2) Participating in grid services such as demand response, which supports a more reliable electricity supply for surrounding communities. Storage also builds resilience and delivers on the promise of environmental responsibility by increasing the availability of on-site power.

In its pursuit of solar + storage, SRJC identified Stem as its storage partner. Liebman's evaluation criteria initially focused on the storage specifications (e.g. battery chemistry, estimated lifetime and warranty, energy density and the appropriate state of charge), but

"Lithium ion battery technology is really only as smart and useful as the software that controls it. Stem has the smartest algorithm software for controlling our battery storage. This was a key factor in our decision to go with Stem."

David Liebman

Manager of Sustainability & Energy Programs

as he went through the process he quickly realized that maximizing the value of both the solar and storage assets depended on the intelligence of the software controlling the batteries. Software is critical for determining the best times to store, generate, or consume power, and he wanted a solution that would enable SRJC to interact directly with the utility and CAISO, the grid operator, to provide value-added services.

Liebman found that Stem's energy storage service powered by Athena™, the world's first artificial intelligence (AI) for energy storage, was the only logical choice. Stem's AI-driven software enables organizations to optimize energy use by automatically switching between battery power, onsite generation and grid power.

SRJC installed a 2.6 MW solar carport and 1.3 MW energy storage system—and Liebman's innovative project was recognized at a California Higher Education Sustainability Conference (CHESC), where Liebman was also recognized as a Sustainability Champion in the California Community College category. SRJC is the first California Community College to be recognized for completing the Sustainability Tracking, Assessment & Rating System™ (STARS) framework.



Sustainability + Cost Savings

Powered by Athena's superintelligence, Stem's energy storage system calculates SRJC's rate structure, energy consumption, and other factors to optimize automatic deployment of stored energy, reducing grid demand and shielding the college from unnecessary costs. "We're seeing 30 to 35 percent of our main campus's

"Stem's modular approach to the installation went exactly as planned. Software setup, testing the battery management system, and baselining the batteries were all easy, and the batteries have been running smoothly ever since."

David Liebman

Manager of Sustainability & Energy Programs

electricity coming from on-site generation instead of from PG&E," said Liebman. "On extremely hot days, our peak load, which used to be in the 2000 kW to 2,200 kW range is now 800 kW to 1,000 kW. And when we're at peak solar production, the load drops to 100kW or even 50 kW, depending on whether the battery is charging or discharging."

Liebman is hoping to participate in grid services in the future when demand response opportunities open up. He plans to put grid service revenue into an energy and sustainability endowment to help build a financial buffer for additional projects and maintenance. "Stem is the only player I've seen right now who's demand response-ready and pushing for new programs," added Liebman.

A Microgrid for Resilience and Reliability

The California Energy Commission recently awarded SRJC a \$5 million grant for a microgrid, which Liebman is currently designing. Over the short-term, the microgrid will enable the campus to continue operating through "nuisance outages." Over the long-term, the microgrid, in concert with the Stem solar + storage project, will enable the campus to achieve resilience in the event of PG&E's planned power outages or other emergencies. It will allow the school's essential buildings to automatically operate independently of the local energy grid in case of emergency and can help restore power after an event.

To support the microgrid, SRJC will be purchasing additional battery storage and a smart microgrid controller from Stem. The goal is to have battery storage that Stem controls. Stem will be responsible for the load-shedding and additional demand response and will work with the SRJC microgrid controller for automatic responses to outages.



ABOUT STEM

Stem pairs artificial intelligence with energy storage to help organizations manage expenses, reduce risk, and support sustainability goals. As the market leader in real-time energy optimization, Stem has created new cash flows for hundreds of customers, including many Fortune 500 enterprises. Athena by Stem is the first AI for energy storage.