

Intelligent energy storage saves Soka University \$55,000 in first year and supports sustainability goals



Location
Aliso Viejo, California

Building Type
College Campus

Project Goal
Reduce operating expenses, lower energy bills without disrupting operations, and advance sustainability goals

Activation Date
December 2016

System Size
400 kW

Annual net savings
\$55,000 - \$100,000

10-Year Estimated Savings
\$740,000

With a strong commitment to sustainability, Soka University in Southern California continually looks to reduce its carbon footprint and energy use. So when Stem approached Soka to participate in an energy storage initiative to lower energy costs and improve local grid reliability, administrators at the campus saw it as a complement to energy management measures already underway.

Within the first meeting, it was clear that Stem's proven technology would give Soka an opportunity to demonstrate to students and the community its commitment to clean energy leadership while simultaneously achieving substantial savings. "When I explained to the senior administration that there would be no capital outlay and major, guaranteed savings, the response was 'This is a no brainer' and 'Where do I sign?'" said Tom Harkenrider, Chief of Operations.

Ultimately, Soka chose Stem for five reasons:

1. Stem's storage-as-a-service offering provides Soka with guaranteed energy savings at no upfront capital costs for immediate payback.
2. Stem works automatically without requiring staff time and oversight.
3. Stem's intelligent controls allow Soka to automatically respond to load and rate changes.
4. Stem showcases to students and the community Soka's commitment to sustainable innovation.
5. Stem handles everything, making project installation easy.

Soka University: a commitment to sustainability

A private four-year liberal arts college and graduate school, Soka University is located in Aliso Viejo, a small city in Orange County. Established in 2001, the growing campus includes 20 buildings spread across 103 hilltop acres.

Soka practices its environmental mission by integrating sustainability in all areas of teaching, campus life, and operations. The university has been recognized as a top green employer, and its newest buildings have received Leadership in Energy and Environmental Design (LEED) Gold Certification for meeting energy-efficient and eco-friendly standards. The university and its Chief of Operations, Tom Harkenrider, have received numerous awards for excellence in facilities management.

This is one of the best projects we've done on campus.

Scott Collins
Director of Operations

Saving more than \$55,000 a year through demand management and grid rewards

Using its proprietary analytics platform, the industry's most advanced tool for projecting commercial energy storage performance, Stem recommended a 300-kilowatt battery storage system, which came online in December 2016. An additional 100 kW system will be installed in a new science building.

Soka's team appreciates how easy it is to work with Stem. "Stem made the effort to understand the culture of the campus, so the project was relationship based and not just transactional," said Harkenrider. "The installation and coordination with the utility and municipal building permitting was seamless, as well."

By storing energy when power use is low and releasing that energy when use is high, Soka sees net savings of \$55,000 in the first year, expected to grow to \$100,000 by year ten.

In addition to lowering peak demand costs, energy storage at Soka earns grid rewards as part of an 85 MW virtual power plant that Stem is building for Southern California Edison. Through Stem's Grid Rewards program, Soka enjoys improved project economics while supporting a more sustainable, reliable grid.

I'm proud that we have the lowest energy usage currently by a university in Southern California. We want to keep that trend going, and Stem is our next step in that direction.

Scott Collins, Director of Operations

Reducing time spent on manual tasks

While Soka operations managers continually strive to control utility costs, they have discovered that energy management is increasingly a time-management challenge. "We were doing too much labor for what we were gaining in savings," said Scott Collins, Soka's Director of Operations.

Stem solves this problem by automating cost savings, eliminating the need for Soka's staff to manually manage energy use. Stem's self-learning software analyzes Soka's demand 24/7 to shift energy use away from expensive times.

The intelligence platform does all the work to minimize costs, allowing the operations team to stay focused on its priorities.

"When Stem was introduced, I realized that it would do this work for us automatically," Collins said. "I looked at this technology and said, 'Wow.'"

Adapting to variable energy rates

The shifting energy landscape brings new challenges, complexities and higher costs that are influenced by not only how much energy is consumed, but also *when* energy is consumed. In Soka University's area, for example, demand charges, based on the period of highest usage during each month, have spiked more



Photo: 300 kW PowerStore by Stem

than 90 percent over the last decade. Demand charges increasingly make up more than half of a commercial utility bill in California.

Soka's new energy storage service helps it get a handle on this complexity and uncertainty. Stem analyzes and optimizes the timing of energy use, protecting Soka no matter how their operations or utility rates fluctuate.

Achieving its sustainability mission

Stem's solution supports Soka's sustainability mission, contributing to environmental goals at both campus and grid levels. At the campus level, in addition to storage, Soka has installed a 102 kilowatt solar photovoltaic array. Being able to store its onsite generation allows Soka to reduce its energy consumption from the grid and lower peak energy usage when the sun isn't shining.

At the grid level, through its participation in Stem's network, Soka helps create an on-demand power reserve that can be tapped by the local electric grid instead of conventional fossil fuel generation. This allows the utility to improve the sustainability of the grid and avoid building new power plants, while continuing to provide reliable power for the whole community.

When I explained to the senior administration that there would be no capital outlay and the opportunity for major, guaranteed savings—the response was "This is a no brainer" and "Where do I sign?"

Tom Harkenrider, Chief of Operations

About Stem

Headquartered in Millbrae, CA, Stem creates innovative technology services that transform the way energy is distributed and consumed. Our mission is to build and operate the largest digitally connected energy storage network for our customers. Our world class analytics optimize the value of customers' energy assets and facilitate their participation in energy markets, delivering economic and societal benefits while decarbonizing the grid. [Learn more at stem.com](https://www.stem.com).