



California State University, Long Beach

Case Study



One of the largest campuses in the CSU system

15%
Utility cost savings

110
Buildings

3M
Square feet under state management

Reducing utility costs by more than 15 percent is just one of many benefits for the progressive Energy and Utility team at this highly regarded university.

California State University, Long Beach has one of the largest campuses in the CSU system. It covers 322 acres and includes 110 buildings, with 70 of them operated by the state.

Shawn Cun, PE, CEM, has served as the Energy & Utilities Manager for this sprawling facility since 2019. He has a \$10M budget, 16 percent of which he applies to energy upgrades and retrofits each year. He plans this spend carefully knowing that lighting upgrades are in high demand on the campus, but HVAC updates generate greater monetary returns.



Choosing a lighting solution that includes IoT sensors that will enable us to control the HVAC was such a smart way to invest our limited funds.

SHAWN CUN

Energy & Utilities Manager
California State University, Long Beach

The initial decision to engage Enlighted pre-dated Cun's tenure, but he has been impressed with the value the solution delivers. Enlighted lighting with IoT sensors is now a standard here, and Cun is looking forward to deploying them across the campus with centralized control that his team can access from anywhere.

Getting started

In 2017, CSU Long Beach won an Electric Program Investment Charge (EPIC) grant from the California Energy Commission that Paul Wingco, the Energy Manager at the time, had pursued. This program funds research, development, and demonstration projects that advance the technical performance and cost-effectiveness of clean energy technologies.

The team partnered with Enlighted to fully commission the six-story, 101,670 square-foot Engineering and Computer Science building. This involved deploying 1,000 Enlighted LED lights with integrated sensors that enabled occupancy data to drive HVAC settings by zone. This delivered significant reductions in lighting energy use. But, they were even more pleased with the dramatic impact on HVAC energy cost, as this system accounts for a much larger portion of their energy costs. Being able to program setbacks by zone and set fans to run only when needed, rather than constantly delivered real results.

Building on success

The work that predated Cun provided an excellent head start on three of his most passionate initiatives. He wants to:

1. Retrofit state-operated buildings on campus within 10 years.
2. Support the campus's sustainability goals.
3. Establish the campus with an IoT foundation for the future.

The project to retrofit all the state-operated buildings on the campus within 10 years is multifaceted. It involves ensuring all equipment operates as intended, doing BACnet integration to connect the equipment to Enlighted Control, and completely outfitting every building with sensors that will provide the data needed to inform programmatic adjustment of temperature and lighting. Projections show that eliminating waste in HVAC by widening settings alone will reduce utility costs by at least 15 percent, and greatly increase occupant comfort, as well.

Cun and his team have strategically standardized on a short list of components that can be used in building updates. Lighting options all include sensors, future-proofing the building for IoT needs even if the work in a building starts with a lighting-only project. This also serves their aim to be good partners with the university's operations team, who find that standardization on components they've tested and approved streamlines maintenance, dramatically reducing maintenance costs. Plus, Cun's team has taken an innovative approach to installation of these components. They work with local manufacturers to pre-wire a kit for each sensor, enabling his team to consistently beat their one-hour-per-retrofit goal, making their retro commissioning effort highly efficient.



It's so easy to retrofit with Enlighted, and it has both immediate and long-term impact. We realize the lighting modernization and related energy savings now. Plus, we're all set with the sensors to take advantage of the larger HVAC energy savings as soon as we're ready.



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Cun's second initiative is to support the campus's sustainability goals of being Scope 1 and 2 carbon neutral by 2030 and Scope 3 by 2040. His team is working toward electrifying the central plant, so they no longer need to combust natural gas to power the campus. He will take advantage of low interest rate loans that are available for this purpose to begin that work this year.

The third initiative on Cun’s list is to be a strong driver in the campus’s move to IoT. He looks forward to a future when every building is fully commissioned, his team has all the data they need to optimize energy usage, and they have a centralized dashboard that they can access from anywhere for visibility and control. The Enlighted team has played an important role in this effort, working alongside Cun’s team to push initiatives that are important to him and his campus. For example, they’ve collaborated on standardization documentation and getting the Virtual Enterprise Energy Manager (VEEM) set up on campus for centralized control, and they’ve provided continued education for Cun and his team.

Work in progress

Just three years in, Cun is well on the way to fulfilling his vision. They’ve added another 1,000 sensors, working with the campus operations team to update lighting in hallways in numerous campus buildings. He’s actively working with Enlighted to install the cloud-based enterprise energy manager, so he can replace on-prem controls in each building with a much more efficient single system that provides single access across the campus. He’s excited to move his first building onto this system and start observing more data on energy consumption and taking action to produce the results.

Building the future

In addition to his team, working full time on these initiatives, Cun manages a workforce training program in his department. This provides paid learning for select engineering students, as they do hands-work, conducting audits, feasibility studies, and commissioning.

Cun sees high value in the program for both the university and the students, and it brings him a great deal of personal satisfaction.



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I look for students with a passion for the field. It’s gratifying to work with them, share their journey, and then see them take their knowledge into roles in other energy organizations.

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Seeing the strategy behind the work the campus is doing with Enlighted he fully expects they’ll soon be telling stories that start with, “I first learned about Enlighted when I was a student as CSU Long Beach...”

Sharing the knowledge

Cun is not directly responsible for the buildings on campus that are not operated by the state, which includes housing and shops. These are self-funded by the revenue they generate and are managed by others. Cun still readily shares what his team is learning as they do their research, working through deployments, and doing their analysis. After all, they share the same campus goals for energy efficiency and sustainability.

Another opportunity for knowledge-sharing comes from participation in an affinity group formed through the Chancellors Office.

The California State University system has 23 campuses and eight off-campus centers enrolling 485,550 students with 55,909 faculty and staff. It's the largest four-year public university system in the United States.

Cun meets regularly with his peers from other campuses, both to learn from their experiences and to share his knowledge. When asked about the work he is doing with Enlighted, he tells them:

“Enlighted is a great partner in helping us to transform the way we manage energy on the CSU Long Beach campus. Our energy savings, combined with the possibilities of sensor IoT data for campus utilization planning, creates a high value proposition for us.”

