

# California State University, Dominguez Hills

## Case Study



Public university reduces energy use with lighting retrofit

**8K**  
Sensors

**>1M**  
Square feet

**\$1M**  
Energy savings

### CSU, Dominguez Hills teams with Enlighted to significantly reduce energy consumption

California State University, Dominguez Hills (CSUDH), a public university in Los Angeles, is a major consumer of energy and natural resources. The university has made it their responsibility to be a wise steward of scarce resources by reducing the use of non-renewable resources and increasing energy efficiency. As part of the large CSU system, this responsibility also includes promoting continued economic and ecological viability in California.

Keeping with the university's charter, central plant and energy manager Kenny Seeton led a cost and energy saving lighting retrofit project for CSUDH. The retrofit came after Seeton and the physical plant team made an

evaluation of the existing lighting system, conducted a two-month pilot project, and received the help of environmental science students from the university who researched several product options.

### CSUDH leads the way in energy efficiency with controls across 90% of the campus

In an initial test, four Enlighted Advanced Sensors were integrated with each of four existing fluorescent fixtures (replacing existing florescent ballasts) outside of the IT suite. The energy monitoring results then were shared with an Earth Sciences class. A group of students studied the performance data from the sensors, which supported the case to extend the pilot to deploy Enlighted sensors in all corridors in Welch Hall, as well as in its IT offices

and the server room. The project team was not timid in testing the limits of energy savings with the system. Corridor lights in the Welch Hall facility were set at 10 to 35 percent of full brightness. In the IT office spaces, most of the lights were set at 30 to 50 percent.

“There is power to fixtures in Welch Hall corridors from 7 a.m. to 7 p.m., but with the advanced sensors instead of those lights being on at 100 percent, the highest they ever go is 35 percent. And you don’t notice it. That’s how much we were overlit there,” Seeton said. “We couldn’t do that with just an occupancy sensor.”



- **Cost-effective solution:** The sensor units could be easily installed, commissioned, and serviced by the facilities management team at the university, making the solution affordable to implement and maintain going forward.
- **Highly intelligent sensors:** Advanced sensors make control decisions locally at each fixture, adjusting light levels by sending information to the driver of the host fixture. Lighting level decisions are made by:

**Daylight harvesting**

The sensors adjust light levels as natural light changes the need for overhead light, based on weather and time of day.

**Motion sensing**

During work hours when spaces are unoccupied, lamps in fixtures equipped with the advanced sensors idle from zero to 10 percent luminosity until “human-specific” motion is detected.

**Digital PIR sensing**

The sensors are designed to ignore other heat-producing items, such as fax, printers, and computers or changes in the environment produced by HVAC systems.

## Enlighted selected as the go-forward partner of choice

The team chose to move forward with Enlighted’s platform because its advanced sensors provided several unique benefits to the university. The capabilities that were particularly interesting to the project team included:

- **Ease of implementation:** Sensors communicate over a wireless network, enabling a relatively simple upgrade of CSUDH’s existing fixtures.

## The results

Seeton states that the initial installation of 276 hallway sensors in Welch Hall and the South Academic Complex (SAC), and the 188 sensors in Natural Sciences and Mathematics (NSM) and La Corte Hall (LCH) together save the university 201,436 kWh annually. The Enlighted lighting projects in these buildings are saving the university \$26,289 in electricity costs over that same time period. Additionally, Southern California Edison issued a rebate of \$51,565 for the campus energy savings brought about by the Enlighted Advanced Sensors. The successful outcome at Welch Hall and SAC, NSM, and LCH led to further installations on campus.



The team added 576 sensors at SAC and NSM, along with a new installation at Social and Behavior Sciences (SBS). Seeton says these installations save the university 245,496 kWh and \$30,483 in energy cost annually. Plus, Southern California Edison issued an additional rebate of \$58,919 for this project.

Seeton has continued to add sensors and connect them to the system as time and budget have allowed. Most recently he installed 800 of Enlighted’s ruggedized outdoor fixtures to light walkways and roadways around the campus. Next, he will work on getting the remaining 10 percent of the campus on Enlighted controls, including a few small buildings and the library. “That five-story building is lit 24/7. We need to get it updated to capture additional energy savings.”

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Lights and HVAC are often on more than they need to be, burning energy in the process. IoT technologies can reduce energy consumption from lighting by up to 90% and from HVAC by up to 35%.

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**KENNY SEETON**

Central Plant Manager  
California State University, Dominguez Hills

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Enlighted is a non-compromise solution. We reduced our energy spend while increasing the comfort of building users.

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## Continuing the quest for energy savings

“From the people I’ve talked to, nobody has this extensive of a control system,” Seeton said. And he has only begun to tap into what Enlighted can do.

“Enlighted technology is the backbone. Once we’ve installed the sensors, adjusted light levels, and task-tuned to individual need, we can use that connection for so much more,” he explains. “I’m tying into the heating and cooling system, using occupancy data to save energy there, too. It adds up, especially during extended period of time when nobody is in the space like semester breaks and vacations.”

This integration has proven to have benefit beyond energy savings. Seeton shares several examples. “During California heat waves we didn’t have to shut down, like many campuses did. We weren’t using excessive energy to cool areas that weren’t in use, so we continued to have AC in occupied areas of the campus.” He adds, “We’re also able to add more



buildings to the loop without adding chillers. We’ve added 300,000 square feet since 2019.”

“Plus, if we need to troubleshoot a lighting issue, we can do that in an isolated area, rather than take a big bank of lights off line.”

Looking ahead, Seeton sees opportunities to use the connection to open the door to a variety of other applications, including being able to personalize room settings for individual professors.

Seeton considers a campus-wide lighting retrofit to be a “no-brainer.” When the President of Edison asked Seeton to name the biggest thing he did to save energy he told him, “Occupancy-based controls is the number one thing you can do to reduce loads in a building. Today our highest energy load is lower than our lowest energy load in 2019.”

As an early adopter of the technology and an advocate for the value it brings, Seeton is excited to see other campuses following suit. He encourages them, “Don’t wait until you have a million-dollar budget. Get started, knock it out a little at time. It took me a few years, but here we are now with most of the campus connected, way ahead of the curve.”

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Anything anyone can do to reduce the load on the grid will help all of us connected to the grid. Enlighted has been a huge piece of the puzzle that has made it so our buildings use 50% less energy. Every reduction to the grid helps that much more during the peak energy days like heat waves.

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## And the awards go to CSUDH and Enlighted

### Environmental Leader Product & Project Awards

In its second year, the *Environmental Leader Product & Project Awards* recognize excellence in products and services that fall into two categories:

- Products that provide organizations with energy and environmental benefits
- Projects that improve environmental or energy management and conserve resources

Enlighted's advanced sensor lighting installation within CSUDH has qualified it to receive a Top Project of the Year Award by the *Environmental Leader* because of the impressive annual energy savings being recognized by the university.

### California Higher Education Energy Efficiency and Sustainability (CHESC) Best Practice Awards

The annual CHESC Best Practice Awards competition is made possible by the Higher Education Energy Efficiency Partnership.

The competition is meant to:

- Highlight the achievements that California campuses have made through innovative and effective energy efficiency projects and sustainable operations
- Showcase specific projects as models to be used by other campuses to achieve energy efficiency and sustainability goals
- Provide campus staff with a compendium of Best Practice projects that could be transferable to their campus

CSUDH's use of Enlighted's technology garnered the university the Best Practice award at CHESC 2014 and 2015 for Lighting Design/Retrofit.

