CSU Channel Islands
Lighting Standards and Retrofit

CSU Channel Islands’ new exterior lighting standards address energy efficiency, sustainability, safety, maintenance, and aesthetics to improve the quality of the campus’s nighttime lighting. The university is using the standards to refashion its nocturnal environment one project at a time, starting with the South Quad.

CSU Channel Islands was founded in 2002 on a site that originally housed a state hospital. The university faces several challenges as it works to create a modern college campus in existing facilities. One of these challenges is updating exterior lighting that was designed for the limited nighttime activities of hospital residents rather than busy students. To address lighting deficiencies across the campus, CSU Channel Islands has developed a master plan for sustainable, safe and energy-efficient exterior lighting. The campus realized a 42 percent energy savings in its first application of the standards in a retrofit of the South Quad.

The exterior lighting inherited by CSU Channel Islands is very inconsistent with high lighting levels in some areas and extreme darkness in others. Glare is also a problem across the campus. These conditions are most likely a result of the hospital responding to the needs of a changing resident population, which resulted in piecemeal installations over many years. Additionally, the specific nature of nighttime hospital activities demands an entirely different set of lighting conditions than might be expected on a college campus.

CSU Channel Islands’ exterior lighting standards simultaneously contend with many disparate sustainable lighting issues including protecting the night sky, reducing energy use, and improving safety.

Prior to developing any specific standards the university surveyed the existing nighttime conditions, recording the lighting levels, luminaire placement and existing fixture stock. Parking lots, streets, pedestrian pathways, building exteriors and decorative landscape lighting were reviewed in the survey. Understanding the nighttime environment was essential for the university to develop a policy that addresses the selection, installation and control of luminaires for every exterior lighting application on the campus.

In conjunction with the survey CSU Channel Islands developed several broad goals for its exterior lighting. Creating a safe campus with even, consistent lighting and high nighttime visibility was given the highest priority. Using energy efficiently, honoring the campus architecture and surrounding environment, and reducing maintenance requirements were also identified as critical components of an ideal lighting system. With its goals set and survey completed, the university was ready to draft a detailed set of standards.

To improve nighttime safety the standards outline several strategies that simultaneously reduce intense lighting levels and improve visibility. The existing high-wattage, uncovered luminaries actually reduce visibility by casting a harsh glare and disrupting the eye’s ability to adjust to darkness. Low-glare fixtures that provide an appropriate amount of light are now used. The standards also stipulate that wayfinding techniques should be used instead of high lighting levels. These include paving lights, wall washers, illuminated entries, and other accents that aid people in reaching their destination. Even lighting coverage and uniform luminaire distribution are also used to create a safe and navigable campus.

People and objects are visible against white walls illuminated by wall washers. Photo: Deborah Wylie.
Reducing exterior lighting energy use at CSU Channel Islands is largely a function of replacing antiquated luminaires with the right modern technology. The standards require that all exterior lighting utilize one of three lamp types: LED, compact fluorescent, or induction. These options are all low energy users with long lives. The standards also encourage the use of wall washers as a second energy-saving strategy. These fixtures splash light downward on the highly-reflective white walls of the campus’s Mission-style buildings, which enhances the installed luminance levels and produces high visibility while using less power.

To save additional electricity the campus uses photocells and time clocks integrated with its energy management system to control the timing and duration of illuminated fixtures. These controls reduce burn time and subsequently save both energy and relamping costs.

The initial implementation of the standards reduced exterior lighting energy use in the South Quad by 42 percent and resolved problems with uneven lighting coverage.

For CSU Channel Islands, sustainable exterior lighting is about being a good neighbor. The campus is surrounded by acres of farmland protected from development by a county initiative. With very little light pollution in the area, the university considers preventing light spillage into adjacent properties and reducing light emitted to the night sky to be critical to preserving the local environmental quality. The campus selects full cutoff fixtures to eliminate direct uplight. In addition, the campus is delamping many fixtures to limit the overall amount of illumination.

To ensure lighting meets the university’s environmental goals and enhances the campus’s Mission-style aesthetic, the standards specify a family of fixtures that are pre-approved by the campus architect. The list simplifies the process of selecting fixtures and will produce a consistent atmosphere across campus.

The standards specify durable lamp types with long lifetimes to reduce ongoing maintenance requirements and replacement costs. The campus also tries to locate fixtures in places that are easily accessible by staff to facilitate maintenance activities.

CSU Channel Islands is now implementing the lighting standards one project at a time. The initial application was completed in the South Quad, a high-traffic open area surrounded by buildings on all sides. The previously underlit area now has consistently-spaced fixtures that provide even lighting coverage, making nighttime navigation much safer. The retrofit also reduces electricity used to light the area at night by 42 percent.

LESSONS LEARNED

Deborah Wylie, Associate Vice President of Operations, Planning and Construction, notes that “the look of a campus at night can be as distinctive as the appearance during the day.” She recommends selecting a lighting consultant with both technical and artistic skills that will design solutions to meet a campus’s specific needs and conditions. Ms. Wylie advises that the consultant and campus staff should work together to assess each area for its unique challenges and opportunities.

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