



LED Parking Lot Lighting at Cape Cod Community College

In the summer of 2012, Cape Cod Community College realized they had a parking problem, but not like you'd think. The college had plenty of spaces, but not enough light.

Their parking lots had dark stretches between light poles, and they were spending more money than they wanted to on their electric bill for lighting, and for equipment maintenance and upkeep. In addition, the old metal halide lights took so long to warm up, that they had to be turned on before the sun went down in order to make sure there was enough light once it got dark.

Built largely in the 1970s, the campus' lighting systems were in need of an upgrade. Already committed to sustainability in a big way, with a LEED Gold certified classroom building, a solar array and other measures, the college was looking for a way to save money, save energy and increase students' quality of life.

The college turned to Cape Light Compact (the "Compact") in July of 2012 for assistance. Working together, Jeff Marcotte, the Assistant Director of Facilities at the College and Nicole Price, Program Planner at the Compact, determined that retrofitting all parking lot lights with LED fixtures would be the most cost-effective and beneficial way to better light their parking lots and reduce their monthly energy consumption.

The Project

Over the course of two days, Cape Light Compact and its contractor, RISE Engineering, swapped in 77 Sansi C0820 series LED fixtures across the campus. This included replacing twenty-eight 1,000-watt fixtures with 240-watt LEDs, and forty-nine 400-watt fixtures with 120-watt LEDs, spread across 11 parking lots. Installing new LED lights would result in an estimated annual reduction in energy usage of 173,825 kWh. In monetary terms, this yields an annual cost reduction of more than \$26,000. Prior to the LED installs, the parking lot lighting load was 52 kW. In the months since the install, the lighting load has been reduced to an average peak of 13 kW, a reduction of 75%, which Facilities noticed almost immediately. Given that the 1970s era campus relies primarily on electric heat, this kind of reduction in electric load helps to offset other ongoing operating costs at the College.

Other Benefits

Besides their inefficiency, the old high-pressure sodium and metal halide bulbs were maintenance headaches. According to Marcotte, the old bulbs required renting a lift and waiting for trained crews to come out to make the repairs, a wait that

sometimes took up to four days to complete a simple task like replacing a burned out bulb. Not any more – the new LEDs have an expected life span between 25,000 and 50,000 hours with minimal diode burnout – more than twice the lifespan of the older technology. With the old lights, it seemed like there was always a burned out bulb needing to be replaced somewhere. Without those frequent replacements, it is anticipated that the annual maintenance costs for all 77 light fixtures will top out at an estimated \$231 – total.

Besides the huge drop in energy and maintenance costs, the new LED lighting in the college's parking lots also has delivered a host of other unexpected benefits unrelated to energy efficiency or sustainability.

For visitors, perhaps most noticeable on that list of benefits is a better quality of light that makes the campus look bright and clean at night. Since LED lighting is actually whiter than traditional bulbs, colors, especially blues and reds, “pop” more against the nightscape, making it easier to find cars and see obstacles. The new lights cover more parking lot area with each lamp, making the campus feel safer for students and faculty. Before, there were some dark spots here and there in the lots where the lights didn't quite reach; but now the lots feel very well lit overall.

“You read about how much better the light that comes from LEDs is all the time. However, it is hard to appreciate just how much better it is until you actually see it. We've been blown away by how good the campus looks under the new light.”
– Jeff Marcotte

Lastly, contrary to what many people believe, the Cape does get snow and ice in the winter, sometimes enough for the campus to even have to cancel classes. With the traditional bulbs, icing was a significant issue in the winter requiring frequent maintenance and causing general frustration for the maintenance staff. The new LEDs have eliminated this problem, largely by virtue of being brighter and better constructed so that they're less impacted by the elements. The fixtures fit more snugly to the pole, keeping moisture out and letting the light function as it should, even in inclement weather.

Energy Education

As one of just two colleges in the region, Cape Cod Community College takes its mission of affordable for the local workforce seriously. A destination for many Cape Codders, the school's curriculum is constantly evolving to keep up with emerging economic trends and fields of study. Energy efficiency and sustainability have become a key part of the curriculum at the college, and are integrated into measures the school has undertaken to ensure tuition stays affordable.

Implementing energy saving and sustainable measures has the added benefit of giving students first-hand experience in a field that is on its way to becoming a key piece of the 21st century economy. Students studying in these fields get an up-close-

and-personal look at the inner workings of these technologies. This is especially important on Cape Cod, where a dependence on the environment for many sectors of the economy is increasingly requiring workers with expertise in these fields. The College has spent significant resources in recent years developing a well-regarded environmental technology curriculum; being able to practice what it preaches reinforces those classroom lessons.

Future Plans

The success of the LED parking lot program at the college has led to planning for retrofitting the entire central campus with LED lighting. Walking around the campus at night, the difference in lighting between the parking lots and campus walkways is noticeable. The central campus is already tied into a sophisticated management system, allowing the college to precisely determine when each light goes on and turns off, and for detailed reporting on outages, usage and more. Campus Facilities looks forward to making management of that system even more satisfying with the longer lasting and less energy intensive LED lamps.