The City of Durham installed Cree® LEDway® luminaires at the South Durham Water Reclamation Facility to reduce energy usage and maintenance costs while achieving higher quality illumination.

- Dramatically improved visibility for nighttime work
- Approximately 64 percent reduced energy consumption
- Reduced greenhouse gas emissions and light pollution
ENERGY SAVINGS AND IMPROVED NIGHTTIME VISIBILITY

OPPORTUNITY

According to the American Water Works Association Research Foundation, the average wastewater facility spends seven percent of its budget on energy, adding up to hundreds of thousands of dollars in expenses each year. Implementing energy-efficient resources such as LED lighting makes it possible to reduce expenses, better serve the community, and operate wastewater treatment plants more effectively.

The City of Durham joined the LED revolution and elected to implement an energy-efficient LED lighting solution for the South Durham Water Reclamation Facility. In addition to saving energy, the recent upgrade also supports The City of Durham’s Greenhouse Gas Emissions Reduction Plan’s goal to reduce emissions from local government by 50 percent and the community by 30 percent below 2005 levels by 2030.

SOLUTION

The City of Durham’s South Durham Water Reclamation Facility now has improved nighttime visibility and significantly reduced energy consumption, thanks to the recent installation of Cree® LED luminaires around several exterior areas of the facility. Implementing an LED lighting solution was especially important for the facility as the site runs 24/7 to process as much as 20 million gallons of potable water per day for area residents. Maintenance on the facility’s systems often occurs at night, and the aging lighting system needed updating.

The decision to implement an LED technology solution was not easily reached. The facility staff needed to be educated on the benefits of BetaLED® Technology. After learning about the color clarity, light uniformity, targeted illumination and energy savings that luminaires could provide, management was convinced that the switch would be beneficial. Projections included uniformity of light levels, increased color quality, and targeted illumination providing significantly improved nighttime visibility and reduced light pollution (light spill into areas where it was not needed).

The 20-year-old high-pressure sodium (HPS) site lighting was upgraded with Cree Edge® area luminaires using 40-degree flood optics reducing energy consumption by approximately 64 percent. The previous HPS lighting on 18 poles in the processing area and at the front gate cast a yellowish hue, creating a challenge for the staff to work at night. After the new LED lighting installation, employees remarked on the higher quality of illumination, and they feel their productivity increased as a result of the improved visual performance.

To control project cost, the facility utilized the existing poles in the lighting design keeping in mind the desire to eliminate dark zones. With limited flexibility for pole placement, directing illumination where it was most needed was achieved with BetaLED® NanoOptic® Technology and the facility selected the best optics for their application. The visual effect of the new lighting in the walkways and maintenance access areas creates a perception of increased light levels, due to the shifts in color and intensity.

BENEFITS

According to Joel Reitzer, director of the City’s General Services Department, this project was one of many focused on reducing energy use and costs for Durham. “This lighting project was part of an overall effort by General Services, Community Development, Water Management, and the City-County Sustainability Office to reduce energy use for the City,” Reitzer said. “We’re really pleased with the results, since not only is visibility greatly improved at this facility, but the City is spending less money on operating these new lights. It really is a ‘win-win’ for the City’s bottom line and, ultimately, Durham’s environment.” The City anticipates significant maintenance savings in both material and labor with the new lights, which are located in an area that’s difficult to access.

The City of Durham utilized federal grant funds from the American Recovery and Reinvestment Act and the U.S. Department of Energy’s Energy Efficiency and Conservation Block Grant Program to fund the lighting project.

The South Durham Waste Reclamation Facility Lighting Design project received an Engineering Excellence Award in the energy projects category from the American Council of Engineering Companies - North Carolina chapter for the 2011 competition.

"The client is very happy. The design engineer insisted that we use the best product available for the project — Cree® luminaires — for nighttime color accuracy and efficiency. We are very happy that we did.

Donna G. Maskill, PE, Construction Project Manager, City of Durham, NC"
We're really pleased with the results, since not only is visibility greatly improved in this facility, but the City is spending less money on operating these new lights.

Joel Reitzer, Director of General Services, City of Durham, NC
IN THIS CASE STUDY

Cree Edge™ Series
AREA LUMINAIRE

- Minimum 70 CRI
- CCT: 4000K (+/-300K), 5700K (+/-500K)
- Utilizes BetaLED® Technology
- UL wet listed
- Two-level options
- Modular, low-profile design

Cree® BetaLED® Technology uses a total systems approach combining the most advanced LED sources, driver technologies, optics and form into each product. The patented NanoOptic® technology, available in more than 20 distributions, provides a level of optical control and thermal management that traditional light source technology cannot provide. Combined with the DeltaGuard® Finish, the finest industrial-grade finish available, the result is outstanding target illumination, lasting performance and optimum energy efficiency.

PARTICIPANTS
End User: City of Durham, NC
Cree® Rep Agency: Tarheel Lighting Sales, Louisburg, NC

Cree IS LED Lighting
Learn more at: www.cree.com/lighting | info@cree.com | 800.236.6800