



Education - Upgrade

# University of Colorado

Boulder, CO

The University of Colorado is looking to reduce energy use and extend maintenance by replacing metal halide technology with less expensive Cree® LED luminaires — a nice surprise for the budget.

- Anticipated annual energy cost savings of 70 percent for rooftop parking structure
- Key contribution to ranking of top “green” university in the nation
- Cost less than former metal halide lighting technology, provide improved illumination and last longer





## CREE LED LIGHTING SAVES ENERGY, CONTRIBUTES TO GREEN CAMPUS STATUS

### OPPORTUNITY

The University of Colorado at Boulder main campus is located at the base of the Rocky Mountains in the heart of beautiful Boulder, Colorado. Safety is of utmost importance for the 30,000 students and nearly 6,000 faculty members who travel throughout the campus during daylight and nighttime hours. For the university facilities management department, outdoor campus lighting is essential in creating a safe environment. Parking lots and structures, main pedestrian walkways and bike paths, and most campus building exteriors are illuminated all night long.

University of Colorado at Boulder campus electrical engineer, Joe Branchaw, is in the process of a long-term project to relight the 132-year-old campus. Beyond improving safety, Branchaw is looking to reduce energy use and extend maintenance by replacing metal halide technology with less expensive Cree LED luminaires — a nice surprise for the budget.

“The campus-wide relighting project is happening in phases as the budget becomes available with the level of maintenance required for existing fixtures driving prioritization,” remarked Branchaw. “The university will continue making installations with a goal to relight the entire campus. My next task is to light all surface parking lots with LED area lights,” he said.

### SOLUTION

With help from Denver-based The Lighting Agency, Branchaw selected the Cree Edge™ area luminaires for a trial in late 2007. Pleased with the significantly improved lighting quality, energy savings and low maintenance, Cree luminaires were selected for the project. Branchaw is now in the midst of a longterm relighting project with a goal to achieve an overall energy and maintenance savings payback in three to five years.

Even with a partial installation, success is being realized with savings in both areas. A 62 percent annual energy reduction (-15,720 kWh) is achieved by replacing thirty 175-watt metal halide lights (-210 system watts) with the same number of Cree 79-watt (60 LEDs) area lights that illuminate campus pathways 4,000 hours per year. Currently, the Cree Edge™ area luminaires are installed throughout six locations, including pathways that lead to university housing and the top level of a campus parking structure.

### BENEFITS

“My daughter, who’s a graduate of the university, visited campus recently and remarked about how the dimly lit area by the underpass that leads to residence halls where she used to be afraid to walk is now brightly lit,” said Branchaw. “She said she wouldn’t be afraid to walk through that area any more.”

Regent Drive AutoPark is a two-level parking garage illuminated with 22 (104 watt) Cree Edge™ area luminaires on the upper level. Branchaw said getting approval to replace the 27 (250 watt) high intensity discharge (HID) fixtures was no easy task. He had to convince skeptical university officials that LED luminaires were a better choice than fluorescent luminaires.

Branchaw took the head of parking and transportation for the university on a field trip to see a similar Cree installation. The show-and-tell dispelled the myth that LEDs provide less light and require more fixtures and gave Branchaw clearance for relighting the structure. With an HID lamp rated life expectancy of 15,000 hours and a typical lamp replacement needed approximately every 6,000 hours (1.5 years), Branchaw calculated a savings based on a comparison to the Cree product. Cree luminaires achieve maintenance-free operation for an average 50,000 hours (-12 years) with lumen depreciation of less than one percent per year. With a savings of approximately 5,515 watts (calculated using 289 system watts for 27 HID fixtures and 104 watts for 22 Cree luminaires), the lamp life expectancy increased dramatically and saves a tremendous 70 percent in annual energy use.

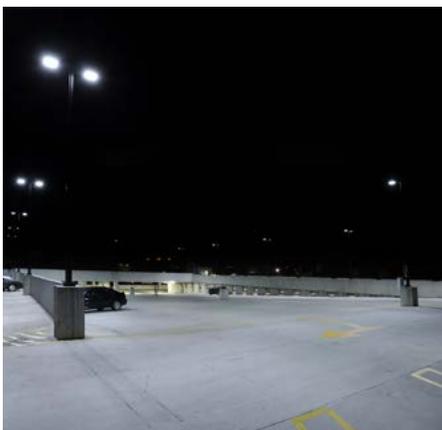
“Campus police and motorists navigating the parking structure immediately noticed a huge improvement in light and visibility after the installation,” said Branchaw. “University maintenance personnel also thanked us for the improved lighting in the Dalton Trumbo Fountain student courtyard. They said it helps them perform their work more easily during dimly lit hours.”

The new lighting installation is a contribution to sustainable practices that helped achieve the ranking of top “green” university in the nation by Sierra Club Analysis and Ranking of American Campuses for 2009. The university is aiming for a 20 percent reduction in overall energy consumption from 2005-2006 levels by the 2011-2012 academic years. Campus design standards mandate that all new buildings and major renovations meet LEED Gold standards. There are currently four LEED Gold buildings on campus and two LEED Gold submissions.



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## IN THIS CASE STUDY

### Cree Edge™ Series

#### AREA

- Minimum 70 CRI
- CCT: 4000K (+/-300K), 5700K (+/-500K)
- Utilizes BetaLED® Technology
- UL wet listed
- Two-Level options
- Linear single light module accommodates 20 to 60 LEDs
- Multiple heights available



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.



## Cree IS LED Lighting

Learn more at: [www.cree.com/lighting](http://www.cree.com/lighting) | [info@cree.com](mailto:info@cree.com) | 800.236.6800

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