The City of Boulder switched from metal halide fixtures to Cree® LED luminaires to improve efficiency and light quality.

- 50 percent energy savings
- Anticipated $15,000 annual savings on energy costs
- Dramatically improved visibility
Cree® PROVIDES SAFE, COST-EFFECTIVE LIGHTING SOLUTION

OPPORTUNITY

In an effort to create a more cost-effective parking structure that’s safer and easier to navigate, City of Boulder manager of parking services Kurt Matthews sought a better lighting solution for the existing downtown location at Eleventh and Spruce Streets. Using a Cree® upgrade solution, the city improved visibility and safety in the parking structure while reducing energy consumption. The extended lumen life of Cree Edge™ luminaires will reduce maintenance costs.

SOLUTION

The existing structure is a 120,000 square-foot six-level garage that was previously lit with 175-watt metal halide garage style luminaires with vertical lamp orientation in the drive and parking areas.

The perimeter utilized 50-watt metal halide luminaires with black honeycomb baffles. There were 60 foot candles at the entrance and the general lighting throughout the garage was 40 foot candles, directly below the 175-watt metal halide fixtures, to 0.3 foot candles between those fixtures, giving a maximum to minimum light level ratio of about 133 to one. The perimeter walls were dark and signage was very difficult to read.

In a one-for-one replacement, 337 metal halide luminaires were upgraded with Cree® luminaires. Innovative Electrical Systems, Inc., a full service electrical consulting engineering company with LEED accredited staff, designed and installed the new lighting system using existing rough-in locations and branch circuit wiring. The firm used the same wiring locations throughout the existing garage. With 79- and 55-watt LED, achieved an average of 4 foot candles with a maximum to minimum light level ratio of 11 to 1 and an average to minimum light level ratio of 3.8 to 1. These light levels and light level ratios exceed IESNA recommendations. The lighting improvement was accomplished while reducing energy consumption in the areas remodeled from the original 70,000 watts to 32,000 watts. With savings of 32 kilowatts and energy at +/-0.07 per kilowatt hour, the total savings per hour will be $2.66 when all luminaires are on. The city expects to save at least $15,000 annually on parking fixture energy costs, the majority of which are lit 24 hours per day, seven days a week.

IES project engineer Kevin Yingling designed the lighting and led the installation. “There were remodel design challenges in the dark and unevenly lit space. Our customer didn’t want us to run any new wiring anywhere,” said Yingling. “The Cree® luminaires made it possible for us to easily adapt the amount of light necessary for every area by using different fixtures installed with just the amount of LED light bars needed to create a uniform and bright space. Any concerns we had about glare were taken care of by properly mounting fixtures for the space.”

BENEFITS

The vast majority of multi-level parking garages stay brightly lit 24-hours per day, seven days per week. To reduce energy, more parking garage structures are switching from metal halide fixtures to LED for the significant savings realized in these applications that require light for long periods of time throughout the day and night. The high efficiency and light quality delivered by Cree® luminaires requires less energy demand than traditional lighting sources.
“Any concerns we had about glare were taken care of by properly mounting fixtures for the space.”

Kevin Yingling, Project Engineer, Innovative Electrical Systems, Inc.
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 Edge™ Series SECURITY LUMINAIRE
- Minimum 70 CRI
- CCT: 4000K (+/-300K), 5700K (+/-500K)
- Utilizes BetaLED® Technology
- UL wet listed
- Multi-level options
- Modular, low-profile design

Cree Edge™ Series PARKING STRUCTURE LUMINAIRE
- Minimum 70 CRI
- CCT: 4000K (+/-300K), 5700K (+/-500K)
- Utilizes BetaLED® Technology
- UL wet listed
- Two-level options
- Integrated occupancy sensor
- 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 Boulder, CO

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