SMUD
SACRAMENTO MUNICIPAL UTILITY DISTRICT
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Energy Efficiency & Customer Research & Development

Technology Brief… Bi-Level LED Bollards

Background

Bollards are often used as light fixtures to illuminate pedestrian areas and walkways. Most of them use metal halide, high pressure sodium, or compact fluorescent lamps (CFLs) and are controlled by time clocks or photocells. The main drawback to using this control strategy is wasted energy, since the lights are on when no one is nearby. On the other hand, turning off the lights completely during these periods raises concerns about safety and liability. Fortunately, there is a new option: the Bi-Level LED Bollard.

Working under a grant from the California Energy Commission's Public Interest Energy Research (PIER) program, the California Lighting Technology Center (CLTC) and Gardco Lighting developed an innovative luminaire for pathway lighting applications. The new bollard utilizes high quality LEDs and microwave motion sensors to efficiently light the pathway and reduce energy consumption. During periods when no one is around, the LEDs are switched to low mode (1/3 of original power). When the sensor detects movement, the LEDs are switched back into the high mode. This feature saves energy and increases safety by alerting people to the presence of others.

Field Demonstration Project

SMUD worked with the Arcade Creek Recreation and Park District to install these new bollards at Hamilton Street Park in Sacramento, California.

"We are excited to have an energy efficient product that increases park safety for local residents."

Jane Steele, District Administrator
Arcade Creek Recreation and Park District

Lessons Learned

- Microwave sensors consume approximately one Watt of power and are similar in principle to a police radar gun. This type of sensor works very well in pathway lighting applications.
- Commissioning the sensors is easily accomplished by setting dip switches that adjust time delay and motion sensor sensitivity.
- LED bollards provide comparable light levels to typical HID and CFL bollards.
- Gardco's product fits most industry-standard four bolt anchor patterns.

Energy and Cost Savings Potential

- Up to 70% savings verses typical HID sources.
- Up to 50% savings verses CFLs.

Since installing Bi-Level LED bollards is essentially the same as other bollards, and commissioning the sensors is a simple process, labor costs for new construction and renovation projects should be considered equivalent. The material cost for Gardco's new fixture is approximately $300 higher than typical HID or CFL products. The table below shows estimated payback periods based upon this incremental cost difference.

Base case System Type	Simple Payback	Life Cycle Cost Savings
42W CFL	>10 yrs	$220
70W HID	~5 yrs	$350
100W HID	~2.5 yrs	$530

Based upon 4,380 hours of operation per year, an energy rate of $0.115 per kWh, and an incremental cost increase of $300 per bollard. Source CLTC

Availability

The Bi-Level LED Bollard is currently available from Gardco Lighting and is designated as the BRM 830 Series. This series includes dome or bevel tops, various luminaire colors, multiple LED colors, and can be installed using either cast aluminum or concrete bases. For more information, visit www.sitelighting.com.