



A Transit Station Goes Green

A lighting upgrade exemplifies a structure's commitment to sustainability.

By Mark Bolton

Parking structures are open for long hours, sometimes all day and night. Some spaces are infrequently occupied and open to daylight, making additional lighting unnecessary. In addition, energy costs are rising and industry standards (developed by organizations such as the American Society of Heating, Refrigerating and Air Conditioning Engineers [ASHRAE] and California Title 24) have become more stringent as they apply to building owners and operators. To lower energy consumption to comply with such standards, it is essential to be proactive and make energy-saving decisions that lessen costs and consumption, reduce maintenance, and increase sustainability efforts.



These standards become even more challenging for owners and operators of park-and-ride facilities, where intermittent foot traffic often dictates 24/7 operation and magnifies the need to implement energy-saving practices. Park-and-ride lots help ease commutes by offering a convenient and safe location to transfer from a single-passenger vehicle or bicycle to a carpool, vanpool, or transit system. Ridesharing or using public transit saves time and money while reducing traffic congestion and energy consumption. In addition to safety and affordability, public transportation saves energy, reduces traffic congestion, helps the environment, and offers benefits for individuals and communities alike. Making these facilities sustainable is important to the preservation of our natural environment.

The Foothill Transit Park & Ride, Industry, Calif., demonstrates one option that uses lighting to help a parking facility successfully meet sustainability goals and save energy while improving safety and visibility.

Parking Structures and Lighting

LED luminaires can be one cost-effective solution that helps achieve sustainability goals and industry standards while providing benefits such as high efficacy and glare reduction for safety and security.

LED lighting fixtures present a potential solution for a variety of applications due to their low energy consumption, high efficacy,

and longer lamp life, which can reduce maintenance requirements. Estimated LED (L70) lamp life of 150,000 hours is currently available on some parking garage fixtures. This longevity also makes LEDs a possibility in areas that are difficult or costly to maintain, including remote, hard-to-reach, or dangerous locations.

When coupled with control systems that monitor and adjust light levels based on motion and/or daylight, newer-generation lights provide increased energy efficiency in areas that receive intermittent use, including park-and-ride facilities. These lighting control systems can help building owners meet emerging building goals and standards related to energy efficiency.

Use of tax incentives and rebates can further reduce costs and enhance the return on investment. The DesignLights Consortium® (DLC) Qualified Products List (QPL) catalogs products that qualify for efficiency program incentives across the U.S. and Canada. The DLC promotes quality, performance, and energy efficiency in commercial lighting solutions. Visit designlights.org/qpl for more information.

Lighting and Security

Parking facility safety and security is a huge issue; beyond an obvious need to keep users as safe as possible, parking affects the economic viability of a community. Crime Prevention Through Environmental Design (CPTED), which applies to parking facilities, emphasizes the proper design and effective use of a created environment to reduce crime and enhance quality of life.

The single most important CPTED security feature is lighting.

Data suggest sufficient lighting deters crime and produces a more secure atmosphere. In fact, lighting is one of the few facility features that has been documented to reduce crime in parking facilities.



According to Witherspoon Security Consulting, exterior lighting should enable parkers and employees to see individuals at night from a distance of 75 feet or more and to identify a human face from approximately 30 feet. Employees who are working after hours or visitors entering the building at night need to have efficient parking lot illumination so they can safely return to their vehicles.

In addition, the Illuminating Engineering Society (IES) offers specific standards for determining sufficient light levels for illuminating parking structures and lots to ensure both vehicular and pedestrian safety. These standards can be found in the IES publication RP-20-98.

Increasing Visibility without Glare

When lighting to increase visibility and safety, one must consider the importance of glare, which reduces the contrast of an object against its background and makes it difficult for the eye to perceive depth accurately. Glare is a potential hazard for all drivers, particularly senior citizens and other individuals with weak or impaired vision. Many modern lights are designed to address the issue of glare through specialized optics combined with specially designed lenses. This design addresses glare while maintaining high efficacy and efficiency.

Foothill Transit Park & Ride Facility

The recently constructed \$9.9 million Foothill Transit Park & Ride Facility parking structure provides parking for transit customers who choose public transportation to commute into downtown Los Angeles.

This five-level, 216,000-square-foot, 620-car parking structure is Foothill Transit's first agency-owned park-and-ride facility. The design embraces the materials and themes of the neighborhood while promoting Foothill Transit's goals of a dynamic visual experience for those entering the city by public transit. The facility offers pedestrian plazas, secure bike lockers for local cyclists, LED lighting, and a large art mural by California artist Hannah Daly that decorates the north and south side of the structure. Future plans include 18 electric vehicle charging stations and rooftop solar panels.

The agency, which provides public transportation for the San Gabriel and Pomona valleys, utilizes park-and-ride lots owned by Caltrans or other cities but wanted to open its own to better serve the needs of Foothill Transit's customers.

"Increased safety and easy access to public transportation benefits everyone," says Doug Tessitor, Foothill Transit's board chair. "Each person on board is one less car on the freeway. And this new Industry Park & Ride

makes it possible for all of us to enjoy cleaner air and safer, less congested streets."

A commitment to sustainability and patrons' safety was the driving force for installing 249 LED luminaires both in the structure and on the exterior perimeter walls. While no state or federal mandates regulated the lighting technology, management and the board wanted to be innovative while designing an energy-efficient structure.


"We are pleased with the results that include reduced energy consumption than if we installed traditional fixtures. One of our goals is to have low operational expense while improving visibility and safety for anyone using the park-and-ride structure, especially during evening hours," says Sharlane Bailey, Foothill Transit director of facilities.

The lights were chosen carefully. "We presented a 25-year total life cycle cost analysis showing they could save approximately \$1.5 million using the recommended LED luminaires instead of T8 fluorescent fixtures," explains Kevin Waters, L.A.-based project manager with Walker Parking Consultants.

Foothill Transit has a strong commitment to safety and security, as well as a desire to maintain a pleasant aesthetic look to the structure. Bailey and the board view lighting as an important safety resource in the parking structure, and the installation of LED luminaires reduces its effect on the environment. The luminaires selected provide superior glare control without compromising light levels, helping ensure the safety and security of park-and-ride patrons.

Foothill Transit's mission statement is to be the premier public transit provider committed to safety, courtesy, quality, responsiveness, efficiency, and innovation. The design of the park-and-ride intentionally incorporates the elements of Foothill Transit's mission statement.

Sustainability Commitment

Foothill Transit is committed to a sustainable environment and part of its mission statement is innovation. To that end, Foothill Transit has a total fleet of 331 buses, 316 of which are compressed natural gas (CNG) powered, and 15 fast-charge battery electric buses. Additionally, Foothill Transit is the first transit agency in the nation to electrify a bus route; line 291 utilizes nine fast-charge electric buses that serve the cities of Pomona and La Verne, Calif. To reduce GHG emissions, the agency implemented a solar array project at its two operating facilities located in Arcadia and Pomona, Calif. Foothill Transit's Arcadia facility has developed an environmental and sustainability management system (ESMS) program and is ISO 14001 Certified. Foothill Transit is currently working on having the Pomona Operations and Maintenance facility certified under ISO standards. 

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