GOING GREEN WITH LED LIGHTING RETROFITS

By Jennifer I. Tougas, PhD, CAPP

If you are looking for ways to save money in your operation, take a hard look at your lighting system. Recent advances in the lighting industry allow us to save energy with more efficient fixtures, more intelligent controls, and lower maintenance needs. All of this adds up to significant cost savings and a very short return on investment.

Efficient Lighting Fixtures

There are many different lighting technologies on the market. When evaluated on lighting output, energy efficiency, initial costs, lifecycle costs, etc., each has advantages and disadvantages. Light-emitting diode (LED) technology has matured to the point where fixtures are durable in outdoor environments, light quality is excellent, lifecycle costs are very low, and initial costs are affordable. LEDs are also extremely energy efficient.

The Lighting Energy Efficiency in Parking (LEEP) Campaign is a "collaborative effort of the U.S. Department of Energy and industry associations to promote the use of energy efficient lighting in parking lots and structures." Its website, leepcampaign.org, contains many technical resources and case studies available for anyone interested in learning more about energy-efficient lighting systems.

IPI has partnered with the Green Parking Council as supporters of the LEEP Campaign. See the December 2015 issue of *The Parking Professional* for more information about how to submit your facility for an award to be recognized at the 2016 IPI Conference & Expo, in Nashville, Tenn.

Intelligent Lighting Controls

Adequate lighting is critical to our operations for safety and security, but lighting areas where there aren't any people is wasteful in both energy use and expense. You can manually turn lights off when there is adequate natural light or in areas that aren't in use. Sensors that detect natural light levels can turn lights on when needed or off when levels are adequate. Sensors that detect motion can turn lights on when people are present at night. This works well for lighting systems that do not have to warm up to reach full brightness. Modern lighting fixtures are able to connect wirelessly to a network and communicate with software on a centralized computer to control lighting levels and patterns from a desktop computer. The software is also able to track energy use and maintenance needs down to individual fixtures.

Of course, with increased complexity comes increased costs. While large operations could benefit from controlling lights from a central command center, smaller operations could just as easily have a staff member flip a switch at the end of the day.

Lower Maintenance Needs and Costs

Lower maintenance costs represent a significant cost savings during the lifetime of LED fixtures. LEDs have a longer lifespan than traditional lighting systems, often lasting twice as long or longer. With fewer replacements required during the lifetime of the fixture, cost savings are realized in both reduced labor and material costs. There are green bonuses to increased product durability as well: reduced use of natural resources to manufacture the products and reduced use of landfills to dispose of the products.

WKU Case Study

Western Kentucky University upgraded the lighting at its surface parking lots about a year ago. By moving to LED fixtures, the university was able to reduce the number of lighting fixtures needed to cover the same area. The energy savings realized by converting to LED fixtures approached 50 percent. By implementing sensors, WI-FI connectivity, and central software management, we were able to realize an additional 30 percent in energy savings. The LED fixtures have a projected life three times that of the HID lamps that were replaced, which resulted in future cost avoidance as well. Overall, we've been very pleased with the results of the project. ℗
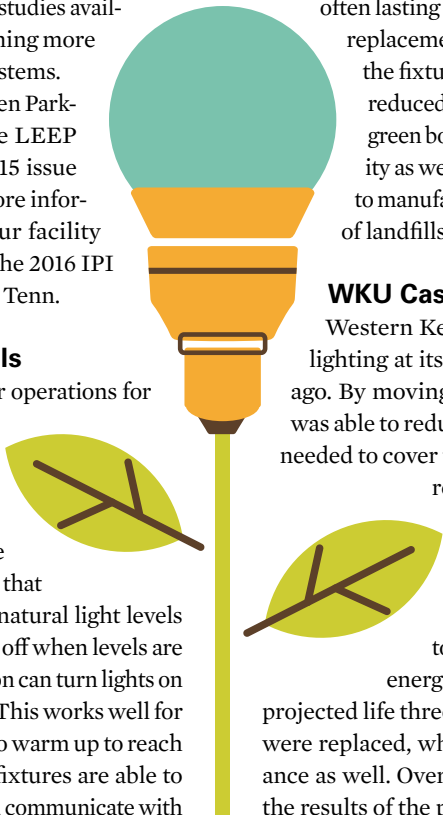
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