

Welcome to Bright Ideas, your source for information on outdoor lighting issues, products and ideas. Georgia Power's Lighting Services group works to bring you the most up-to-date information about the industry and your options for outdoor lighting.

In this issue, you can find the latest on outdoor lighting technology, the Model Lighting Ordinance, LEED, and more.

Outdoor Lighting Helps Change Perceptions for Apartment Community

The situation: Toro Properties Group was working to renovate and improve one of its multi-family apartment communities, Deerfield Gardens, which is in the Campbellton Road area of Atlanta. As part of the renovation, they needed to address the property's outdoor lighting system, which included a variety of older, inefficient fixtures. But with many other projects on their list as well, property management needed someone who could make recommendations for an updated system and manage the process from start to finish.

The Georgia Power Outdoor Lighting solution: Georgia Power lighting expert and Account Executive Joe Cobb helped determine what fixtures and system design would work best for the property, which has 375 apartment units and covers 24 acres.

"The old system had many different fixtures and wasn't providing enough light in the right areas," said Cobb. "As with many older properties, there was a hodgepodge of wood poles and various post lights. It just wasn't efficient."

New torch post-top fixtures were installed throughout the grounds, creating better light distribution and visibility, and helping improve the overall look and feel of the property. The new 360-degree fixtures are not only more efficient than the older lights, but also brighter. "We increased the lighting levels and the outward attractiveness of the system," said Cobb. "In the process, we actually reduced the number of fixtures needed and the total wattage used by the system."

Other aspects of the new lighting system include having all lines buried underground, further improving the property's appearance, and renumbering all light poles so maintenance workers can

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easily track and repair lights when necessary.

Brent Sobol, managing partner for Toro Properties, knows the importance of outdoor lighting – it is one of the first things he addresses when renovating a property. "The outdoor lighting has been a huge component of the overall repositioning of this apartment community," he said. "We were able to address safety and security issues as well as make aesthetic improvements to the area."

However, Sobol was new to working with an expert who could lead the way on new technology and system options as well as manage the day-to-day issues of the project. "The outdoor lighting was a key component of our overall plan, so I relied on Joe heavily for recommendations," he said. "Technology is always changing so much, and he had the most up-to-date knowledge about the fixtures. And it was so helpful to have him as a project manager because that was one less thing I had to do every day."

Perhaps the most telling results of the outdoor lighting renovations were shown in the reaction of Deerfield Gardens' residents. Property management received a note from a resident that mentioned how much safer she and her children feel "with the security and great lighting of the area at night." And at the first Neighborhood Watch meeting after the new lighting was installed, the system was a big topic of conversation. "I was astounded by how many people mentioned the improvements in the outdoor lighting," said Sobol. "They just bragged about it and how good it looks."

Crime Prevention and Outdoor Lighting

Lighting for Safety and Security: 90 percent of all crime occurs after dark

The purpose of security lighting is to enhance the protection of people and property, and lighting is the number one element in controlling criminal activity. Improper or poor lighting allows criminals the opportunity to conduct their activity unobserved and without fear, so it is essential that lighting be used to influence criminal behavior.

This can be achieved using Crime Prevention through Environmental Design (CPTED), a multi-disciplinary approach to deterring criminal behavior that emphasizes enhancing perceived risk of being detected and getting caught. Lighting has two purposes within the CPTED model:

- Illumination of human activity
- Security

When used to influence behavior in this way, lighting achieves the “3 D’s” of Security Lighting:

- Deter, discourage and prevent
- Disable (physically and psychologically)
- Detect/eliminate concealment

It also improves visibility, which in turn:

- Helps individuals observe their surroundings and respond to a potential threat
- Illuminates pathways or pedestrian connectors to the point where faces of pedestrians can be observed
- Increases safety, which can be diminished if lighting is too bright or not bright enough

Light Levels Needed for Safety

So how much outdoor light is needed? A study by the Lighting Research Center indicated there are several factors affecting the perception of safety at night – light levels (horizontal and vertical), uniformity of the light, lack of glare and light color. The study indicated that illumination above five footcandles makes little difference in perceived safety.

The Illuminating Engineering Society (IES) recommends that for people to have a reasonable perception of security in parking lots and on business streets, the horizontal illumination on the pavement should be somewhere between one and five footcandles. The IES also recommends that the vertical illuminance uniformity be within a ratio of 4:1, average to minimum. These guidelines allow for early detection of suspicious or threatening behavior and defensive action at a safe distance.

CPTED: Influencing Criminal Behavior

Research into criminal behavior shows that the decision to commit a crime is influenced more by the perceived risk of being caught than by ease of entry or the potential “reward” of the crime. One strategy for reducing crime that takes this into consideration is Crime Prevention through Environmental Design (CPTED), which emphasizes enhancing the perceived risk of detection and apprehension. CPTED has been embraced by law enforcement and government agencies throughout the U.S and around the world.

Using CPTED, the physical environment can be arranged to produce behavioral responses that will reduce crime. These behavioral responses can be achieved by reducing the likelihood of the physical environment to support criminal behavior through environmental cues.

Environmental cues:

- Assist criminals in locating targets in time and space
- Individual cues can be associated with “safe” or “good” targets or “unsafe” or “bad” targets
- Criminals learn to recognize “good” and “bad” crime sites and targets

Natural surveillance, a key CPTED concept, refers to areas where people and their activities can be readily observed. Such areas can be created by:

- Designing landscapes that allow clear, unobstructed views of surrounding areas
- Improving visibility with lighting or transparent building materials
- Avoiding the creation of building entrapment areas

The major benefits of CPTED include:

- Reduction in crime
- Reduction in potential for crime
- Perceived greater safety and security
- Improvement and beautification of the physical environment
- Improved quality of life
- Revitalization and preservation of neighborhoods
- Increased business activity and an improved business environment

Technology Update: LED

Georgia Power's Lighting Services team is actively engaged in the assessment and evaluation of new technologies in outdoor lighting. The technology currently receiving the most attention is Light Emitting Diode (LED). This solid-state lighting (SSL) technology is very different from the incandescent lighting that is now in use for outdoor lighting. While offering a number of potential advantages, LED as a new technology also presents a number of obstacles to be overcome before widespread adoption and commercialization in the outdoor lighting marketplace.

Lighting Services began testing an LED outdoor light fixture last fall at

In addition to LED, we're also looking at developments in plasma, solar and wind-powered lighting.

its Tucker, Ga., location and is working with lighting manufacturers and several Georgia Power lighting customers to finalize details of LED outdoor lighting test installations. Lights will be installed and testing and evaluation will begin as LED fixtures meeting our specifications become available from manufacturers.

In addition, Southern Company and its subsidiaries Georgia Power, Alabama Power, Gulf Power and Mississippi Power are working with the Electric Power Research Institute (EPRI) on five

LED street and area light test installations that are expected to begin soon.

To keep abreast of new developments and trends in outdoor lighting technology, we are meeting with LED lighting manufacturers and attending and participating in lighting industry trade shows, conferences and workshops such as LIGHTFAIR International, IESNA and the U.S. Department of Energy. In addition to LED, we're also looking at developments in plasma, solar and wind-powered lighting.

Stay tuned – we'll continue to provide updates on new technology in outdoor lighting in future issues of Bright Ideas.



LEDs: The Lights of the Future?

Jim Brodrick, Lighting Program Manager for the U.S. Department of Energy's Building Technologies Program, recently published a commentary on LED technology, LED streetlights, and cities wanting to use stimulus dollars to replace conventional streetlights with LED streetlights. He cautioned that while the intent is good – seeking energy efficiency, durability, long life and reductions in greenhouse gas emissions through the reduced energy usage offered by LEDs – the reality is that using LEDs for street lighting is not yet a “slam-dunk.” He offered the following advice for municipalities to keep in mind to avoid being burned by negative experiences in these early market days of LED lighting technology.

1. LED technology is not a magical panacea that can overcome all existing street lighting problems.
2. Not all LED luminaires are created equal; some are better than others, some by a wide margin, and more than a few don't live up to the manufacturers' claims.
3. LED lighting is not a “cut and paste” technology that can be

simply substituted for existing lighting without taking its own special requirements into account. LEDs are different from conventional lighting sources in many important respects.

4. Someone involved in the purchase of LED street lighting has to be familiar with the technology and exercise due diligence. The technology is changing rapidly, so this person needs to keep up-to-date on the most recent developments.
5. Ask lighting vendors questions about their products and the availability of independent laboratory reports to back up performance claims for photometric performance, color correlated temperature, lumen maintenance testing data, warranty terms, and BUG ratings for luminaires.

The same cautions are good for anyone to keep in mind when considering LED lighting for street and area lighting applications and they are some of the things that Georgia Power is concerned with in our testing and evaluation of new outdoor lighting technologies.

Light Pollution Update: Model Lighting Ordinance (MLO) and the BUG System

In 2001, the Illuminating Engineering Society (IES), the International Dark-Sky Association (IDA) and many communities saw the need for a technically-based ordinance to provide guidelines for outdoor lighting that would be adaptable to municipalities of any size. More than 2,000 localities have adopted outdoor lighting regulations, many of which were written by non-lighting experts. They often use non-existent units to specify lighting limits, and many regulations are unenforceable. To address this, the IES and IDA developed their first draft of a Model Lighting Ordinance (MLO) in 2004.

A task force composed of IES and IDA members released a draft of the long-awaited revised Model Lighting Ordinance for public review and comment on Feb. 9, 2009. The review and comment period closed on April 10; the task force is now reviewing the public comments and a response is scheduled to be released on Aug. 1.

The MLO provides a single generic outdoor lighting ordinance that is written in code language for easy adoption into individual community codes and laws. It can be tailored to any community through the use of five Lighting Zones (LZ0 – LZ4), which can accommodate local needs, functions and geography.

A prescriptive system to regulate typical outdoor lighting installations using a new rating system called BUG (Backlight-Uplight-Glare) is a principal component of the MLO. It is designed to prevent excessive lighting through backlight, uplight and glare shielding and by

limiting lamp lumens to values appropriate for each lighting zone. BUG permits easy plan review and field inspection and also includes a computer analysis option for complex lighting installations.

The BUG system is designed to make comparing and evaluating outdoor luminaires fast, easy and more complete than older systems. It was developed by IES and released to the public as Technical Memorandum TM-15-07 (revised). Since this new system addresses the increased concerns of glare and light trespass in all types of outdoor lighting, not solely street lighting, it supplements and may eventually replace the current classification system (full cutoff, cutoff, semi-cutoff and non-cutoff) for all outdoor lighting.

As written, the draft MLO is consistent with the California Title 24 outdoor lighting energy code, the next generation of the IES Recommended Practice for Outdoor Environmental Lighting, and the ASHRAE/IES 90.1 and IECC energy codes. It is also being submitted to the U.S. Green Building Council for use in the LEED® program for the Sustainable Sites Light Pollution Reduction Credit.

The Outdoor Lighting Team at Georgia Power is monitoring the progress of the MLO initiative and will continue to design outdoor lighting systems and install outdoor lighting luminaires that are compliant with all applicable outdoor lighting ordinances. For answers to your outdoor lighting questions or for additional information, please visit outdoorlighting.georgiapower.com or call 1-888-768-8458.

LEED® Update

Developed by the U.S. Green Building Council (USGBC), the LEED (Leadership in Energy and Environmental Design) program provides building owners and operators a framework for identifying and implementing practical and measurable green building design, construction, operations and maintenance solutions.

Since its launch in 1998, the LEED program has become widely accepted as the standard measure of sustainability for buildings. Many municipalities, state governments, and federal agencies have adopted LEED and incorporated it into construction guidelines, legislation and requirements for incentive programs.

The USGBC introduced LEED Version 3 on April 27, 2009, featuring three major updates to the rating system.

1. It incorporates Regional Priority Credits that add bonus points for addressing concerns identified by local USGBC chapters and regional councils as being a priority for their region.
2. LEED credits have been weighted, placing increased emphasis on those choices that will have the greatest impact on the energy efficiency and carbon footprint of buildings.
3. The rating system has been simplified – there are now five categories of ratings, down from nine: new construction, core and shell, schools, existing buildings operations and maintenance, and commercial interiors.

LEED Version 3 moves to a 100-point scale, with regional

and innovation credits providing an opportunity for projects to earn up to 110 points. Also introduced are uniform certification thresholds across all five rating systems:

Certified	40-49 points
Silver	50-59 points
Gold	60-79 points
Platinum	80 points and above

Another change, which is being phased in over the next year, involves modifications to the LEED Accredited Professional (AP) program. The lowest tier will be LEED Green Associate, intended for people who want to demonstrate a commitment to green building practices but may not be directly involved in LEED projects. The second tier is expected to be the equivalent of the current LEED Accredited Professional credential. The third tier, LEED Fellow, will designate an elite level of expertise.

Outdoor lighting remains a part of the LEED Project Scorecard in four of the five LEED rating systems and can contribute 1 point in the certification scoring system for Light Pollution Reduction (Sustainable Sites Credit 8).

A Georgia Power outdoor lighting representative can assist with the selection and installation of outdoor lighting that meets the LEED criteria for Light Pollution Reduction. This will allow your project to maintain safe light levels while avoiding off-site lighting and night sky pollution.

Plan Ahead: Daylight Savings Ends November 1

It's not too early to prepare for the end of Daylight Savings Time, which will take place this year on November 1. A Georgia Power outdoor lighting expert can provide a free lighting analysis and, if needed, recommend upgrades and schedule installation to make sure that your outdoor lighting is ready for the extended hours of darkness that are coming soon.

**For a free lighting analysis, visit us at outdoorlighting.georgiapower.com
or call 1-888-768-8458.**