

Bright Ideas

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Georgia Power
Outdoor Lighting Services

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'll find the latest lighting industry news; lighting industry standards, regulations and legislation; LED Roadway Lighting; an outdoor lighting overview; and more.

Call 1-888-768-8458 or visit outdoorlighting.georgiapower.com for more information about Georgia Power Outdoor Lighting. Our lighting experts will be happy to help you learn more about creating a bright, inviting outdoor environment for your business.

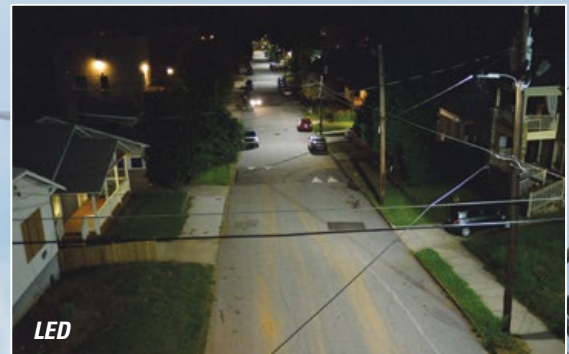
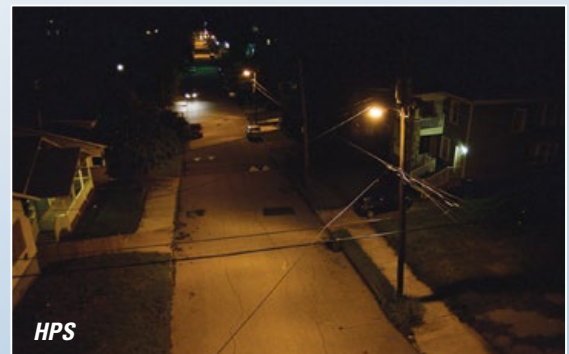
Georgia Power launches LED Roadway Lighting Initiative

February 16, 2015, marked a milestone for Georgia Power and its Lighting Services Business unit. On that day, Lighting Services began its governmental roadway LED lighting conversion initiative with its first two installations in the cities of Abbeville and Atlanta.

Lighting Services plans to convert over 400,000 high-pressure sodium roadway lights to LED over the next four years. Phase I of the project, currently underway, replaces 100 and 150 watt high-pressure sodium cobrahead lights with 65 and 90 watt LED lights. Higher wattage cobrahead and post top lights will be replaced with LED lights later in the program.

Lighting Services began researching and testing LED outdoor lighting in late 2008, and in January of 2012 added LED to its product offering for commercial and industrial customers for area lighting applications. To date, more than 60,000 LED area lights have been installed statewide. In 2013, Lighting Services began planning for the conversion of governmental roadway lighting to LED. Successful pilot installations of approximately 750 LED lights each were completed in DeKalb County and in the city of Atlanta in the summer of 2014.

In late December 2014, the Georgia Public Service Commission approved a new tariff – RLG-1 – allowing Georgia Power to begin offering regulated LED roadway lighting upgrades to governmental customers. Governmental customers can request an LED roadway lighting upgrade for their current Georgia Power roadway lighting. A process is in place for governmental customers to make their request and be placed in the queue for the LED upgrade. To date, more than 35 governmental customers, representing over 100,000 lights, have made their request.



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Nobel Prize

The Royal Swedish Academy of Sciences on October 7, 2014, awarded the Nobel Prize in Physics 2014 to Isamu Akasaki, Hiroshi Amano and Shuji Nakamura “for the invention of efficient blue light-emitting diodes which has enabled bright and energy-saving white light sources.”

Their invention of a blue LED in the early 1990s launched a fundamental transformation of lighting technology. Red and green diodes had been around for years (the red LED was invented in 1962 by Nick Holonyak Jr. while working at General Electric Company’s research lab in Syracuse, New York), but without blue light, white light could not be created. The three scientists were able to solve the blue light problem that had eluded science and industry for three decades.

With a blue LED, white light sources have been created which have very high energy efficiency and very long lifetime. White LED

lamps are constantly being improved, getting more energy-efficient – producing more lumens per watt. An estimated 20 to 25 percent of the world’s electricity is used for lighting. Widespread use of LED lighting technology could reduce this to 4 to 5 percent.

The Nobel Prize Committee stated in their award announcement that “the invention of the efficient blue LED is just 20 years old, but it has already contributed to create white light in an entirely new manner to the benefit of us all. Their inventions were revolutionary. Incandescent light bulbs lit the 20th century; the 21st century will be lit by LED lamps.”

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2015 Year of Light

The U.N. General Assembly 68th Session, on December 20, 2013, proclaimed 2015 as the International Year of Light and Light-based Technologies. This United Nations observance is a global initiative which will highlight to the citizens of the world the importance of light and optical technologies in their lives, for their futures, and for the development of society. The overview and aims of the celebration, per the 2015 IYL website, are:

“In proclaiming an International Year focusing on the topic of light science and its applications, the U.N. has recognized the importance of raising global awareness about how light-based technologies promote sustainable development and provide solutions to global challenges in energy, education, agriculture and health. Light plays a vital role in our daily lives and is an imperative cross-cutting discipline of science in the 21st century. It has revolutionized medicine, opened up international communication via the Internet, and continues to be central to linking cultural,

economic and political aspects of the global society.

IYL 2015 programs will promote improved public and political understanding of the central role of light in the modern world while also celebrating noteworthy anniversaries in 2015 – from the first studies of optics 1,000 years ago to discoveries in optical communications that power the Internet today.

This International Year will bring together many different stakeholders including scientific societies and unions, educational

institutions, technology platforms, non-profit organizations and private sector partners.”



**INTERNATIONAL
YEAR OF LIGHT
2015**

LED Roadway Lighting

There are an estimated 26 million streetlights in operation in the United States. The majority of these are high-pressure sodium lights, with lesser numbers of mercury vapor, low-pressure sodium, induction and metal halide technology lights in use. LED lighting technology first began making an appearance on streets and highways in the U.S. in 2009 with the start of large-scale installations in Los Angeles and Seattle (with current installed numbers of 150,000-plus and 20,000-plus, respectively, in those cities). Since then, more and more municipalities, government agencies and utilities have begun converting roadway lighting to LED.

- The Lighting Research Center (LRC) at Rensselaer Polytechnic Institute in June 2014 announced new research and publication of the National Academies Report titled "Analysis of new highway lighting technologies" for the U.S. Transportation Research Board (TRB). The report states that LEDs are ready for prime time, while also finding that some high-intensity discharge technologies, including ceramic metal halide, also perform well but lack the long life expectancy of solid-state lighting. LRC stated that technologies

such as LED are becoming mainstream choices for roadway lighting and that their findings can help agencies make better decisions as they face these choices on roadway lighting. The TRB is one of the major divisions of the National Research Council, the primary operating agency of the U.S. National Academies charged with delivering technical information and services to the U.S. Government, the public, and scientific and engineering communities.

- In late September 2014, Duke Progress Energy announced an initiative to modernize outdoor lighting across its service area. The utility said that it had received approval from the North Carolina Utilities Commission to replace more than 100,000 mercury vapor street and area lights with LED fixtures over a two-year period beginning in October 2014. It also announced that it would soon propose a replacement plan for its customers in South Carolina.
- On January 27, 2015, the White House announced the Presidential Challenge for Advanced Outdoor Lighting with the following press release:

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LED Roadway Lighting

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“Outdoor lighting consumes enough energy to power 6 million homes for a year, costing cities about \$10 billion annually. That is why we have launched the Presidential Challenge for Advanced Outdoor Lighting, and tripled the DOE Better Buildings program goal of upgrading 500,000 poles, which is on track to be exceeded, to 1.5 million poles. Through the Better Buildings Outdoor Lighting Accelerator, the Presidential Challenge for Advanced Outdoor Lighting will work with dozens of municipalities to accelerate the adoption and use of high-efficiency outdoor lighting, driving carbon pollution reductions in communities across the nation. Using today’s new technologies, these systemwide lighting exchanges can help local governments cut their outdoor lighting bills by 50 percent or more.”

- The Presidential Challenge for Advanced Outdoor Lighting will work with mayors to upgrade 1.5 million street, parking lot and park lights to high-performance, low-energy lighting in the next two years through the U.S Department of Energy’s High Performance Outdoor Lighting Accelerator program.
- A recent Strategies Unlimited research report on the outdoor roadway and area lighting market forecasts that the global outdoor LED lighting market will reach \$1.9 billion by 2017 and that LED streetlight installations are forecast to grow by 400 percent in the next five years.

Celebrating 100 Years of Safety and Interoperability

For 100 years companies and workers alike have relied upon the National Electrical Safety Code (NESC) to help guard the safety and efficiency of electric supply, communication lines, and related equipment. One of the oldest and most ubiquitous safety codes, the NESC has been in continuous use since August 1914.

Produced exclusively by IEEE, which serves as Secretariat, the NESC specifies best practices for the safety of electric supply and communication utility systems at both public and private utilities. The code is a collaborative work, and is frequently revised with significant input from the businesses and industries it serves.

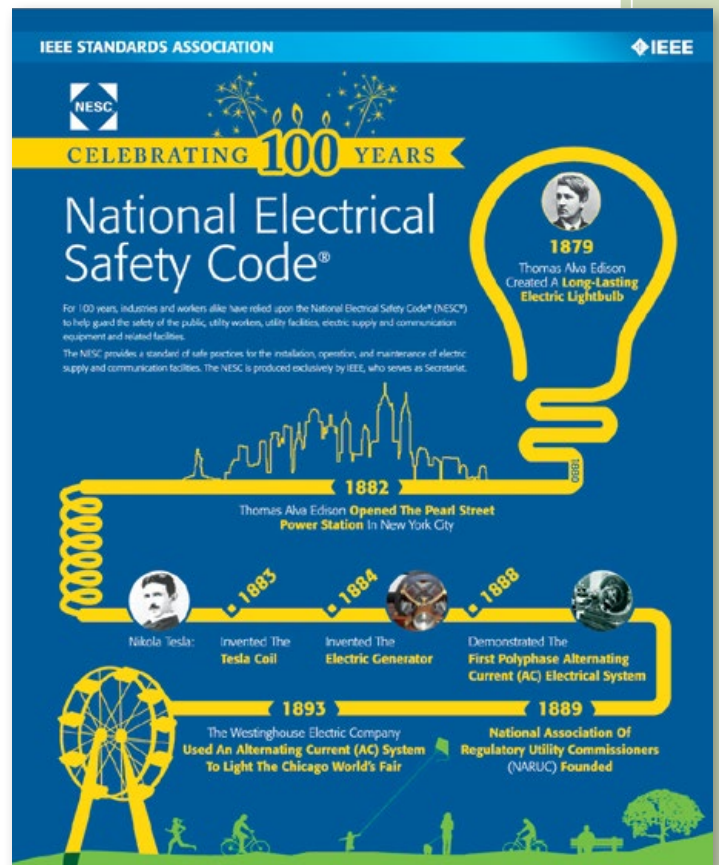
As it progresses into the next century, IEEE invites everyone to learn more about the NESC and the vital role it plays in ensuring the safety of companies, employees, and the public alike.

From: standards.ieee.org

Many of the outdoor lights installed and maintained by Georgia Power are installed according to the NESC code. For outdoor lights that are wired through a building or facility electrical panel and meter, Georgia Power installs the lights according to the National Electric Code (NEC). The NEC code, first published in 1897, is part of the National Fire Codes series published by the National Fire Protection Association (NFPA), a private trade association. The code is updated every three years.

IEEE is the Institute of Electrical and Electronics Engineers, the

largest organization of technical professionals with more than 400,000 members in chapters around the world.



New Outdoor Lighting Standards, Regulations, and Legislation

IES

- **RP-8-14** Recommended Practice for Roadway Lighting
- **RP-33-14** Lighting for Exterior Environments
- **RP-20-14** Lighting for Parking Facilities

At LightFair 2015, the U.S. Department of Energy (DOE) made a presentation about a new color metric that is being completed by the IES Color Metrics Task Group. TM-30 will combine CRI (average color fidelity) with Gamut Index (average color gamut or color saturation) to create the new color metric. Note that TM-30, along with a companion design guide DG-01, are not yet completed or approved. The new metric addresses industry concerns that the standard CRI metric, developed for use with legacy light sources, does not adequately measure the color rendering capabilities of solid-state lighting technology.

NEMA

- **ANSI C136.13-2014** American National Standard for Roadway and Area Lighting Equipment – Metal Brackets for Wood Poles
- **ANSI C136.40-2014** American National Standard for Roadway and Area Lighting Equipment – Solar Lighting Systems
- **ANSI C136.41-2013** American National Standard for Roadway and Area Lighting Equipment – Dimming Control Between an External Locking Type Photo Control and Ballast or Driver
- **ANSI C136.46-2013** American National Standard for Roadway and Area Lighting Equipment – Concrete Lighting Poles

In 2014, the National Electrical Manufacturers Association (NEMA) announced the formation of the new ASC 137 Lighting Systems Committee after it received approval from the American National Standards Institute (ANSI) Executive Standards Council as an Accredited Standards Committee (ASC). ASC will develop and approve standards and specifications for indoor and outdoor lighting systems installed in an application with consideration of human health and comfort, personal security, the physical environment, energy consumption and day-light integration.

U.S. Department of Energy (DOE)

In February 2014, DOE published a final rule for metal halide lamp fixtures. This rule was basically a ballast standard as it expanded the scope of previously regulated products to 50 – 1000W luminaires and eliminated the exemptions for 150W products. The intent of the rule was to eliminate less efficient magnetic-probe start technology and transition the market to electronic pulse-start technology.

In October 2014, the DOE changed course and announced that it will not regulate high-intensity discharge lamps after holding a series of public meetings, reviewing public comments, and speaking with manufacturers. Based on this new information, the DOE revised its previous analyses and lowered its estimates for potential HID lamp energy conservation standards. It is felt that the change in position by the DOE on this subject recognized the projected high cost for manufacturers to comply with the proposed rule for products rapidly declining in usage due to a market shift to solid-state lighting technologies.

U.S. Green Building Council (USGBC)

Effective June 15, 2015, the USGBC's Leadership in Energy and Environmental Design (LEED) building rating system LEED v4 will be required for all projects vying for LEED certification, replacing LEED 2009. The new LEED v4 covers new construction, commercial interiors and existing buildings, and has specific requirements for schools, data centers, warehouse and distribution centers, and hospitality and healthcare facilities.

LEED v4 represents a major update of LEED requirements, and includes changes that impact the design and selection of lighting. While most of the changes impact interior lighting, there are also changes to exterior lighting requirements addressing light pollution, with the new requirements based on the IES Backlight/Uplight/Glare (BUG) luminaire rating system.