

Dark Sky-Friendly Decorative Post Top Reduces Light Pollution

Amerlux, an award-winning design-and-manufacture lighting company, announced that it has released the newest addition to its [dark sky-friendly family of LED luminaries](#), providing developers and municipalities with stylish solutions for effectively curtailing rampant lighting pollution and costs. The new [DS770FC Series](#) is a set of traditionally styled, post-top fixtures that can be specified and used in place of typical acorn-styled luminaries, which offer little in lighting control and typically have a large amount of wasted up-light. The decorative DS770FC post-top luminaire alternatively utilizes fully shielded optics to minimize glare while reducing light trespass and unwanted skyglow. Each solution has been approved by the [International Dark Sky Association \(IDA\)](#), the recognized authority on light pollution and the leading organization for combating light pollution nationally.

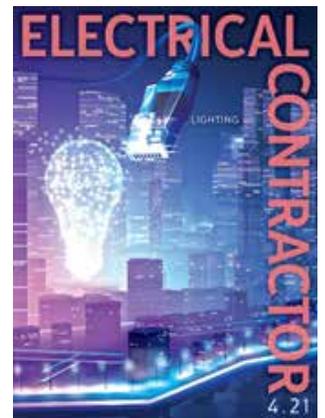


National LED Energy Market Observer:

1. **The Electrical Contractor April Issue is All about Lighting** - Lighting is not just about illumination anymore, as you well know by now..... The new LED products and systems of today offer real opportunity to serve your customer base with energy savings, space redesign, lighting system maintenance, the ability to control the light levels, on and on. The April issue of Electrical Contractor is special as it is all about lighting: [April 2021 | Electrical Contractor Magazine \(ecmag.com\)](#)

- [Healing and Light: Reducing Stress, Improving Comfort in Healthcare](#)
- [Changes in Lighting: Experts Discuss Opportunities and Challenges](#)
- [LED Light, Green Light: Chicago Turns on LED Streetlights](#)
- [Flagship Facelift for Huskers: Commonwealth Electric Co. of the Midwest Upgrades University of Nebraska Library](#)
- [High Energy to Low-Voltage: Power over Ethernet Brings More Energy to New Applications](#)
- [Safety: OSHA Must Address Infectious Diseases](#)
- [Cool Tools: Wearables and Accessories](#)
- [Featured Products: Home Automation and Lighting Controls](#)

See the Monthly Feature at end of this newsletter as NEMA ElectroEnergy focuses on lighting too!



2. **DOE Study Examines Performance and Reliability of Sensors Used in Tunable Lighting Systems** - The U.S. Department of Energy has released a report on the initial performance and reliability of chromaticity sensors used for tunable LED lighting systems. The performance of LED lighting is known to change over time because of lumen depreciation, shifts in chromaticity coordinates, and changes in the drivers. Sensor-driven lighting systems can compensate for these aging-related changes by adjusting the amount of light and color quality to maintain a consistent lighting environment. They can also adjust to changes brought on by daylighting in the space. However, the impacts of changes in the control sensors over time on the reliability of tunable LED systems has not previously been examined. [DOE Study Examines Performance and Reliability of Sensors Used in Tunable Lighting Systems | Department of Energy](#)

3. New DLC Draft Policy: Light Usage for Night Applications (LUNA) - The DLC is pleased to introduce the first draft of the [LUNA \(Light Usage for Night Applications\)](#) requirements: a new policy that establishes performance thresholds for specific categories of outdoor lighting in order to minimize light pollution, provide appropriate visibility for people, and limit negative impacts to the environment. The LUNA requirements aim to help energy efficiency programs, cities and municipalities, and all outdoor lighting decision makers ensure that their selections save energy AND follow best environmental practices for nighttime lighting. **The first draft of LUNA V1 is now available for public comment through the DLC Stakeholder Input Process.** Your feedback on the draft is essential for helping the DLC create requirements that identify energy efficient, high quality outdoor lighting that reduces sky glow and light trespass, creates a better outdoor experience for people, and supports a faster path to meeting energy efficiency goals. Please submit your comments on the draft requirements using the comment form linked below to comments@designlights.org by May 21, 2021. [Learn more about LUNA](#)

4. DLC Forms Advisory Group for Light Usage for Night Applications - The [DesignLights Consortium](#) recently announced the formation of a Light Usage for Night Applications (LUNA) Advisory Group as a first step toward development of a new program to recognize and promote light fixtures that are both energy efficient and protect the night sky from light pollution. The group is comprised of six lighting experts, as well as DLC staff and a representative of the International Dark-Sky Association (IDA). The advisory group will provide perspectives and recommendations for criteria related to light at night for products on the [DLC's Solid-State Lighting Qualified Products List \(QPL\)](#). The panel will advise the DLC on the development of a program that includes a near-term supplemental criterion that will allow QPL users to differentiate products that minimize light pollution. [DLC Forms Advisory Group for Light Usage for Night Applications | EC&M \(ecmweb.com\)](#)

5. Flexible is the New Normal by Matt Ochs - While change remains a constant and design thinking continues to evolve, lighting and shading control systems will play an increasingly essential, pivotal role in commercial and public spaces that feel comfortable, secure and inviting. What does lighting control look like in these spaces? It is simpler to design and more flexible, offers seamless integration, facilitates a connection to the outdoors, and enhances personalized and touchless control options for better usability. Here's a closer look at: [Flexible is the New Normal – Illuminating Engineering Society \(ies.org\)](#)

- Simpler to design, program and personalize for each project.
- Design with dynamic lighting to make an impact that gets more powerful over time.
- Integrated lighting and shading control enhance connection to the outdoors.
- Ease of use and touchless solutions give clients peace of mind.

6. ATG Upgraded Its Web-Based Rebate Finder by Partnering with BriteSwitch - BriteSwitch has helped business owners, facility managers, contractors, and distributors understand and take advantage of rebates and incentives for the installation of energy efficient LED lighting in commercial and industrial buildings across the US & Canada. BriteSwitch offers a unique, chat-based platform that provides all the critical rebate information customers will need to maximize their rebate dollars on every lighting project. By partnering with BriteSwitch, the ATG team has access to the BriteSwitch RebatePro database. Using a sophisticated algorithm, RebatePro can find the geographies with the highest rebates for a specific product. We can then export that information to an Excel file and send it to our customers so they can focus their sales and marketing efforts accordingly. [Utility Rebate Finder - ATG LED Lighting](#)

7. LED Light, Green Light: Chicago Turns on LED Streetlights - Major U.S. cities pursuing a conversion to LED has grown from 107 in 2018 to 185 today. Chicago is one of the leaders as it wraps up the fourth and final phase of its Chicago Smart Lighting Program. Begun in 2017, the program represents the largest municipal-owned project in the country. By 2021, the city will have replaced an estimated 270,000 high-pressure sodium (HPS) fixtures with energy-efficient LED counterparts in streets, alleys and viaducts. Simultaneously, the project has been developing a mesh network to streamline lighting management, maintenance and repairs and provide a foundation for other forays into smart city management. [LED Light, Green Light: Chicago turns on LED streetlights | Electrical Contractor Magazine \(ecmag.com\)](#)

8. DALI Alliance Defines Gateway Specs to Bluetooth and Zigbee Wireless Networks - Interoperability in connectivity implementations has been among the biggest roadblocks to wider deployment of smart and connected solid-state lighting (SSL). Now the DALI Alliance (also known as the DiiA or Digital Illumination Interface Alliance) has delivered on its promise to specify standard Wireless to DALI Gateways that will enable seamless integration of network nodes based on either wired DALI (Digital Addressable Lighting Interface) connections or wireless Bluetooth mesh or Zigbee mesh connections. The gateway specifications will free product developers from supporting multiple interface options in a new luminaire or sensor, and will give designers and specifiers far more freedom in deploying connectivity throughout a space. [DALI Alliance defines gateway specs to Bluetooth and Zigbee wireless networks | LEDs Magazine](#)

9. Interoperable Connected LED Lighting Remains a Pipe Dream — For Now by Maury Wright - There are a lot of reasons connected solid-state lighting (SSL) hasn't reached the glorious success many predicted. The industry was hijacked a bit with what seemed fantastic new Internet of Things (IoT) applications that turned out to be incredibly difficult to execute on and, more importantly, deliver return on investment (ROI). In fact, we recently changed the name of our connected-lighting newsletter to the Connected SSL & Controls newsletter, omitting IoT in the title. Fantastic IoT concepts may happen but connected lighting should deliver ROI simply based on additional energy savings beyond what efficient LEDs offer. So why have networked lighting controls struggled to lift off? There is complexity involved. And we have published articles that illustrate issues with sensors and more. Still, I would argue it's the lack of interoperability that is the main issue standing in the way of plug-and-play simplicity. [Interoperable connected LED lighting remains a pipe dream — for now \(MAGAZINE\) | LEDs Magazine](#)

10. The Evolution of Controls Technology by Tony Adams - How has the development and introduction of LLLC progressed to date? The lighting industry has successfully managed the evolution from legacy to LED sources over a little more than a dozen years. This transition has brought with it a myriad of control opportunities that were not possible in lighting applications using fluorescent or HID lamps. Solid-state technologies allow us to continuously dim, tune color spectrum, and add numerous control strategies to lighting systems through controllers and sensors. One such lighting system option is luminaire level lighting controls (LLLCs). LLLC technology is a subset of networked lighting control (NLC) systems that includes factory-integrated sensors in each luminaire. These sensors provide occupancy and daylight sensing and wireless, two-way digital communication with (at a minimum) other luminaires in the space, or (at the maximum) broader connectivity via a gateway and the internet, to unite remote spaces such as those found on an educational campus. [The Evolution of Controls Technology | EC&M \(ecmweb.com\)](#)

11. DOE Issues Preliminary Determination of Energy Savings for Commercial Buildings - The U.S. Department of Energy (DOE) is announcing its [preliminary determination](#) of energy savings for ANSI/ASHRAE/IES Standard 90.1-2019, preliminarily affirming that the updated code will increase energy efficiency in commercial buildings. The Department's analysis, performed by Pacific Northwest National Laboratory (PNNL), indicates that buildings meeting Standard 90.1-2019 (as compared to the previous 2016 edition) would result in national average energy savings. Interested stakeholders are invited to submit public comments within 30 days from publication of this Notice in the Federal Register. More information, including supplemental energy and cost savings analysis, is available via the DOE Building Energy Codes Program. [Learn more.](#)

12. **DOE: Achieving Better Measurement of Discomfort from Glare** - The prevalence of LED lighting has brought greater attention to the issue of discomfort produced by glare. At what luminance does glare become intolerable? The answer varies from one study to another: more than 80 experimental studies over the past few decades have not produced a consensus. A [new report](#), funded by the U.S. Department of Energy (DOE) and published in LEUKOS, reviews these past studies and identifies flaws in experimental procedures that call into question the reliability of their findings. The new report also provides guidance for future research on discomfort from glare. [Achieving Better Measurement of Discomfort from Glare | Department of Energy](#)

13. **BriteSwitch: Do Field-Adjustable LED Fixtures Qualify for Rebates?** - Over the past couple of years, LED manufacturers have introduced field-adjustable LED fixtures into the market. They are different from the traditional controllable/dimmable fixtures most people are familiar with; rather than the user dynamically adjusting the light level or color temperature, these field-adjustable fixtures are typically set once during installation and left that way. With the rapid growth of this category of LED products, BriteSwitch looked into how rebate programs treat them. [Do Field-Adjustable LED Fixtures Qualify for Rebates? \(briteswitch.com\)](#)

14. **OLED Qualities Inspire Planar LED Design by Liz Congero** - As OLED uptake in general illumination has lagged due to costs and manufacturing complexity, lighting designers and specifiers can look to an efficient and cost-effective LED module design that delivers the desired qualities. Organic light-emitting diode (OLED) technology has gained market interest for general illumination applications due to the ultrathin profile of the OLED modules. Unfortunately, high production costs and inferior performance have resulted in a cost per lumen (\$/lm) that remains greater than its LED equivalent. With OLED and liquid-crystal displays (LCDs) as an inspiration, a new technology is emerging for planar light sources, with lower manufacturing costs and improved performance that can allow LEDs to match the desirable characteristics of OLED in a thin form factor. [OLED qualities inspire planar LED design \(MAGAZINE\) | LEDs Magazine](#)

15. **Endeavor Business Media Announces Launch of LightSPEC West** - LightSPEC West is scheduled to take place September 21-22, 2022 at the Magic Box @ the REEF in Los Angeles, CA.....a new West Coast lighting education and solutions event for buyers and specifiers of commercial, architectural and high-end decorative lighting products, controls, and technologies. By leveraging Endeavor's leading B2B media brands in relevant industries such as buildings and construction, schools and universities, hospitals, airports, and facilities management, LightSPEC West is primely positioned to build a strong exhibitor and attendee base to provide a unique environment for information exchange and new business development. [Launch of LightSPEC West | Endeavor Business Media](#)

16. **LEDucation 2021 In-Person August Trade Show Is Cancelled** - Conference Sessions to be held Virtually The LEDucation committee has made the difficult but necessary decision to cancel the in-person Trade Show scheduled for August 17-18, 2021. However, the committee is pleased to announce that LEDucation will offer a series of accredited virtual conference sessions in August 2021. Definitive dates and details are forthcoming. So stay tuned! [Full Announcement Here](#)

17. **CASE STUDY: University Installs Baffles for Acoustics and Wayfinding** - California-based university Cal Poly Pomona enlisted CO Architects to design a student services building that aligned with the vision and mission of the university at-large. When conceptualizing the office area within the Student Services Building, CO Architects relied on Kirei's EchoPanel Simple Baffles for their dual function: to help balance the overall acoustic quality of the building — which boasts a generous open-plan and high ceilings — and provide important wayfinding without impeding the abundance of natural light. Providing important wayfinding, the baffles' colorways guided the color scheme for the project-at-large, helping to differentiate the 'neighborhoods' of desks and working areas by providing visual cues. Through matching the building's paint colors to the baffles' colors, CO Architects created a visually cohesive, uplifting space. <https://www.kireiusa.com/products/simple-baffle>



18. CASE STUDY: Hotspot EZ Exit LED Emergency Systems Make a Huge Impact for Newly Constructed AZ Warehouse

- In late 2020, the Fulham HotSpot EZ Exit LED Emergency System was selected for a brand new food warehousing storage facility being built for United Foods Inc. in Tempe, AZ. This client was attempting to achieve two main goals for their emergency lighting that made Fulham HotSpot EZ Exits the perfect choice: 1) Installation of the fewest number of fixtures (to achieve the lowest acquisition cost possible and quickest, easiest installation time possible) 2) A reliably bright solution given that the ceilings are 34+ feet tall. The brightness of the LED EZ Exits that allowed for the distribution of fixtures across this space cut the required number of fixtures by approximately 50% compared with standard high bay emergency battery backups.

<https://www.fulham.com/PDFs/CaseStudy-TempeAZ-EZExits-reduced.pdf>

19. CASE STUDY: Installing New SYLVANIA UltraLED™ CCT Luminaires at Lamb Farms - The Vapor Tight luminaires are environmentally preferable LED alternatives to traditional HID or fluorescent luminaires, offering up to 69% in energy savings. Ideal in place of traditional luminaires, or as new installations, the Vapor Tight series is suitable for illuminating garages, stairwells, industrial areas, canopies, and outdoor walkways. **Benefits and Features:**

- DLC Premium listing ensures high energy efficacy and optimizes this product for utility rebates
- Both lumen and CCT selectable
- IP65 rating, NEMA 4X rating, NSF Splash Zone rating and an IK10 rating
- Standard 4kV surge suppression with optional 10kV models
- Optional integrated microwave (daylight/motion) sensor and emergency battery back-up
- Up to 150 LPW; CRI >80
- Selectable 3500K, 4000K, or 5000K color temperatures
- Offered in two selectable wattage/lumen packages (60, 75 or 90W and 120, 150 or 180W)

Download the cut sheet at: [asset-11089304 \(sylvania.com\)](asset-11089304(sylvania.com))

Watch the video at: <https://www.youtube.com/watch?v=fGIQfCzOILk>

20. CASE STUDY: Two Lighting Retrofits Provide Energy Cost Savings by Chris Wolgamott - Case studies demonstrate why LLLC technology delivers high return on investment. Luminaire level lighting controls (LLLCs) have the potential for significant energy cost savings. Although the numbers vary by facility type and hours of operation, the average savings is up to 63% beyond fixture upgrade savings alone, according to a recent report from the Northwest Energy Efficiency Alliance and the DesignLights Consortium titled, "[Energy Savings from Networked Lighting Control Systems With and Without Luminaire Level Lighting Controls.](#)" [Two Lighting Retrofits Provide Energy Cost Savings | EC&M \(ecmweb.com\)](#)

21. TRAINING: Lighting Controls Association Publishes New Networked Lighting Control Course - The Lighting Controls Association (LCA) has published EE302., Part 3: A Year with a Networked Lighting Control System, a new learning module in its popular Education Express online education program. Authored by C. Webster Marsh of HLB Lighting Design, this learning module was designed to help building owners/managers and electrical industry consultants visualize networked lighting controls as tools that can be used to improve operations while also saving energy. Part 3 follows two learning modules authored by Steve Mesh, which describe networked lighting control technology, typical systems, and how to apply them to a project. [Education Express | \(aboutlightingcontrols.org\)](#)

22. TRAINING: Leviton and the Electrical Training Alliance Announce Five-Year Partnership - Platinum-level training partnership will provide resources and support for future and existing electrical workers. Electrical wiring device manufacturer [Leviton](#) announced a new partnership with nationwide electrical training organization the [electrical training ALLIANCE \(etA\)](#). The goal of the five-year agreement is to develop the best-trained and most technically advanced electrical workforce in the world; it will bring funding, training kits, instruction and technical expertise through traditional and digital training curriculum platforms. [Leviton and the Electrical Training Alliance \(etA\) Announce Five-Year Partnership](#)

23. RESEARCH: DOE Projects Energy Savings Related to Expected SSL Quality Improvements - Pacific Northwest National Laboratory (PNNL) has published the results of a US Department of Energy (DOE)-funded study intended to project the impact on planned solid-state lighting (SSL) technology innovations. The research focused on improvements in LED lighting that could be driven by PNNL technology research initiatives. The study reveals significant energy savings attributed to coming advanced SSL products even if some of the advancements demand modest tradeoffs in energy efficiency. Specifically, PNNL plans to undertake research in the areas of visual glare, flicker, color rendering, non-visual effects or lighting for health and wellbeing, and the impact of outdoor lighting on dark skies. [Energy Saving Opportunity from Advanced LED Lighting Research | PNNL](#)

24. RESEARCH: Lighting the Patient Room of the Future: - This study explores how aspects of lighting in patient rooms are experienced and evaluated by nurses while performing simulated work under various lighting conditions. The lighting conditions studied represent design standards consistent with different environments of care—traditional, contemporary, and future. Significant differences were found for several a priori hypotheses. Interesting findings provide insight into lighting to support circadian synchronization, lighting at night, the distribution of light in the patient room and the use of multiple lighting zones, and the use of colored lighting. The results of this study provide insight into potential benefits and concerns of these new features for patient room lighting systems and reveal gaps in the existing evidence base that can inform future investigations. [Download the full report.](#)

Global LED Energy Market Observer:

25. ReportLinker Reports the Global Specialty Lighting Market to Reach \$8.1 Billion by 2027 - Amid the COVID-19 crisis, the global market for Specialty Lighting estimated at US\$5.5 Billion in the year 2020, is projected to reach a revised size of US\$8.1 Billion by 2027, growing at aCAGR of 5.6% over the period 2020-2027. LED, one of the segments analyzed in the report, is projected to record 6.1% CAGR and reach US\$5.9 Billion by the end of the analysis period. The Specialty Lighting market in the U.S. is estimated at US\$1.5 Billion in the year 2020. China is forecast to reach a projected market size of US\$1.8 Billion by the year 2027 trailing a CAGR of 9.2% over the analysis period 2020 to 2027. Among the other noteworthy geographic markets are Japan and Canada, each forecast to grow at 3.1% and 4.5% respectively over the 2020-2027 period. [Global Specialty Lighting Industry \(reportlinker.com\)](#)

26. Nichia Prepares Mass Production of Deep UV LED That Can Kill 99.99% of Coronaviruses on a Surface - Major Japanese LED manufacturer Nichia will be working with other OEMs to incorporate its deep UV LED into various devices and equipment such as air purifiers and air conditioning systems. The deep UV LED was jointly developed by Nichia and a team of researchers from Tokushima University. According to their study, a UVC LED with a wavelength of 280nm and a radiant flux of 70mW can annihilate 99.99% of coronaviruses on a surface if the irradiation takes place from a distance of 5cm or less and lasts at least 30 seconds. The UV spectrum is further divided into four segments based on wavelength range, and UVC or deep UV is between 200nm and 280nm. UVC light has been demonstrated to be highly effective for disinfection applications. <https://www.ledinside.com/node/31845>

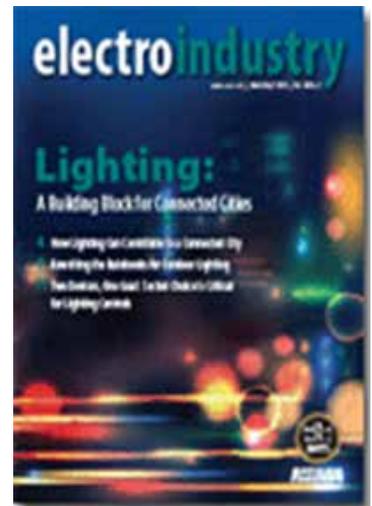
27. Canadian City Launches Smart Street Lighting - The City of Laval has given the green light for a project to convert 37,000 fixtures to LED luminaires with smart controls. Dimonoff and Pierre Brossard Ltée (a subsidiary of Black & McDonald) will undertake the three-year \$34.5 million program. The first units were expected to be installed in March, with the conversion of all streetlights as well as the deployment of intelligent controls expected to take 12 to 18 months spread over the remainder of 2021 and the first half of 2022. A second phase, consisting of decorative and architectural fixtures, will follow thereafter. [Canadian City Launches Smart Street Lighting – Illuminating Engineering Society \(ies.org\)](#)

28. **Fagerhult Buys All of Danish Outdoor IoT Lighting Technology Company** - The Swedish group now owns 100% of Seneco, up from 20%, a move that could lead to wider adoption of controls and wireless communication components across Fagerhult's twelve companies. Fagerhult CEO Bodil Sonesson told LEDs Magazine that Seneco's management team will remain intact and will "start to work more closely" with the IoT development group at Fagerhult, which is based at Fagerhult's new "competence center" in Linköping, Sweden. The Linköping site also houses development of Fagerhult's Organic Response wireless indoor IoT connectivity, which is part of OR Technologies, a Fagerhult company based in Melbourne, Australia. [Fagerhult buys all of Danish outdoor IoT lighting technology company | LEDs Magazine](#)

29. **Sonepar Expands in Switzerland** - Since April 1st, 2021, the Swiss wholesale electrical equipment companies Winterhalter + Fenner Dysbox, ElectroLAN, Electroplast, and Fabbri, all belonging to the Sonepar Group, have gone to market under one brand: [Sonepar](#). [Sonepar Expands in Switzerland - tEDmag](#)

Monthly Feature:

NEMA ElectroIndustry March/April News on Lighting: A Building Block for Connected Cities - NEMA's ElectroIndustry specialize in B2B campaigns that position NEMA and its 58 Product Sections as thought leaders on key technical and public policy issues, including energy-efficient technologies and electroindustry trends as well as environment, health, and safety issues related to our products, international Standards and trade activities; and economic indicators and trends. The multimedia portfolio includes a technical library of 700 Standard documents with 81,000 downloads, a bi-monthly magazine with 68,000 opt-in subscribers, 18 websites, 4 social media channels, and 12 digital newsletters with 2.2 million views. This issue is all about lighting: <https://www.nema.org/news-trends/ei?title=March/April%202021>



1. How Lighting Can Contribute to a Connected City by Martin Mercier, Strategic Marketing Manager, Cooper Lighting Solutions - Lighting is all around us—on every street corner, on every building floor, inside every home. All told, cities, utilities, and facility owners have deployed millions of lights. This massive network of devices provides stellar opportunities for devices to connect and communicate and provide end-users with useful information. Amid the digitalization of cities and buildings, we can leverage lighting infrastructure to get better insights and data via IoT devices.

2. Rewriting the Rulebooks for Outdoor Lighting by Morgan Pattison, PhD, Senior Technical Advisor, U.S. Department of Energy Lighting R&D Program - Municipalities are taking action to replace high-pressure sodium outdoor and roadway lighting with light-emitting diode (LED) technology. They are motivated by compelling benefits, including reduced maintenance costs, energy savings, and mercury elimination. Despite this, many foundational questions remain unanswered, issues that stand in the way of cities' taking full advantage of LED lighting, particularly "smart" systems using connected and automated controls.

3. Two Devices, One Goal: Socket Choice Is Critical for Lighting Controls by Dan Evans, Senior Director of Product Management, Itron, Inc. - Mr. Evans has more than 25 years of experience in the networking and computer industries with a strong focus on wireline and wireless data services/equipment, including pioneering work in broadband internet and large-scale IPv6 networks. As more and more cities and utilities embark on upgrading their lighting infrastructure to light-emitting diodes (LEDs), a critical decision that may be easily overlooked is which type of receptacle (or socket) they specify to be used for lighting controls. The lighting manufacturers offer a myriad of options, but which one is best to lay a solid foundation for expanding from simple lighting controls to electronic methods and sensors (or "smart lighting")? Which ones are better to use the insight gained from that data as "smart cities," and beyond? This article will help explain some key differences between two common sockets from two global Standards organizations: the ANSI C136.41 socket and the Zhaga Book 18 socket.

4. **Quantum Dots Offer Lighting Industry Solutions to Rare Earth Challenges by Kirk Anderson, Industry Director, Industrial System Division, NEMA** - Over the past several decades, lighting has undergone tremendous innovation, enabling increases in output per watt of nearly 500 percent in 30 years. An essential ingredient fueling this surge is using a specific group of 17 minerals called rare earth elements (REEs). REEs are a class of minerals with unique characteristics necessary to manufacture many innovative products and high- technology devices.

5. **Data's Data: Helping Integrate, Connect, and Control Buildings by Jeremy Yon, Industry Relations Leader, GE Current** - Today's world is connected, but that connectedness isn't always as clean or tidy behind the scenes as some would hope. Whether you want to assemble information to gain knowledge or simplify requests for control, there is an overabundance of options to accomplish those goals. While our formal wired and wireless interconnections continue to improve, a longer- term opportunity exists with semantic tagging, which acts as a means for data to be identified independently from the interconnection. Semantic tagging is a deep discipline, but one specific corner is critical now to develop: defining what is essential to tag.

6. **City's Outdoor Lighting Upgrade Focuses on Sustainability** - Knoxville, Tennessee, is routinely ranked among the country's best places to live, and a chief reason is that the city is continuously growing and changing for the better. A recent example of this forward thinking in action is the city planners' recent upgrade to longer-lasting LED street lighting, which involved about 30,000 outdoor lighting fixtures that help the city achieve its sustainability objectives of reducing energy usage and carbon emissions.

7. **Lighting 'Smart' Homes in Connected Cities by Bill Lacey, President & CEO, GE Lighting, a Savant company** - Today, one out of every two homes contains some "smart"—also known as connected—device, and that number is growing at a steady pace. Users adopt connected lighting faster than other devices such as security cameras and thermostats, but it represents fewer dollars in the home automation market. If we flip the right switches, we can position lighting as a simple entry point for consumers to dip their toes into the growing "smart home" market and speed up the mass adoption of connected lighting technologies.

8. **A Better Way to Keep the Lights on by Annette Clayton Chair, NEMA Board of Governors** - The approach I support can be summed up in three words: digitalize, decarbonize, and decentralize. The "3D" vision is designed to solve short- and longer-term challenges—grid outages today and global temperature-affecting emission reduction for tomorrow. As the grid digitalizes, it can better predict asset failures and automate fixes, thus gaining the ability to self-heal. As the grid decarbonizes, it can help to lessen emissions and their follow-on effects, especially those that pose a risk to power availability. And as the grid decentralizes, it can offer communities back-up options during outages. Taken together, the three "Ds" make the grid more intelligent, sustainable, and resilient.