ENERGY OBSERVER
A MONTHLY NEWSLETTER FROM AMERLUX®

MAR 2022

Amerlux - Antimicrobial Commercial Lighting | UV Commerical Lighting

UV-Free, White Antimicrobial Lighting for Offices and Commercial Buildings

What is ActiveClean™? What if you could provide an extra layer of defense and reduce your staff's exposure to viruses, bacteria, fungi, yeast and other contaminations—all day, every day?

You can—with ActiveCLEAN™.

ActiveClean™ combines Amerlux's award-winning, commercial-grade LED engineering with the UV-free, market-leading anti-microbial technologies of Vyv to continuously light—and better protect—your business, staff and customers under the most beautiful, comfortable, white-light illumination.

- Continuously Kills1 Viruses
- Continuously Kills1 Bacteria
- Approved for Unlimited Use Around People & Pets
- UV-Free
- Crisp, Comfortable White Lighting

How It Works: Utilizing a spectrum composed of visible light, ActiveClean™ produces a high-intensity yet soothing white-light illumination that shines comfortably at 40 nm, which excites porphyrin molecules found exclusively in microorganisms and destroys their cellular membranes from the inside out. Because our UV-free, white antimicrobial lighting solutions do not degrade DNA or RNA in humans, it meets the domestic and international standards for continuous use around people and pets. ActiveCLEAN™ recently announced the efficacy of its antimicrobial light technology for the inactivation of viruses. Only recently have active investigations been conducted on the effects of these antimicrobial lights on non-enveloped viruses and enveloped viruses. The results of these tests have verified the antimicrobial impact on multiple classes of viruses.

National LED Energy Market Observer:

1. **Lightfair Accepting Applications for Second Annual Mentorship Program** - Following the success of its inaugural mentorship program in 2021, LightFair has opened applications for mentors and mentees for the 2022 edition, with a **submission deadline of February 14**. The LightFair mentorship program, which aims to facilitate and foster meaningful, personalized professional connections, will host an in-person networking event to be held at this year's LightFair, June 19 – 23 at the Las Vegas Convention Center. To be a LightFair mentee, individuals must have one to three years of lighting industry experience and a willingness to expand industry knowledge. Mentees must spend a minimum of one to two hours per month for mentor/mentee interaction and completion of progress surveys. Interested mentee applicants can apply at: LightFair Mentorship Program | LightFair Commercial Lighting Tradeshow

2. **NEMA Offers Recommendations on Replacing HID Lamps with Screw-base LEDs** - Replacing high-intensity discharge (HID) lamps with light-emitting diode (LED) equivalents should be an easy and straightforward endeavor. However, currently, there are significant variations in the luminous flux (light output) of LED lamps claiming to be equivalent to a particular HID lamp wattage. When this happens, customer confusion and dissatisfaction can ensue and result in an unlevel playing field for manufacturers. NEMA provides value to the end-user and the manufacturing community with recommendations for when this scenario occurs. To obtain a copy of NEMA LL-10 click Replacing HID Lamps with LED Lamps: Light Output Equivalency Claims (nema.org) To obtain a copy of ANSI C78.55 click American National Standard for Electric Lamps—LED Lamp Specification Sheets for HID Replacement and Retrofit Applications (nema.org)

3. **NEMA Creates Online Portal as Gateway to Infrastructure Funding Information** - The bipartisan Infrastructure Investment and Jobs Act (IIJA), signed into law last November, is an historic windfall for the electroindustry and an overt commitment to the electrification of America's infrastructure and economy. In all, the legislation allocates roughly **$450 billion** in potential funding for various energy and electrification projects. Of this, nearly $30 billion is directed at the electroindustry due to NEMA's direct Congressional advocacy on dozens of key policy provisions within IIJA. These enormous sums present fantastic opportunities for NEMA members; however, unless companies know how to apply for and access these funds, they will remain an abstract talking point. Therefore, NEMA is creating a **dynamic, sector-specific access portal** to help cut through the bureaucratic red tape and avoid confusion. Using NEMA's existing website, the **Infrastructure Portal** will direct members of each industry sector as close to their available funds as possible. Members are encouraged to sign-up for these task forces to receive timely updates. Contact information can be found at A Milestone for Infrastructure Investment (nema.org)

4. **The NAED National Meeting May 17-20, 2022 at the Westin Kierland Resort, Scottsdale, AZ** - This is a premier opportunity for senior-level and national account executives to network and learn about business trends and future outlooks from industry peers and top-notch speakers you won't want to miss! NAED is welcoming Energy and Geopolitical Strategist Peter Zeihan and Economist Dr. Bill Connerly to the stage in 2022. These experts will help you and your organization understand and plan for the future and the needs of your company and customers. More speakers and sessions are to be announced in the coming weeks. NAED - 2022 National Meeting

5. **Alliance's 2022 Policy Summit in Washington, D.C., on Thursday, March 10** - We face a defining moment for energy efficiency policy on Capitol Hill. Hear from top administration, congressional, and industry leaders on where federal energy efficiency policy stands today and the key issues to watch for in the coming months. Register at: Policy Summit | Alliance to Save Energy (ase.org)

6. **The NLB Annual Lighting Forum Kicks Off 2022 with "Visual Light"** - Under its Annual Lighting Forum program, the National Lighting Bureau (NLB) is hosting a discussion entitled Visual Light Wednesday, 9 FEB at 12:00 EST. Moderated by Randy Reid, NLB Executive Director, the panel:

- Nancy Clanton, Clanton & Associates
- Lisa Heschong, Author of the Visual Delight in Architecture
- Terry McGowan, Representing the International Dark Sky Assn and the American Lighting Assn

The conversation will center around the importance of natural visual light in designed environments, specifically the significance of receiving illumination at the eye and designing environments that support visual quality and the right balance of visual information. To join in the discussion, sign up at https://visuallight.eventbrite.com

7. **Wholesale Trade's Record Year: Sales Increase 22% to $7.1 Trillion** - The increase in revenues is well above 2019 and 2020 as U.S. inflation rises to its highest level since 1982. Wholesale trade experienced more than $7.1 trillion in sales in 2021, a greater than 22% increase over 2020 when the industry recorded just over $5.8 trillion in revenues, the U.S. Census Bureau reported Thursday. It was a record year for the industry, also besting the last pre-pandemic year of 2019, which saw roughly $6.1 trillion in wholesale revenues. Inflation continues to be a significant factor in the U.S. economy as the Consumer Price Index, over the past 12 months, increased 7.5% before seasonal adjustment. Increases in the indexes for food, electricity, and shelter were the largest contributors to the seasonally adjusted increase. Wholesale Trade's Record Year: Sales Increase 22% to $7.1 Trillion - Modern Distribution Management (mdm.com)

8. **Next Steps in Cyber Secure Lighting by Stuart Berjansky** - Connected lighting delivers benefits while presenting another cybersecurity concern. As connected lighting steadily gains ground, "turning on the lights" increasingly means not just illuminating employee desks and workspaces, but tapping into a network of advanced control technology capable of collecting data useful for functions ranging from improved worker comfort and enhanced energy efficiency to smarter utilization of building space and resources. Since lighting is ubiquitous throughout commercial and industrial facilities, the capacity for networked lighting controls (NLC) to support smart building functions through communication between and among building management and various facility systems is significant. So, too, is the energy savings potential. A 2020 study[1] by the DesignLights Consortium (DLC) and Northwest Energy Efficiency Alliance found that adding NLCs to LED lighting projects yields energy savings of nearly 70% for some building types, averaging 49% across various building categories. While not yet the norm, the frequency of pairing LEDs with controls is increasing. Connected Lighting: Next Steps In Cyber Secure Lighting (facilityexecutive.com)

9. **How Can You Volunteer with IALD?** - As a not-for-profit corporation, the IALD relies on members to volunteer their time and knowledge to guide the association. Committee and leadership positions are filled 100% by our volunteer members. If you are interested in shaping the future of the IALD or just want to spend an afternoon helping us spread the word about quality lighting design, consider volunteering with the IALD: IALD Volunteer Interests (google.com)

10. **DOE Publishes 2022 SSL Manufacturing Status & Opportunities** - The U.S. Department of Energy (DOE) Building Technologies Office (BTO), within the Office of Energy Efficiency and Renewable Energy (EERE), has published the 2022 DOE SSL Manufacturing Status & Opportunities document. The report examines high-priority opportunities to develop manufacturing technologies that will benefit energy-saving solid-state lighting (SSL) while also supporting an increased role in the global marketplace for U.S. manufacturing of lighting products. Light-emitting diode (LED) technology has reached wide deployment quickly over the past 20 years and innovations have been ongoing. This rapid evolution in LEDs, organic light-emitting diodes (OLEDs), and SSL-based luminaire products and systems presents opportunities to rethink how products and components are manufactured and to embed sustainable manufacturing processes and materials into the manufacturing supply chain. DOE Publishes 2022 SSL Manufacturing Status & Opportunities | Department of Energy

11. **DOE 2022 Solid-State Lighting Workshop Presentations Posted** - During the four-day event, held January 31–February 3, 2022, top lighting scientists and industry thought leaders shared progress, challenges, ideas, and solutions to shape the future of lighting. The virtual format allowed for a wide array of participants, and the gathering of more than 1,500 workshop attendees reflected a depth of knowledge and expertise that resulted in dynamic discussions, fresh perspectives, and valuable input. Visit the DOE website to view the workshop presentations

12. **DOE Announces Phase 1 Winners of L-Prize® Lighting Competition** - The L-Prize® is a $12.2 million prize lighting competition launched by DOE in May 2021. The L-Prize® is designed to spur groundbreaking innovation, domestic manufacturing, and the benefits of an inclusive, clean-energy economy for next-generation lighting solutions in commercial buildings. The L-Prize® Concept Phase winners are: Department of Energy Announces Phase 1 Winners of L-Prize® Lighting Competition | Department of Energy

- **Project Tango, submitted by QuarkStar of Las Vegas, Nevada.**
- **Sustainable and Connected Troffer Retrofit, submitted by Orion Energy Systems of Jacksonville, Florida.**
- **Laterally Symmetrical Level 3 Engine for 3D Printing, submitted by Smash the Bulb/Bridgelux of Mountain View, California.**
- **Papaya Modular Lighting Ecosystem, submitted by Papaya of Evanston, Illinois.**

13. **DOE Funds Helped U.S. Firms Launch 357 LED Products** - The U.S. Department of Energy (DOE) began funding solid-state lighting (SSL) R&D in 2000, and to date has supported 347 SSL projects in the areas of applied research, product development, and manufacturing R&D. These projects are funded through the DOE SSL Program and the Small Business Innovation Research (SBIR) Program. This support has directly advanced the scientific understanding and performance of SSL through the publication of articles in technical journals, the creation of intellectual property (with 458 patents submitted), and the direct development of **more than 357 commercially available, state-of-the-art products by U.S. companies**. Those products—which include lamps, luminaires, LED components, power supplies, controls, materials, and manufacturing tools—have contributed to about $20 billion in U.S. energy savings so far. DOE Funds Helped U.S. Firms Launch 357 LED Products (inside.lighting)

14. **2022: The Price Increases Continue with Cooper, Lutron, Acuity, Hubbell and Signify** - In 2021 we saw many of the major brands in lighting implement three or four price increases – citing the escalating costs of components and logistics along with other inflationary pressures. The year 2022 seems to be a continuation of the continuous price escalation affecting nearly all industries, including electrical and lighting. Given the volatility of markets, manufacturers are currently providing more general guidance. Here is a roundup of what some notable manufacturers are communicating: 2022: The Price Increases Continue (inside.lighting)

15. **$5B in Funding Announced for National EV Charging Network** - The United States is one step closer to implementing a national electric vehicle (EV) charging network to enable people to "go the distance—from coast to coast." On Feb. 10 the DOE announced nearly $5 billion in funding for states to help build out a national EV charging network along designated "alternative fuel corridors," particularly within the interstate highway system. The funding is part of the new federal National Electric Vehicle Infrastructure (NEVI) Formula Program established by the November 2021 passage of the Infrastructure Investment and Jobs Act. $5B in Funding Announced for National EV Charging Network | Electrical Contractor Magazine (ecmag.com)

16. **Community College Taps into Federal Higher Education Emergency Relief Fund** - In Pennsylvania, the Community College of Allegheny County (CCAC) is modernizing buildings across its four campuses and the West Hills Center, as well as its building automation system, with occupancy sensing, improved LED lighting control systems, and Internet of Things (IoT) platform. The initiative will retrofit indoor spaces spanning more than 1.8 million square feet with an LED lighting and controls system consisting of 17,000 Enlighted IoT sensors. The IoT sensors, positioned in the lighting fixtures, will connect to Enlighted's Data as a Service (DaaS) offering, Space, which will provide occupancy and utilization insights to lower energy usage and costs and make strides in furthering CCAC's sustainability initiatives. Community College Taps Into Higher Education Emergency Relief Fund (facilityexecutive.com)

17. **TRAINING: Lighting Controls Association Announces New Course on California Title 24** - The Lighting Controls Association (LCA) now offers EE203: Lighting Controls and Energy Codes, Part 4: California Title 24, Part 6 (2019) as a new learning module in its popular Education Express program. Title 24, Part 6 contains robust, detailed lighting and control requirements. Regarding lighting controls, it requires a broad range of strategies to ensure general lighting is turned Off or reduced when it is not needed. Because of the code's importance, the Lighting Controls Association produced this Education Express learning module, authored by Craig DiLouie, LC, CLCP, to describe its major features. Education Express | (aboutlightingcontrols.org)

18. **Nonresidential Construction Spending Projected to Increase Through 2023** - According to a new report from the American Institute of Architects, the nonresidential building sector is expected to see a healthy rebound through next year after failing to recover with the broader economy last year. The AIA's Consensus Construction Forecast panel expects spending on nonresidential building construction to increase by 5.4% in 2022 and accelerate to an additional 6.1% increase in 2023. With a 5% decline in construction spending on buildings last year, only retail and other commercial, industrial, and health care facilities saw spending increases. This year, only the hotel, religious, and public safety sectors are expected to continue to decline. By 2023, all the major commercial, industrial, and institutional categories are projected to see healthy gains. Recovery in building construction projected to continue into 2023 - AIA

19. **BriteSwitch Commercial Lighting Rebate Trends for 2022** - Currently, commercial customers in over 3/4 of the US can be eligible for a rebate for installing energy-efficient lighting or controls. Lighting incentive programs are all about LEDs and controllability. In addition, the programs have adopted new ways of working and shifted from mail and fax-in forms to interactive online applications. 2022 is no exception, and here is a look at the 2022 trends in commercial lighting rebates.

- 77% of the US Has a Commercial Lighting Rebate
- LED Rebate Amounts Are Flat for a Second Year
- Number of Horticulture Rebates Nearly Triples While Amounts Decrease
- Networked Lighting Control Rebates Continue To Grow

20. **Road Building and EVs** - The current rage for charging EVs is using in road or over road chargers, so that you never have to stop to charge the batteries, and in fact you don't need much battery as the system is envisioned by many. For EVs the idea is to install inductive coils continuously in each lane, if the chargers are installed to provide the maximum power transfer the EV needs to stay within roughly 7 inches of the center of the lane.The first question that comes to mind is do you install in intersections, on and off ramps and other areas like this where the electrical infrastructure become complex, or only in the driving lanes? Many practical issues are still open on charging while moving, and little discussion about the issues, and practical solutions have been discussed. If we are going to provide in route charging this discussion needs to accelerate. Road building and EVs | Energy Central

21. **White Paper: How EV Charging Is Driving Electric Mobility Forward** - A new study from Juniper Research has found that spending on EV charging at home will exceed $16 billion globally in 2026; up from $3.4 billion in 2021. This rapid growth of more than 390% over the next five years is being driven by the lower cost and convenience of home charging for EVs. Our complimentary whitepaper examines developments within the EV charging ecosystem, including the segments set for future growth, challenges to roll-outs and key trends; combined with a forecast summary for total EV charging sessions in 2026. How EV Charging Is Driving Electric Mobility Forward (juniperresearch.com)

- Introduction
- Definitions
- Market Structure
- EV Adoption: Current Market Status
- Forecast Summary

22. **RESEARCH: EV Charging: Key Opportunities, Challenges & Market Forecasts 2021-2026** - Juniper Research's new EV Charging research report provides highly insightful analysis of the evolution of this highly dynamic market, the types of chargers and segments driving growth, their future prospects, and barriers to future growth. It provides a comprehensive study of the new developments and key trends driving this highly important market for both end users and EV (Electric Vehicle) manufacturers. The report also presents extensive market forecasts; delivering detailed insights and overall market sizing across EV charging usage in terms of points in service, charging sessions, shipments of charging points, hardware and service revenue, split by the home, workplace and public segments. The forecast suite also includes forecasts for the installed base of both EVs and PHEVs (Plug-in Hybrid Vehicles). EV Charging Market Size - Industry Study, Forecasts 2021-26 (juniperresearch.com)

Global LED Energy Market Observer:

23. **What Would a Russian Invasion Mean for Energy Markets?** - Russia is the second-largest producer of gas and third-largest oil producer in the world. It is also one of the world's top exporters of coal and wheat and a leading producer of other important resources, such as palladium and ammonium nitrate. Europe is deeply reliant on natural gas from its eastern neighbor, with Russia accounting for nearly 40 percent of its supply. As long as this dependence on Russian gas continues and the conflict escalates, experts warn Europe will bear the brunt of the supply crunch, even as it affects commodities globally. What a Russian Invasion Would Mean for Energy Markets (foreignpolicy.com)

24. **White House Tells Chip Industry to Brace for Russian Supply Disruptions** - According to Techcet, a market research group, Neon, critical for the lasers used to make chips, is a biproduct of Russian steel manufacturing, according to Techcet. It is then purified in Ukraine. Palladium is used in sensors and memory, among other applications. Techcet estimates demand for all the materials will rise by more than 37% over the next 4 years. White House Tells Chip Industry to Brace for Russian Supply Disruptions | Newsmax.com

25. **ams Osram Quarter Slides Amid Ongoing Supply Chain Headaches** - It didn't help that the company seems to have lost a certain large customer of smartphone sensors. But there's a future for LEDs in horticulture, UV-C, AR, and VR, CEO Everke says. Everke and Bank both provided a look at the LED areas that will help drive future growth. LEDs Magazine will report on that outlook in a separate article. Ams Osram quarter slides amid ongoing supply chain headaches | LEDs Magazine

26. **Three UK Ports Implement Smart Lighting** - Associated British Ports (ABP) has equipped two UK ports and a rail freight terminal with smart technology (Telensa's PLANet) to save on energy and improve the control of light levels in individual cargo handling compounds. The smart system allows for deep levels of lighting control at each site by dividing each port into multiple zones and tailoring the lighting levels for each zone to reflect the activity taking place within it. Lighting can be changed in real-time, at any time, from any location and by any authorized person. Lights can be further controlled on an individual basis, in grouped zones or across the whole of the site. While each "port estate" team can manage their own illumination levels, data relating to energy usage, light status, carbon emissions and overall performance across the three estates is accessible to ABP staff. Three UK Ports Implement Smart Lighting – Illuminating Engineering Society (ies.org)

27. **ams Osram Reveals Next Generation Projected Lighting** - Projected light is the latest optical effect to be used to brand a car's interaction with the driver and passengers. Tiny assemblies of LEDs and micro-lenses embedded in the wing mirror, door sills and elsewhere project light patterns on to the road or pavement, producing effects such as the 'welcome light carpet' - the car's optical 'hello' to the driver when the wireless key fob comes into range. ams Osram has recently revealed that it is now developing the next generation of the technology: semi-dynamic light projection, opening up new creative possibilities to car makers. ams Osram Reveals Next Generation Projected Lighting - LEDinside

28. **Fluence Announces Strawberry Research Results** - Fluence and Delphy examined how to sustainably grow strawberry crops in high-tech greenhouse environments while maximizing yield and fruit quality. Fluence and Delphy researchers analyzed morphology, yield and quality for Sonata and Sonsation cultivars—two of the most popular cultivars in Europe—under four spectral strategies: white (Fluence PhysioSpec™ R4), white with a fraction of far-red (R4 + FR), pink (R8), and pink with the same fraction of far-red (R8 + FR). Overall, during the winter flush, spectra that included a fraction of far-red saw increased performance across all categories. However, the white spectrum with a fraction of far-red recorded the best performance. For more information on Fluence and the company's ongoing research initiatives, visit www.fluence.science

30. **Signify to Acquire Pierlite to Strengthen Position in Australian and New Zealand Lighting Markets** - Signify today announced that it has entered into a definitive agreement with Australian based Gerard Lighting Group to acquire their Pierlite business. The acquisition is in line with our strategy to expand within highly attractive market segments and will bring together the strong R&D and innovation capabilities of a global leader with the significant expertise and network of a local brand. The union will strengthen our position in the Australian and New Zealand lighting markets and provide us with growth opportunities - including those that exist between Pierlite's luminaire portfolios and Signify's connected lighting solutions. Customers in Australia and New Zealand are early adopters, and can be regarded as pacesetters when it comes to the latest lighting trends around the globe. This transaction will provide them with the best of global and local lighting technologies. https://www.ledinside.com/news/2022/2/signify_pierlite

31. **TALQ Publishes V2.4.0 of Its Smart City Software Protocol** - The open interface specification includes three new profiles for modeling smart city functions such as environmental monitoring and smart parking/traffic management. Version 2.4.0 of the TALQ protocol adds smart traffic and smart parking management profiles to the software developer toolset, as well as environmental monitoring functions for noise, atmospheric values, wind, precipitation, and more. The traffic and parking profiles enable integration of cameras and sensors into the network for monitoring traffic density and parking availability. Industry vendors must join the consortium in order to have their products tested and certified to the TALQ standard. At present, more than 35 member products have achieved TALQ certification. The specification continues to add more capabilities to what was once a lighting-centric standard and now offers an open path to smart city integration and management of multiple municipal applications beyond connected outdoor lighting. TALQ publishes v2.4.0 of its Smart City software protocol | LEDs Magazine

Monthly Feature:

Taking (Building) Stock: DOE's Data on Commercial Buildings and Lighting by Craig DiLouie - Commercial buildings in the United States are getting larger and increasingly include energy-saving features such as LED lighting, according to the U.S. Department of Energy's 2018 Commercial Buildings Energy Consumption Survey (CBECS). Published in September 2021, this iteration of the survey is based on an anticipated participating population of roughly 8,000 buildings. The data was then extrapolated to produce national estimates covering a wide range of characteristics for the estimated 5.9 million commercial buildings in the United States, covering 97 billion square feet. CBECS data include number of buildings and floorspace by characteristics such as geographic region, building activity, size and age, employment and occupancy, energy sources used and energy-related equipment.

The estimated number of U.S. commercial buildings grew by 6% from 2012 to 2018, and total floorspace grew by 11%. An estimated 357,000 buildings were built from 2013 to 2018, representing 7.5 billion square feet. The number of education, lodging, public assembly, worship, service and warehouse buildings increased, while some markets, such as food sales/service, healthcare, mercantile and office, decreased. By square footage, the largest markets were office, mercantile, education and warehouse.

With its large population, the South had the largest number of commercial buildings and floorspace, followed by the Midwest. The West came in third and is populated by buildings of the largest median size. The smallest number of buildings and the oldest in median years was in the Northeast. Some 86 million people worked in these buildings, with a median 1,175 square feet per worker, which was 14% more space than in 2012. Seventy percent of commercial buildings were 10,000 square feet or smaller, down from around 75% in 2012. For all buildings, the median building size was 5,400 square feet. Buildings over 100,000 square feet constituted only 2.4% of the total number of buildings, but 34% of the floorspace. As this is a lighting column, let's take a look at this category. The LED revolution started back in 2012. By 2018, CBECS estimates that standard fluorescent fell from lighting 92% to 76% of all commercial building floorspace. LED, meanwhile, increased from 25% to 64%. Meanwhile, in 2018, incandescent was used to illuminate 22% (down from 44%) and HID 12% (down from 27%). This is a snapshot of an extraordinary technology shift still in motion.

Lighting control adoption also increased, with the biggest winner being occupancy sensors. In 2018, an estimated 17% of commercial buildings—46% of floorspace—used occupancy sensors, up from 15% and 41%, respectively, in 2012. Daylight harvesting modestly increased from 7% to 7.5% of floorspace. Building automation systems for lighting increased from 14% to 17%. Multilevel lighting and dimming remained flat at 15% of floorspace, somewhat surprising due to the inherent controllability of LED lighting, and suggesting some dimming for energy management was not considered in the response. For the first time, the CBECS included plug load control, which showed use in less than 1% of buildings and around 2% of floorspace. On a related note, one of the most significant takeaways is a persistent lighting retrofit opportunity. Lighting retrofits are most profitable in buildings with older lighting systems, which tend to be overlighted and use obsolete technology. Add long operating hours and high energy rates, and the building is often a good candidate for a lighting upgrade.

There's plenty more in the 2018 CBECS that can be used for business planning around the commercial buildings market. The lighting data alone can be parsed by building size, age, type, region, etc., providing rich insights. It's important to note, however, that the results are estimates based on a sample population. View and interpret the results with an educated eye and remember that how some data appears depends on how the question was interpreted by DOE and the respondent. Find the 2018 CBECS at www.eia.gov/
https://www.ecmag.com/section/lighting/taking-building-stock-does-data-commercial-buildings-and-lighting