

2015

PROGRESS

REPORT

The Progress Committee's mission is to keep in touch with developments in the art and science of lighting throughout the world and prepare a yearly report of achievements for the Society. Acceptance in the Progress Report is based on an impartial judging process used by the committee to evaluate each submission on its uniqueness, innovation and significance to the lighting industry. There were 227 submittals in 2015; 116 were accepted into the report.

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2015 PROGRESS REPORT

We experienced a landmark this year—it is the first Progress Report since 1911 without any fluorescent, HID or incandescent sources being submitted. 2015 also marks the third consecutive year that

our Report does not include any luminaires that use traditional sources. Additionally, the quantity of controls submissions accepted into the Report has nearly doubled from two years ago.

LED Replacement Lamps

The Progress Report serves as a microcosm of our industry. It reveals both an industry trajectory and the velocity of change. This year we accepted 22 LED lamps typically intended to replace less efficient sources. Most shapes have now achieved **<superior??>** efficacy and CRI in the 90s. There are several firsts this year.



Replacements for 2-pin CFL lamps, both from the PLEDGE Series by **Green Creative**.



VIVID, the first 4-deg 95 CRI AR111 LED replacement lamp from **Soraa Lighting**.



The VIVID Series also includes the PAR20, the first 10-deg 95 CRI PAR20 LED replacement lamp, also from **Soraa**.



The ULTRA LED HIDr, the first IP60 rated HID replacement by **OSRAM**.



Omni-directional 12-V bi-pin replacement lamp from **Element by Tech Lighting**.



The first 75-W A21 LED replacement for enclosed fixtures from **GE Lighting**.



The first A21 100-W equivalent replacement lamp for enclosed fixtures by **Green Creative**.



The first three-way LED 150-W equivalent A21 lamp from **GE Lighting** at 98 lumens per watt.



The PAR38 LED lamp with 92 CRI at 84 lumens-per-watt from **Nanoleaf**.



The ULTRA MR16, HO PAR38 and long-neck PAR30 replacement lamps from **OSRAM**.



MR16 7.5-W high CRI replacement lamp approved for enclosed fixture use from **Green Creative**.



The SubstiTUBE IPS LED T8 linear replacement lamp from **OSRAM**.



The SubstiTUBE Curvalume LED T8 U-bend replacement lamp from **OSRAM**.



OmegaLux GS-400, a mogul-base 22K high-bay replacement by **Foreverlamp, Inc.**

Ten new replacement lamps touted CRI up to 95, including this A19 9-W high-CRI replacement from **Green Creative**.



Lamps with the highest R9, from 90 to 95, include the PAR30 LED from **GE Lighting** and the VIVID MR16 9-W LED from **Soraa**.



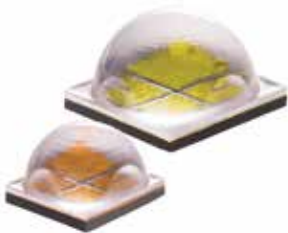
Three lamps with GU-24 bases attained new levels, including an A19 11-W bulb and a BR30 Cloud 11-W bulb, both from **Green Creative**.



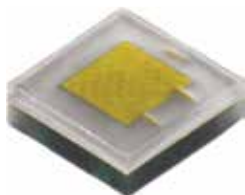
The Puck Lamp, the first low-profile, enclosed, puck-shaped lamp from **MaxLite**.

LED Chips and Chipsets

2015 shows product performance stabilizing with incremental advancements and market gaps being addressed to make LED replacements viable for almost every imaginable source and shape. Overall, efficacy of replacement lamps has increased by about 10 percent over 2014 and high CRI options have expanded. This snapshot in time of replacement light sources indicates that the trajectory of change is continuing toward product improvements and expanded offerings but at a slower, less dramatic pace than in the past few reports.

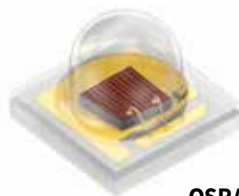


Cree submitted the XHP LED, with the highest lumen package in surface mount technology in both the 5 and 7 millimeter package size.



Cree also reduced the optical source size on their XP-L, and are able to deliver 100,000 candela from a single-dye LED.

Cree's new XLamp MH product uses a ceramic package that will operate at higher temperatures, which allows for a 60 percent reduction in heat sink size.

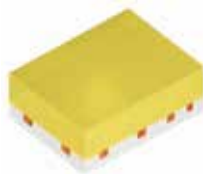


OSRAM submitted the Oslon Far Red LED, a 730 nanometer far-red source that combined the highest efficacy with the smallest footprint.

OSRAM's new Duris S10 package for PAR38 and MR16 applications offers the highest efficacy at 125 LPW.



OSRAM introduced the Duris S2 with a new form factor utilizing 150-deg optics for increased performance.



OSRAM also offered its Preva-LED Pro AC product which meets UL8750 5VA flammability requirements as a standard product without any added accessories.



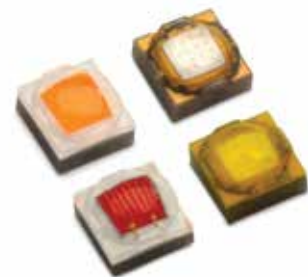
Xicato's XTM 9 millimeter module utilizes a smaller remote light emitting surface to achieve tight color consistency with a 7-deg spot beam and 1 x 2 MacAdam ellipse.



Sora's SLE-16 10D Optical Light Engine includes an integrated precision 10-deg optical lens for more uniform high intensity beams.



Cooledge's SQUARE Light Sheet is a new form factor in its flexible light emitter family which utilizes electrical snaps for ease of configuration and expanded coverage.



Philips's Luxeon offers a new RGBW product with a single focal length for all colors for consistent radiation patterns.

Downlights

This year the committee accepted a total of 15 LED downlights into the Progress report.



Leading the list were several firsts including, from **USAI**, the Infinite Color+, which is the first architectural line of LED downlights offering tunable white and full color output from 1900 to 8000K.



The **OSRAM**

OmniPoint is the first wireless LED array based architectural luminaire where the 64 LEDs can be independently switched on and off, and dimmed, in coordination with the others in any combination to produce ambient and spot lighting from a single light package.



The Halo HL6 ALLSLOPE from **Eaton Lighting** is the first LED slope ceiling downlight with full range aiming from 2/12 to 12/12 pitch, and a collar allowing 20 deg side-by-side rotation.



The BeveLED 5.0 from **USAI** is the first LED downlight with a 10-deg optic delivering up to 72,000 candela.



From **Eaton Lighting** is the Portfolio 4-in. Adjustable Accent/Slope which is the first LED adjustable downlight with an IC rating, and an output of up to 2,000 lumens.



Rounding out this year's firsts is the **Edison Price Aplus** recessed LED series, which is the first downlight family to use the **Cree** LMH2 chip accepted in the 2014 Report.



This year the committee also saw a continued trend toward shallow plenum products. One complete LED downlight family from **USAI** features the BabyLED Downlight with an installation footprint of less than 3 in.



Philips submitted the Lyteprofile Commercial Downlight series, claiming to have the shallowest commercial-grade LED 4- or 6-in. aperture downlights; the LyteCaster Accent Downlight series, the shallowest adjustable LED accent downlight; and the LyteCasterLED Downlight series, the shallowest residential LED downlight.

Juno Lighting's

Aculux Gen 3 is a 3-in. aperture fixture series with 2,000 lumens from a 12-deg optic.



Acuity's EVO Downlight is the highest efficacy LED downlight with 45-deg cutoff.



A family of **Kurt Verson** install-from-below LED 3-½ in. aperture downlights.



An **Acuity** Incito 2-in. aperture family of LED downlights.

The Con Tech

Lighting R2A, 2-in. aperture, IC rated family of recessed LED adjustable downlights.



Recessed Troffers

We have four products in the recessed troffer category.



The One-Space Luminous Ceiling product from **Philips** incorporates an indirect LED array with glass fiber textile as a diffusing element. The unique form factor is available in sizes up to 9.8 by 32 ft.



The Cruze luminaire by **Eaton Lighting** comes in standard form factors with the highest efficacy in the industry for a center basket-style luminaire.



For more industrial type applications, **Viscor** has launched the LHBR LED recessed high-bay luminaire, which was accepted as the highest lumen output 2-by-2 high-bay at 18,000 lumens.

GE Lighting

was also accepted in this category for their Lumination IS Series using Tri-Gain technology that provides efficacy up to 136 lumens per watt with 90 CRI and an R9 value of 90.



Track Luminaires



In the track luminaire category, **Edison Price** introduced the Artima family of luminaires with up to 97 CRI.



Amerlux Lighting introduced the Murro wall washer recognized for best performance at 91 lumens per watt.



The Lumination TS Series from **GE Lighting** was recognized for their narrow spot 13-deg beam with 16,000 center beam candlepower.



The T272L Series from **Juno Lighting** brings a unique low profile form factor with an efficacy of up to 110 LPW.

Green Creative's

Aspire Series provides high lumen output up to 2,400 lumens in a small form factor with 90 CRI.



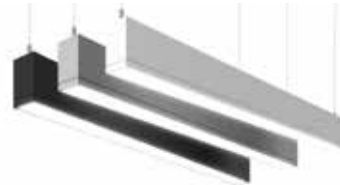
Con-Tech's O3 series with a spot optic at 11 deg, features 48,307 center beam candlepower.



Also accepted in the track category is a direct/indirect modular system by **Tech Lighting**. The Element Merge Linear system provides indirect general illumination through a 3-in. slot aperture which also contains low voltage track.

Linear Suspended Luminaires

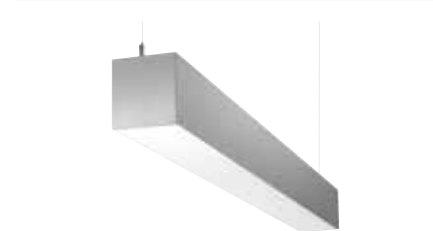
Six products were accepted in the linear suspended category, showcasing both strong performance as well as new and innovative features.



The TruGroove LED from **Philips** Ledalite is the highest efficacy direct/indirect on the market with up to 126 LPW in a 3-in. aperture that has the ability to produce a true batwing distribution.



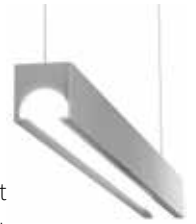
Lumenwerx introduced the CAVA pendant series offering integral drivers for separate control of the uplight and downlight. The luminaire offers three different lumen packages with an efficacy of up to 106 LPW.



The Bionic Linear Wall Wash and the Bionic Linear Wall Grazer by **Prudential Lighting** offer efficacies of up to 100 LPW.

Prudential Lighting

has introduced the Stream Square pendant with its 98 percent efficient white optic reflector offering up to 104 LPW.



The HP2ID luminaire from **Finelite** is currently the highest efficacy 2-in. aperture linear suspended pendant, claiming 92 lumens per watt.



The **Selux** M36 luminaire provides tunable white light using their My White technology from a 1-1/2 in. wide aperture controllable by either DALI or DMX protocols.

The Winona Windirect from **Acuity** is a family of asymmetric pendant indirect LED luminaires available in single or twin mount.



Decorative Luminaires



GE Lighting's EP Circular Pendant uses their Intrinsic Technology, which allows the pendant to appear translucent in the off state. The luminaire performs at 105 lumens per watt.



Visa Lighting has increased performance on their Sequence pendant. The luminous cylinder features a color-changing

housing and a high performance white downlight up to 3,190 lumens.



iW Flex Compact from **Philips** has LED strings with up to 60 nodes that can be individually or group color tuned from 2000 to 6500K.

Industrial Luminaires



From **Meteor Lighting**, the new Whiz Bi-Direction LED high bay is the industry's first with independent control of direct and indirect components. The up and downlight can be controlled together or separately by 0-10-V, DMX or DALI controls.



From **GE Lighting**, the Albeo ABR1 industrial luminaire offers the highest efficacy at up to 139 LPW for an IP66 and 65C rated luminaire that is UL 1598 wet location listed.



The **GE Albeo ALC5 Linear** Low Bay Luminaire produces 14,800 lumens and 159 LPW at 55 deg C.

Lighting for extreme industrial conditions demands a robust lighting solution and the HBL Crane Light from **Hubbell Industrial Lighting** is the first documented LED system to withstand 3G vibration in three axes.



LED Miscellaneous and Specialty Products

As solid-state lighting continues to develop, we see evidence that a one size fits all approach does not work. We are now at a point where manufacturers are applying LEDs and related components to develop highly specialized lighting products.



A series of exterior site lighting and bollard style luminaires such as **Philips' ClassicStyle** and **SleekVision Post Tops** and **Bollards** are the first to apply vertical light guide configurations to address the need for light quality and glare control while simultaneously delivering over 90 lumens per watt.



Another instance of optical enhancement is demonstrated in the Eseta LED Wall Sconce full cutoff, exterior wall luminaire with a glare control optic from **Leotek Electronics**.



Kim Lighting's Archetype X Series exterior wall mount fixtures give designers the ability to use field rotation and aiming of the luminaire's optics specific to the requirements of the job.



This family of Open Luminaires from **Acuity Brands Lighting** has the LEDs oriented at the edges of the luminaire, delivering efficacies of up to 100 lumens per watt.



Eaton's Halo HU10 Undercabinet LED luminaire offers the highest LPW and CRI for a line voltage undercabinet luminaire at 330 lumens per ft and 90 CRI.

The Committee also recognizes four new specialized products for healthcare, horticulture, railway and extreme vibration applications.



The MedMaster from **Kenall Manufacturing** is the first to include white color tuning in a 2-by-4 troffer housing, that utilizes DMX signals to control light output over a CCT range from 2700 to 6500K.



The INFRALED 60 from **The Kirlin Company** suits the different needs of the patient, physicians and hospital staff with this product, which features wireless remote control for independent, motorized heads.



Having the capacity to provide highly specialized spectra, LEDs are becoming a favored source for plant growth. **Hubbell Industrial Lighting's** NutriLED is the first to accommodate different planter bed configurations and needs.



Combining colored LED light with electronic controls simplifies railway wayside signal lighting, and **GE Lighting's** Tricolor Lamp is a single lamp that emits three separate colors.

Outdoor Luminaires



The **ERCO** Gecko LED Projector is leading the industry for performance in a spotlight luminaire. At only 11 watts, the spotlight produces up to 800 lumens and features field-changeable lenses including a 6-deg spot optic. Also accepted from **ERCO** is their site in-ground wall grazer. It features adjustable aiming without opening the luminaire.



The S172 outdoor surface mount luminaire by **The Lighting Quotient** is the first wet listed LED asymmetric indirect luminaire on the market.



Evolve Canopy EC Series by **GE Lighting** provides an efficacy of 123 LPW. Optional features include motion/occupancy sensors and 10KV additional surge protection.



RAB Lighting is recognized with the acceptance of their FXLED300 FloodLight System claimed to replace a 1,000-W HID luminaire. It features five NEMA distributions and an efficacy of 121.6 LPW.



Also from RAB Lighting is the FXLED200 FloodLight System. Offering five NEMA distributions, this luminaire claims efficacies of up to 132 LPW.



Hubbell Lighting is recognized for the ArcheType X Flood, the first LED floodlight luminaire offering field rotatable and tiltable optics. The fixture is available in six different distributions.



The Traxon Media Tube HO RGBW Luminaire by **OSRAM** produces the highest output direct view media tube solution combined with the highest IP rating at IP67.

Controls

Ten years ago, the most advanced codes dictated primarily time-based or occupancy-based controls where today that has expanded to require daylighting and even demand response systems. This has led to new controls in the architectural and theatrical markets, and there is a greater awareness of controls in general.

The ENERGENI control from **Hubbell** provides up to 32 pre-programmed dimmed levels that can be tied



to time-based events, all internal to the fixture without the need for a separate control.



Lutron's Maestro dimmer sensor provides 0-10-V control with an integral occupancy sensor without the need for a neutral connection.



Encelium's Wireless Area Control from OSRAM is a control solution to provide power measurement from 120 to 347 volts.

Acuity's DTL

Connect Series is a retrofittable wireless outdoor photocontrol to give utilities the ability to enable and disable area and security lights from the ground.



Lutron's myRoom System provides an additional sensor at the door of a guestroom to complement the occupancy sensor on the thermostat, reducing false operations.



Acuity's Fresco Show Controller is a theatrical touchscreen lighting control.

eldoLED's

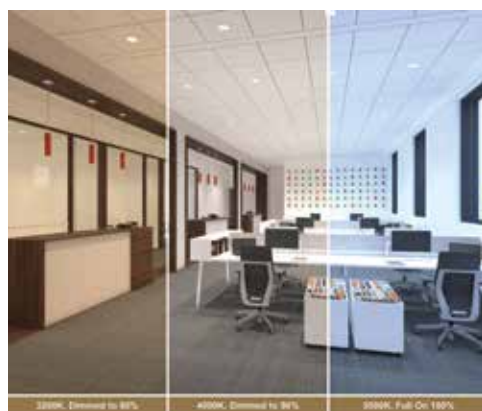
Symbiosis is an LED driver that provides encoded visible light communication or VLC.



Philips' ActiveSite provides remote real-time light show content management of installations.



As white tuning is growing in both demand and interest, **USAI's** Color Select Technology provides the broadest CCT range in one light engine from 2200 to 6000K.



Finelite's FineTune is the first white color tuning system with plug-and-play DMX controls and supporting an entire line of LED luminaires.

Lutron has developed its Performance Fabrics Collection, which is the industry's first shading fabric providing strict production tolerances and consistency with regards to openness at plus or minus 0.75 percent.



Power Supplies and Drivers



New power supplies and drivers continue to bring LEDs into more places. **Universal Lighting Technologies** Tunable 347-V Class 2 Driver does just that by bringing architectural grade dimming to commercial buildings for our friends in Canada.



Philips has brought us the Xitanium 300-W SimpleSet Driver, providing the highest wattage for outdoor LED lighting.



Fulham's All-in-One AC and Emergency Driver combines a programmable output 0-10-V driver with a fully replaceable battery backup in one enclosure.

Accessories



The FSP3-480-20KA from **Thomas Research Products** provides 20,000 amp surge protection for 480-V LED luminaires.

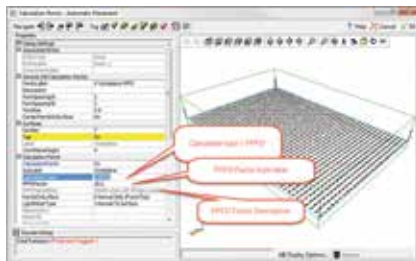
Life Safety

With a focus on easier service and fewer devices, there are a couple of additions from **Hubbell**.



The Dual-Lite EVHC-BC is the first emergency egress luminaire with a front accessible battery. The Dual-Lite DYN is an emergency egress luminaire with enhanced optics that allows for wider on-center spacing.

Design Tools



A singular entry was accepted this year in the Design Tools Category. A new feature has been added to **Lighting Analyst's** calculation software AGI32. The software is now the first in the industry to include a calculation metric of Photosynthetic Active Radiation specifically for Horticulture applications.

Publications



We are pleased to announce four new Recommended Practices, or RPs from the **IES**—*Roadway Lighting, RP-8-14, Lighting for Parking Facilities, RP-20-14, Lighting for Exterior Environments, RP-33-14, and Economic Analysis for Lighting, RP-31-14.*



Not wanting to be outdone by their East Coast counterparts, the **California Lighting Technology Center** has created a helpful guide to the lighting section of the 2013 Title 24 code.