March 29, 2023

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SUBJECT: IN THE MATTER OF THE IMPLEMENTATION OF THE LIGHT EMITTING DIODE ("LED") STREETLIGHT PROGRAM DOCKET NO. QO22110710

Dear Ms. Diaz,

Thank you for the opportunity to respond to this Request for Comment. Rather than responding to your specific performance-related questions, we hope to provide additional information that might change how you consider what lighting is installed with respect to its behavior in the nocturnal environment.

LED technology has not only provided advancements in energy efficiency, but allowed for the creation of lighting products with more capabilities and options than ever. We can install brighter, higher tech lighting in more areas at a low cost, and this phenomenon has led to a rapid increase in light pollution year over year.

This increase in light pollution not only affects our ability to see and connect with the night sky but it also disproportionately impacts disadvantaged communities and non-human life. For example, hundreds of millions of birds migrate in the middle of the night over a twenty night period in the spring and fall over the east coast. Light pollution from the built environment disrupts, disorients, and changes the timing of these migrating species. Light pollution also negatively impacts insect biodiversity, disorients sea turtle hatchlings along marine coastlines (including New Jersey), and interferes with the circadian rhythms of numerous plant and animal species.

The primary way for us to reverse the trend of increasing lighting pollution and its effects on human and non-human organisms alike is to reduce light levels, use controls to dim and switch off lighting when people aren't present, use LED fixtures with lower Correlated Color Temperatures (CCTs) that have reduced percentages of blue light, and reduce wasted and stray light (light trespass) by taking advantage of better optical control that is available with LED fixtures.

The DesignLights Consortium (DLC) is a non-profit organization with a mission to enable higher efficiency and quality lighting. We develop technical requirement documentation, and manufacturers with products that meet those requirements are eligible to be listed on our Qualified Product Lists (QPLs). All our QPLs are free to use by anyone, and utilities and energy efficiency programs across North America require lighting products to be DLC-qualified to be eligible for commercial lighting rebates. Currently, we have QPLs for commercial LED lighting, networked lighting controls, horticultural lighting and, most recently, our LUNA program which is oriented around dark-sky friendly outdoor lighting.

The LUNA program is designed to mitigate the negative impacts of outdoor lighting at night all while maintaining energy efficiency and quality lighting for people. Luminaires on the LUNA QPL are controllable and meet performance requirements that help to prevent light trespass, minimize glare, and preserve the visibility of the night sky.

Generally speaking, LUNA eligible luminaires are able to meet or exceed most or all of the performance requirements specified in outdoor lighting ordinances such as Newark, Princeton, and Maplewood. This makes it easy for municipalities or businesses to choose products that comply with the ordinance requirements and still provide good color rendition, energy savings, and reliability.

Meaningful mitigation of light pollution can be accomplished through simple changes to procurement and ordinance language and has lasting positive impacts on the community and environment. LUNA requirements are in line with International Dark-Sky Association requirements, with the added benefit of increased energy efficiency and higher quality lighting. The DLC also supports emerging standards that are enabling more interoperable controls and sensors which ensures that these capital investments will have longer useful lives.

We recommend that procurement documents for outdoor lighting projects incorporate language that requires products to be DLC LUNA qualified (currently listed on the DLC's LUNA QPL) or meet the following additional requirements:

1. DLC SSL v5.1 qualified or meet equivalent performance requirements including minimum luminaire efficacy of 105 lumens per Watt.
2. Replacement lamps and retrofit kits are excluded from consideration.
3. Product must have a maximum IES uplight rating of U1
4. Correlated Color Temperature (CCT) must not exceed 3000K
    i. Products with color tuning capabilities outside of this range are ineligible.
5. Continuous dimming capability to 20% of max output power or lower and support for standard ANSI/Zhaga receptacles and/or controls
6. Products that include an arm or tenon mount must have a maximum allowable tilt of +/- 10 degrees
7. Products must have at least one shielding option or accessory available (e.g., house-side shield, etc.)
8. Mitigation of Glare and Light Trespass
    i. All Light Fixtures shall be equipped with whatever shielding, filters, lenses, or cutoff devices required to eliminate Light Trespass onto any street or abutting lot or parcel, to eliminate Glare perceptible to persons on any street or abutting lot or parcel and to minimize uplighting.
    ii. Outdoor Lighting Fixtures intended solely to illuminate any freestanding surface (signs, walls, landscaping elements, etc.) shall be 1) mounted above the surface and face downward to prevent uplight and 2) shielded so that Direct Light is confined to the surface only.

Projects that adhere to these requirements will not only allow the NJBPU to reach efficacy goals, but simultaneously address light trespass, dark sky concerns, and environmental stewardship. If clarity is needed on any part of our guidance or you would like to have a full discussion on how to incorporate light pollution mitigation strategies into your procurement policies, please contact our Project Manager of Technical Development, Andrew Antares at aantares@designlights.org.

Sincerely,

The DesignLights Consortium