Dear DLC Members and Stakeholders:

The DLC is pleased to announce the final release of Horticultural Lighting Technical Requirements Version 3.0 (Hort V3.0), with a proposed effective date of March 31, 2023.

View Horticultural Technical Requirements V3.0

View Surveillance Testing Policy, Hort V3.0

Horticultural Lighting Technical Requirements V3.0

In North America, increasing demand for locally produced food combined with the legalization of medical and/or recreational cannabis and the desire for resilient supply chains are fueling the growth of controlled environment agriculture (CEA).[1] Although CEA facilities tend to be more efficient than traditional agriculture, the cumulative impact of the added electric loads must be considered. Globally, the average energy required to produce one kilogram of harvested crop is 38.8 kWh for indoor agriculture.[2] Combined with projections that show the North American CEA industry growing to $8 billion annually by 2026,[3] it is imperative that CEA facilities are converted to or built with energy efficient lighting technology. The DLC Horticultural Lighting Technical Requirements are designed to help guide the industry toward sustainable growth in concert with decarbonization efforts.

Relying on industry standard nomenclature, testing, and reporting methodologies, the DLC technical requirements establish minimum performance baselines for horticultural LED fixtures. The requirements support the successful adoption of energy efficiency practices in CEA through the implementation of LED luminaires, LED lamps, and controls. Since the implementation of Hort V1.0, the average efficacy of listed products has increased by 17.5%.

Hort V3.0 is designed to further support and accelerate the adoption of energy efficient lighting and controls in CEA. This is accomplished through the following key revisions to the previous technical requirements:

- **Increased efficacy threshold**
  The Hort V3.0 PPE threshold has been increased to a minimum of 2.30 µmol × J^{-1}, which is a 21% increase over the Hort V2.1 PPE threshold. This sets the DLC threshold for LED-based horticultural lighting at 35% above the most efficacious non-LED option, the 1000W double-ended high pressure sodium luminaire.
- **New requirements for reporting intended use of products, dimensions, and images**
  To support the development of prescriptive/midstream energy efficiency incentive programs, Hort V3.0 will collect and report application (intended use of product) information of listed products to give users insights into the intended controlled environment and lighting scheme for all listed products. Additionally, product dimensions and a representative image are required and will be published on the Hort QPL.

- **Introduction of product-level controllability requirements**
  To enable additional energy savings, promote interoperability, and lay the groundwork for future demand-response systems and programs, Hort V3.0 will require dimming capability for certain AC-powered luminaires, all DC-powered products, and all replacement lamps. Hort V3.0 also requires reporting of additional controllability details, including dimming and control methods, connector/transmission hardware, and integral control capabilities.
- **Introduction of a surveillance testing policy**
  To protect the integrity and value of the Hort QPL for all stakeholders, the DLC will actively monitor the validity of data and other submitted information through a surveillance testing policy.

Changes from Draft 2

The final version of Hort V3.0 includes revisions resulting from comments received on Draft 2, summarized below:

- **Application information**
  The DLC received 12 comments pertaining to application information, including suggested changes to terminology, parameters for submitted product images, and additional use-case information. *The final policy contains revised terminology to ensure clarity and better alignment with industry nomenclature and practices.*
- **Controllability**
  The DLC received 29 comments regarding controllability, including feedback on proposed dimmability requirements, communicating dimming range in terms of wattage vs. PPF, and proposed updates to control terminology. *The final policy contains more clarification on how each field is reported, revised definitions and nomenclature for dimming and control method designations, additional connector/transmission hardware options, and has replaced "High End Trim" with "Integral Control Capabilities" in the Control Capabilities table.*
- **Surveillance Testing**
  The DLC received 26 comments pertaining to the surveillance testing proposal, including feedback on the fee structure, requests for an appeal pathway and excluding the possibility for double jeopardy, suggestions for procurement of surveilled products, and proposed tolerances and the role of the test labs. *The DLC has researched standard laboratory tolerances to ensure the final policy supports industry practice. The final policy supports selection of the same product for surveillance testing more than once, so long as at least two years have passed between selections. The DLC will also release fee structure information once available.*

Informational Webinar

The DLC will host an informational webinar to review the final Hort V3.0 requirements on **Wednesday, December 14th at 1:00 pm ET.**

Register for Webinar

If you have questions about Horticultural Technical Requirements V3.0, please contact horticulture@designlights.org. We look forward to engaging with you as we continue to develop the Horticultural Lighting program.

Best Regards,

The DLC Team

[1] *Where marijuana is legal in the United States*. (2022, November 9). MJBizDaily. https://mjbizdaily.com/map-of-us-marijuana-legalization-by-state

[2] Energy, A. (2022, May 16). *AGRITECTURE*. AGRITECTURE. https://www.agritecture.com/blog/2022/5/16/indoor-ag-has-an-energy-problem-could-microgrids-be-the-solution

[3] *The Controlled Environment Agriculture Opportunity Is Ripe for Investment | L.E.K. Consulting*. (2022, September 23). Lek.com. https://www.lek.com/insights/ei/controlled-environment-agriculture-opportunity-ripe-investment