



ANNUAL **2022**



# New Pathways FOR Light

# LETTER FROM THE EXECUTIVE DIRECTOR

After two years of disruption and uncertainty, the business world resumed a sense of normalcy in 2022 and the DLC's work was no exception.

In May, we hosted our first post-pandemic gathering — a summit in Boston that enabled the DLC staff to reconnect in person with about 100 members and stakeholders. “Lighting the Path to a Decarbonized Future” provided a forum for utility executives, energy efficiency professionals, and lighting industry decisionmakers to share ideas about how to drive greater energy savings, reduce carbon emissions, and increase commercial building intelligence through LED lighting and controls.

The summit was among a suite of activities throughout the year aimed at taking a more holistic approach to achieving the DLC's mission, in part by focusing on the interaction and interconnection of lighting and control technologies that advance building decarbonization.



Christina Halfpenny

The past year also saw the DLC play a significant role in advocating for responsible light at night. We hosted and participated in educational panels and webinars that focused on mitigating the unintended and adverse impacts of artificial light at night on people and nature. Supporting this focus, we added the first products to our LUNA Qualified Products List (QPL) in 2022, and we developed and published a toolkit for municipalities grappling with how to mitigate light pollution while maintaining appropriate outdoor illumination in their communities.

We also continued to advocate for equity and inclusion through lighting — both by highlighting the need to mitigate light pollution's unequal impacts in under-represented communities and by moving to ensure the DLC itself reflects these values. To this end, we established a new Respect, Equity, Diversity and Inclusion (REDI) Committee in 2022. This collaborative internal working group has begun examining ways in which REDI can be embodied in all areas across the DLC — from professional development and human resources policies to marketing and communications and identification of strategic goals and initiatives. This is essential to the DLC's mission, and I look forward to sharing more information as the REDI Committee's work progresses.

In addition to starting to populate the LUNA QPL, DLC program updates in the past year included a proposed first-time efficacy increase in the Horticultural Lighting Technical Requirements. We also fully transitioned the DLC's Solid-State Lighting (SSL) QPL to SSL Version 5.1, emphasizing quality and controllability requirements.

Finally, we were thrilled to welcome two new members to the DLC Board of Directors in 2022. We thank Pat Lo and Larissa Paredes Muse for coming aboard and look forward to collaborating with them, as well as all our board members and industry stakeholders in the months ahead, as we continue to pursue our work to optimize energy usage, prioritize sustainable solutions, and protect the environment.

The **DesignLights Consortium®** (DLC) is a non-profit organization with a mission to achieve energy optimization by enabling controllability with a focus on quality, people, and the environment.

As a non-profit, the DLC is committed to improving energy efficiency for commercial lighting throughout North America, and to making a positive climate impact worldwide. It's our goal to provide a trusted, impartial assessment of the industry's highest performing lighting products and systems to boost consumer trust and adoption of the technologies that save the most energy.

## OUR MISSION



**Alecia Ward**  
Lawrence  
Berkeley  
National Lab



**Regina Durga**  
Centrica



**Carlos Nouel**  
National Grid



**Pat Lo**  
IESO



**Scott Johnstone**  
VHB



**Larissa Paredes Muse**  
Quanta Technology

## BOARD OF DIRECTORS

# OUR VALUES



**INTEGRITY:** We are dedicated to the work we do and are committed to honesty, transparency, and environmental stewardship.



**COLLABORATION:** The input of our colleagues and stakeholders is paramount. We diligently pursue opportunities for cooperation and comprehensive feedback on our work.



**DIVERSITY:** We are committed to inclusion, representation, and a voice for all those affected by our work.



**IMPACT:** We hold ourselves responsible and accountable for the outcomes of our work and actively pursue opportunities that best support our environmental mission.

# GUIDEPOSTS TO INNOVATION



**ENERGY:** Integrate lighting into Smart Building technologies, achieving dramatic improvements in energy efficiency.



**QUALITY:** Research, promote and enable standards for quality lighting.



**CONTROLLABILITY:** Drive connectivity of the built environment to optimize quality and energy benefits.



## Industry Advisory COMMITTEE

### Distributors

**Marc Hodges** • Sonepar USA

**Bernie Erickson** • Facilities Solutions  
Group

### Lighting Controls Manufacturers

**Michael Davidson** • Synapse Wireless

**Stephen Irving** • Lutron Electronics

**Eric Miller** • Avi-on Labs

### Medium Manufacturers

**Dan Wang-Munson** • RAB Lighting

### Small Manufacturers

**Daniel Katz, LC** • Eiko Global, LLC

**Daniel Kroencke** • Illumus

**Corinne Wilder** • Fluence by OSRAM

### Top 6 Manufacturers by QPL Listings

**Jim Gaines** • Signify

**Tanya Hernandez** • Acuity Brands

**Bob Smith** • Cooper Lighting

**Jon Vollers** • Cree Lighting

**Jeremy Yon** • Current by GE



## Collaboration AND Partnerships

Collaboration improves business relationships, generates novel ideas, and helps us face challenges and maximize opportunities. The DLC knows that advancing energy efficiency and decarbonization can't happen in a vacuum and we are pleased to collaborate with several organizations, benefitting from shared strategies, lessons learned, and unique perspectives. In 2022, we were proud to partner with the following organizations to advance our common goals:

- Browning the Green Space
- Integrated Lighting Campaign
- National Association of Innovative Lighting Distributors
- California Lighting Technology Center
- Resource Innovation Institute

# THANK YOU TO OUR MEMBERS **Members**





## What We're Working Toward

The impacts of climate change continued to mount in 2022. The year brought dozens of climate disasters to the US, from devastating floods and droughts to wildfires, with total damages reaching \$165 billion, according to the National Oceanic and Atmospheric Administration. There is no overstating the urgent need for effective, innovative solutions to this crisis.

Smart, efficient commercial and industrial lighting has a vital role in efforts to decarbonize the economy, and we have barely scratched the surface of its potential. The DLC views energy efficiency as a pillar to decarbonization and to an equitable and sustainable future for people and the environment. Our work in 2022 reflected that. With a net-zero future in mind, we put additional emphasis on integrated and controlled lighting systems, sustainable outdoor light-at-night, and energy saving solutions for the controlled environment agriculture (CEA) sector.



A nighttime photograph of a city skyline, likely Boston, featuring several prominent skyscrapers with illuminated windows and facades. The buildings are reflected in the water of a harbor or waterfront. In the foreground, a cobblestone promenade is visible, with a large metal chain and a bicycle rack. The sky is dark with some clouds and a full moon.

# Our Initiatives

## “Lighting isn’t just lighting anymore”

has been a refrain in industry circles for several years. With a mounting climate crisis and growing demand for illumination that supports the wellbeing of people and the planet, the phrase is truer than ever. NOAA reports that every month in 2022 was among the warmest ever recorded for that month, and the year overall was the sixth warmest since global records began in 1880. Moreover, the ten warmest years since then have all occurred since 2010. Clearly, the time for incremental change is past — we need innovative, bold solutions. Our work in 2022 reflected this as we pursued a diverse array of opportunities to decarbonize the commercial and industrial sector in the most impactful, sustainable way possible.



# 2022 in Review

## Fully transitioned to controls and quality of light requirements.



- V5.1 increased the efficacy and improved quality of light and controllability of qualified products.
- Making the switch to fixtures! 99.5% of fixtures and lamps on the QPL are now dimmable and 75% feature integrated controls.
- The policy requires reporting of performance data on attributes such as color and discomfort glare, allowing QPL users to better distinguish these characteristics and identify and select appropriate products.

## Bringing solutions to light pollution.



- The first products were qualified to the LUNA QPL, meaning they meet stricter requirements for attributes that limit light pollution.
- Besides meeting the DLC's SSL V5.1 efficacy thresholds, LUNA-qualified products comply with additional dimming, control, and shielding requirements to ensure efficient use of lighting energy.
- LUNA introduces requirements for light distribution, correlated color temperature, and dimming controls to reduce light trespass and sky glow, supporting outdoor lighting that provides appropriate visibility for people while embodying methods and guidelines that mitigate light pollution.



## We held our first in-person Summit since 2019.

- Held in Boston, “**Lighting the Path to a Decarbonized Future**” convened utility executives, energy efficiency professionals, lighting manufacturers and suppliers, researchers, and other industry stakeholders to collaborate on solutions to drive greater energy savings, reduce carbon emissions, and increase building intelligence through LEDs.
- Participants discussed ways in which controls and connectivity can contribute to a decarbonized future, as well as how to inspire wider NLC adoption.



## We strengthened our Horticultural Lighting performance.

- Hort V3.0 featured the program's first efficacy bump, increasing potential energy savings by at least 20%.
- The policy introduced product-level dimming requirements for all products and reporting of additional controllability details to enable more energy savings, promote interoperability, and prepare for future demand response systems and programs.

# Networking the Built Environment

Buildings in the U.S. consume 75% of the country's electricity and drive up to 80% of peak power demand in some regions. And although networked lighting controls (NLC) can make commercial projects, on average, 50% more energy efficient than LEDs alone, less than 1% of the nation's installed lighting includes controls. This runs counter to the DOE's ambitious goals for connectedLED lighting which, if met, could enable the U.S. to cut commercial sector energy use by about one fifth by 2035, saving over \$10 billion in annual energy costs.

Seeking to lower the barriers to adopting controlled, connected lighting, in 2022 the DLC:

- Fully implemented a new solid-state lighting policy (SSL V5.1) that improves controllability and quality for all QPL-listed products.
- Increased the number of listed manufacturers and systems that meet these new criteria.
- Published a whitepaper and hosted a webinar to help manufacturers understand and comply with requirements for energy monitoring capabilities of NLC systems.
- Joined forces with the Lighting Controls Association (LCA) to improve NLC training — a partnership that expands the universe of professionals trained in and eager to adopt NLC technology.



Less than **1%** of all buildings in the US have connected lighting systems installed, if you concentrated that 1% into one state, it would represent only the buildings in Connecticut — one of the nations smallest states.

# SMALL BUILDINGS, Big Impact

The U.S. has approximately 5.9 million commercial buildings, 5.5 million of which are smaller than 50,000 square feet. Of those smaller buildings, few have implemented any significant lighting control strategies. The remaining 3.6 million small commercial buildings represent an enormous opportunity for energy savings and improved lighting controllability.

In 2022, the DLC began developing a new program — NLC-Local — to help decisionmakers streamline the adoption of NLC technology in small buildings. The program is designed to answer questions, provide essential resources, and open the lines of communication needed for smaller facilities to overcome barriers and begin reaping the energy and non-energy benefits of NLCs. We will pilot this new program in 2023 as we work to speed up getting controls into as many buildings as possible.



**5.5 MILLION** OUT OF **5.9 MILLION** COMMERCIAL BUILDINGS IN THE US  
ARE SMALLER THAN **50K** SQUARE FEET



## Lighting Up Controlled Environment Agriculture (CEA)

Increasing efficiency in the rapidly growing CEA market is another big opportunity, and one the DLC pursued vigorously in 2022. U.S. greenhouses relied on LEDs for only 2% of supplemental and 11% of high intensity sole-source lighting, respectively, according to the U.S. DOE's latest agricultural lighting report. Meanwhile, fueled by demand for locally-grown food and newly-legalized cannabis cultivation, the North American CEA industry is projected to grow to \$8 billion by 2026. The DOE has recommended transitioning all horticultural lighting to LEDs, which will reduce annual energy usage by 34% and save growers \$350 million annually.

To drive these energy savings, in 2022 the DLC:

- Finalized and implemented Horticultural Lighting Technical Requirements Version 3.0, providing the first increase in efficacy since the horticultural lighting program began in 2018 and establishing additional minimum performance baselines for LED luminaires, lamps, and controls used by the industry.
- Improved the Hort QPL — a searchable, filterable online resource — for cultivators and other lighting decisionmakers by adding by adding product images, categories, and information on intended product use.



TRANSITIONING HORTICULTURAL LIGHTING TO LEDs REDUCE ENERGY BY AT LEAST **40%**

SAVING APPROXIMATELY **\$350K** MILLION ANNUALLY

# Keeping Our Night Skies Dark

Light pollution is a fact of life for more than 80% of the world — most severe in Europe and North America, where 60% and 80% of inhabitants, respectively, can no longer see the Milky Way. The statistics are sobering, and yet light pollution from illuminated buildings, roadways, and outdoor facilities has continued accelerating by about 10 percent annually for over a decade. Besides obscuring the stars, light pollution harms the wellbeing of both human communities and wildlife habitats. Mitigating these impacts is relevant to the DLC's energy efficiency and decarbonization goals, as a third of all energy used for outdoor lighting in the U.S. is wasted and responsible for carbon emissions of 21 million tons annually.

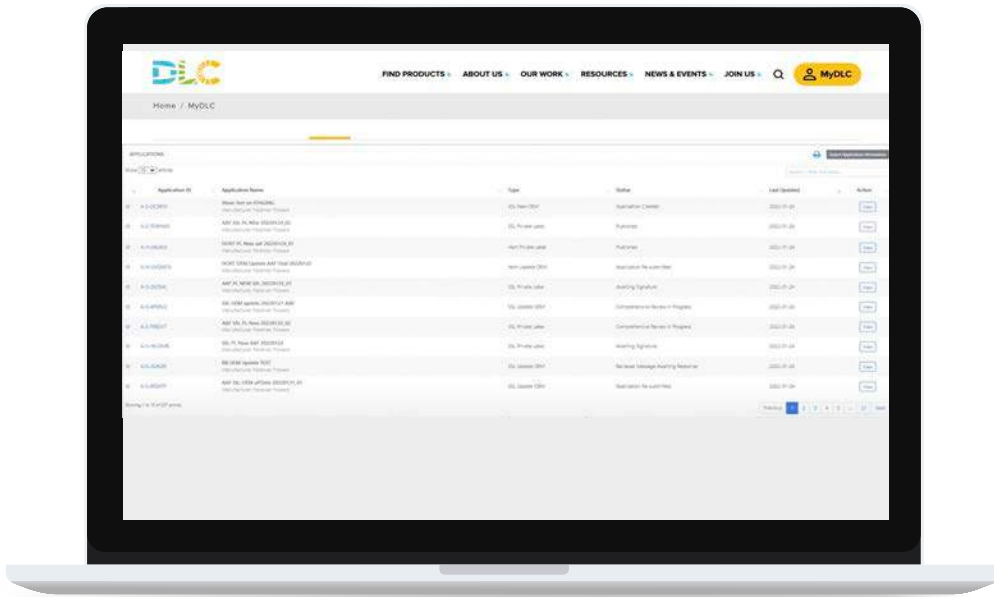
The DLC approved the first group of products on our LUNA Qualified Products List in July 2022, and we continue to grow this list of products that qualify for energy efficiency incentives while including added features that mitigate unintended negative consequences of nighttime lighting. To help municipalities and other outdoor lighting decision makers, the DLC published a resource, **“Seven strategies to minimize negative impacts of outdoor light at night”**, other lighting ordinance resources, and a list and map of ordinances and bylaws in place across North America.

Finally, in recognition that non-white light (NWL) sources are frequently favored over conventional LEDs for sensitive wildlife areas, the DLC published a whitepaper on NWL — a category currently not covered by LUNA. The whitepaper outlined necessary developments required for the DLC to address these types of products in the future, calling for updating of existing lighting standards so the DLC and other stakeholders can evaluate these products using a consistent framework.

# Keeping the DLC Current

## Improved Application Portal

The DLC introduced a new application portal for the SSL and Horticultural Lighting QPLs in 2022, designed to guide manufacturers through the application process and provide quick and easy access to important application data. The new allows submitters to access and sort applications by date, type, and status. Users can also “favorite” their applications for easier access, view outstanding invoices, and see application messages that need addressing — all from the application dashboard.



## Redesigned Product Logos

Continuing our efforts to keep the QPL experience current and easy-to-use, the DLC created updated logos for products on our SSL, NLC, Horticultural Lighting, and LUNA QPLs. The new DLC Listed, DLC Premium, DLC Horticultural, and DLC LUNA logos are visually simpler and easier to differentiate and read at small sizes. DLC logos and trademarks are valuable to all DLC Members, as well as to manufacturers with products listed on our QPLs. Guidelines for using DLC logos remained the same throughout 2022 and we continue to carefully enforce them to retain that value.



# Our Reach

## “Lighting the Path to a Decarbonized Future” Summit

2022 marked the DLC’s return to in-person meetings with our members and other stakeholders. In May, we hosted “**Lighting the Path to a Decarbonized Future**”, a one-day summit that gathered approximately 100 professionals representing utilities, lighting manufacturers and designers, researchers, and other industry professional to exchange ideas and best practices for promoting wider adoption of lighting control technologies.

Timing of the summit coincided with the ongoing replacement of first-generation LEDs by businesses, universities, hospitals, and other commercial facilities across North America. Summit discussions centered primarily on how to get the most energy savings from new LED installations through controls and connectivity. The meeting also came as the DLC was in the process of updating both its SSL and NLC Technical Requirements with an eye toward creating scalable building solutions to reach carbon reduction goals. Key topics included overcoming barriers to adoption of NLCs by improving interoperability and tailoring solutions to the small- to medium-sized building market.



## Our Reach (continued)

### Driving Standards for Amber Light

2022 saw increased public awareness of the negative impacts of outdoor lighting on an array of wildlife species, with attention focused particularly on “white” LEDs that emit more of the blue-violet light spectrum that contributes to sky glow. “Amber” LEDs have surfaced as a potential strategy to mitigate environmental impacts, but due to a lack of industry standards, amber products are not included in the LUNA Technical Requirements. Recognizing amber’s potential to reduce light pollution, in 2022 the DLC studied the issue and published a whitepaper that provides an overview of the state of the science for amber LEDs and suggests next steps to address gaps in existing research, standards, and guidelines that would make LUNA inclusion more achievable.

The paper, which DLC Senior Lighting Scientist Leora Radetsky presented at the Light Symposium 2022 in Copenhagen, summarized outdoor lighting requirements published by various institutions ranging from public advocacy groups to government regulators and found little agreement on amber spectral thresholds, metrics, and nomenclature. It called on the lighting industry and researchers to take an integrated approach to developing new standards so the DLC and other stakeholders can evaluate these products using a consistent framework.

#### Other Outreach

- Hosted **14** public webinars with **1000** attendees
- Hosted **10** working groups
- Put a friendlier face on DLC staff through our Meet the DLC blog series
- Collected over **200** comments on DLC draft policies





# 2022 Financials

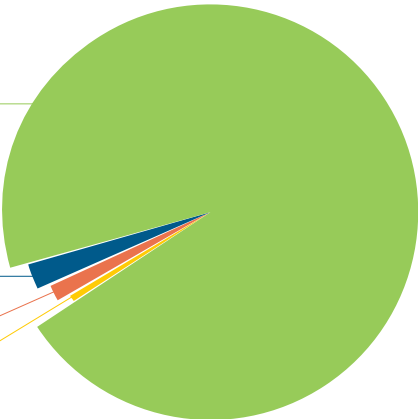
REVENUE: **\$10,711,915**

DLC QPLs: \$9,993,504

Membership Fees: \$674,206

Training & Events: \$27,896

Other: \$16,309



EXPENSES: **\$10,522,959**

Application Review and QPL: \$6,448,469

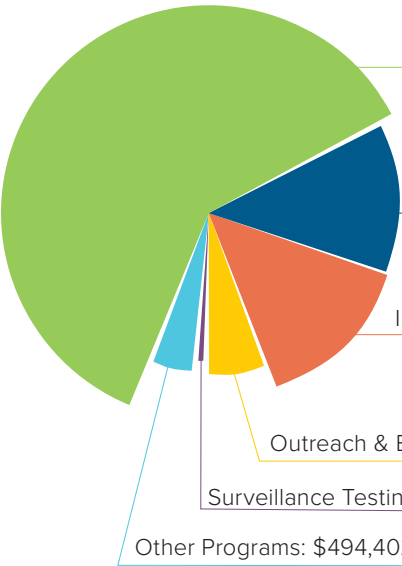
General & Administrative: \$1,379,807

Information Technology: \$1,487,680

Outreach & Engagement: \$614,796

Surveillance Testing: \$97,805

Other Programs: \$494,402



# LOOKING **AHEAD**



**2022 WAS A FRUITFUL ONE FOR THE DLC ON SEVERAL FRONTS**, and the goals we accomplished, the connections we made and lessons we learned will inform and inspire our work in the year ahead. In particular, we look forward to building on our strong foundations to expand the use of integrated controls, mitigate the negative impacts of light pollution, and prioritize an increased focus on diversity, equity and inclusion (DEI).

In the area of integrated controls, we will be launching a new program in 2023 specifically aimed at increasing uptake of network lighting control (NLC) technology in the small- to medium-sized building market. Geared toward supporting implementation of lighting control strategies in buildings under 50,000 square feet served by the retrofit market, the new program will provide tools that help smaller facilities adopt NLC technologies appropriate for their building size and resource constraints.

As 2023 unfolds, look also for the DLC to continue growing the number of light pollution-mitigating products on our LUNA Qualified Products List, as we simultaneously advocate for municipalities to reference LUNA in outdoor lighting ordinances and add to the responsible light at night resources for cities and towns we created in 2022.

Meanwhile, our Horticultural Lighting Program continues to implement Version 3.0 of the Horticultural Lighting Technical Requirements that took effect in March. During 2023, we will also be reaching out to the indoor cultivation community to build awareness of the Hort QPL and benefits of using listed products to reduce energy usage and optimize plant growth.

In line with our commitment to DEI, DLC looks forward to continuing our collaboration with Browning the Green Space (BGS), a nonprofit coalition driving DEI in clean energy and climate tech. As a founding member of the coalition, the DLC has pledged to advance diversity, equity, inclusion, and justice within its organization in support of a just energy transition for Black and Brown communities.

***All the above just scratches the surface of the DLC's activities over the course of 2023.***

Looking ahead, it's exciting and inspiring to consider the opportunities we'll have to improve the efficiency and quality of commercial lighting, while helping to mitigate environmental challenges ranging from climate change to light pollution's impacts on wildlife and human communities. As always, the partnership of DLC members and stakeholders is central to our ability to realize these opportunities and maximize our impact, and we look forward to another rewarding year with your support.



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