



INNOVATING IN A CHANGING LANDSCAPE

ANNUAL 2021



FROM THE EXECUTIVE DIRECTOR



Anticipating THE “new normal”

IN 2021, we emerged from the quarantine of COVID-19 into a different, yet still disruptive business landscape. Energy efficiency and the lighting industry continued to persevere and the DesignLights Consortium, working as a bridge and liaison, remained both nimble and committed to our mission.

Working with our stakeholders in the lighting and controls industry and with energy efficiency providers, we collectively championed energy savings and carbon reduction in the face of supply chain challenges and other unprecedented ramifications of the pandemic.

After a more reflective period during 2020, the DLC returned to a hybrid workplace model

and began to develop a new set of technical requirements designed to promote energy efficient outdoor lighting that also works to protect the night sky. Part of the DLC’s Solid-State Lighting (SSL) Technical Requirements, the LUNA requirements were developed to promote adoption of luminaires that meet our specifications for energy efficiency while minimizing light pollution, providing appropriate visibility for

people, and limiting negative impacts to the environment. Released after more than a year of research and development to ensure a technically sound policy, LUNA provides a solution to mitigate the growing problem of light pollution.

In addition to launching LUNA, the DLC continued to strengthen our SSL and horticultural lighting programs, while focusing on efforts to further expand the adoption of networked lighting controls. To help our members and stakeholders keep apprised of and involved with these programs, the DLC also took steps to improve our online user experience. We unveiled a new website, an enhanced MyDLC dashboard, and new Qualified Product List (QPL) platforms, while making great strides toward overhauling our application portal to streamline and simplify the QPL application submission process.

The DLC also worked to exercise our commitment to diversity, equity, and inclusion during 2021. We collaborated with other industry leaders to build awareness and think through ways for meaningful, sustainable change.

Through all these efforts, the DLC was privileged to have the advice and counsel of industry stakeholders, active members, and a committed and knowledgeable Board of Directors who share the resolve to keep improving quality, control, and efficiency in commercial and industrial spaces. We have an actionable solution through QPLs, knowledge, and education, and together we are taking steps each day to lower energy consumption and provide quality and connected indoor and outdoor environments.

Christina Halfpenny
Executive Director

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About the DLC

Our Mission

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 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.

OUR **Biggest** **Accomplishments** OF **2021**

Expanded the list of qualified horticultural lighting products for growers to choose from.

In 2021, The Hort Qualified Products List grew by 150%, with 51 new manufacturers designing energy efficient lighting that meets DLC requirements for efficacy and quality. The DLC introduced three new categories of eligible horticultural fixtures to the Hort QPL as well. Technical requirements were developed for actively cooled fixtures, DC-powered products, and linear replacement lamps to expand on the variety of qualified products available for controlled agricultural environments. As a larger percentage of the horticultural lighting market designs and installs products that meet DLC technical requirements, the bigger the impact we have on reducing the growing energy load from CEA.



Leveraged our tools to mitigate light pollution.

2021 marked the release of the DLC's long awaited LUNA policy, a set of requirements for outdoor lighting that works to minimize light pollution while providing energy savings and appropriate visibility for people. Light pollution has consequences beyond suboptimal stargazing, including disrupting the circadian cycles of people and animals and the life cycles of insects; disorienting nocturnal creatures and migrating birds; and reducing agricultural yields. LUNA supports the use of the right type of outdoor light, and only where and when it is needed — so that we can begin to make a dent in the approximately \$3 billion worth of energy¹ that wasted light contributes to each year. But energy savings is not the only target. Qualifying products that produce high quality light for all communities with minimal negative environmental impact remains the LUNA program's highest priority as the policy evolves.

¹ Reference: www.darksky.org/light-pollution/energy-waste/

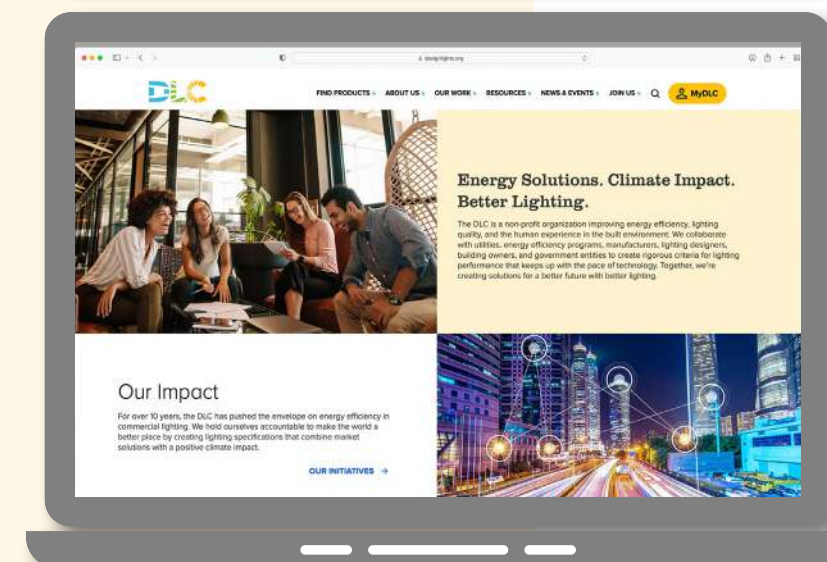
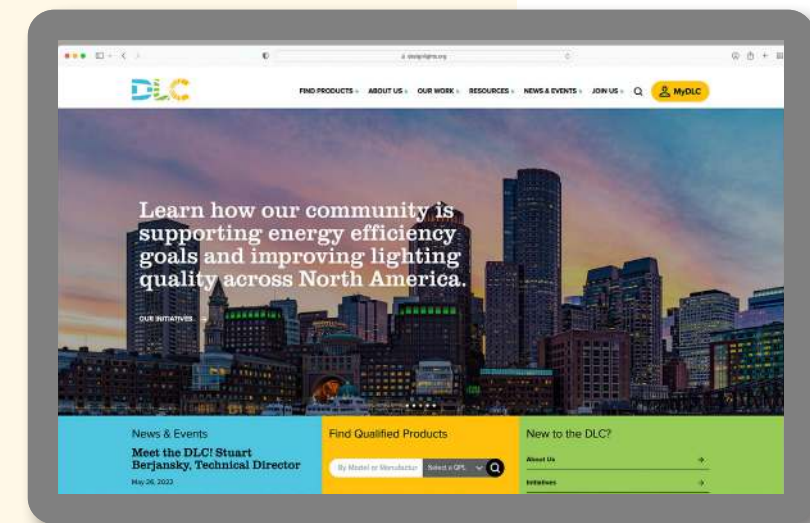
Laid the groundwork to meet our goal of achieving 45% market adoption of connected lighting.

If people use them, connected lighting controls provide advanced energy savings, controlled lighting quality, and the potential for building system optimization – so the DLC is tackling some of the largest barriers to adoption. In 2021, we began the D2Di (device-to-device interoperability) initiative, which will link key data from the Solid-State Lighting and Networked Lighting Controls QPLs, decreasing the chances that networked lighting systems go unused due to components that can't communicate successfully. We facilitated a working group to align on energy reporting criteria, and added an additional cybersecurity standard to the NLC Technical Requirements. When used correctly, networked lighting controls can save 49% more energy than LEDs alone – and we're on a mission to capture every kWh of those savings and make NLCs instrumental to achieving decarbonization goals.

² Reference: www.designlights.org/resources/reports/report-energy-savings-from-networked-lighting-control-nlc-systems-with-and-without-lllc/

Enhanced the DLC online experience.

The DLC owes its success to the engagement of our stakeholders. In 2021, we launched a beautiful and functional new website for them. Our new website includes easier access to information, more ways to stay up to date with the many goings on at the DLC, and a brand new MyDLC dashboard for logged in users. We also gave the QPLs an upgrade, allowing for faster, easier searching and more ways to save products.



OUR Initiatives

As an impact driven organization, the DLC measures our success against a number of initiatives designed to reduce energy usage and cut carbon emissions.



Integrating Networked Lighting into the Built Environment

Impact opportunity

Adoption of connected lighting in the United States currently sits at an abysmal less than 1%.³ However, the potential for energy savings is massive. The US DOE estimates that with 100% market penetration, LEDs controlled with connected lighting systems could save up to 5 quads (5 quadrillion Btu) annually if fully implemented, with a full fifth of those savings attributable to the lighting controls. That equals an annual savings of approximately \$56 Billion.⁴

³ & ⁴ Reference: www.energy.gov/sites/default/files/2020/09/f78/ssl-led-adoption-aug2020.pdf
⁵ Reference: www.designlights.org/resources/reports/report-energy-savings-from-networked-lighting-control-nlc-systems-with-and-without-lllc/

Another way to look at lighting controls potential savings comes from the DLC's 2020 report, *Energy Savings from Networked Lighting Control (NLC) Systems with and without LLLC⁵*, whose research indicates that on average, NLCs enable 49% more energy savings when combined with LEDs than when LEDs are installed alone.



Actions toward the goal

- Began the process of linking data on the Solid-State Lighting and Networked Lighting Controls QPLs to promote the installation of interoperable components — a key factor in ensuring that NLCs are used to their full potential.
- Facilitated a working group of DLC members, manufacturers, and industry experts to determine more effective strategies of reporting energy usage from NLCs.
- Added an additional cybersecurity standard to the NLC Technical Requirements, widening the path for secure and trustworthy systems to be listed on the QPL and installed in buildings.
- Closed NLC4 application submissions, paving the way to fully transition the NLC QPL to NLC5 in 2022, which contains stronger requirements for cybersecurity, energy monitoring, and interoperability.
- Conducted extensive research on the non-energy benefits of NLCs — data that will be instrumental in building public support for their installation and use.

STATISTICS



growth of the NLC QPL in 2021, representing 8 new listed systems



of DLC member territories offering incentives for NLCs



of DLC members that offer NLC incentives referencing the DLC QPL for qualification

Transforming Horticultural Lighting from the Ground Up

Impact opportunity

A 2020 report by the US DOE estimates that transitioning all horticultural lighting in the United States to LEDs could reduce its current energy usage by a third, saving growers up to \$350 million annually. This cost savings estimate has increased by over \$100 million since 2017, and will continue to grow as CEA increases its foothold as a solution for agriculture in an unpredictable climate. A report by Grand View Research forecasts that the market will grow to be worth over \$14 Billion by 2030 — an increase of approximately \$10 Billion from 2021. This rapid expansion necessitates a concerted effort to ensure that the lighting installed in these indoor facilities meets the DLC’s energy efficiency thresholds in order to mitigate greenhouse emissions from this sector.

Actions toward the goal

- Qualified 262 new products on the Hort QPL – a 150% increase from 2020.
- Implemented Horticultural Technical Requirements V2.1, which broadened the variety of products eligible for qualification, including actively cooled fixtures, DC-powered fixtures, and linear replacement lamps.
- Held five meetings of the Horticultural Working Group, a committee comprised of DLC members who provide critical feedback on the implementation of DLC technical requirements in incentive programs.
- Began research for Hort V3.0, the next iteration of the Horticultural Technical Requirements, which will include a significant increase in efficacy thresholds for listed products.

6 Reference: www.energy.gov/sites/prod/files/2020/07/f76/ssl-agriculture-jun2020.pdf

7 Reference: www.grandviewresearch.com/industry-analysis/grow-light-market

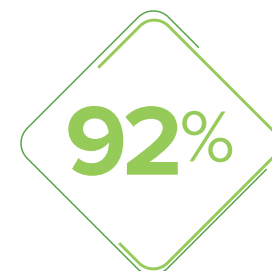
STATISTICS



growth of the Hort QPL in 2021



new manufacturers with DLC listed Hort products in 2021



of DLC member territories offering incentives for LED hort lighting

Addressing Light Pollution

Impact opportunity

2016 research by Fabio Falchi, et al, indicated that over 80% of the world population and 99% of U.S. and European populations experience light pollution at night.⁸ Almost 80% of North Americans can't see the Milky Way at all. In addition to this sobering fact, the International Dark Sky Association estimates that 35% of outdoor lighting is wasted due to improper shielding or aiming. The opportunity for improvement is threefold: waste less energy at night by installing appropriate and efficient lighting with effective controls, improve our collective experience of the night sky, and mitigate the multitude of negative ecological impacts attributable to light pollution.

Actions toward the goal

- Released the final LUNA Technical Requirements, which establish performance criteria for specific categories of outdoor lighting so that lighting decision makers can be confident that their selections save energy AND follow best environmental practices for nighttime lighting.
- Completed extensive research on the state of the market and environmental impacts of non-white light, which will support future revisions to the LUNA requirements.
- Hosted a webinar on the increased presence of light pollution – particularly light trespass and glare – in underrepresented communities.
- Convened multiple meetings of the LUNA Advisory Group, a committee of experts focused on the development of an effective LUNA policy.

Why we need to act

Harmful effects of light pollution include:

- Disruption of circadian rhythms of humans, animals, and plants
- Disorientation of wildlife such as sea turtles and migrating birds
- Harm to both diurnal and nocturnal insects
- Increases in pathogenic risks
- Massive amounts of wasted energy

8 Reference: www.science.org/doi/10.1126/sciadv.1600377

OUR Reach — Bigger THAN Ever

As COVID-19 continued to disrupt our lives, 2021 challenged the DLC to find new ways of interacting virtually with our stakeholder base. Collaboration is one of our core values, and the DLC mission is unachievable without comprehensive feedback and participation from the energy efficiency and lighting industries. To that end, we leveraged webinars and online meetings, working groups, the reach of the lighting industry media, and our improved website to ensure our message reached our stakeholders and their feedback reached us.



In 2021, we:

- Hosted 26 public webinars and meetings, with over 1300 total participants
- Were featured in over 100 published press releases, guest columns, editorials, and references in the media
- Published 7 blog posts
- Completed a voice of the customer survey to ensure that the Surveillance Testing Program continues to improve in the future
- Hosted four working groups focusing on horticultural lighting, energy reporting, room level controls, and LUNA, for a total of 16 meetings
- Created new avenues for industry to provide feedback, including new Industry Advisory Committee subcommittees
- Received 384 comments from multiple organizations on policy drafts released in 2021 through our stakeholder input process
- Launched a new website and MyDLC dashboard for logged in users, streamlining access to important information and updates

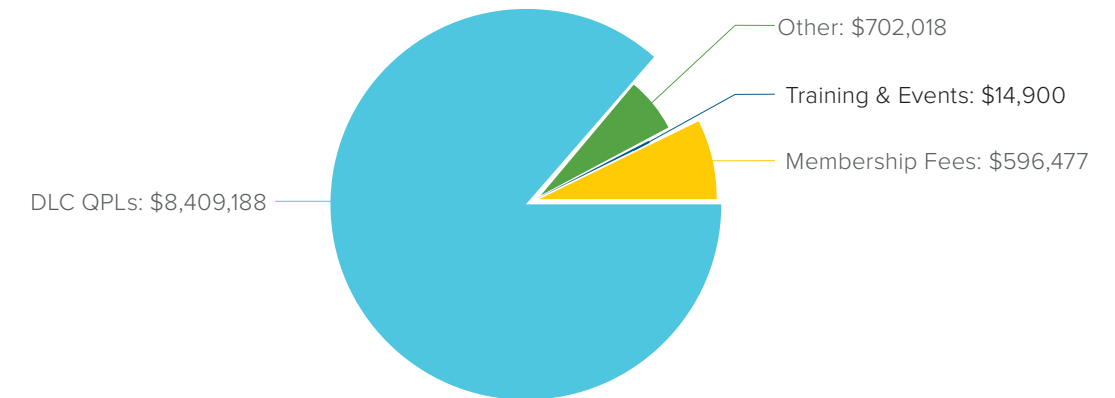


IN 2021

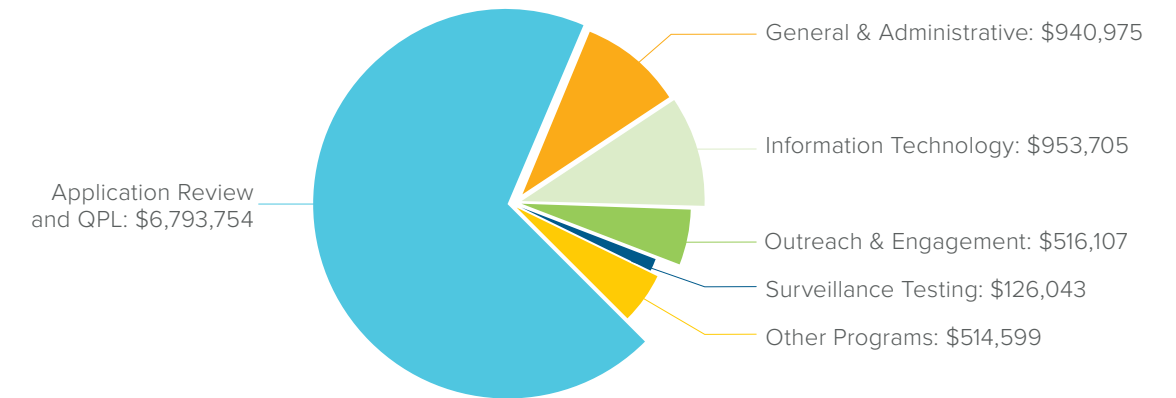
2021 FINANCIALS

QPL activity makes up the majority of both revenue and expenses for the DLC. From application review and processing to the DLC's IT systems, this was no exception in 2021. Other annual expenses included administration of DLC events, development of industry research and resources, and the deployment of the DLC's tools and training programs.

REVENUE: \$9,722,583



EXPENSES: \$9,845,183





Looking Ahead

Since its founding, the DLC has championed broad scale initiatives to improve energy efficiency for commercial lighting throughout

North America while making a positive climate impact worldwide.

From increasing the efficacy and quality of solid-state luminaires

to implementing the first industry specification for LED horticultural lighting to expanding the reach of networked lighting

controls, we continue to embrace three basic principles:

energy savings, lighting quality, and controllability, and

they guide our work going forward.

As the world has reopened, the DLC continues to leverage the new virtual collaboration strategies that took hold during the pandemic, while adding targeted face-to-face meetings as needed to develop and promote energy savings solutions. In 2022 and beyond, the DLC will infuse these conversations and alliances with an increased focus on diversity, equity, inclusion, and respect (DEIR).

The need to diversify our industry could not be clearer. For example, an April 2022 report by the National Association of State Energy Officials (NASEO) found that, despite comprising over half the US population, women account for only 25 percent of the nation's energy efficiency workforce, which includes energy efficient lighting. The story is more disheartening for Black and Hispanic workers, who make up just 8 and 15 percent of the energy efficiency workforce, respectively, according to the NASEO report.

The DLC is invested in this effort not just because it is the right thing to do as people, but because we also know that representation is necessary for the equitable and successful development and implementation of policies essential to mitigating climate change and protecting the increasingly scarce environmental resource that is the night sky. Both issues are at the forefront of the DLC's future work as we pursue a higher percentage of energy saving lighting controls and connected buildings and solidify our role in the dark sky movement through the LUNA Technical Requirements.

We look forward to collaborating with all our stakeholders on these matters and more in the months and years ahead. Working together, we can realize sustainable change for our communities and the climate.

