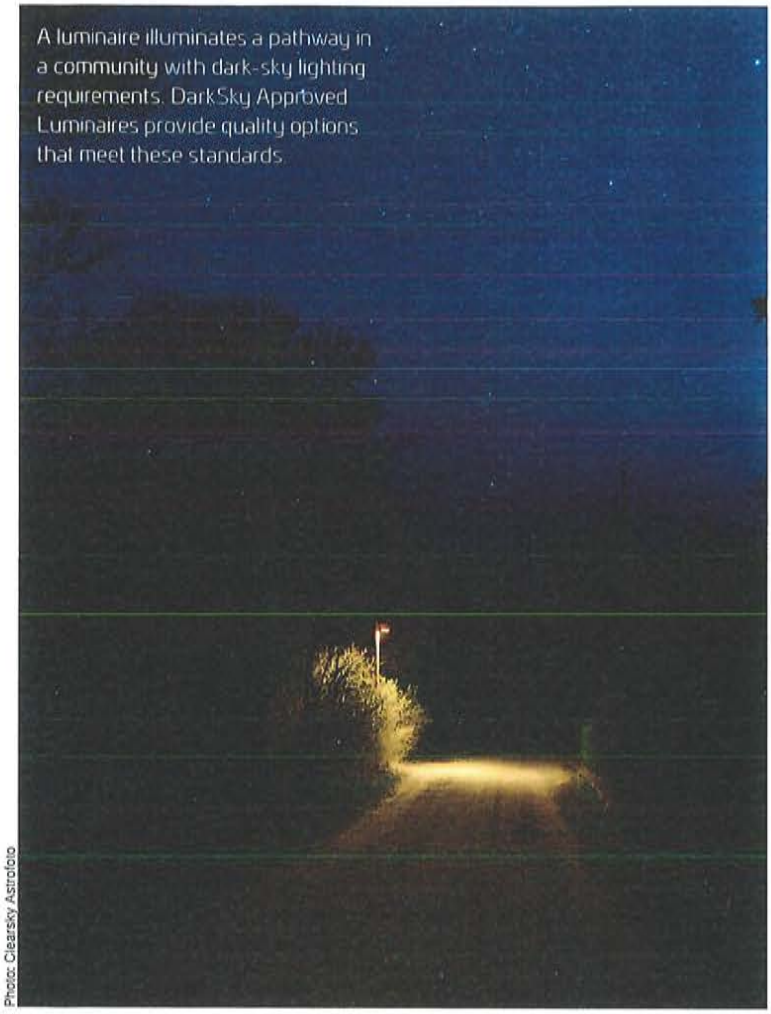


A luminaire illuminates a pathway in a community with dark-sky lighting requirements. DarkSky Approved Luminaires provide quality options that meet these standards

Photo: Clearsky Astrofoto

LET THERE BE NIGHT

The outdoor lighting revolution is underway

I've always been drawn into the dark. Even before working at DarkSky International, I often found myself getting up before sunrise for morning runs or out climbing with friends beneath a full moon. I'm always on a quest for new experiences; the night is a treasure trove for adventure, with something new to discover every time I venture out.

By James Brigagliano

In a world flooded with light, a growing movement is embracing the value of darkness. Thanks to advancements in lighting technology, design, and application, outdoor lighting no longer must come at the expense of dark nights, and the DarkSky Approved Luminaires program is helping guide the way.

DarkSky International, previously known as the International Dark-Sky Association, is leading a new generation of programs that not only seek to preserve the night but also aim to transform how we think about—and use—outdoor lighting. Today, more than 80% of the world's population—and over 90% of those in Europe and the U.S.—live beneath light-polluted skies. For most, a night filled with stars is no longer part of our lived experience. The consequences of this loss reach far beyond stargazing, disrupting critical wildlife ecosystems, obstructing astronomical observations, impacting human well-being, and diminishing a shared cultural heritage.

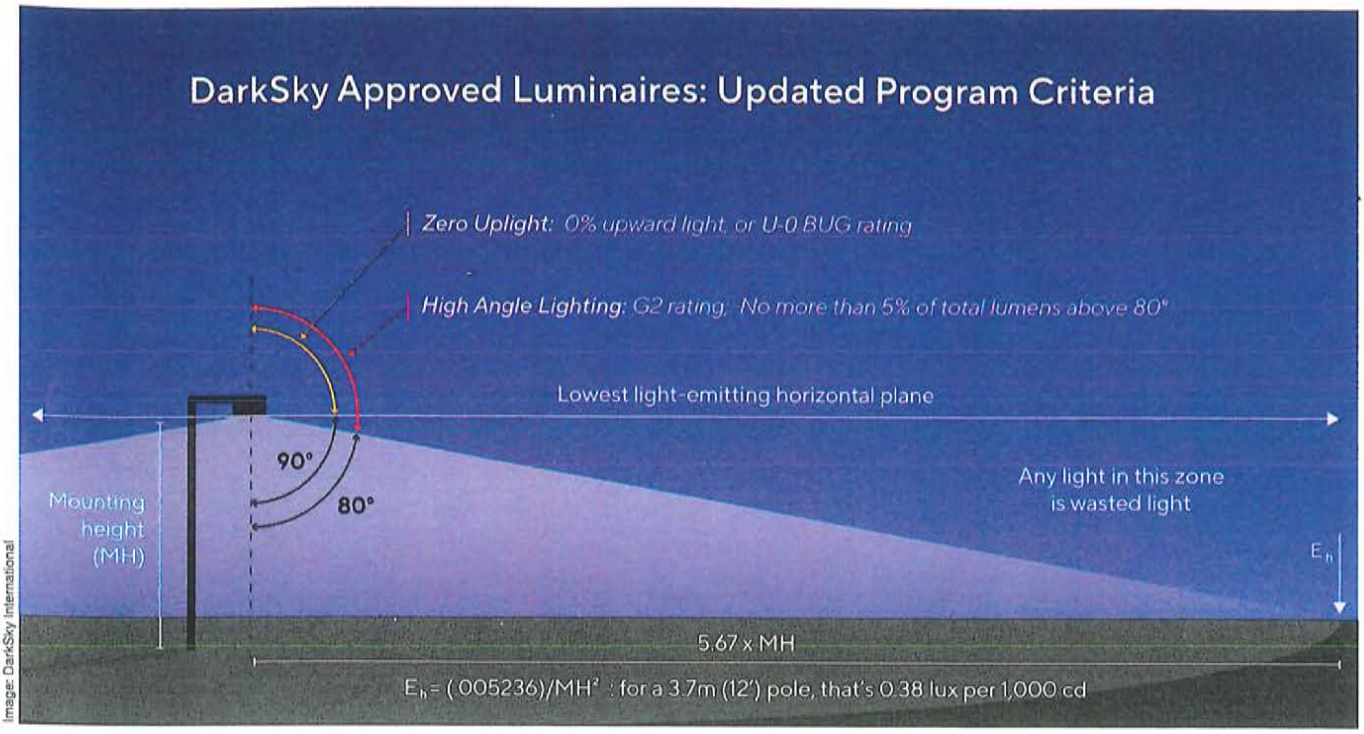
Life on Earth has evolved beneath the natural cycle of light and dark for at least 3.7 billion years. By contrast, electrically generated artificial light has existed for only the past 150 years, with widespread light pollution emerging in just the last 75 years. And the problem is accelerating. Recent studies show that light pollution is growing globally at an alarming rate of 9.6% per year—doubling roughly every eight years.

Over the past 30 years since its founding, DarkSky International has helped raise global awareness of light pollution as a critical environmental threat, building a growing network of advocates, chapters, and communities working to protect the night. Now more than ever, people are aware of the impacts of light pollution, and they are seeking solutions.

The Quality Lighting Revolution

For a long time, dark-sky advocacy largely focused on raising awareness about light pollution. That's been incredibly valuable in helping people understand the problem, but it hasn't always provided a clear understanding of the solution—quality lighting.

In 2020, DarkSky International, in partnership with the IES, took a major step toward solution-based advocacy by developing Five Principles for Responsible Outdoor Lighting at Night. These actionable guidelines have been widely embraced by both the lighting and dark-sky communities and now shape DarkSky's communications, educational materials, and programs, providing



An illustration demonstrating key criteria of the updated DarkSky Approved Luminaires program.

a proven, science-based foundation for reducing light pollution.

More recently, DarkSky has seen significant growth in its DarkSky Approved programs, designed to bridge the gap between rising demand for quality, dark-sky-friendly lighting and real-world, market-ready solutions. The most relevant to the lighting design and manufacturing industry is the DarkSky Approved Luminaires program. Launched in 2002 as the Fixture Seal of Approval, this third-party certification has long promoted lighting aligned with DarkSky International's mission. In response to the rise of LED technology, expanding scientific research, and growing global demand, the program recently underwent major updates to meet today's challenges.

The revised program is now fully aligned with the Five Principles and features four categories with distinct specifications: Residential, Commercial, Wildlife-Tuned, and Pedestrian Comfort, reflecting the diverse needs of outdoor lighting. While the updates include several key changes, there are two that are true game changers: limiting the amount of light allowed above 80 deg from nadir as well as the introduction of the new Pedestrian Comfort category.

The 80-Deg Shielding Requirement

Early versions of DarkSky's guidelines specified that the cutoff angle of a luminaire must be 90 deg to minimize uplight. In the updated program, most categories have added restrictions to the amount of light allowed above 80 deg. Why the change? Light emitted from a luminaire at an angle greater than 80 deg is barely measurable by the time it hits the intended pathway or street and is, therefore, not useful. While the 90-deg limit prevented most uplight, the 80-deg threshold eliminates nearly all of it, with only a small allowance of 2 to 5%, depending on the category.

Restricting high-angle light emissions helps to reduce glare, sky glow, and light trespass. High-angle light between 80 and 100 deg from nadir has the highest potential for scattering in the atmosphere.

The Residential category is the only one that retains the 90-deg threshold. Residential luminaires have stricter specifications in other ways. They're limited to 1,000 lumens, compared to higher lumen packages for a commercial luminaire. Plus, residential luminaires are often installed under awnings or with timers or motion sensors, which we highly recommend, so the 90-deg cutoff is still appropriate.

While some lighting experts and advocates would like to see even stricter requirements, there is a balance to strike. We want dark-sky-friendly lighting to be accessible. So, while some criteria could be more strict, we are balancing optical control requirements with what is available in today's market.

Image: DarkSky International

Photo: Torben Eskerod

Top: The Five Principles of Responsible Outdoor Lighting at Night in practice, illustrating the impacts of poor versus quality lighting.

Left: Low-level luminaires keep the light source out of view for better adaptation.

The Addition of a Pedestrian Comfort Category

The Pedestrian Comfort category was developed in response to the unique challenges lighting designers face when illuminating outdoor public spaces, such as parks, pathways, and plazas. It can be extremely difficult to know how comfortable an outdoor luminaire will be before it is installed on site. While arranging a product mock-up is ideal, it is not always possible. Luminaires that meet DarkSky Approved Pedestrian Comfort criteria give designers added confidence, without the risk of an unexpected "glare bomb." The requirements for this category address major contributors to uncomfortable lighting, including total lumens, percentage of lumens in high-angle zones, and maximum vertical candela angle.

This new category provides lighting designers with solutions focused on enhanced optical control, better targeting, and reduced glare, helping to improve application efficiency and real-world results. By eliminating the direct view of the light source, designers reduce the scene's dynamic range, helping human eyes adapt to the dark and improving overall visibility.

These luminaires are designed with people in mind. They help create nighttime environments that are more comfortable, safer, and more appropriate for pedestrian spaces. Designers can select these luminaires with confidence, knowing they will enhance the area while also improving the human experience and protecting the night.

Meeting the Growing Demand for Quality Lighting

The DarkSky Approved Luminaires program is designed to meet the rising demand for lighting that protects dark skies and the nighttime environment. This demand is fueled by DarkSky's

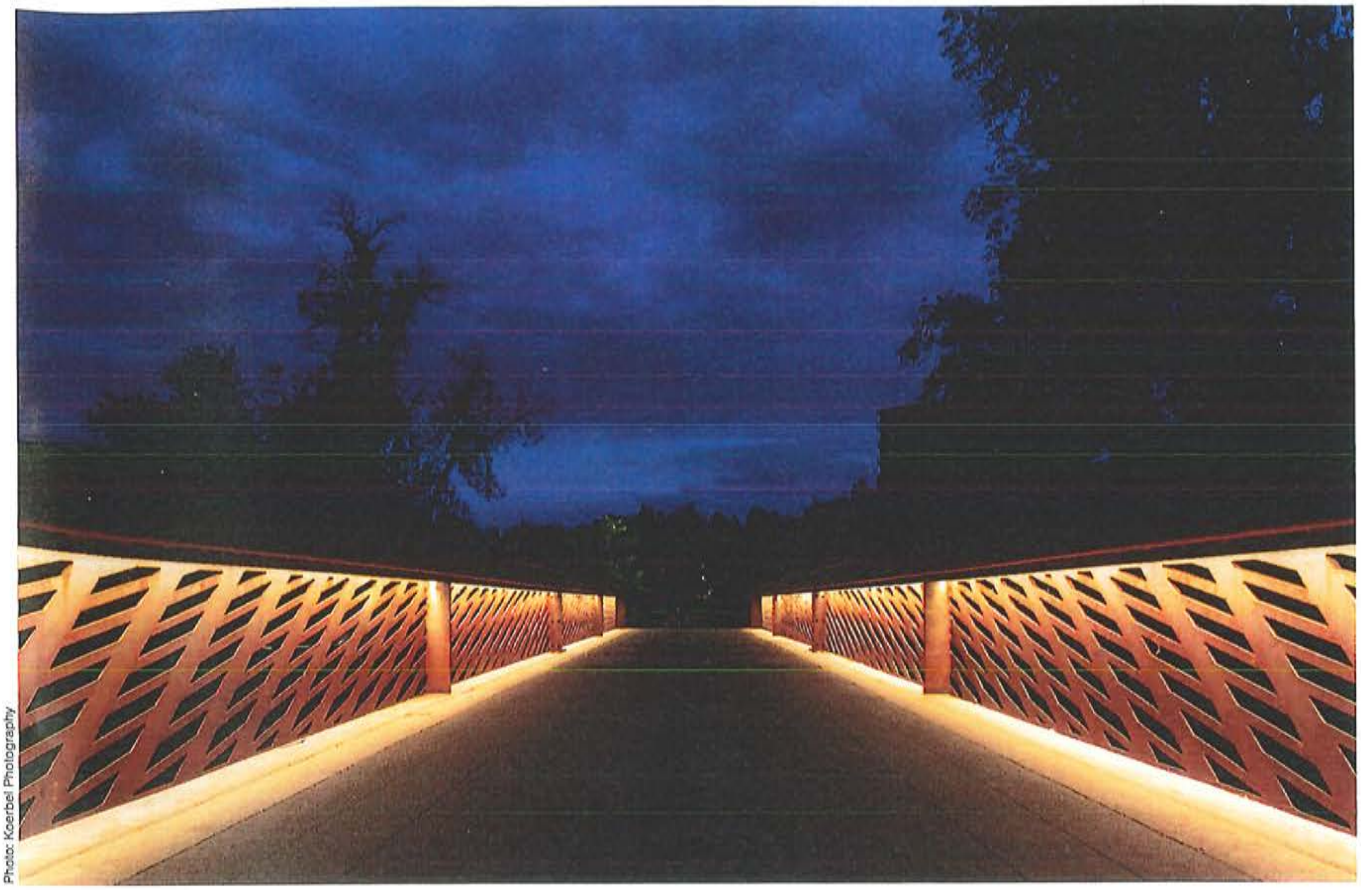


Photo: Koerbel Photography

Pedestrian comfort luminaires illuminate surfaces without exposing the light source.

growing network of supporters and programs. The International Dark Sky Places program now spans parks, preserves, and communities worldwide, requiring dark-sky-friendly lighting and raising awareness of better lighting practices. DarkSky Codes and Statutes are helping cities adopt night-friendly policies—and as adoption grows, demand continues to rise.

Momentum is also building beyond DarkSky's core programs. In Europe, efforts to protect declining pollinator populations are bringing new attention to lighting's ecological impacts. In New Zealand, there's a growing movement to become the first Dark Sky Nation, placing night-sky protection at the heart of their cultural identity. Globally, astrotourism and noctourism are surging, with *Forbes* and *National Geographic* naming them among today's top travel trends.

More communities and people are tuning into the quality lighting conversation. This is an exciting moment—not just for DarkSky and the lighting community, but for the public as well. This program isn't just for designers. It's for everyday consumers, too. Certified products can be found on the DarkSky website—and increasingly in retail stores, marked with the DarkSky Approved logo.

With more people recognizing the impacts of light pollution, the DarkSky Approved Luminaires program is an important tool. We believe this program will shift how we think about—and use—outdoor lighting.

DarkSky envisions a future where quality lighting is the norm, and where stars once again shine over communities worldwide. The organization invites manufacturers, designers, and consumers alike to explore the program, apply for certification, or browse the growing gallery of DarkSky Approved Luminaires. ◎

For more information about DarkSky and the DarkSky Approved Luminaires program, visit www.darksky.org.

THE AUTHOR | James Brigagliano LC, LEED Green Assoc., is the Lighting Program manager at DarkSky International. Active in the lighting community for 20 years, he brings a unique blend of technical knowledge, real-world experience, and a passion for dark-sky preservation.