Artificial Light At Night
## How DALI Controls Can Help

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① Artificial Light at Night

Artificial light at night has long been an enabler for our modern way of life, allowing society to keep on functioning in the evening and at night. From our educational and professional working lives to our leisure activities and domestic down time, we have become accustomed to and reliant upon, artificial light to pursue our activities. It contributes to our safety, facilitates economic activity, social interactions and our general quality of life. Streets, workplaces, transport hubs, cities and public spaces depend on well-lit environments to function and remain accessible at night.

Alongside these benefits however, there is growing global concern and an increasing body of evidence highlighting challenges that arise when poorly designed, or poorly controlled lighting installations are left on at full brightness all night. We are all familiar with the images of a yellow, orange or white skyglow hovering over towns and cities, creating a dome of brightness and reducing the visibility of the stars. Many of us will also recognise how excessively bright or poorly shielded outdoor lighting in residential areas, can cause glare and light trespass.

For our ecosystems, many species from bats and insects to migratory birds and coastal species such as sea turtles, rely on the natural alternation of day and night to guide behaviour. Artificial light that encroaches on habitats can alter feeding patterns, disrupt navigation, or displace wildlife from critical environments.

At the end of the day, from an environmental point of view excessive light is also just wasted energy, which translates directly into unnecessary carbon emissions and increased costs for municipalities, businesses, and individuals. At a time when climate goals are high on the global agenda, eliminating avoidable energy use is both an environmental and financial priority.
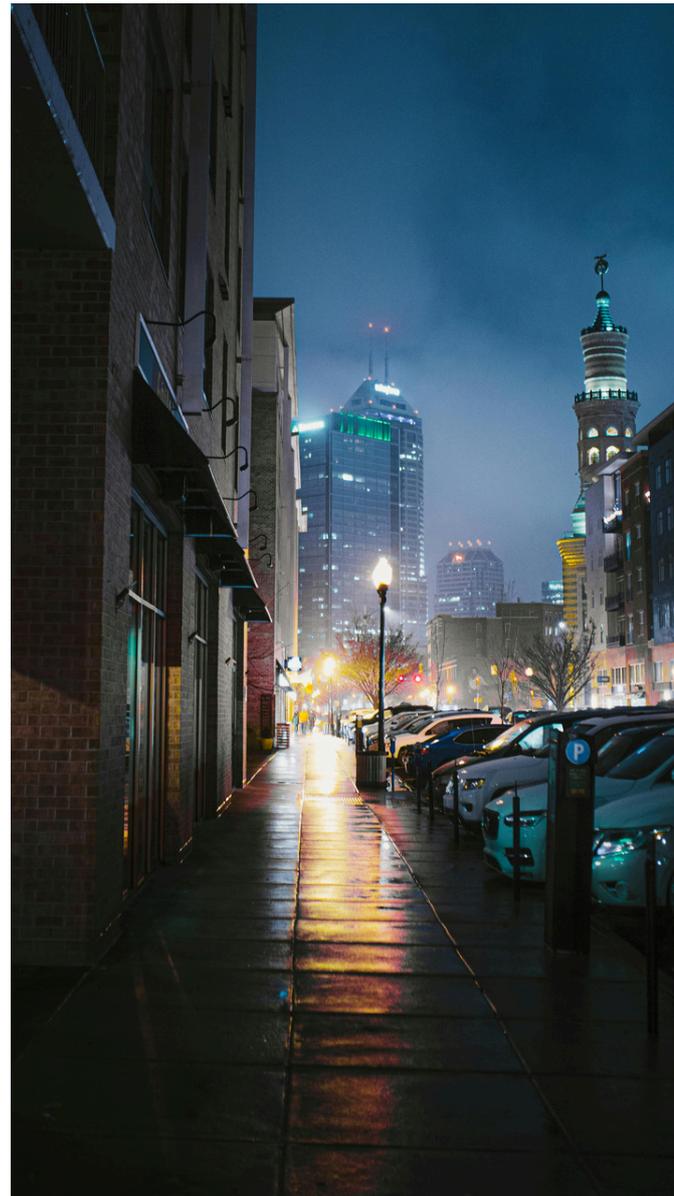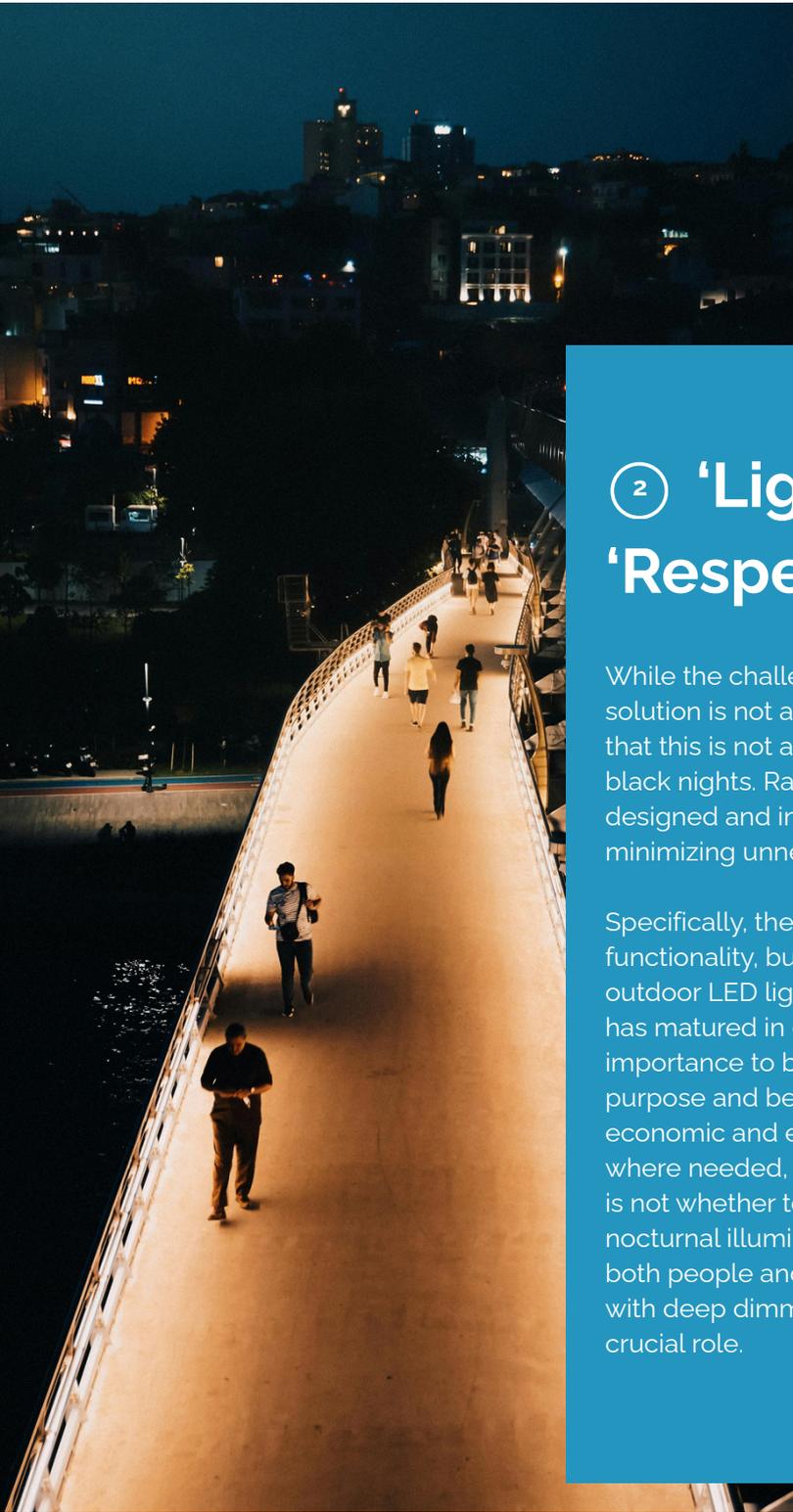
② 'Light for People' versus 'Respect for the Environment'

While the challenges of artificial light at night are well recognized, the solution is not as simple as switching the lights off. It is crucial to recognise that this is not a binary choice between bright, bustling cities and pitch-black nights. Rather, it is about finding the balance between correctly designed and installed lighting systems that serve people's needs, while minimizing unnecessary side effects.

Specifically, the goal should be to provide enough light to ensure functionality, but not more than is necessary. With increasing volumes of outdoor LED lighting installations being installed, as the LED lighting market has matured in energy efficiency and prices have dropped, it is of vital importance to broaden the narrative. Lighting projects should have a clear purpose and be adjusted to the needs of the application, combining human, economic and environmental goals. Light should be directed precisely where needed, when needed and not be brighter than necessary. The issue is not whether to light, or not to light. It is about how to deliver evening and nocturnal illumination in a more restrained, considered way that respects both people and the environment. This is where lighting control systems with deep dimming schedules that reduce light levels at night, can play a crucial role.

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3 DALI Control Systems can help reduce the effects of Artificial Light At Night

The installation of outdoor LED lighting with smart control systems, programmed to automatically dim or switch off outdoor lighting during low use periods, will have a direct result of minimizing the unwanted effects of artificial light at night. The lighting industry enables state-of-the-art lighting control systems which, when designed and installed according to the correct lighting application standards, will enable light to be delivered precisely when, where, and how it is needed; the right amount of light, at the right place, at the right moment in time!

DALI Lighting Control Systems

The protocol for precise dimming and sensor control of lighting is the Digital Addressable Lighting Interface (DALI). This is the lighting industry digital protocol for wired and wireless lighting control systems, which facilitates seamless bi-directional communication between components in a lighting control system. Originating in the mid-1990s, DALI is globally standardized under IEC 62386 and DALI Specifications. With its three certification programs, DALI-2, D4i and DALI+, it is known for its reliability, flexibility, and cross-vendor interoperability.

DALI-2 and D4i certified products

With precise dimming, automated control, diagnostics, spectral tuning options and scene setting capabilities, DALI-2 and D4i certified control gear and control devices contribute towards reduced light levels and energy consumption, leading to enhanced user comfort in both indoor and outdoor applications. Certified wired DALI-2 networks installed in offices can help reduce spill light from buildings at night. D4i simplifies the selection of intelligent luminaires with data-rich assets that can store, process and share information with other systems.

D4i in outdoor luminaires

Outdoor luminaires with D4i controls can provide deep dimming schedules that reduce light levels during quiet night time periods. Those built upon D4i drivers and the Zhaga Book18 connector (Zhaga-D4i luminaires), support plug-and-play sensors and communication modules, enabling remote control with calendar based adjustable dimming schemes and functions like motion detection and ambient light sensing. Lights can automatically adjust brightness, switch off when areas are empty, or respond to natural daylight levels, preventing unnecessary illumination.

Towards Safer, Greener Nights

By deploying LED luminaires with advanced DALI lighting controls, communities can have well-lit environments that support activity and safety, alongside darker skies, healthier ecosystems, and lower carbon emissions. It is a practical, scalable solution that addresses the issue of artificial light at night, without forcing compromises between people and planet. With DALI-2 and D4i based lighting control systems, the path forward is clear: the right light where it's needed, when it's needed, and no more!

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The DALI Alliance is also known as the
Digital Illumination Interface Alliance (DiiA).

c/o ISTO, Inc.
371 Hoes Lane, Suite 200
Piscataway, NJ 08854 USA

Telephone: +1 732-465-5852

www.dali-alliance.org