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## **Biologically Appropriate Exterior Lighting for California**

*Additional submitted attachment is included below.*

# Biologically Appropriate Exterior Lighting for California

*“We strongly believe artificial light at night—in combination with habitat loss, chemical pollution, invasive species, and climate change—is driving insect declines. We posit here that artificial light at night is another important—but often overlooked—bringer of the insect apocalypse.”*

— [Biological Conservation](#), November 2019

Significant technological innovation coupled with aggressive state energy policy has greatly accelerated LED lighting use in exterior applications. This is resulting in a significant energy use reduction by street and area lighting in California. However, increasing efficacy, reduced component costs, and a lack of standards have resulted in a wide proliferation of biologically inappropriate LED lighting that is a significant threat to our ecosystem—impacting species wellness, bird migration, and the vitality of our pollinators—which is crucial to our agricultural economy.

The utility, regulatory, and efficiency communities have not paid enough attention to the biological effects of this massive market transformation, instead focusing mainly on energy and carbon mitigation. This oversight is leading to human health impacts from melatonin suppression, threatening insect pollinators, and hindering bird migration patterns—all weakening biodiversity. We have failed to implement current dark sky best practices, nor have we evolved specific new performance-based standards that better articulate specifications that support both biologically appropriate and energy-saving lighting.

Scientific American recently reported on the dangers of light pollution in our ecosystem and its rapidly worsening effects. There is a growing concern within the biological community that light is devastatingly impacting pollinators that are crucial to the agricultural industry, a mainstay of the California economy. We must take proactive steps now to reverse this trend. The use of adaptive controls, appropriate lighting spectrum, and application-appropriate optics can significantly reduce biological disruption in California while maintaining the energy efficiency opportunities associated with LED technology.

To address this issue, California needs a multi-faceted program that establishes the specifications and develops appropriate technologies that can mitigate the biological disruption associated with exterior lighting while maintaining safety and the energy efficiency opportunities associated with LED lighting. This initiative should also focus on activities to accelerate technology transfer, market integration opportunities, and workforce training to address this growing concern.

Sincerely,

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