Good morning, my name is Michael Siminovitch. I'm a professor at UC Davis, Director of the California Lighting Technology Center and I hold the Art Rosenfeld Endowed Chair for Energy Efficiency. I'm pleased to be here this morning to provide educational input on AB38. Based on over 20 years of research that we've done at UC Davis relative to exterior lighting, it is our strong contention that as much as 50% of the light that we produce for lighting our exterior environment is totally wasted here in California. This egregious waste of energy and resulting cost burden to the state of California’s can be largely eliminated using both advanced lighting controls and appropriate optics and shielding.

There are two important outcomes that can be realized by a more careful and prudent application of lighting at night. Firstly, a significant energy and cost savings to the state California, aligning with Governor Newsom’s aggressive greenhouse gas mitigation, goals. Secondly, reducing the negative biological impact that light has on humans and other species at night. Scientific American recently published (January) an article that clearly articulates the issue of global light pollution as a growing issue. This issue was also addressed in 2016 by the American Medical Association which recommended reducing exposure to light at night. There is also a rapidly growing body of knowledge that light at night is having a negative effect on other species – birds, animals, and insects – in terms of biological disruption. Bird migration patterns are being disrupted and we are seeing significant impacts on pollinators and other insects relative to light at night.

The application of adaptive lighting controls that reduces light during periods of vacancy using sensors and scheduling with dimming has been broadly demonstrated to be highly cost-effective. We often see 50 to 70% savings in many of these common applications including parking lots, pathways, and wall lights building exteriors. We have broadly demonstrated this at multiple universities, state institutions, and it’s helped inform codes and standards enhancement efforts for Title 24 and at a national level, ASHRAE. Safety has been raised as a potential issue and we believe sensor based bi-level controls has the potential to ensure safety through enhanced awareness.

Using good optics and shielding limits the amount of light above the horizontal that goes up into the night sky as this light is totally wasted and contributes to light pollution and biological impacts on humans and other species. Quality optics and shielding requirements for luminaires less than 6,500 lm is critically needed as it is outside the current regulatory purview. The broad application of optical shielding has the further potential for power and cost savings with more efficient, application of light.

In closing, as educational input we believe that cost effective and proven technologies are broadly available today that would greatly limit the 50% wasted light that we see at night resulting in a significant energy cost savings to the state of California and reduced biological
impact on humans and other species. The state of California’s building portfolio should be a leadership model for all of us and employ the most efficient, highest quality of lighting as an example for best practices for all, again supporting Governor Newsom’s leadership on addressing climate change through mitigating greenhouse gases.

References


