Adaptive Lighting for Next Generation Buildings

with

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Lighting is an important part of any comprehensive energy efficiency plan, especially in commercial buildings, where electric lighting accounts for more than 30% of electrical loads. Adaptive lighting utilizes controls to adjust light output based on changing factors such as occupancy patterns, fluctuating daylight levels and demand response emergencies.

This session focuses on emerging adaptive lighting systems, with emphasis on the use of occupancy-based controls for interior and exterior applications. These adaptive controls systems switch electric lights to full power during occupancy and reduce output by 50% or more during vacancy. The session includes information and results from various cases studies of adaptive lighting installations in California, which show significant and consistent energy savings, as well as descriptions of advanced adaptive lighting technologies that use networked lighting systems. Networked lighting systems estimate occupants’ speed and direction of movement to predict occupants’ movement patterns and optimize their experience accordingly, turning lights to full power along their predicted path of travel at a rate that increases safety and comfort, whether the occupant is a pedestrian, a cyclist or a driver.

Professor Michael Siminovitch is Director of the California Lighting Technology Center, Associate Director of the Energy Efficiency Center, Rosenfeld Chair in Energy Efficiency, and Professor of Design at UC Davis. Dr. Siminovitch established the Lighting Center as an industry, utility and government partnership to accelerate the commercialization and development of efficient residential and commercial lighting technologies. Dr. Siminovitch participated on the development team for California’s Strategic Lighting Plan and helped lead efforts to update the new Title 24 and Title 20 regulations for exterior lighting. He helped establish UC Davis's Smart Lighting Initiative, one of the largest lighting retrofit projects in California, as a model strategy for the UC system and other entities.

Dr. Siminovitch has also established an undergraduate concentration at UC Davis with classes in lighting technology, design and daylighting. Last year he established the first graduate program in the country focused on Lighting Controls, at UC Davis, funded by the lighting industry.

Dr. Siminovitch is a graduate of Carleton University, Faculty of Engineering. He received his Master's Degrees in both Industrial Design and in Architecture from the University of Illinois, where he held the Plym fellowship and was awarded the Henry Adams Scholastic Gold Medal. He earned his doctorate degree in Architecture and Human Factors Engineering from the University of Michigan.