

**2017 U.S. DEPARTMENT OF ENERGY
CONNECTED LIGHTING SYSTEMS WORKSHOP AGENDA**

June 7–8, 2017 • Hyatt Regency Santa Clara • Santa Clara, CA

WEDNESDAY, JUNE 7

7:00 a.m. *Registration Opens and Continental Breakfast*

MORNING SESSIONS

8:00 a.m. **Welcome and Introduction**

We are in the midst of a lighting revolution — a second lighting revolution — that promises seismic shifts. The ongoing replacement of today’s lighting infrastructure with LED technology is opening the door for connected lighting systems that have the potential not only to further improve lighting quality and energy performance, but also to improve the energy performance of non-lighting systems and enable a wide array of benefits, services, and revenue streams. But are we there yet? What are the potential risks and rewards of connected lighting? And how will this shift fundamentally change lighting — and the lighting industry — forever? This opening session will feature perspectives from lighting manufacturers, distributors, and industry associations working to navigate this change and enable the full potential of connected lighting systems.

JAMES BRODRICK, U.S. DEPARTMENT OF ENERGY

8:30 a.m. **How Are Lighting Manufacturers Changing to Meet the Connected Lighting Revolution?**

LED technology brought the semiconductor industry into the lighting industry, and both industries had to change and learn from each other. The connected lighting revolution is bringing more industries and bigger players to lighting, and is poised to be even more disruptive to all. This talk will highlight the evolution in process for one traditional lighting manufacturer, and offer suggestions for others striving to thrive in a world where lighting systems can do much more than just provide light.

ROBERT HICK, VICE PRESIDENT OF ENGINEERING – LIGHTING AND ENERGY SOLUTIONS, LEVITON

9:15 a.m. **Illuminunity or Illumigeddon 2.0: What Role Will Distributors Have in the Connected Lighting Future?**

Distributors have long played a key role in the lighting market predicated on their day-to-day engagement with the owners and operators of lighting systems. As lighting systems become more sophisticated, and deliver more than lighting services, distributors are (or must be) reconsidering what kind of education and specification guidance they can provide their customers, and what other services they might have to start providing. This talk will peer into the future distributor role, from the perspective of one of its leading players.

CHRISTOPHER BROWN, CHIEF EXECUTIVE OFFICER, WIEDENBACH BROWN

10:00 a.m. *Refreshment Break*

10:30 a.m. **What Are Industry Associations Doing to Provide Guidance and Pave the Way for Change?**
 Voluntary industry test methods and recommended practices underpin the lighting specification market. As LED technology brings spectral tunability and adaptive control to more lighting applications, the need for testing guidance and recommended practices for these and other features is growing quickly. Dynamic lighting capabilities will increasingly be available to end users as a result of the connected lighting revolution — or they might be obstructed by other non-lighting value propositions. This talk will examine the evolving role of industry associations in providing guidance on how to take advantage of connected lighting capabilities and how they can maintain relevance during the massive changes anticipated from connected lighting systems.

MARK LIEN, INDUSTRY RELATIONS MANAGER, ILLUMINATING ENGINEERING SOCIETY OF NORTH AMERICA

11:15 a.m. **How Can We Ensure That Cybersecurity Issues Do Not Limit Connected Lighting Potential?**
 Connecting lighting systems with Enterprise IT systems, the cloud, and automation platforms enables significant energy savings and additional value propositions and, potentially, revenue streams. The integration doesn't stop with tying the systems together. What cybersecurity threats exist from integrating these systems? Are there additional vulnerabilities? How can we limit the impact of any connected lighting system vulnerability on the rest of the network? How do we make connected lighting systems more resilient? This talk will offer suggestions to the various lighting stakeholders on how to manage the inherent risks of connected lighting.

MICHAEL RING, VICE PRESIDENT OF PRODUCT DEVELOPMENT, STAR LAB

Noon

Lunch

AFTERNOON SESSIONS

1:00 p.m. **User Perspectives: Session Introduction**
 MODERATOR/SPEAKER: MICHAEL POPLAWSKI, PACIFIC NORTHWEST NATIONAL LABORATORY

1:15 p.m. **Are Today's Connected Lighting Systems Serving the Needs of End Users?**
 Part 1 of this two-part session will explore whether today's connected lighting systems are solving real problems and delivering new value to some specific industries, including healthcare, banking, and others.

LISA NEWMAN, NURSE MANAGER, OREGON HEALTH & SCIENCE UNIVERSITY
 RON BERNSTEIN, PRESIDENT, RON BERNSTEIN CONSULTING GROUP

2:45 p.m. *Refreshment Break*

3:15 p.m. **Are Today's Connected Lighting Systems Serving the Needs of End Users?**
 Part 2 of this session will feature facilitated discussion between panel participants and the audience — and explore the benefits to be gained when end users in a given industry work together to take a more active role in describing and defining needs that might be served by connected lighting systems.

4:30 p.m. *Networking Reception*

THURSDAY, JUNE 8

7:00 a.m. *Continental Breakfast*

MORNING SESSIONS

8:00 a.m. **Is the Connected Lighting Market Ready to Converge on Common Intra-luminaire Communication Protocols?**

Common intra-luminaire communication protocols might make it easier to integrate connecting or sensor technology into a wider array of lighting fixture types, thereby opening up connected lighting solutions to more applications. This panel will explore the growing need for such convergence, and what currently available technologies might serve that need.

MODERATOR: CLEMENT GAIDON, PACIFIC NORTHWEST NATIONAL LABORATORY
 KEVIN FITZMAURICE, LIGHTING SPECIALIST, GEORGIA POWER
 PETER DUINE, GLOBAL PRODUCT MANAGER, PHILIPS LED ELECTRONICS
 RUSS SHARER, VICE PRESIDENT OF GLOBAL MARKETING AND BUSINESS DEVELOPMENT, FULHAM

9:30 a.m. *Refreshment Break*

10:00 a.m. **Is the Connected Lighting Market Ready to Converge on Common Inter-luminaire Communication Protocols?**

Common inter-luminaire communication protocols might make it easier for connected lighting system specifiers to design solutions for more applications and realize more value propositions. This panel will explore the growing need for such convergence, and what currently available technologies might serve that need.

MODERATOR: CLEMENT GAIDON, PACIFIC NORTHWEST NATIONAL LABORATORY
 PETER DUINE, GLOBAL PRODUCT MANAGER, PHILIPS LED ELECTRONICS
 ERIK DAVIDSON, DIRECTOR OF MARKETING AND PRODUCT MANAGEMENT, CORTET BY CEL
 SZYMON SLUPIK, PRESIDENT AND CHIEF TECHNOLOGY OFFICER, SILVAIR

11:30 a.m. *Lunch*

AFTERNOON SESSIONS

12:30 p.m. **How Can Owners and Operators Specify Connected Lighting Systems That Meet Their Cybersecurity Needs?**

Lighting control systems have historically utilized proprietary communication protocols and been physically isolated from most other end-use hardware, software, and communication networks. Consequently, lighting system owners and operators have not had to think about, let alone develop, strategies for managing cybersecurity risks. This panel will describe existing and emerging strategies, services, and testing regimes for characterizing connected lighting systems for cybersecurity vulnerabilities, and offer best practice suggestions for using such resources to manage risk when specifying systems today and in the future.

MODERATOR: KARSTEN KELLY, PACIFIC NORTHWEST NATIONAL LABORATORY
 AARON TEMIN, PORTFOLIO MANAGER, MITRE CORPORATION
 KEVIN POWELL, DIRECTOR OF EMERGING TECHNOLOGIES, U.S. GENERAL SERVICES
 ADMINISTRATION
 DAN ISAACS, DIRECTOR OF CONNECTED SYSTEMS, XILINX

2:00 p.m. *Refreshment Break*

2:30 p.m. **How Are Connected Lighting Systems Currently Being Integrated with Non-Lighting Systems?**

Many connected lighting value propositions are fundamentally dependent on the ability to exchange data with other non-lighting systems. In lieu of full interoperability, there are many ways to realize such system integration. For example, many connected lighting system providers offer BACnet interfaces to enable integration with existing building systems, or provide application programming interfaces (APIs) to facilitate custom integrations. This panel will review, compare, and contrast some of the approaches being taken in real-world projects today, as well as some of the standards, specifications, and other tools that are being leveraged to enable these approaches.

MODERATOR: MICHAEL POPLAWSKI, PACIFIC NORTHWEST NATIONAL LABORATORY
JON SARGEANT, VICE PRESIDENT OF TECHNOLOGY, INTEGRATED BUILDING SOLUTIONS
DAVID WILTS, ASSOCIATE PRINCIPAL, ARUP

4:00 p.m. **What Is the Present and Future of Energy Data for Connected Lighting Systems?**

The energy performance of lighting devices and systems has long been described and compared by some measure of efficacy, typically at some full or nominal output condition. The increasing number of possible operational states, and related power draws, that are possible in connected lighting systems is rapidly making it difficult to describe the energy performance of such systems in traditional ways. While many available systems provide some form of energy self-reporting capability, the accuracy of reported values, and which system components are responsible for it, is often unclear. This panel will discuss some of the needs for energy data and the techniques by which it is reported and analyzed in various system implementations, and offer some thoughts on what the future for energy data should be, and what might be done to successfully and efficiently enable that future.

MODERATOR: JASON TUENGE, PACIFIC NORTHWEST NATIONAL LABORATORY
GABE ARNOLD, TECHNICAL DIRECTOR, DESIGNLIGHTS CONSORTIUM
AKSHAY YADAV, PRODUCT MANAGER — DIGITAL BUILDING, CISCO

5:30 p.m. *Adjourn*