LIGHTFAIR CONNECT VIRTUAL CONFERENCE OFFERS TOOLS AND EDUCATION FOR DESIGNERS

Courses Offered Online July 21-23, 2020

ATLANTA – July 16, 2020 – Interior designers have an opportunity to explore innovations in lighting design while earning design society CEUs at the new LightFair Connect virtual conference presented online by LightFair July 21-23, 2020. LightFair Connect is a virtual staging of the annual LightFair Conference, which was canceled earlier this year due the COVID-19 crisis. It presents 50 courses in six niche tracks including the design-focused “Design Tools” track.

“The virtual nature of LightFair Connect allows us to present the advanced, highly technical topics of the LightFair conference plus additional course options for all levels and professionals who are interested in learning about best practices in lighting,” said Show Director Dan Darby. “The accessibility of the virtual event allows designers to earn CEUs and expand their knowledge in a new medium while getting a feel for LightFair and exploring how it can be a part of their education and sourcing in the future.”

The Design Tools track covers the lighting tools the industry may use to bring designs to fruition. Topics include: “Designing Visually Accessible Spaces: Low Vision Visual Hazard Prediction,” “Luminous + Acoustic Surfaces - A New Paradigm in Lighting Design,” “Community Friendly Lighting Certification Training,” and “Color and Light: Nature's Guide to Designing Better Interiors.”

Additional topics of interest to designers include “Kitchens and Homes: Updating Best Practices,” “Integrating LED into Landscape Lighting Design,” “Downshifting Lighting Design: Slow Design Principles Within Cost Driven Industries,” “KLEO Art Residences - Light as a Human Right in Affordable Housing,” “Everything Is Acoustic” and “Life-Changing Lighting: A Case Study on Lighting for Children with Autism.” Business education topics include “Careers 101 - Resumés, Interviews, Promotions, Start-ups,” “The Difficult Client: A "How To" Guide for Success” and “A Guide to Intellectual Property: Turn Your Ideas Into Gold.”

All LightFair Connect courses offer CEU / Learning Units / Certification Maintenance Points for the American Institute of Architects (AIA), American Society of Interior Designers (ASID), American Society of Landscape Architects (ASLA), Building Owners and Managers Association International (BOMA), Independent Institute for Property and Facility Management Education (BOMI), International Association of Lighting Designers (IALD), Interior Designers of Canada (IDC), Interior Design Continuing Education Council (IDCEC), International Interior Design Association (IIDA), Institute of Electrical and Electronics Engineers (IEEE) or Illuminating Engineering Society (IES).

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LightFair Connect sessions are presented as 60-minute and 90-minute webinars with time for attendees to interact with the speakers and ask questions after learning from pre-recorded sessions. Cost to attend is $40 for a 90-minute seminar and $30 for a 60-minute seminar with 10% savings on 5-9 courses and 20% savings on 10+ courses. The full conference schedule and registration are available online at LightFair.com/conference. *(Note: The Full schedule follows).*

About LightFair
LightFair, the world's largest annual architectural and commercial lighting trade show and conference, is owned by the International Association of Lighting Designers (IALD), the Illuminating Engineering Society (IES) and International Market Centers. For more information, please visit LIGHTFAIR.COM. Join the #LightFair conversation on Facebook, Twitter @lightfair, Instagram @lightfair_international, LinkedIn and YouTube.

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TUESDAY - July 21, 2020

L20HE1 I Compassionate Lighting for the Future Urban Night
By Francesca Bastianini, Sighte Studio Shaun Fillion, RAB Lighting | New York School of Interior Design Alex Pappas-Kalber, Sighte Studio Jane Slade, Speclines | Anatomy of Night
10:30 AM - 12:00 PM MT
Session Type: 90-minute Seminar
CEU: 1.5
Session Level: All Levels

By 2050, two-thirds of the world population will reside in cities. The life of a city does not stop at dusk, but continues through the night. Lighting is a key component for wayfinding after dark. It establishes an identity for the city skyline that can unite residents and drive tourism. Yet if improperly applied, lighting can blanket the surrounding landscape with light pollution, impacting both natural ecosystems and the well-being of the population. Our panel considers all residents, visitors, flora and fauna who cohabit in the urban night. We will discuss current studies on light's impact on biology, look at lighting as part of a city's identity, and formulate action plans for municipalities to shape a compassionate night experience.

Learning Objectives:

- Designers can engage municipalities directly via public outreach, ordinances and other advocacy strategies.
- The identity of a city skyline does not need to be at odds with a night experience for residents.
- Advances in lighting and controls offer a balanced approach to deliver lighting where and when it is desired, while minimizing waste.
- Light pollution has a measurable impact on the ecosystem of a city.

Target Audience: Lighting Designer / Lighting Specifier, Architect / Interior Designer / Landscape Architect, Engineer, Controls Specialist / Commissioning Agent / Systems Integrator, Manufacturer / Sales Representative, Researcher / Educator / Student, Utility / Energy Services

Company / Energy Consultants / Energy Integrator / Aggregator, Government Official / Municipality

L20AE1 I Data Driven Public Lighting Design
By Naomi Miller, Pacific Northwest National Laboratory Bob Parks, Smart Outdoor Lighting Alliance (SOLA) Ron Gibbons, Virginia Tech Transportation Institute
10:30 AM - 12:00 PM MT
Session Type: 90-minute Seminar
CEU: 1.5
Session Level: All Levels

This panel discussion will examine several key aspects of public lighting to reveal how lighting designers can use available research data to maximize visibility while reducing energy, glare, light trespass, and sky glow. It will focus on residential areas and identify strategies to enhance safety, visual comfort and public satisfaction. This discussion will address best practices for street lighting, sidewalks, intersections and crosswalks. The panel will present trends in lighting design that use current recommended practices to achieve community friendly outdoor lighting that employs controls and fixtures with innovative optical design to put the right amount of lighting, precisely where needed, and adapt it over time.

Learning Objectives:

- Understand available research on visibility and how to apply it to outdoor public lighting design.
- Review lighting technology options that reduce energy and improve visibility.
- Understand how to use current recommended practices to design public lighting to maximize visibility while reducing energy, glare, light trespass, and sky glow.
- Learn the critical elements of successful residential public lighting design and how to develop community lighting standards.

Target Audience: Lighting Designer / Lighting Specifier, Architect / Interior Designer / Landscape Architect, Engineer, Controls Specialist / Commissioning Agent / Systems Integrator, Manufacturer / Sales Representative, Owner / Facility Manager / End User / IT Manager, Researcher / Educator / Student, Contractor / Distributor / Construction Professional, Utility / Energy Services Company / Energy Consultants / Energy Integrator / Aggregator, Government Official / Municipality

L20PP1 I Is Your Company Missing Out on Tax Incentives for Your Lighting Designs?
By Jacob Goldman, R&D Tax Savers
10:30 AM - 12:00 PM MT
Session Type: 90-minute Seminar
CEU: 1.5
Session Level: All Levels

Tax reform created many new tax opportunities for lighting companies. This presentation will explain the newly permanent Research and Development Tax Credit and how it is used by lighting designers, engineers and equipment manufacturers to increase innovation in the lighting industry. We'll discuss how manufacturers developing new or improved lighting technologies use the credit to relay the financial risk of innovation, and how designers that incorporate these new technologies can ease the initial cost of adaptation. We will provide strategies created by

new legislative updates for companies at all stages of the technology chain to use this credit to make their product or process more effective, and case studies which show these successes.

Learning Objectives:

- Highlight new developments in the credit which expand its availability and adoption for lighting designers and equipment manufacturers
- Learn strategic ideas illustrated through case studies showing how lighting manufacturers and designers have used the credit to reduce the costs of innovation
- Summarize a range of current tax incentives that can benefit lighting design firms, manufacturers, or end users who incorporate innovative lighting technologies and design methods
- Define the Research and Development Tax Credit and how it has been historically used in the lighting industry

Target Audience: Lighting Designer / Lighting Specifier, Architect / Interior Designer / Landscape Architect, Engineer, Controls Specialist / Commissioning Agent / Systems Integrator, Manufacturer / Sales Representative, Owner / Facility Manager / End User / IT Manager, Researcher / Educator / Student, Contractor / Distributor / Construction Professional, Utility / Energy Services Company / Energy Consultants / Energy Integrator / Aggregator

L20IP1 I Keeping Up with Change
By Michael Lunn, Cooper Lighting Solutions Mark Lien, Illuminating Engineering Society Paula Ziegenbein, Hartranft Lighting Design Rob Cilic, LEDVANCE
10:30 AM - 12:00 PM MT
Session Type: 90-minute Seminar
CEU: 1.5

Pre-Requisites: Content covers advances over the past year so it requires a basic understanding of topics
Session Level: Intermediate

As the industry changes and developments in new technologies serve to integrate lighting into systems, smart cities, and the infrastructure of buildings as well as the markets dominated by electronics, internet and telecom companies, it is critical that lighting professionals are informed to remain relevant. Our panel from various lighting skill sets will cover important developments since LFI 2019, provide insight and share projections about future implementation of emerging trends and new technologies.

Learning Objectives:

- Attendees will be able to analyze new offerings in LED replacement lamps, integrated LED luminaries, and lighting controls along with emerging trends with respect to systems integration.
- Attendees will be able to summarize the pertinent lighting industry developments since Lightfair 2019.
- Attendees will be able to appraise implications of new standards and codes for lighting systems and identify third party, non-commercial sources of information.
- Attendees will gain insight regarding lighting trends, the future of the industry and how the upcoming changes may impact them.

Target Audience: Lighting Designer / Lighting Specifier, Architect / Interior Designer / Landscape Architect, Engineer, Controls Specialist / Commissioning Agent / Systems Integrator, Manufacturer / Sales Representative, Owner / Facility Manager / End User / IT Manager, Researcher / Educator / Student, Utility / Energy Services Company / Energy Consultants / Energy Integrator / Aggregator, Government Official / Municipality

L20TI1 I Lighting Controls: New Documents & Emergency Lighting Controls
By Steve Terry, ETC Mitch Hefter, Signify Shoshanna Segal, Luminous Flux, LLC Lyn Gomes, DPR Construction
10:30 AM - 12:00 PM MT
Session Type: 90-minute Seminar
CEU: 1.
Session Level: All Levels

This session will include introductions to IES documents recently adopted or in development, plus updates to address Emergency Lighting Control in response to code changes. Navigating these documents, and a clear understanding of emergency lighting control, can assist designers and specifiers to better describe their control intent.

Learning Objectives:

- A Recommended Practice in development on Controls Narratives and Sequence of Operations
- ANSI/IES RP-42 - Recommended Practice for Dimming and Control Method Designations
- ANSI/IES LP-6 - Lighting Control Systems – Properties, Equipment, and Specification
- Updates to the NEC and UL 924 on Emergency Lighting Control

Target Audience: Lighting Designer / Lighting Specifier, Architect / Interior Designer / Landscape Architect, Engineer, Controls Specialist / Commissioning Agent / Systems Integrator, Manufacturer / Sales Representative, Contractor / Distributor / Construction Professional

L20PP2 I Careers 101 - Resumes, Interviews, Promotions, Start-Ups
By Francesca Bastianini, Sighte Studio Lee Brandt, Horton Lees Brogden Nansi Barrie, New York School of Interior Design Brooke Ziolo, Egret Consulting Group
2:00 PM - 3:30 PM MT
Session Type: 90-minute Seminar
CEU: 1.5
Session Level: Foundational

Emerging professionals in the lighting industry are invited to bring professional development questions to a panel of experts. In this engagement-driven session, we'll cover interviewing, formatting portfolios and resumés. We'll also answer questions regarding career path and the negotiation of salaries and promotions. The panel will discuss their experiences as founders of their own companies.

Learning Objectives:

- Learn to structure your resumé and portfolio as tools to tell your career story.
- Determine how to negotiate during the hiring process.
- Become proactive in advancing your career by working towards promotions and networking within the lighting industry.

- Understand the challenges and benefits of starting your own company in the lighting industry.

Target Audience: Lighting Designer / Lighting Specifier, Architect / Interior Designer / Landscape Architect, Engineer, Controls Specialist / Commissioning Agent / Systems Integrator, Manufacturer / Sales Representative, Owner / Facility Manager / End User / IT Manager, Researcher / Educator / Student, Contractor / Distributor / Construction Professional

L20AE2 I Daylight Harvesting: Is it Worth the Hassle (Yet)?
By Craig Bernecker, The Lighting Education Institute Ruth Taylor, Pacific Northwest National Laboratory Dan Blitzer, Aram Ebben, EXP
2:00 PM - 3:30 PM MT
Session Type: 90-minute Seminar
CEU: 1.5
Session Level: Foundational

Two developments are making daylight harvesting a mainstream control strategy today: the requirements of energy codes and electric utility interest in comprehensive connected control systems. But, will all the effort pay off? For the last several years, The Next Generation Lighting Systems evaluation project has been exploring simpler systems of wireless networked controls. This session reports new information on the installation, commissioning, measurement and performance of 13 control systems installed at Parsons, the New School, with particular emphasis on effectiveness of daylight dimming, notably how well do these systems respond to the available daylight.

Learning Objectives:
- Recognize the range of system configurations available from simple networked systems.
- Assimilate lessons learned from multiple installations of simple networked systems.
- Appraise different methods of evaluating daylight dimming for use in their own projects.
- Assess the measured performance of the networked systems and promote improvements in the technology.

Target Audience: Architect / Interior Designer / Landscape Architect, Contractor / Distributor / Construction Professional, Controls Specialist / Commissioning Agent / Systems Integrator, Engineer, Government Official / Municipality, Lighting Designer / Lighting Specifier, Manufacturer / Sales Representative, Other (please specify), e.g., Health and wellness, horticulture/agriculture, or sustainability professionals, Owner / Facility Manager / End User / IT Manager, Researcher / Educator / Student, Utility / Energy Services Company / Energy Consultants / Energy Integrator / Aggregator

L20MM2 | Enhancing the Value of Lighting Controls: Multiple System Integration
By Chris Wolgamott, Northwest Energy Efficiency Alliance Scott Schuetter, Slipstream Jennifer Li, Slipstream Kristopher Evans, Cree Lighting
2:00 PM - 3:30 PM MT
Session Type: 90-minute Seminar
CEU: 1.5
Session Level: All Levels

Lighting controls are often designed to code minimum. When projects go beyond code, they rarely reach the lighting control system’s full potential. We will present data and lessons learned from projects with the Departments of Energy, Department of Defense and the Northwest

Energy Efficiency Alliance. Within these projects, the lighting control system's value was enhanced by employing task tuning and connecting it to the building's HVAC and plug load systems. This increased energy savings and non-energy benefits but came with a variety of challenges. We will overview the energy and non-energy impacts, and ways for project teams to successfully implement these approaches on their projects.

Learning Objectives:

- Understand the basics of integrating lighting with other building systems.
- Identify the types of spaces and systems that are most appropriate for task tuning and integrated lighting controls and have the best economic profile.
- Obtain practical insights, including performance results from monitored data, verified energy savings, occupant feedback and documented best practices.
- Learn how to balance energy savings opportunities with occupant satisfaction to increase savings persistence and avoid system override due to occupant complaints.

Target Audience: Lighting Designer / Lighting Specifier, Engineer, Controls Specialist / Commissioning Agent / Systems Integrator, Manufacturer / Sales Representative, Owner / Facility Manager / End User / IT Manager, Contractor / Distributor / Construction Professional, Utility / Energy Services Company / Energy Consultants / Energy Integrator / Aggregator

L20TI2 I The Digital Age of Lighting Controls
By C. Webster Marsh, HLB Lighting
2:00 PM - 3:30 PM MT
Session Type: 90-minute Seminar
CEU: 1.5
Session Level: All Levels

Lighting Designers today are more likely to be the designer of lighting controls system than they were five years ago. While this is a positive change in the industry, there are many nuances between analogue, digital, TCP/IP, and wireless systems that need to be considered. This course will explain how a lighting control system works, what systems currently exist, how systems may communicate with other systems, how to specify systems piece by piece, and how to document a system design.

Learning Objectives:

- What is a protocol and how is it used in lighting controls systems? What protocols are used right now and how do they work together? What is the difference between digital and analogue?
- How to specify lighting control systems to meet the project's needs. How to review a system design and identify potential fail points. Who should we communicate with during design?
- How do interfaces work when supporting the five pillars? Why transition from protocol to protocol?
- Five pillars of lighting controls: 1. Energy Sources 2. Human Interfaces 3. Conductors 4. Protocols 5. Luminaires

Target Audience: Lighting Designer / Lighting Specifier, Engineer, Controls Specialist / Commissioning Agent / Systems Integrator, Manufacturer / Sales Representative

L20HE2 I The Science of Healthy Lighting: Blue-Rich Days and Blue-Depleted Nights?
By David Blask Ph.D., M.D., Tulane University School of Medicine Kenneth Wright, University of Colorado, Boulder Martin Moore-Ede, CIRCADIAN ZircLight Inc.
2:00 PM - 3:30 PM MT
Session Type: 90-minute Seminar
CEU: 1.5
Session Level: All Levels

The scientific evidence suggesting a causal chain between lighting conditions that cause circadian disruption (excessive blue-rich light at night, insufficient blue daylight exposure) and sleep disorders, obesity, diabetes and cancer risk has been accumulating for nearly 20 years. Three scientific experts who have contributed extensively to this research, discuss the mounting evidence that is leading scientific panels and standards committees to conclude that for light to be healthy it should be dynamic, circadian-sensitive and spectrally engineered.

Learning Objectives:

- To explain how lights can be spectrally engineered and dynamically controlled to optimize circadian entrainment and health and well being
- To understand how the circadian system is especially sensitive to the blue content of light and can be disrupted by modern indoor lighting conditions.
- To explain the relationships between circadian disruption, sleep disorders, performance impairment and multiple diverse disease states, and the strength of evidence supporting causal relationships
- Advise on the design and controls for spectrally-dynamic indoor lighting to optimize health and well being

Target Audience: Lighting Designer / Lighting Specifier, Architect / Interior Designer / Landscape Architect, Engineer, Manufacturer / Sales Representative, Owner / Facility Manager / End User / IT Manager, Researcher / Educator / Student, Contractor / Distributor / Construction Professional, Utility / Energy Services Company / Energy Consultants / Energy Integrator / Aggregator, Government Official / Municipality

WEDNESDAY - July 22, 2020

L20TI3 I Demystifying Tunable-White Lighting
By Gary Meshberg, OSRAM Steve Mesh, Lighting Education & Design
8:30am -9:30am MT
Session Type: 60-minute Session
CEU: 1
Session Level: All Levels

Tunable-white lighting offers an extraordinary new dimension in lighting control, providing occupants and facility operators the ability to tune luminaire color output for a variety of applications, from circadian lighting recipes to in-office signaling to enhancing spaces and merchandise. However, specifying tunable-white lighting remains difficult for many specifiers. In this presentation, industry veterans Gary Meshberg, LC, CLCP, LEED AP, IES and Steve Mesh, LC demystify tunable-white lighting. Attendees will learn numerous applications, technological approaches, control interfacing, protocols, and maintenance.

Learning Objectives:

- Determine the most appropriate tunable-white lighting approach.

- Determine the most appropriate control option.
- Identify opportunities for tunable-white lighting control.
- Effectively specify a tunable-white lighting and control system.

Target Audience: Lighting Designer / Lighting Specifier, Architect / Interior Designer / Landscape Architect, Engineer, Controls Specialist / Commissioning Agent / Systems Integrator, Owner / Facility Manager / End User / IT Manager, Contractor / Distributor / Construction Professional, Utility / Energy Services Company / Energy Consultants / Energy Integrator / Aggregator

L20AE3 I Owning the Code: From the Front Lines of Title 24
By Clifton Stanley Lemon, Clifton Lemon Associates James Benya, Benya Burnett Consultancy
8:30am -9:30am MT
Session Type: 60-minute Session
CEU: 1
Session Level: All Levels

Lighting has delivered dramatic energy reductions over the past 20 years, more than any other technology. We are reaching diminishing returns on effecting further reductions. But based on old technology and theories, California’s lighting codes are have become expensive and difficult to implement. They no longer represent the interests of stakeholders and don't accommodate changing energy infrastructure and the rapid integration of information and data technology into the industry. The only way to achieve this is through a coalition of government, NGOs, manufacturers, contractors, specifiers, and owners. California Title 24 2022 has a unique opportunity to renew its tradition of reasonable and practical energy and environmental regulation.

Learning Objectives:
- Explore models and best practices for successful stakeholder engagement that strengthen the impact and effectiveness of the code making process.
- Review the history of California lighting codes and how they have both responded to and driven the evolution of innovation in design and technology.
- Discuss how lighting code can lead efforts to incentivize technology development in integrated controls, advanced storage, renewables and smart grid while not penalizing simple everyday projects.
- Investigate strategies for evolving California code to be able to adapt to future changes in the energy infrastructure, utility business model, and information technology with cost effect solutions.

Target Audience: Lighting Designer / Lighting Specifier, Architect / Interior Designer / Landscape Architect, Engineer, Controls Specialist / Commissioning Agent / Systems Integrator, Manufacturer / Sales Representative, Owner / Facility Manager / End User / IT Manager, Contractor / Distributor / Construction Professional, Utility / Energy Services Company / Energy Consultants / Energy Integrator / Aggregator, Government Official / Municipality

L20IP3 I PoE for Lighting and the Intelligent Building
By Michael Pearce, Microchip Technology Galit Mendelson, Microchip Technology
8:30am -9:30am MT
Session Type: 60-minute Session
CEU: 1

Session Level: All Levels

The course will introduce the Power over Ethernet (PoE) technology and standards, while focusing on the design and implementation of a PoE system when used as part of a digital ceiling network and network-based LED luminaries. We will present the different powering methods used in digital ceiling, introduce the challenges and benefits of each alternative and point the unique values of PoE digital ceiling solution. The class will cover the technical aspects associated with the design of a PoE system, commissioning, PoE lighting switches and sensors (wired and wireless options).

Learning Objectives:

- Experience and understand the flexibility of using PoE in lighting and intelligent building design.
- Be able to evaluate the needs for designing a PoE based system.
- Gain an understanding of what PoE is, and where and how it fits in lighting and intelligent building.
- Learn how a PoE system can be built.

Target Audience: Lighting Designer / Lighting Specifier, Engineer, Manufacturer / Sales Representative, Researcher / Educator / Student, Contractor / Distributor / Construction Professional, Government Official / Municipality

L20PP3 I The Difficult Client: A "How To" Guide for Success
By Haley Hull-Robson, Bernhard TME
8:30am -9:30am MT
Session Type: 60-minute Session
CEU: 1
Session Level: Foundational

Difficult clients give us great stories to tell after the project is complete. Most of the stories will make us laugh later, but when we are in the heat of the project, it can be very stressful. Typically, these are the projects that teach us the most along our career path about patience, clear communication, client advocacy and the importance of quality design. This presentation will help identify a difficult client. It will teach you how to navigate the typical personality types to ensure effective client communication. We will discuss how to outline the client's needs, wants, budget to ensure the design meets expectations. Learn how to kindly adjust client expectations when they ask for a non-code compliant design.

Learning Objectives:

- Identify the client’s needs, wants, and budget. Carefully plan a design that will fit as many of those options as possible. Communicate any areas that are not feasible clearly to the client.
- Learn how to quickly identify and navigate four typical personality types to ensure effective communication with a client.
- Learn how to navigate difficult conversations when a client asks you to do a design that is non-code compliant. Educating the client and gauging expectations will go far to help meet project goals.
- Identify what defines a difficult client from a lighting design perspective and how to persuade them to come into the “light”.

Target Audience: Lighting Designer / Lighting Specifier, Architect / Interior Designer / Landscape Architect, Engineer, Controls Specialist / Commissioning Agent / Systems Integrator

L20TI4 I Connected Lighting and Security in the Dark
By Mark-David McLaughlin, Aspen Technology Jazib Frahim, Acuity Brands Lighting
10:00am - 11:00am MT
Session Type: 60-minute Session
CEU: 1
Session Level: All Levels

The integration of technology and luminaires has changed the way we live, work and play. With the convergence of networking infrastructures, the digital realm now meets the physical world. At the same time, the security landscape has changed. Malicious actors leverage technology's interconnectedness to penetrate secure environments. Connected lighting can be exploited. This session will review recent legislation related to connected lighting, and several case studies examining how threats are exploited in different IoT solutions. We will also examine a security architecture to address end-to-end security. This session concludes with a discussion of best practices for security and privacy.

Learning Objectives:

- Ensure the audience understands security threats are not theoretical, but through the use of case studies demonstrating real threats.
- Introduce current legislation around securing connected lighting.
- Present a generic model to explain best practices around securing connected lighting.
- Enlighten the audience to the current threat landscape of connected lighting.

Target Audience: Engineer, Controls Specialist / Commissioning Agent / Systems Integrator, Manufacturer / Sales Representative, Owner / Facility Manager / End User / IT Manager, Researcher / Educator / Student, Contractor / Distributor / Construction Professional, Utility / Energy Services Company / Energy Consultants / Energy Integrator / Aggregator, Government Official / Municipality

L20HE4 I Downshifting Lighting Design: Slow Design Principles Within Cost Driven Industries
By Jane Slade, Speclines | Anatomy of Night Dr. Amardeep Dugar, Lighting Research & Design
10:00am - 11:00am MT
Session Type: 60-minute Session
CEU: 1
Session Level: All Levels

The modern pace of industry has created an expedience to design processes that has often culminated in short-lived buildings, spaces, and installations due to a loss of need, purpose, or meaning. Slow Design principles embrace factors that drive design beyond just cost, focusing on context, community, long-term meaning, and the environment. Moreover, the information age has created more tangible research than ever before. How can we adjust our design process to foster longevity of design, increase responsiveness to living and dynamic environments, and bring more research into the process? This seminar will provide a deeper discussion behind the design thinking and strategies that go into our everyday lighting design practices.
Learning Objectives:

- To review Slow Design principles, including emphasis upon lifespan, ecological soundness, and human enjoyment.
- To analyze the current climate of the design industry, and how design thinking and strategy influence the fast pace of building.
- To look at lighting designs that have utilized Slow Design principles, with analysis of the design thinking utilized in the designs from start to finish, including the Living Building Challenge.
- To review best practices and practical implementation of Slow Design principles in the modern design industry.

Target Audience: Lighting Designer / Lighting Specifier, Architect / Interior Designer / Landscape Architect, Owner / Facility Manager / End User / IT Manager, Researcher / Educator / Student, Government Official / Municipality, Other (please specify), e.g., Health and wellness, horticulture/agriculture, or sustainability professionals

L20AE4 I M/P Ratios: What are they good for? How are they calculated?
By Naomi Miller, Pacific Northwest National Laboratory Anne Irvin, PNNL
10:00am - 11:00am MT
Session Type: 60-minute Session
CEU: 1
Pre-Requisites: Understand SPDs and V-lambda
Session Level: Intermediate

Melanopic-to-Photopic ratios are a way to evaluate a light source SPD for blue-cyan content, and this can be useful for interior circadian health applications, and perhaps for environmentally-sensitive outdoor lighting as well. But, how are the calculated? What do the numbers look like, and what thresholds are appropriate? How do these relate to Equivalent Melanopic Lux and similar metrics?

Learning Objectives:
- Understand that there are four separate ways to calculate M/P ratios, and the resulting values will be different.
- Be able to articulate why two SPDs with identical CCTs but very different profiles will produce widely different M/P ratios.
- Know how to use a table of M/P values for a wide range of light sources, and how to calculate the ratios yourselves for specific light sources.
- Hear the role of the ipRGC photoreceptor and how it relates to circadian metrics.

Target Audience: Lighting Designer / Lighting Specifier, Architect / Interior Designer / Landscape Architect, Engineer, Manufacturer / Sales Representative, Owner / Facility Manager / End User / IT Manager, Researcher / Educator / Student, Utility / Energy Services Company / Energy Consultants / Energy Integrator / Aggregator

L20PP4 I Oops! Was THAT in the Energy Code?!
By Deborah Steimel-Clair, Primera Engineers
10:00am - 11:00am MT
Session Type: 60-minute Session
CEU: 1
Session Level: Intermediate

Once again, energy codes are changing, and with the changes come some sneaky additions. The new 2018 International Energy Conservation Code will bring new considerations aimed at protecting the environment and reducing energy consumption. For example, did you know that controlled outlets are now required? But which compliance path does this reference? Or did you know that skylights are now also required? If you answered incorrectly or did not know the answer to the examples posed, then this session is for you! Highlights of what has changed in the requirements since the preceding 2015 edition will be featured, as well as how these changes apply to lighting systems. Join us to improve your code-savvy on future projects.

Learning Objectives:

- Understand the recent changes in energy codes as they apply to lighting controls and architectural systems.
- Learn about recent energy code adoption and which codes apply to which states.
- Understand how the two major codes have varying impacts, and how one or the other could be a better choice.
- Learn about some of the sneaky code requirements that can have a big impact to your project if not understood early on.

Target Audience: Lighting Designer / Lighting Specifier, Architect / Interior Designer / Landscape Architect, Controls Specialist / Commissioning Agent / Systems Integrator

L20PP5 I Beyond Lighting & Semantics
By Alp Durmus, The Pennsylvania State University
11:30 am – 12:30 pm MT
Session Type: 60-minute Session
CEU: 1
Session Level: All Levels

Humans communicate through language for expressive, informative, cognitive, and phatic purposes. Accurately identifying objects and events in the world we live is the first step towards solving problems. An accurate and precise definition of a phenomenon enables mutual agreement, while vague definitions may hinder progress. This course will discuss some of the widely used, yet vague or poorly-defined, lighting terms. Examples from visual and color perception studies will highlight how research can help clarify these definitions. The discussion will also include the challenges of reaching stylistic and contextual clarity, and cognitive biases that may distort our thinking.

Learning Objectives:

- Attendees will be informed about the research studies that investigate visual and color perception phenomena that are the basis of some of the lighting terminologies.
- Attendees will learn some of the cognitive biases that can impact our thinking in negative and positive ways.
- Attendees will be encouraged to think critically about buzz words, umbrella terms, and vague terminology.
- Attendees will be able to identify inaccurately used lighting terminologies via specific examples from research.

Target Audience: Lighting Designer / Lighting Specifier, Architect / Interior Designer / Landscape Architect, Engineer, Manufacturer / Sales Representative, Researcher / Educator /

Student, Contractor / Distributor / Construction Professional, Utility / Energy Services Company / Energy Consultants / Energy Integrator / Aggregator, Government Official / Municipality

L20MM5 I Circadian Lighting: Science & Application in Healthcare & Behavioral Health
By Robert Soler, BIOS Lighting Lisa Bartlett, Davis Partnership Architects
11:30 am – 12:30 pm MT
Session Type: 60-minute Session
CEU: 1
Session Level: Intermediate

Evidence demonstrating the impact of light on human biological and behavioral health is well-documented. Research shows that certain populations, including behavioral health patients, the elderly, and shift workers are particularly susceptible to circadian dysregulation. What lighting strategies are available to support improved patient and staff outcomes and possibly lessen the negative impacts of a poorly entrained circadian system? In the first half of this dynamic presentation, a researcher will address established and emerging science behind circadian lighting. In the second half, a lighting architect will share strategies for design and implementation of an effective circadian lighting system through review of three case studies.

Learning Objectives:

- Explore the basics of the circadian system and unique challenges of circadian lighting in heathcare environments, for behavioral health, and for dementia and senior living
- Understand impacts of circadian dysfunction on physical and behavioral health for patients, staff and caregivers
- Explore potential benefits of circadian lighting for increasingly challenging demands in healthcare and behavioral health environments, including the demands of 24-hour staffing and shift work
- Learn circadian lighting design and implementation strategies for healthcare, behavioral health, and senior living environments

Target Audience: Lighting Designer / Lighting Specifier, Architect / Interior Designer / Landscape Architect, Engineer, Manufacturer / Sales Representative, Owner / Facility Manager / End User / IT Manager, Researcher / Educator / Student, Other (please specify), e.g., Health and wellness, horticulture/agriculture, or sustainability professionals

L20AE5 I Integrating LED into Landscape Lighting Design
By Janet Lennox Moyer, Learn Night Light
11:30 am – 12:30 pm MT
Session Type: 60-minute Session
CEU: 1
Session Level: Intermediate

Join Janet Lennox Moyer as she shares lessons learned from over 40 years working in landscape lighting design. She shares how she visualizes an outdoor space to create a night environment; from composition to key factors in lighting plant materials. The way LEDs produce light is significantly different than traditional light sources, meaning the way we use them differs. With day and night and halogen to LED comparisons, she will share how the LED technology radically changed landscape lighting. Jan will discuss the new opportunities LEDs offer to create successful solutions and the complications LEDs introduce. Jan will touch on the new landscape lighting design training platform Learn•Night•Light that Garden Light LED released fall 2019

Learning Objectives:

- Attendees will be able to recognize the issues that LED technology can introduce into landscape lighting projects.
- Attendees will be able to apply best practices for using LED lighting as an integral part of their landscaping project.
- Attendees will be able to describe the differences in light production between halogen and LED light sources and their effects on landscape lighting compositions.
- Attendees will be able to explain the benefits LED technology provides in landscape lighting applications.

Target Audience: Lighting Designer / Lighting Specifier, Architect / Interior Designer / Landscape Architect, Engineer, Owner / Facility Manager / End User / IT Manager, Researcher / Educator / Student, Contractor / Distributor / Construction Professional

L20IP5 I New Media Technologies and the Future of Architainment Design
By Robert Pope, Digital Ambiance
11:30 am – 12:30 pm MT
Session Type: 60-minute Session
CEU: 1
Session Level: All Levels

Course Description: technology, pushing the boundaries of what is possible. A new industry is emerging that combines innovative lighting and fabrication techniques with new types technologies traditionally used on the stage. The result is architectural centerpieces and interactive "light-art" installations that are being integrated into public and private spaces around the world. This presentation will discuss methods, technology, and challenges that are commonly faced in the execution of these innovative projects.

Learning Objectives:

- Review the common challenges associated with creating unique installations. Review how to market these types of projects and who's buying them.
- Discuss the classes of technologies commonly used to create these installations. Review how different technologies can be combined to create innovative works of art.
- Explore the current status of architainment feature installations and review prominent examples. How can people find more inspiration and who can they contact for help with their own projects?
- Demonstrate the exploding market for creative uses of new lighting technologies, and broaden perceptions of how these technologies are used, and how creative designers are re-purposing techniques.

Target Audience: Lighting Designer / Lighting Specifier, Architect / Interior Designer / Landscape Architect, Engineer, Owner / Facility Manager / End User / IT Manager, Researcher / Educator / Student

L20HE5 I Skin Deep: Peeling back the LIGHT/SKIN Connection
By Deborah Burnett, Design Services Inc/BENYABURNETT Consultancy
11:30 am – 12:30 pm MT
Session Type: 60-minute Session
CEU: 1
Session Level: All Levels

Skin: The largest organ in the human body but yet we often fail to understand the connection between skin extra-ocular reception and ambient light, and the direct link to overall health, immune response, genetic expression and circadian entrainment.

Learning Objectives:

- Discuss ambient light as absorbed energy resulting in skin biologic response purposely destroying genetic material for creating a hormone involved in keeping the SCN amplitude robust
- Learn how skin and the integumentary system, is directly linked to circadian entrainment and overall health; a critical consideration when specifying LED lighting intended for occupant comfort
- Discover UV, NIR, and IR as a potent biologic stimulant which penetrates human skin and if specified without considering microbiome impacts what harm is at stake ?
- Uncover the differences between phototoxic and photo allergic skin response and why lighting professionals need to know the difference and temper the potential to inflict unintentional harm

Target Audience: Lighting Designer / Lighting Specifier, Architect / Interior Designer / Landscape Architect, Engineer, Manufacturer / Sales Representative, Owner / Facility Manager / End User / IT Manager, Researcher / Educator / Student, Government Official / Municipality

L20TI5 I The Migration of Lighting Standards From Component Based to Systems Based
By Howard Wolfman, Lumispec Consulting Ernesto Mendoza, Signify
11:30 am – 12:30 pm MT
Session Type: 60-minute Session
CEU: 1
Pre-Requisites: Familiarity with lighting standards
Session Level: Intermediate

Historically, there were separate performance standards for lighting components, sensors, etc.; now lighting systems have emerged that require system standards. Without new lighting systems standards that focus on the versatility of LEDs and fill the need for system compatibility and interchangeability, lighting will revert back to the Wild, Wild West. This session will introduce and explain the new and developing lighting systems standards including ANSI C137-Lighting Systems Standards, DLC Networked Lighting Standard update, and the IEC lighting systems standards.

Learning Objectives:

- Identify how to utilize new lighting systems standards to create smoother designs and system integration with reduction in customer complaints, as well as maximizing lighting efficiency
- Understand the new lighting systems standards that have been developed or are in their development phase
- Learn about the evolution of migrating lighting standards from component-based standards to system-based standards
- Learn about user satisfaction, energy efficient benefits and the need for migration of lighting standards from component-based standards to system based standards

Target Audience: Lighting Designer / Lighting Specifier, Architect / Interior Designer / Landscape Architect, Engineer, Controls Specialist / Commissioning Agent / Systems Integrator, Manufacturer / Sales Representative, Owner / Facility Manager / End User / IT Manager, Contractor / Distributor / Construction Professional, Utility / Energy Services Company / Energy Consultants / Energy Integrator / Aggregator, Government Official / Municipality

L20PP6 I A Guide To Intellectual Property: Turn Your Ideas Into Gold
By William Honaker, Dickinson Wright PLLC
2:00pm - 3:00pm MT
Session Type: 60-minute Session
CEU: 1
Session Level: All Levels

A program designed around the business owner's guide to intellectual property, you'll learn a wide range of protection concepts and methods. You will learn the 5 Pillars of IP Value and how to protect your ideas, innovations, and brand from theft. How to avoid being sued (or worse yet, put out of business), how to create an inventory of your most valuable IP assets, and a simple system to recognize, prioritize and maximize business value will be covered in this fast-paced session.

Learning Objectives:

- Identify ways to avoid being sued, or worse yet, put out of business.
- Learn to create an inventory of your most valuable IP assets.
- Learn to protect your ideas, innovations, and brand from theft.
- Familiarize your company with a simple system to recognize, prioritize and maximize business value.

Target Audience: Lighting Designer / Lighting Specifier, Engineer, Manufacturer / Sales Representative, Owner / Facility Manager / End User / IT Manager, Researcher / Educator / Student, Utility / Energy Services Company / Energy Consultants / Energy Integrator / Aggregator

L20AE6 I Bridging the Gap: Research to Design
By Rachel Fitzgerald, Stantec Katherine Stekr, HLB Lighting Design Andrea Wilkerson, Pacific Northwest National Laboratory
2:00pm - 3:00pm MT
Session Type: 60-minute Session
CEU: 1
Session Level: Intermediate

Most of the metrics we use as lighting designers haven't evolved much over recent decades. Why is that? We know that researchers are hard-at-work evaluating data related to human responses to light. This panel of researchers and lighting designers will engage in a discussion about the gaps that inevitably occur between research and the reality of applying it in application. They will explore several research topics with detailed case studies, evaluating what research data tells us and discussing why and what type of metrics are most needed for designers. Attendees will be able to navigate the complex world of emerging lighting research, knowing where to look and what questions to ask to apply research to the everyday design process.

Learning Objectives:

- Attendees will better understand what drives research topics and why there is a lag in advancing metrics for designers.
- Attendees will understand why research struggles to answer design questions.
- Attendees will learn about emerging metrics, software, and meters and be reminded about older design issues that still plague our industry.
- Attendees will be able to identify ways to critically consider new research they learn about and how it's relevant to their design process.

Target Audience: Lighting Designer / Lighting Specifier, Architect / Interior Designer / Landscape Architect, Engineer, Controls Specialist / Commissioning Agent / Systems Integrator, Manufacturer / Sales Representative, Owner / Facility Manager / End User / IT Manager, Researcher / Educator / Student, Contractor / Distributor / Construction Professional, Utility / Energy Services Company / Energy Consultants / Energy Integrator / Aggregator, Government Official / Municipality

L20DT6 I Designing Visually Accessible Spaces: Low Vision Visual Hazard Prediction
By Rob Shakespeare, Indiana University
2:00pm - 3:00pm MT
Session Type: 60-minute Session
CEU: 1
Session Level: All Levels

DeVAS has created a set of prototype software tools that predict visibility for mild through severely degraded vision. The graphical tools identify, mark and score potential visual hazards within a user selected region in the architect's model. Using several illustrated case studies; the significance of this work will be presented in the context of the designer's workflow, enabling the design of safer environments for the mobility of low vision individuals. Built upon collaborative research at University of Minnesota's Low Vision Lab, University of Utah Computer and Cognitive Science, and Indiana University Lighting Design, this work was supported by the National Eye Institute (NIH#5-RO1EY017835-10).

Learning Objectives:

- The impact of Analyzing visibility of potential hazards at different acuities
- Identify the need for designs appropriate for the low vision community
- Describe how luminance based design differs from current practice
- Compare subjective vs analytical visibility prediction tools

Target Audience: Lighting Designer / Lighting Specifier, Architect / Interior Designer / Landscape Architect, Engineer, Owner / Facility Manager / End User / IT Manager, Researcher / Educator / Student

L20IP6 I How 3D Printing will Fuel Lighting's Next Big Transformation
By Gary Trott, Interplay Lighting LLC Mara Hitner, Matterhackers
2:00pm - 3:00pm MT
Session Type: 60-minute Session
CEU: 1
Session Level: All Levels

Most consider 3D printing to be a quick way to prototype. However, innovation with additive manufacturing technology has made it viable for luminaire production today. This releases luminaire manufacturers and lighting designers from the traditional constraints of luminaire development to create products that have never been possible before. Lights with unique forms, lighting textures, and lighting distributions can be launched more quickly than with traditional technology. This session will explore the multiple additive manufacturing technologies and the challenges and opportunities in applying these to luminaire development and manufacturing.

Learning Objectives:

- Learn about the additive manufacturing technologies that can be applied to lighting production today
- Learn how additive manufacturing can make customization of luminaires possible.
- Understand how other industries are using additive manufacturing today
- Learn how the technology can relieve constraints of luminaire design

Target Audience: Lighting Designer / Lighting Specifier, Architect / Interior Designer / Landscape Architect, Engineer, Manufacturer / Sales Representative, Owner / Facility Manager / End User / IT Manager, Researcher / Educator / Student, Contractor / Distributor / Construction Professional

L20MM6 I Lighting Controls Systems Integrators: Why and When to Specify Them
By C. Webster Marsh, HLB Lighting Adam Levine, HLB Lighting Design
2:00pm - 3:00pm MT
Session Type: 60-minute Session
CEU: 1
Session Level: Intermediate

A controls integrator supports the project and the electrical contractor and may even be on the project without the knowledge of the designer. Contractors retain integrators when controls systems are connected to multiple trades or provide complex multi-media experiences, but the everyday application of an integrator is becoming more common with the increased use of digital controls protocols and wireless devices. This course will provide an elevated level of understanding as to why and when to specify an integrator. It will also cover best practices when working with an integrator during the project.

Learning Objectives:

- How integrators are commonly specified in a design/bid/build project and common tips for good specification. Where in the specification and budget does the integrator belong?
- What exactly is a Controls Integrator and what they do for the design team. We will present historical beginnings of adding integration services into an architectural project and why it has changed.
- How to work with an integrator during construction administration as a part of the construction team. We will present lessons learned regarding integration during realized projects.
- When adding an integrator to a project, designers find resistance and skepticism from clients and owners. We will provide topics to discuss with clients and owners when adding an integrator.

Target Audience: Lighting Designer / Lighting Specifier, Architect / Interior Designer / Landscape Architect, Engineer, Controls Specialist / Commissioning Agent / Systems Integrator

L20HE6 I On the Waterfront: Light for the People
By Charles Stone, Fisher Marantz Stone, Inc.
2:00pm - 3:00pm MT
Session Type: 60-minute Session
CEU: 1

In cities around the world, active, accessible, and beautiful waterfronts provide a most delightful amenity for the people. Architects, city planners, and private developers, in collaboration with lighting designers, have tremendous opportunity to create and enhance light and life on the waterfront. Particular lighting opportunities range from didactic historical exposition to illuminated works of art. When light on the waterfront is carefully curated, iconic indelible visual images can be created to celebrate light for the people.

Learning Objectives:

- Utilize essential lighting vocabulary in order to properly describe the challenges and solutions on the waterfront.
- Identify opportunities and challenges in the public realm that reside along a waterfront District.
- Evaluate basic technical and aesthetic criteria necessary for a successful master plan approach to waterfront lighting design.
- Describe key principles of lighting buildings, surfaces, and objects adjacent to the water, including consideration of luminance contrast ratios and water reflection effects.

Target Audience: Lighting Designer / Lighting Specifier, Architect / Interior Designer / Landscape Architect, Engineer

L20PP7 I Cities and Specifiers: Creating Strong Partnerships
By Gordon Feller, Meeting of the Minds Chris Davis, Technicity Consulting LLC
3:30pm - 4:30pm MT
Session Type: 60-minute Session
CEU: 1
Session Level: Intermediate

Smart lighting and smart city projects increasingly rely on a web of partnerships for short-term and long-term success. Specifiers, engineers, and consultants are critical players in this web and can win more business and have greater project success if they are able to pro-actively structure and manage the relationships with multiple municipal departments, private organizations, and multiple technology vendors. We'll analyze several projects to see how you can orchestrate these relationships to lead cities to smart city success.

Learning Objectives:

- Discover what elements have led to successful partnerships and project results and how specifiers/engineers/consultants can emphasize these elements to increase project success.
- Learn ways that cities have undertaken the decision process to prioritize their smart city initiatives, assemble partnership teams, and execute project plans.
- Explore how specifiers/engineers/consultants can build a long-term relationship with a city that doesn't stop at the plan or the deployment, but increases in value over time.

- Review case studies of private and public funding models for smart city and smart lighting initiatives to understand how you can advise cities on how to plan and execute these improvement projects.

Target Audience: Lighting Designer / Lighting Specifier, Engineer, Controls Specialist / Commissioning Agent / Systems Integrator, Researcher / Educator / Student

L20TI7 I Cities embracing Smart Street Lighting and Smart CMS
By Adam Chaffey, Liveable Cities
3:30pm - 4:30pm MT
Session Type: 60-minute Session
CEU: 1
Session Level: All Levels

Cities want to invest in open systems with a high level of interoperability between software and network/hardware, to avoid being locked into proprietary systems. By requesting TALQ compliance in their tenders, cities and authorities can focus on user friendliness, richness of features and price when selecting any kind of smart city application (from waste over parking, traffic to lighting management). The session aims at educating cities and solution providers about the benefits of standards and the best way to their smooth implementation.

Learning Objectives:
- Informing cities and solution providers about the technical specifications of an open software protocol, including real time control, data collection and configuration
- Showcasing existing TALQ implementations and reference projects
- Evaluate requirements of different smart city and smart street lighting applications
- Summarizing the benefits of open, interoperable systems enabled by TALQ

Target Audience: Lighting Designer / Lighting Specifier, Engineer, Controls Specialist / Commissioning Agent / Systems Integrator, Manufacturer / Sales Representative, Owner / Facility Manager / End User / IT Manager, Researcher / Educator / Student, Utility / Energy Services Company / Energy Consultants / Energy Integrator / Aggregator, Government Official / Municipality

L20HE7 I KLEO Art Residences - Light as a Human Right in Affordable Housing
By Juan Gabriel Moreno, JGMA
3:30pm - 4:30pm MT
Session Type: 60-minute Session
CEU: 1
Session Level: All Levels

The KLEO Art Residences project intentionally challenges affordable housing typologies by emphasizing dignity in the way that people live. The design celebrates the use of light as a means of improving the quality of life and reinforcing this basic human right for the residents. The project opened in August 2019 and has already become a beacon of hope for the Washington Park community in Chicago. This social housing project represents many ‘firsts’ for Chicago and sets a new standard for Chicago and the nation, by making light (both natural and artificial) a mandatory requirement and not a value engineering alternative.

Learning Objectives:

- Explore how light became the primary need for the residents and how engagement with local artists led to an affordable housing project becoming a study of light.
- Explain how the KLEO project is helping transform a community and creating a new standard in Chicago where providing light to human beings is a the rule and no longer an exception.
- Summarize the history of the KLEO Art Residences Project and how the innovative use of light in affordable housing represents the first of its kind for the city of Chicago.
- Expand on the concept behind the KLEO project and the use of natural and artificial illumination as the inspiration behind the entire development.

Target Audience: Lighting Designer / Lighting Specifier, Architect / Interior Designer / Landscape Architect, Engineer, Manufacturer / Sales Representative, Owner / Facility Manager / End User / IT Manager, Researcher / Educator / Student, Contractor / Distributor / Construction Professional, Government Official / Municipality

L20DT7 I Luminous + Acoustic Surfaces - A New Paradigm in Lighting Design
By Adam Carangi, Diversified Josue Citron, Clipso Productions
3:30pm - 4:30pm MT
Session Type: 60-minute Session
CEU: 1
Session Level: All Levels

Lighting and sound have a relationship rooted in synchronicity. These ethereal elements seem to mystify while at times defy sensibilities. Yet, they can be calculated in part by simple metrics with similar terms like: angles of incidence, absorption, transparency & intensity. Meanwhile, today's open architecture, denser floor plans, harder material selections and use of glass require solutions that can provide sound control in the same places where quality illumination must be carefully calculated. Naturally architects must address both these elements in building design. This session will look at how wall and ceiling systems can be designed in a cohesive manner, creating surfaces that are both acoustic and luminous in nature all at once.

Learning Objectives:

- Study the negative impacts of excessive noise in the built environment and how sound can be controlled with acoustic surfaces for better design results.
- Learn about the science of lighting as it relates to incorporating luminous surfaces, including: choosing the light source, translucency, install methods, and designing with luminance from a surface.
- Discover best practices in integrating multiple building systems while maximizing the design capabilities of each element, while ensuring the health safety and welfare caused by ineffective planning.
- Better understand terminology of acoustics and lighting, including: reverberation; Noise Reduction Coefficient (NRC); acoustic vs. lighting transparency; reflection; luminance contrast and others.

Target Audience: Lighting Designer / Lighting Specifier, Architect / Interior Designer / Landscape Architect, Engineer, Controls Specialist / Commissioning Agent / Systems Integrator

L20MM7 I Photometry 101 a Primer
By Matthew Hartley, Matt Hartley Lighting LLC.
3:30pm - 4:30pm MT
Session Type: 60-minute Session
CEU: 1
Session Level: All Levels

This presentation takes a look at the basics of photometry including: The different types of photometry, how it is created, how to view files and plots, and more importantly how to apply the proper distribution for specific scenarios. Indoor and outdoor lighting will be covered, along with discussions about TM-15 and the IES/IDA Model Lighting Ordinance. This is an entry level course useful to those who are new to the industry or need more information on how to apply photometry in common applications.

Learning Objectives:

- Understand how a photometric report is created.
- How to read a photometric report and understand the difference in report types.
- How to interpret the graphs showing distributions and how to see the desired distribution graphically.
- Know the pitfalls of overdesigned fixtures using newer technologies.

Target Audience: Lighting Designer / Lighting Specifier, Architect / Interior Designer / Landscape Architect, Engineer, Controls Specialist / Commissioning Agent / Systems Integrator, Manufacturer / Sales Representative, Contractor / Distributor / Construction Professional, Utility / Energy Services Company / Energy Consultants / Energy Integrator / Aggregator, Government Official / Municipality

L20DT8 I Community Friendly Lighting Certification Training
By Bob Parks, Smart Outdoor Lighting Alliance (SOLA)
5:00pm - 6:00pm MT
Session Type: 60-minute Session
CEU: 1
Session Level: All Levels

The SOLA Community Friendly Lighting Training and Certification program was created to help designers, installers, and municipal staff learn design principles and best practices of quality outdoor lighting design. This session will prepare attendees to pass the written SOLA Community Friendly Lighting Certification (CFLC) examination that will be offered at the end of the program. The CFLC helps cities and employers select individuals that understand the tenets of Community Friendly Lighting in the design and implementation of successful public LED lighting installations. The CFLC exam consists of 100 questions and tests the knowledge required to successfully design, plan and install a LED public lighting project.

Learning Objectives:

- Understand the value of public outreach and engagement in the public lighting design process. This includes town hall style meetings, mockups, pilot tests, walking tours and surveys.
- Learn to evaluate exterior lighting fixtures and controls that will meet the requirements of the Community Friendly Lighting program.

- Understand the applicable lighting standards and recommended practices that guide the design of outdoor lighting to ensure visibility and safety.
- To learn the criteria of Community Friendly Outdoor Lighting design which includes reduced glare, light trespass and skyglow and ensuring superior visual comfort.

Target Audience: Lighting Designer / Lighting Specifier, Architect / Interior Designer / Landscape Architect, Engineer, Controls Specialist / Commissioning Agent / Systems Integrator, Manufacturer / Sales Representative, Owner / Facility Manager / End User / IT Manager, Researcher / Educator / Student, Contractor / Distributor / Construction Professional, Utility / Energy Services Company / Energy Consultants / Energy Integrator / Aggregator, Government Official / Municipality

L20HE8 I Defining Dark Sky: A discussion of pro-dark metrics and practices
By Kate S. Hickcox, Pacific Northwest National Laboratory
5:00pm - 6:00pm MT
Session Type: 60-minute Session
CEU: 1
Session Level: All Levels

The term “dark sky” is used broadly by many organizations, however, because it lacks a formal definition it takes on a different meaning with each use. The term originated to address concerns of astronomy and sky glow, but it has been used to address issues including sensitivity to the environment, health of nocturnal animals, energy efficiency and more. This presentation reviews “dark sky” metrics and practices, as well as the design and implementation of outdoor lighting that affects sky glow, energy use, human concerns, wildlife and ecology. Attendees will gain a clear understanding of the metrics and terminology of lighting for nighttime concerns, as well as a framework for understanding the key elements of pro-dark nighttime design.

Learning Objectives:
- Learn about the metrics that apply to pro-dark design at the product and project design level
- Gain a clear understanding of the ambiguous and undefined term “dark sky”
- Understand the benefits for considering darkness in the design process and how this affects humans, wildlife, energy use, and sky glow.
- Learn about design practices that support pro-dark design at the product and project design level

Target Audience: Lighting Designer / Lighting Specifier, Architect / Interior Designer / Landscape Architect, Engineer, Controls Specialist / Commissioning Agent / Systems Integrator, Manufacturer / Sales Representative, Owner / Facility Manager / End User / IT Manager, Researcher / Educator / Student, Utility / Energy Services Company / Energy Consultants / Energy Integrator / Aggregator, Government Official / Municipality

L20AE8 I Kitchens and Homes: Updating Best Practices
By Doug Walter, Doug Walter Architects
5:00pm - 6:00pm MT
Session Type: 60-minute Session
CEU: 1
Pre-Requisites: Basic familiarity with lighting and kitchens

We spend most of our time in our homes and yet the design techniques and practices have remained relatively the same for decades. LEDs and new control options have revolutionized the field and opened up numerous design opportunities. This session pulls from practical design experience and emphasizes kitchen design which tends to be the most critical luminous environment in the home.

Learning Objectives:

- Attendees will see how the choice of the right luminere and lamp can provide drastic improvements to efficiency and performance.
- Attendees will look at residential lighting standard practices critically.
- Attendees will learn why to emphasize daylight in tandem with electric lighting sources and how to mix both types for successful designs.
- Attendees will understand why each end-user might have different needs, and how to provide them the control and choice they require.

Target Audience: Lighting Designer / Lighting Specifier, Architect / Interior Designer / Landscape Architect, Controls Specialist / Commissioning Agent / Systems Integrator, Contractor / Distributor / Construction Professional

L20PP8 I Running Defense: Your Spec against Value Engineering
By JP Bedell, SDA Lighting
5:00pm - 6:00pm MT
Session Type: 60-minute Session
CEU: 1
Session Level: All Levels

Value engineering is happening earlier in the design process and seems almost inevitable. In order to get the intended design, Lighting Designers and architects have to get more comfortable talking about pricing and defending their specifications. Like it or not, price is now part of the spec. This 60-minute session will cover how to craft a specification that is defensible to contractors, owners and the rest of the design team, so when the dreaded words “Value Engineering” are uttered you’re ready.

Learning Objectives:

- Learn to write a defensible specification.
- Explore the roles of the specification rep, the destination rep, the lighting distributor, electrical contractor and general contractor.
- Demonstrate an understanding of how the pricing process works.
- Learn how to educate the contractor about your intent in the spirit of holding your spec.

Target Audience: Lighting Designer / Lighting Specifier, Architect / Interior Designer / Landscape Architect, Engineer, Controls Specialist / Commissioning Agent / Systems Integrator

L20IP8 I Standardization of the Lighting IoT Platform
By Martin Mercier, Signify
5:00pm - 6:00pm MT
Session Type: 60-minute Session
CEU: 1
Pre-Requisites: Lighting control, connected lighting understanding
Session Level: Intermediate

Our industry is involved in beyond-lighting IoT initiatives to support smart city and smart building projects. Without an open ecosystem within our industry, we will miss this opportunity to add value to lighting "controls" while other industries will find solutions. We have an opportunity with our positioning in cities and buildings to deploy connectivity and sensors to collect advanced data, though, without a true open and standardized platform we will slow down penetration and lose a competitive edge. This session will present an intra-luminaire open platform supported by a new certification program D4i open to all manufacturers, based on multiple mechanical and electrical standards.

Learning Objectives:

- What are the IoT in lighting enablers: Partnership, Standard and security.
- How does the IoT open platform works - Protocols, electrical & mechanical interfaces. - Lighting cont
- What is IoT + IoT specific to lighting industry? Why we need IoT in our industry (specific to indoor and outdoor) Why sensors is key for it (internet & data)
- How partnership lead to standards, the standards that support (Zhaga,DiiA, ANSI C137, C136) and finally how it is supported and controlled with a certification program for such lighting IoT platform

Target Audience: Lighting Designer / Lighting Specifier, Architect / Interior Designer / Landscape Architect, Engineer, Controls Specialist / Commissioning Agent / Systems Integrator, Manufacturer / Sales Representative, Owner / Facility Manager / End User / IT Manager, Researcher / Educator / Student, Contractor / Distributor / Construction Professional, Utility / Energy Services Company / Energy Consultants / Energy Integrator / Aggregator, Government Official / Municipality

L20TI8 I Understanding the Smart Campus
By Gary Meshberg, OSRAM Brian Dykstra, University of Nebraska Medical Center Brian Haines, FM Systems
5:00pm - 6:00pm MT
Session Type: 60-minute Session
CEU: 1
Session Level: Intermediate

Networked lighting control systems offer amazing potential not only to integrate building control but also control of entire campuses, notably college and university campuses. At a single workstation, facility operators can fine-tune, measure, monitor, and maintain their lighting system while generating data that can be used to improve operational efficiency along with the occupant experience and safety. In this session we explore how networked lighting control systems can form the foundation of a modest Internet of Things solution for college and university and campuses. This session also provides case studies as examples of different approaches based on different needs.

Learning Objectives:

- Select a level of networked lighting control system appropriate for various campus needs.
- Apply networked lighting control to generate data that can be used to enhance operational efficiencies and the occupant experience.
- Apply networked lighting control to monitor and maintain the lighting system for safety.
- Apply networked lighting control to optimize energy cost savings.

Target Audience: Lighting Designer / Lighting Specifier, Architect / Interior Designer / Landscape Architect, Engineer, Controls Specialist / Commissioning Agent / Systems Integrator, Owner / Facility Manager / End User / IT Manager, Contractor / Distributor / Construction Professional ,Government Official / Municipality

THURSDAY - July 23, 2020

L20HE9 I Everything Is Acoustic
By Zackery Belanger, Arcgeometer
8:30am - 10:00am MT
Session Type: 90-minute Seminar
CEU: 1.5
Session Level: All Levels

This course will provide an overview of room acoustics in the context of lighting, with an emphasis on the challenges that arise from combining the two. It begins with an introduction to the history of acoustics and the mystery surrounding the birth of Riverbank Acoustical Laboratories. The course will describe the difference between NRC and sabins - two related measures of acoustic performance - and why acoustic lighting favors sabins. The process of testing and deployment of acoustic surfaces and objects will also be covered, and the most common room acoustics parameter, reverberation time, will be described. Case studies, audible examples, and testing data will be used to demonstrate acoustics in an accessible way, from terminology to application and realizing design intent. The course will highlight the differences between acoustic lighting products and more traditional acoustic treatments, while underscoring their similarities.

Learning Objectives:

- Greater knowledge of the benefits and misconceptions of using acoustic materials and products, specifically discussing the difference between absorption and sound blocking or proofing.
- Understanding the basic principles of acoustic lighting and how it compares to more familiar acoustic treatment methods such as drop ceilings, wall panels, and baffles.
- Understand how to apply acoustic treatments in real world situations through the review of multiple case studies that highlight various project types and appropriate acoustic responses.
- Come away with a greater understanding of acoustic product specification and details, including acoustic materials, product construction, and typical applications.

Target Audience: Lighting Designer / Lighting Specifier, Architect / Interior Designer / Landscape Architect, Researcher / Educator / Student.

L20MM9 I Exploring Retail Lighting Concepts in the Istanbul Airport
By MUSTAFA AKKAYA, ZKLD LIGHT DESIGN STUDIO
8:30am - 10:00am MT
Session Type: 90-minute Seminar
CEU: 1.5
Session Level: All Levels

Retail lighting is not as easy topic as its function. There are several design tips to create qualified retail spaces. This presentation will focus on retail lighting tips and indicate to

audiences how to increase retail sales policy by using the power of lighting and end effects of retail lighting on the customers. A case study which had been completed by us last year in Istanbul new Airport / Duty Free Stores will be part of this presentation to introduce these tips to audiences. This highest capacity airport provides a unique shopping experience for 90 million passengers with the duty-free shops located on a 55.000 square meter area having 26 stores with over 12 different concepts.

Learning Objectives:

- Review ways to handle the rapid construction process including the importance of scheduling and collaboration.
- Explore the importance of collaboration between different disciplines in the retail lighting design journey.
- Explore the concepts of flexibility and sustainability as key characteristics of a successful retail project.
- Demonstrate an understanding of enhancing space and supporting activities through highlighting areas in terms of its hierarchical role.

Target Audience: Lighting Designer / Lighting Specifier, Architect / Interior Designer / Landscape Architect, Engineer, Controls Specialist / Commissioning Agent / Systems Integrator, Manufacturer / Sales Representative, Owner / Facility Manager / End User / IT Manager, Researcher / Educator / Student, Contractor / Distributor / Construction Professional, Utility / Energy Services Company / Energy Consultants / Energy Integrator / Aggregator

L20PP9 I Squeezing the Code Turnip: Costs, Comparisons, Compliance and Changes
By Harold Jepsen P.E., WELL AP, Legrand Gina Rodda, Gabel Energy Kelly Cunningham, Pacific Gas & Electric
8:30am - 10:00am MT
Session Type: 90-minute Seminar
CEU: 1.5
Session Level: All Levels

Our lighting industry has contributed tremendous advancements to building efficiency. Some may now ask, “is it still cost effective to mandate lighting and control requirements?”. This course gives insights to this question, exploring how the energy code conversation is changing. The course will include code change updates, as the 2021 IECC and ASHRAE/IES 90.1-2019 are publishing, while the new Title 24 – 2019 takes affect Jan 1, 2020. We will also provide a high-level comparison across key energy codes, for design professionals seeking to meet or exceed requirements with their customer goals. Lastly, the course will share lighting and control application compliance solutions that are evolving with lighting technology and code requirements.

Learning Objectives:

- Learn how the energy code conversation is changing with lighting’s significant contribution to energy efficiency in buildings.
- Recognize the differences in the energy code requirements and when each is best applied to your project.
- Know coming changes and trends in newer energy codes such as ASHRAE/IESNA 90.1-2019, 2021 IECC and Title 24 – 2019.

- Understand application examples as codes adopt to new and changing lighting technologies.

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L20IP9 I The Energy of Light
By Kayla Brown Cestero, Caesars Entertainment Javid Butler, HDR Consulting, LLC
8:30am - 10:00am MT
Session Type: 90-minute Seminar
CEU: 1.5
Session Level: All Levels

Light is critical for humanity and so common in our daily experience, it’s easy to forget how important light really is. Recent studies show that tunable light, light that changes color and intensity throughout the day, can have significant impacts on human alertness, productivity, and even health. While consumers can realize the health and productivity benefits, utilities can benefit from programs that incentivize tunable lighting as part of an overall IDSM (Integrated Demand-Side Management) strategy. This session will discuss costs and benefits of tunable lighting, with real world examples of best implementation practices from a major hospitality provider.

Learning Objectives:
- General impacts of circadian entrainment on human health and productivity
- Typical utility load shapes, peak demand costs, and the value of demand reduction at specific times
- Energy use of circadian lighting throughout the day compared to renewable power generation
- How to work with utilities to develop programs that incentivize the use of circadian lighting

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L20TI9 I Understanding DMX Data Distribution and RDM
By Stephen Ellison, The Light Source
8:30am - 10:00am MT
Session Type: 90-minute Seminar
CEU: 1.5
Session Level: Foundational

DMX512 was developed for the theatrical market to standardize the mess of different digital languages being used by the different manufacturer's at the time. The protocol has moved past those early days and a system now has multiple universes, and runs thru switchers, nodes, and

splitters. This course will go from a simple layout to the complex, going over the different layouts and hardware restrictions to watch out for. Along with the protocol, RDM, which runs over the same wires.

Learning Objectives:

- Definition of terms to layout a DMX512 system.
- Understanding the hardware used in a system
- Understanding the layout and interconnection of the hardware and basic trouble shooting.
- Understanding the history of DMX512 and the future of this control type.

Target Audience: Lighting Designer / Lighting Specifier, Engineer, Controls Specialist / Commissioning Agent / Systems Integrator, Manufacturer / Sales Representative

L20AE10 I A Spectral Day in the Life of a Care Center Resident
By Naomi Miller, Pacific Northwest National Laboratory Eunice Noell-Waggoner, Center of Design for an Aging Society Jessica Collier, Pacific Northwest National Laboratory
10:30am - 12:00pm MT
Session Type: 90-minute Seminar
CEU: 1.5
Pre-Requisites: Understand SPDs
Session Level: Intermediate

The ACC Care Center, together with researchers from Brown University School of Public Health, the U.S. Department of Energy's Solid State Lighting Program, and the McClung Foundation, have undertaken an effort to change the lighted environment for residents. Research using a cross-over study of lighting conditions is showing promising results. This session by a specialist in design for the aging eye and a lighting researcher addressing human health and well-being, will combining practice and experience in this new area.

Learning Objectives:

- Comprehend how this light and dark exposure is measured, and then what metrics are applied to determine intensity and spectral quantity and quality
- Participate in creative thinking on how this light exposure could be improved, through lifestyle, programmed activities, and treatment measures
- Hear how much light and dark exposure a resident normally receives
- Hear how this knowledge might affect care center design and activities in the near future

Target Audience: Lighting Designer / Lighting Specifier, Architect / Interior Designer / Landscape Architect, Engineer, Manufacturer / Sales Representative, Owner / Facility Manager / End User / IT Manager, Researcher / Educator / Student, Contractor / Distributor / Construction Professional, Utility / Energy Services Company / Energy Consultants / Energy Integrator / Aggregator

L20DT10 I Color and Light: Nature's Guide to Designing Better Interiors
By Gloria Jaroff, Gloria Jaroff design
10:30am - 12:00pm MT
Session Type: 90-minute Seminar
CEU: 1.5
Pre-Requisites: Basic knowledge of color

Session Level: Intermediate

This interactive session explores how an additive use of color and light can give architects and designers a new perspective for planning interiors. The application of contrast tools from a unique organic additive color system will be explored. A light box will demonstrate the changing effects of LED dimming on color matching.

Learning Objectives:

- Identify the eight composite colors in nature (additive light) and apply them to a custom color wheel to simplify the process of color and palette selection
- Learn to channel mother nature to determine a project or individual's color contrast personality and how to use that discovery to enhance your ability to tell an interior architectural story.
- Learn how isolating undertones in neutral and off-whites can help control color rendition under natural light as well as various LED light sources.
- Learn nature's four basic color and light concepts and how to apply them to bring luminous movement into interior spaces

Target Audience: Lighting Designer / Lighting Specifier, Architect / Interior Designer / Landscape Architect, Engineer, Researcher / Educator / Student, Contractor / Distributor / Construction Professional

L20HE10 I Life-Changing Lighting: A Case Study on Lighting for Children with Autism
By Connie Samla, SMUD Dave Bisbee, SMUD
10:30am - 12:00pm MT
Session Type: 90-minute Seminar
CEU: 1.5
Session Level: Intermediate

This case study demonstrates how using circadian lighting design and strategies at home helped children with autism and their families. These designs included using proper color temperatures and setting up routines to encourage wanted behaviors and reduce unwanted behaviors. These new lighting techniques helped changed the lives of several families.

Learning Objectives:

- Distinguish between the results of circadian lighting vs. lighting for routines.
- Evaluate the results of circadian lighting effects on children with autism in their homes.
- How to apply results as part of the evidence-based design process.
- Create everyday routines for children with autism to help change behaviors.

Target Audience: Lighting Designer / Lighting Specifier, Architect / Interior Designer / Landscape Architect, Engineer, Manufacturer / Sales Representative, Owner / Facility Manager / End User / IT Manager, Researcher / Educator / Student, Contractor / Distributor / Construction Professional, Utility / Energy Services Company / Energy Consultants / Energy Integrator / Aggregator

L20MM10 I Love and Law: Using Contracts to Transform Your Organization
By Eliot Wagonheim, Wagonheim Law
10:30am - 12:00pm MT
Session Type: 90-minute Seminar

CEU: 1.5
Session Level: All Levels

Legal is where relationships go to die. You devote time, resources, and real money on business development initiatives to demonstrate to customers, prospects, and even prospective employees that, for your organization, relationships matter. Then, you risk tearing down everything you've built up by sliding an impenetrable, legalese-laden document across the table for signature. The fact is that there are two and only two documents guaranteed to be read word-for-word – your contracts and your invoices. If you want them to start working for you, rather than against you, this is your session.

Learning Objectives:

- Learn how to use contracts as business development tools.
- Create documents that align with your core values, rather than fight against them.
- Be able to fill in the holes in your current contracts so that you can get paid, reduce risk, and sleep better at night.
- Enhance your relationships by having the right conversations before putting pen to paper.

Target Audience: Lighting Designer / Lighting Specifier, Architect / Interior Designer / Landscape Architect, Engineer, Owner / Facility Manager / End User / IT Manager,Contractor / Distributor / Construction Professional

L20TI10 I Motion Sensors in the Parking Lot. Really?
By Ruth Taylor, Pacific Northwest National Laboratory Nate Mitten, Kimco Realty Corporation Chip Israel
10:30am - 12:00pm MT
Session Type: 90-minute Seminar
CEU: 1.5
Session Level: Foundational

Today, most energy codes require control of exterior lighting to go beyond photocells and simple scheduling. Parking lots, for example, need to dim late at night but return to full brightness if presence is detected. Happily, most luminaire manufacturers offer motion sensors to address this requirement. But, how well does this work? Will illumination be adequate in a timely fashion? Will pedestrians feel safe and comfortable? The latest evaluation of exterior lighting by the is exploring connected systems of luminaires, sensors and wireless communication. This seminar reports on the first phase installation, commissioning, and evaluation of six systems in parking lots at Virginia Tech.

Learning Objectives:

- Recognize the range of system configurations available from current networked systems.
- Assimilate lessons learned from installing and commissioning multiple systems.
- Assess the performance of the sensors and networked systems and promote improvements in the technology.
- Review approaches to specifying system performance to minimize risk in actual installations.

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