2018 STREETLIGHTS STAKEHOLDER SYMPOSIUM Best Practices in LED Streetlight Conversion and Lighting Control Projects

October 29-30, 2018
Millennium Knickerbocker Hotel
Chicago, IL

PRE-SYMPOSIUM WORKSHOP
LED Streetlight Fundamentals: Issues, Challenges & Recent Scientific Insights
MONDAY, OCTOBER 29, 2018

POST-SYMPOSIUM WORKSHOP
Utility Tariffs for LED Lighting: Future-Proofing Rates
WEDNESDAY, OCTOBER 31, 2018

EUCI is authorized by IACET to offer 1.0 CEUs for the symposium and 0.4 CEUs for each workshop.
OVERVIEW

In recent years, LED streetlight and controls have become advantageous for smart city and energy efficiency initiatives. Implementation of connected streetlights is also viewed as an emerging application in utility and city council executives’ agenda for long-term revenue generation. However, street lighting is typically one of the largest utility bills that municipalities pay. Many have heard of the savings associated with LED technology, but most utilities don’t offer an LED option and those that do seem to offer little savings. Thus, realizing a realistic cost benefit analysis from streetlight investment has always been a challenge to owners.

Riding on EUCI’s 2017 Streetlights Stakeholder Symposium’s success, this 2018 symposium will provide a unique opportunity for all stakeholders involved in LED streetlighting projects to come together and delve into discussion about streetlight successful ownership models, rates, regulations, financial analysis, maintenance, and technology considerations.

The primary objective of this symposium is to provide a rare and inspiring opportunity to discuss and find solutions to issues that specifically target the needs of lighting professionals, energy and efficiency program managers from utility, municipalities and all other stakeholders.

LEARNING OUTCOMES

- Provide an introduction to LED streetlight and smart grid technology
- Construct a helpful framework for utility billing methodology
- Identify key strategies other municipalities have used to convert their cities
- Gain a diverse perspective on LED Streetlighting from munis, IOUs, and consultants
- Review best practices in LED & controls procurement and utility tariffs
- Regional focus: Chicago’s smart lighting project updates
- Establish beneficial networks with professional peers in the industry

WHO SHOULD ATTEND

- Municipal leaders (city planners, engineers, and officials)
- Utility providers
- Lighting manufacturers and vendors
- Environmental specialists
- Construction and design engineers
- Consultants
- Planning managers

“Very good intro to streetlighting and an excellent networking opportunity.”

Chris Halpin, President, Celtic Energy
AGENDA
MONDAY, OCTOBER 29, 2018

12:30 – 1:00 pm  Conference Registration

1:00 – 2:25 pm  Leaders Panel: Creating Brighter & Smarter Communities
• Utilities and legislative landscape for LED Streetlights
• Correlation between a smart city and smart lighting
• Challenges of multiple ownership
• Municipal utility relationships and results of new technologies
Moderator:
Zev Simpser, Shareholder, Briggs and Morgan
Panelists:
Bill Burns, Senior Engineer, ComEd
Michael Poplawski, Senior Energy Engineer, PNNL
Tex Haeuser, Planning and Development Director, City of South Portland
Patrick Roche, Assistant Director of Clean Energy, Metropolitan Area Planning Council, Boston
Fritz Feiten, National Director of LED Lighting & Smart City Solutions, Ameresco

2:25 – 2:45 pm  Networking Break

2:45 – 3:30 pm  Smart Grid, Lighting Controls, and a ComEd Analysis of Multi-Application IoT Network
When ComEd was mandated to improve overall system reliability, it decided to deploy a common network for multiple smart grid and smart city services, enabling the utility to partner with cities to deliver new and improved services. Following ComEd’s successful smart metering roll-out, the utility began exploring ways to leverage its multi-application IoT network for new applications such as networked street lighting.

In 2015, ComEd began extending the use of its mesh IoT network to support a smart streetlight pilot for 750 ComEd-owned fixtures in the Chicagoland area. The program equips energy-efficient LED lighting fixtures with Itron’s wireless monitoring and controls, leveraging the same smart grid network infrastructure used to support AMI and DA.

ComEd’s experience with the pilot demonstrated how utilities can leverage intelligent lighting as a foundation to unlock opportunities for growth and building customer satisfaction. ComEd has decided to expand the lighting network to 140K ComEd-owned lights and is currently in its deployment stage. In this session, ComEd will discuss the benefits and lessons learned from this multi-year streetlight pilot, including the following topics:
• Developing a pilot and scaling to production
• Key selection criteria to evaluate smart city solutions
• Expected benefits of intelligent street lights
• Lessons learned from implementation
Okechukwu Chika, Principal Project Manager, ComEd

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3:30 – 4:15 pm  LED Conversion Projects – Considerations for Success
Utilities and cities are moving away from high-intensity discharge (HID) street lighting technologies and making the switch to LED street lighting. Reasons for this vary, it could be the financial perks, greater reliability, environmental benefits or smart city platforms that LED infrastructure can help provide. Occasionally, the conversion can be a requirement on utilities and muni’s by the market.
• The purpose of this presentation is to highlight key considerations in this conversion
• Understand their importance and relevance to the anticipated outcome
• Gain insight into the critical success factors that comprise these considerations
• Understand the countermeasures and actions that need to be taken to address and satisfy these factors
Duke Energy has already converted nearly 500,000 streetlights to LED. These lights have been converted through areas such rates and regulatory, customer contact impacts, product acquisition and supply chain, project management, resource management and more. Conversion work across the six states served by Duke Energy continues to grow as part of Duke Energy’s overall Outdoor Lighting Program strategy. Thus, this presentation will highlight the strategy and lessons learned by Duke Energy in the way of examples and information sharing so that it may be used by other utilities and cities as part of their LED conversion project strategy.
Jim Cowling, Director of Outdoor Lighting, Duke Energy

4:15 – 5:00 pm  Bringing LED Streetlights to Texas Cities
Oncor Electric Delivery is a regulated utility that operates the largest distribution and transmission system in the State of Texas – serving more than 10 million customers across 410 cities and 120 counties. This presentation will provide a comprehensive overview of Oncor’s LED street lighting and smart controls involvement from pilot program to system-wide implementation. The presentation will include lessons learned and best practices on:
• Technical evaluation
• Standard specifications
• Regulatory requirements
• Inventory management
• Ratemaking
• Customer billing
• City/Community outreach
David Kole, Reporting and Compliance Manager, Oncor

5:00 – 6:00 pm  Networking Reception
TUESDAY, OCTOBER 30, 2018

8:00 – 8:30 am  Continental Breakfast:

8:30 – 9:15 am  Power Sustainability and Conservation Management
The North Carolina Department of Transportation has been engaged with the ESCO Brady Trane Services, Inc. (a Trane U.S. Inc. affiliate) in an ESPC project since August 2014 to implement an LED upgrade project statewide across 14 NCDOT Divisions. The focus of the project includes repairs and upgrades to the roadway lighting systems on all candidate Interstate, US, and NC highway systems. NCDOT maintenance building and area lighting upgrades in all 14 NCDOT Divisions are also included. Additionally, a roadway lighting control system is being installed that will allow NCDOT the ability to control all LED lights remotely and monitor operations and performance.

The project also establishes and funds a statewide roadway lighting system monitoring and maintenance program. Brady Trane is responsible for the system monitoring, preventative maintenance, repair/replacement, and warranty services for all newly installed LED roadway lightings for the entire term of the ESPC project.

This panel will focus on how State and Local governments can utilize innovative financing techniques to quickly and efficiently implement leading edge streetlighting upgrades without the need for precious upfront capital. A case study will be presented illustrating how the North Carolina DOT developed and is implementing a unique self-funding $32 million statewide LED Roadway Lighting program, that will save over $3.2M per year, guaranteed, while creating a long-term maintenance and savings validation program.

Chris Halpin, President, Celtic Energy
Eric Frazier, Energy Management Engineer, North Carolina DOT

9:15 – 10:00 am  How Can Connected Streetlights Save Energy and Provide Value to Municipalities and Utilities?
While many municipalities and utilities have completed pilot studies of connected streetlighting systems, full system deployments remain few and far between in North America. Further, very few of the deployed systems are currently being utilized to reduce energy consumption and costs. This presentation will review the current state of the industry and offer suggestions for how industry stakeholders might work together to develop products that reliably improve operational efficiency, save energy, and provide value to both municipalities and utilities.

Michael Poplawski, Senior Energy Engineer, PNNL

10:00 – 10:30 am  Morning Break

10:30 – 11:15 am  Updates on Chicago’s Smart Lighting Project
The City of Chicago is undertaking the largest street light LED retrofit in the United States. The project management team will discuss Chicago’s various street lighting contexts and the process for choosing fixtures for Phase 1 of the program. As year one of the four year project is complete, the team will discuss challenges faced during the initial roll out and what steps were taken to mitigate the issues. Also, the team will discuss how Chicago is incorporating the smart network into its maintenance operations, energy consumption billing system and why it is a cost effective solution.

Craig Turner, Program Manager, Millhouse Inc.
Oswaldo Chaves, Engineer, City of Chicago
AGENDA

TUESDAY, OCTOBER 30, 2018 (CONTINUED)

11:15 am – 12:00 pm  Legislation to Implementation - A Municipal Case Study from South Portland, Maine
This presentation will address streetlight conversions from the perspective of a city planner. It will chart the course of a municipal streetlights acquisition and LED conversion project starting with several attempts to amend State law, through the Public Utilities Commission rule-setting process, and concluding with the acquisition of existing streetlights from the utility and the initiation of conversion implementation. This presentation will discuss issues such as:
• Pole attachment fee
• Required installer qualifications
• Acquisition price calculation
• Consultant selection
• GIS inventory
• Audit report
• Color temperature selection
• Pilot demonstration
• Design
• Procurement
• Logistics

Tex Haeuser, Planning and Development Coordinator, City of South Portland

12:00 – 1:15 pm  Group Luncheon

1:15 – 2:00 pm  Smart Street Lighting NY Program: New York State’s roadmap to a successful LED street lighting program
The New York Power Authority (NYPA) is the largest state-owned utility in the country. In addition to the Power Authority’s core business of power generation this organization is tasked to carry out and implement various sustainability and energy efficiency programs to meet New York State’s energy plan by achieving 50% renewable energy, 40% GHG reduction, and 23% lower energy use by 2030. The most recent program launched by the NYS Governor, the Smart Street Lighting NY program, aligns closely with these goals and has a target of converting 500,000 street lights to LED technology by 2025 which is anticipated to save 482 gigawatt hours annually of energy. NYPA has recognized street light infrastructure as a unique asset for the municipality and provides services to incorporate Smart City technology. This will allow local governments to utilize Internet of Things (IoT) devices to provide data and information to continue to improve the quality of life and services for their residents.

This session will review the process NYPA uses to develop a successful street light program from a policy, regulatory, and operations perspective. NYPA will also review key stakeholders and partnerships that have been essential to the success of this program and how the business model has been replicable throughout the entire state.

Joseph Rende, Director of Business Development, New York Power Authority

2:00 – 2:30 pm  Afternoon Break
TUESDAY, OCTOBER 30, 2018 (CONTINUED)

2:30 – 3:15 pm  LED Streetlights – Lighting the Way
ComEd launched an LED streetlight incentive program in June 2015 that provides incentives for the conversion of utility owned fixtures. In June of 2017, the program was expanded to include incentives for the conversion of municipally owned street lights to LED fixtures. The program continues to grow with an annual savings goal of 95,000 MWh in 2018. Documenting these changes on the part of the municipality has created challenges and opportunities to improve both municipal and utility information about the fixtures wattage and location.

ComEd will discuss the benefits and lessons learned, including the following topics:
• Fixture documentation and location
• Data required to support completion of incentive applications and the various challenges (latitude and longitude), account number, metered versus un metered fixtures
• Billing updates for unmetered accounts require utility billing updates

Bill Burns, Senior Engineer, ComEd

3:15 – 4:00 pm  Streetlight Wireless Control Deployment in Massachusetts
At the end of 2018, nearly all municipally-owned streetlights in Massachusetts will be converted to LED. A significant number of lights will be ‘control-ready’ and at least 10 municipalities will have installed wireless controls, many of whom MAPC has worked with directly. MAPC will provide an overview of the deployments, including prevailing hardware and software capabilities, implementation strategies related to dimming, and other lessons learned. The presentation will also address on-going tariff development to support billing based on wireless controls.

Patrick Roche, Energy Strategist & Procurement Specialist, MAPC

4:00 – 4:45pm  Streetlights as a Smart City Platform
This presentation will provide an overview of how streetlights could be used as the leading platform for rolling out other city-wide technologies including monitoring systems and wi-fi and include some case studies.

Chris Yoder, Managing Consultant, Navigant

4:45 – 5:00 pm  Closing comments and conference Adjourns

SPONSORSHIP OPPORTUNITIES

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• Tabletop exhibit
• Workshop sponsor
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• Luncheon host and Breakfast host

Please contact Aaron Voss at avoss@euci.com or 720-988-1262 for more information.
PRE-SYMPOSIUM WORKSHOP

LED Streetlight Fundamentals:
Issues, Challenges & Recent Scientific Insights

MONDAY, OCTOBER 29, 2018

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OVERVIEW

The purpose of street lighting is to improve the visibility of potential hazards, including pedestrians and vehicles, thereby improving driving safety. Although it is widely assumed that illuminance levels are related to visibility, and thereby safety, this is not necessarily true. New design criteria based upon visibility should replace current ones based on illuminance levels. Street lighting can compromise the visibility of potential hazards through glare. Although accurate estimates of disability glare have been available for half a century, only recently has it been possible to accurately characterize discomfort glare. Glare should also be an important aspect of new design criteria. Some critics have alleged that LED street lights are a source of circadian disruption. Recent scientific insights into the spectral and absolute sensitives of people to different light sources have been published that can be used to evaluate existing and future street lighting installations. Finally, street lighting will always introduce stray light into the atmosphere, thereby compromising a community’s visual appreciation of the night sky. These optical effects can be quantified so that rational discussions can take place within the community about the trade-offs between estimates of driving safety and viewing the night sky.

This workshop will:
1. Present research relating street lighting to visibility and safety
2. Discuss the collateral effects of street lighting associated with glare, circadian disruption and light pollution

WORKSHOP INSTRUCTOR

Leora Radetsky
MS LC, Research Scientist, Lighting Research Lab/Rensselaer Polytechnic Institute, NY

Leora Radetsky is a research scientist at the Lighting Research Center at Rensselaer Polytechnic Institute, with expertise in outdoor lighting, lighting software, product testing, lighting controls, daylighting, and circadian rhythms. Her current research activities include product performance testing and evaluations, roadway lighting demonstrations, and horticultural lighting for pathogen and pest control. Ms. Radetsky is a member of the Illuminating Engineering Society, and is active on the roadway lighting committee and several subcommittees. She was awarded an IES Regional Technical Award in 2014 for her significant scientific contributions to the field of illumination. Ms. Radetsky has a B.S. in Architectural Engineering with an Emphasis in Illumination from the University of Colorado at Boulder, and an M.S. in Lighting from RPI.

The Lighting Research Center (LRC) at Rensselaer Polytechnic Institute is the world’s leading center for lighting research and education. Its mission is to advance the effective use of light for society and the environment. Established in 1988 by the New York State Energy Research and Development Authority (NYSERDA), the LRC has been pioneering research in solid-state lighting, light and health, transportation lighting and safety, and energy efficiency for nearly 30 years.
POST-SYMPOSIUM WORKSHOP

Utility Tariffs for LED Lighting: *Future-Proofing Rates*

**WEDNESDAY, OCTOBER 31, 2018**

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**OVERVIEW**

Utilities must recreate the way they offer lighting services, embrace flexibility in tariff design and pricing, or accept the consequences of the status quo. The fast pace of changing cost, energy use, life expectancy, and the fixtures themselves are incompatible with the historically methodical process of tariff review and approval by Utilities and State Regulators. This session will look at how two utilities, having very different corporate and customer needs and strategies, are approaching their LED lighting tariffs.

**LEARNING OBJECTIVES**

- Examining IOU rates
- Construct an influence plan on IOU rates
- Discuss why rates differ significantly between IOU’s
- Analyze how IOU’s create business strategy with rates
- Practice how to work more effectively and efficiently with your IOU

**AGENDA**

- Basics of Investor Owned Utility Rate Making
- Historic Approach to IOU Lighting Tariffs
- Paradigm shift of LED Lighting for IOU Tariffs
- Regulated vs Deregulated IOU Business Plans
- Creating a Lighting Business Strategy for an IOU or end user
- Doing business with an IOU (Billing, Marketing, Operations, Customer Service, Work Orders, etc.)
WORKSHOP INSTRUCTORS

Chris Balliet, P.E.
Manager of Outdoor Lighting, WE Energies

Experienced Manager with a demonstrated history of effectively working in utilities and the lighting industry. Skilled in all aspects of the business of Outdoor Lighting installation and maintenance including customer satisfaction, strategy and profitability, process improvement, rates/regulatory, supply chain, billing, material and construction specifications, business development and education of customers / employees / general public. Knowledge of electric utility operations including energy distribution and outage management. Effective written and verbal communicator, comfortable with both large and small audiences. Proven professional experienced with creatively bridging technical products & services with business strategy and customer satisfaction.

Jack Lindsay
Finance & Accounting Manager, Georgia Power

Jack Lindsay has managed the Finance, Accounting, Compliance and Customer Service functions for Georgia Power Company’s Lighting Services group for the past 10 years. Mr. Lindsay has in-depth experience in Unregulated Investor Owned Utility (IOU) Financial Planning & Analysis, Accounting, Lighting Tariffs and the legal issues related to unregulated customer contracts. He has a BS in Industrial & Systems Engineering (IE) from Georgia Tech and an MBA and Masters in IE from the University of Southern California. He is also a Certified Public Accountant who spent the first 10 years of his career in Manufacturing Engineering.
SYMPOSIUM SPEAKERS

Bill Burns  
**Senior Engineer, Commonwealth Edison (ComEd)**

Bill Burns is a Senior Engineer and LED Street Light Program Manager within ComEd’s Energy Efficiency (EE) Department. As program manager, he works closely with the outreach team and the program implementing contractor to drive municipal customer participation in the LED Streetlight Program. Bill is a Registered Professional Engineer and a Building Operator Certification instructor with extensive experience in building operations and management of EE programs.

Okechukwu Chika  
**Principal Project Manager, Commonwealth Edison (ComEd)**

Okechukwu Chika is a Principal Project Manager for Grid Modernization within ComEd’s Smart Grid & Technology Department. As project manager, his role is to execute the deployment of SMART technology & assets on the electric grid. In addition, he oversees the operational integrations to ensure proper management, maintenance, and evaluation of the technology. Okechukwu is a graduate of Northwestern University and earned an MBA from DePaul University.

Jim Cowling  
**Outdoor Lighting Director, Duke Energy**

Jim began working in the electric utility industry in 1981 as a co-op student with Alabama Power Company; one of his first roles was promoting and designing outdoor lighting installations. He has worked for three major electric utilities in his career. Jim obtained a Bachelor of Electrical Engineering degree in 1986 from Auburn University and a Master’s in Business Administration from the University of Central Florida in 1999. He holds a Professional Engineering license and is also a Certified Energy Manager. Jim began his career with Duke Energy in November of 1997, working in the central Florida area. His work experience has included roles in the areas of distribution engineering, major accounts, energy efficiency, load management, power quality, external relations, distribution operations, economic development, non-regulated services and sales, and outdoor lighting since 2012. Jim has served in various leadership roles for Duke Energy since 2000. He began working in Duke’s Outdoor Lighting Program as Manager of Outdoor Lighting for the Duke Energy Florida jurisdiction. He was promoted to Director - Outdoor Lighting, responsible for all Duke Energy jurisdictions, in September of 2015, and now resides in Charlotte, North Carolina. Since Jim has been leading the Outdoor Lighting team, the Duke Outdoor Lighting business has increased new lighting installs by 30%, performed nearly 350,000 HID to LED light conversions, and designed and implemented several different lighting pole attachment programs. Jim has been married to his wife, Kathy, 31 years and they have two grown daughters. Sarah is an industrial and systems engineer residing in Greenville, SC and Emily is an elementary school teacher living in Lakeland, FL. In Jim’s spare time, he enjoys golf, fishing, and reading.
Fritz Feiten  
**National Director of LED Lighting & Smart City Solutions, Ameresco**

Fritz Feiten is the National Director, LED Lighting & Smart City Solutions for Ameresco. He has more than 10 years of experience developing energy efficiency and renewable energy projects, serving in a variety of business development, sales management, and regulatory affairs roles for energy service companies. Since 2016 Mr. Feiten has managed Ameresco’s LED street lighting and smart city initiatives nationally, providing technical assistance to Ameresco regional staff and managing vendor relationships. He’s had key roles in the Chicago Smart Lighting Project (270,000 street lights), as well as the City of Phoenix (110,000 street lights), City of Tucson (21,000 street lights), and more than thirty other LED street light/ smart city projects in the U.S. and Canada. He led the development of one of the first city-wide LED street light conversion projects in North America in 2011, one of the first LED street light projects to use wireless lighting controls, and the first in the US in which the serving utility agreed to use the control system's on-board metering for billing.

Prior to entering the energy field, Mr. Feiten was Vice President of Sales and Marketing for the Affinity Publishing Division of PennWell Corporation, which developed and implemented global alliance marketing programs for Microsoft, IBM, Adobe, Oracle and other leading technology firms.

Eric Frazier  
**Energy Management Engineer, North Carolina Department of Transportation**

A graduate of NCSU with BS degrees in Physics and Electrical Engineering, Eric worked for Parker Hannifin Corporation’s Cylinder Division as an Electrical / Industrial Engineer for 18 years supporting manufacturing operations. He then worked at North Carolina Central University for 9 years as the University's Electrical Engineer, Energy Manager - Sustainability Officer, and as a capital project manager for several multimillion projects - including an Energy Performance Contract (EPC) for ten campus buildings. In 2015 Eric accepted his current position as Energy Management Engineer at the North Carolina Department of Transportation (NCDOT) and has managed a number of construction projects including the completion of one EPC for six NCDOT buildings in Raleigh NC. He is currently managing an EPC to upgrade NCDOT roadway and building light fixtures statewide with LED-based fixtures.

Tex Haeuser  
**Planning and Development Director, City of South Portland**

Tex has been the Planning Director for the City of South Portland since 1990 after holding planning positions at Southern Kennebec Regional Planning and the Town of Cumberland. He has a B.A. in Religion and an M.A. in Urban Planning. Tex's primary interests are distributed energy, complete transportation systems, sustainable economics, and architecture. He was recognized as Maine’s Professional Planner of the Year in 2010 and, as part of a three-community team, helped pass the State law and PUC rule-making that now enable Maine municipalities to own and convert street lights on utility-owned poles.
SYMPOSIUM SPEAKERS

Chris Halpin
CEO, Celtic Energy

Since 1985, Chris has worked for several premiere consulting firms and ESCOs in engineering, management, and sales, and is a former Global Energy Manager for NCR. He started CEI in 2000, and has acted as a Project Facilitator/Owner’s Rep for dozens of energy projects worth over $2 Billion in that time. He is a DOE FEMP Certified Project Facilitator for DOE’s SuperESPC Program, where he has managed projects for all branches of the US military, DOE headquarters, FDA, FBI, and other agencies. He also manages ESPC projects for the Defense Logistics Agency, and the states of RI, MA, DE, NC, NV, and LA, and dozens of cities, towns, hospitals, and school districts. He has been involved in LED street lighting technology evaluation and deployment since 2008, and has taught dozens of classes on lighting and other energy savings technologies nationwide.

Chris has a BS degree in Mechanical Engineering, and is a registered Professional Engineer in AZ, DE, PA, CT, NY, FL, NV, NC, RI, ME, and Ireland. He is on the Society of American Military Engineers Energy and Sustainability Committee, and the Board of Directors of the Energy Services Coalition.

David Kole
Streetlight Reporting & Compliance Manager, Oncor

David Kole is a Manager of Reporting & Compliance with Oncor’s Streetlight Maintenance Organization holding responsibility for overseeing the maintenance performance and regulatory requirements for more than 400,000 streetlights across 410 Texas cities. David’s responsibility includes management of Oncor’s emerging technology and Smart City streetlight pilot programs. David holds a Bachelor of Science Degree from Louisiana State University and is a graduate of Texas Christian University’s Neeley MBA program. David is also a certified Lean Six Sigma Green Belt.

Michael Poplawski
Senior Energy Engineer, Pacific Northwest National Laboratory (PNNL)

Michael joined PNNL in 2009 as a Senior Engineer following twelve years in the commercial semiconductor industry. His work experience includes stints with domestic and foreign component manufacturers ranging in size from start-up to conglomerate, and in various functions including device engineering and reliability, circuit design, application support, and technical marketing. His current efforts are focused on supporting the Department of Energy Solid-State Lighting program, primarily in the areas of connected lighting technology evaluation, standards and specification development, and grid service enabled lighting systems. Michael is a member of IES, IEEE and ASHRAE, serves on multiple standards development committees, and consults with numerous energy efficiency organizations and specification bodies.

Joseph Rende
Director of Business Development, NYPA

Joe Rende currently leads NYPA's business development team focused on energy services for the governmental sector in NYS. This includes managing and leading a Governor’s initiative called the Smart Streetlighting NY program. The goal of this program is to convert 500,000 streetlights to LED by 2025 across NYS. In addition, NYPA’s efforts include smart sensor technology and connectivity deployment and demonstration. Mr. Rende has over 30 years of energy and utility experience, including extensive experience in all aspects of the energy services business. Joe has a BME degree in Mechanical Engineering from Manhattan College and a MBA in finance from Long Island University.
SYMPOSIUM SPEAKERS

Patrick Roche
Assistant Director of Clean Energy, Metropolitan Area Planning Council, Boston

Patrick Roche is an Energy Strategist & Procurement Specialist with the Metropolitan Area Planning Council, the regional planning agency for the 101 cities and towns of metro Boston. In his role leading MAPC’s LED streetlight program, Mr. Roche has assisted over 30 municipalities through the streetlight conversion process, from assuming ownership of the existing lights through procurement of all necessary retrofit products and services. Mr. Roche is currently working with over 50 municipalities and nearly 90,000 lights statewide as part of a $6 million state grant to convert municipally owned streetlights. Through this work, Mr. Roche has also helped four municipalities procure wireless or smart control technology. He also participates with utility working groups on tariff design issues.

Zev Simpser
Shareholder, Briggs & Morgan

Zev Simpser is a member of the Energy section. He practices principally in the areas of: energy law, regulatory compliance, regulatory proceedings and disputes, regulated transactions, and Risk management

Zev has a diversified energy law practice which includes counseling clients in compliance matters, electricity sale and purchase transactions, asset transfers, complex jurisdictional interconnections and sales, and representing clients in regulatory proceedings.

Prior to law school, Zev served as an aide to U.S. Senator Bob Graham, where he advised the Senator on matters related to energy, the environment and agriculture.

While in law school, Zev was a staff member of the Minnesota Journal of Law and Inequality.

Craig Turner, PE, PLS, CLSP
Program Manager, Milhouse Engineering & Construction, Inc

Craig has over 20 years of experience in civil engineering and land surveying and is currently serving as the Program Manager for the City of Chicago Smart Lighting Program (CSLP). Craig’s team oversees the upgrade of more than 270,000 street and alley light fixtures throughout the city. The program seeks to improve public safety and quality of life in neighborhoods across Chicago by replacing the city’s outdated and inefficient High-Pressure Sodium lamps with reliable LED luminaires. The new system will improve the city’s responsiveness to outages via a Citywide Street Light Management System that will provide real-time updates when outages occur. Craig and his construction management team is responsible for the supervision, coordination, inspection, and documentation of the LED conversion and Target Infrastructure Stabilization Repairs.
Chris Yoder
Managing Consultant, Navigant

Chris Yoder is a managing consultant in Navigant’s energy efficiency practice focused on utility program evaluation. Chris has led numerous impact evaluations for clients including PECO, Wabash Valley Power Association, and others. He specializes in the evaluation of custom retrofit programs but has led evaluations of new construction, upstream lighting, and residential programs. Additionally, Chris has been involved in the portfolio design, state utility commission regulatory reporting, and conducting on-site energy efficiency audits for large commercial and industrial clients.

Prior to shifting his focus to utility clients, Chris worked in Navigant’s policy analysis group assisting the Department of Energy in developing federal regulation. He supported DOE’s Building Technologies Office and EPA’s ENERGY STAR programs through project management and technical analysis to shape federal policies by working with various environmental advocacy groups, trade organizations, and manufacturers to shape government policy for technologies including consumer electronics and household appliances. Chris also assisted in the establishing the Appliance Technology Evaluation Center (ATEC) for the DOE and National Energy Technology Laboratory (NETL) to improve testing and efficiency of residential appliances.

Oswaldo Chaves
Civil Engineer with the Chicago Department of Transportation (CDOT), Division of Engineering

Oswaldo currently serves as the CDOT Project Manager for the Chicago Smart Lighting Program. As the project manager he is responsible for managing the replacement of approximately 275,000 HPS street lights with LED fixtures and installation of smart grid network. He was the project manager for the design and construction of Phase 3 of the Chicago Riverwalk Project, managed the construction of the last segment of the north-south Wacker Drive Reconstruction project, and has been involved in various bridge projects at CDOT. Other responsibilities include review and approval of construction projects along the City of Chicago waterways, and review of private developments as they impact the City’s bridges and viaducts.

Oswaldo has a BS degree in Civil Engineering from the Illinois Institute of Technology.
INSTRUCTIONAL METHODS

Panel discussions and PowerPoint presentations will be used at this event.

REQUIREMENTS FOR SUCCESSFUL COMPLETION

Participants must sign in/out each day and be in attendance for a minimum of four hours to be eligible for any continuing education credit.

IACET CREDITS

EUCI has been accredited as an Authorized Provider by the International Association for Continuing Education and Training (IACET). In obtaining this accreditation, EUCI has demonstrated that it complies with the ANSI/IACET Standard which is recognized internationally as a standard of good practice. As a result of their Authorized Provider status, EUCI is authorized to offer IACET CEUs for its programs that qualify under the ANSI/IACET Standard.

EUCI is authorized by IACET to offer 1.0 CEUs for the symposium and 0.4 CEUs for each workshop.

EVENT LOCATION

A room block has been reserved at the Millennium Knickerbocker Hotel, 163 E Walton Pl, Chicago, IL 60611, for the nights of October 28-30, 2018. Room rates are US $209 plus applicable tax. Call 1-800-621-8140 for reservations and mention the EUCI event to get the group rate. The cutoff date to receive the group rate is October 9, 2018 but as there are a limited number of rooms available at this rate, the room block may close sooner. Please make your reservations.

REGISTER 3, SEND THE 4TH FREE

Any organization wishing to send multiple attendees to this event may send 1 FREE for every 3 delegates registered. Please note that all registrations must be made at the same time to qualify.
### PLEASE REGISTER

- **BUNDLE PRICE**: STREETLIGHTS STAKEHOLDER SYMPOSIUM AND BOTH WORKSHOPS: OCTOBER 29-31, 2018: US $2195
  - EARLY BIRD ON OR BEFORE OCTOBER 12, 2018: US $1995
  - **Muni, Coop & Government Rate $1795, Early Bird $1595**

- **STREETLIGHTS STAKEHOLDER SYMPOSIUM AND ONE WORKSHOP**:
  - **MAKE SELECTION BELOW**
  - **PRE-SYMPOSIUM WORKSHOP**: MONDAY, OCTOBER 29, 2018: US $1795
    - EARLY BIRD ON OR BEFORE OCTOBER 12, 2018: US $1595
    - **Muni, Coop & Government Rate $1495, Early Bird $1295**
  - **POST-SYMPOSIUM WORKSHOP**: WEDNESDAY, OCTOBER 31, 2018:
    - US $1795
    - EARLY BIRD ON OR BEFORE OCTOBER 12, 2018: US $1595
    - **Muni, Coop & Government Rate $1495, Early Bird $1295**

- **STREETLIGHTS STAKEHOLDER SYMPOSIUM ONLY**
  - OCTOBER 29-30, 2018: US $1395
  - EARLY BIRD ON OR BEFORE OCTOBER 12, 2018: US $1195
  - **Muni, Coop & Government Rate $1195, Early Bird $995**

- **I'M SORRY I CANNOT ATTEND, BUT PLEASE EMAIL ME A LINK TO THE CONFERENCE PROCEEDINGS FOR US $395**

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### HOW DID YOU HEAR ABOUT THIS EVENT? (DIRECT E-MAIL, COLLEAGUE, SPEAKER(S), ETC.)

<table>
<thead>
<tr>
<th>How did you hear about this event?</th>
<th>(direct e-mail, colleague, speaker(s), etc.)</th>
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<td>Job Title</td>
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**Print Name**

**Company**

**What name do you prefer on your name badge?**

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<th>Address</th>
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**City**

**State/Province**

**Zip/Postal Code**

**Country**

**Phone**

**Email**

**List any dietary or accessibility needs here**

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### CREDIT CARD INFORMATION

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<tr>
<th>Name on Card</th>
<th>Billing Address</th>
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<tbody>
<tr>
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<td>Billing City</td>
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**Exp. Date**

**Security Code (last 3 digits on the back of Visa and MC or 4 digits on front of AmEx)**

**Billing Zip Code/Postal Code**

**OR Enclosed is a check for $**

<table>
<thead>
<tr>
<th>OR Enclosed is a check for $</th>
<th>to cover registrations.</th>
</tr>
</thead>
</table>

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### EVENT LOCATION

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### Substitutions & Cancellations

Your registration may be transferred to a member of your organization up to 24 hours in advance of the event. Cancellations must be received on or before September 28, 2018 in order to be refunded and will be subject to a US $195.00 processing fee per registrant. No refunds will be made after this date. Cancellations received after this date will create a credit of the tuition (less processing fee) good toward any other EUCI event. This credit will be good for six months from the cancellation date. In the event of non-attendance, all registration fees will be forfeited. In case of course cancellation, EUCI's liability is limited to refund of the event registration fee only. For more information regarding administrative policies, such as complaints and refunds, please contact our offices at 303-770-8800.

EUCI reserves the right to alter this program without prior notice.