



9th Edition

MICROGRID

GLOBAL INNOVATION FORUM

NORTH AMERICA • MARCH 18-20, 2019 • WASHINGTON, D.C.

Optimizing microgrids for energy resiliency, renewables integration, and cost savings

The **9th Microgrid Global Innovation Forum – North America**, March 18-20, 2019 in Washington, D.C. (www.microgridinnovation.com) brings together key industry executives for focused networking and information sharing concerning the design, implementation and operation of renewables-centric microgrids in North America and globally. The emphasis is on maximizing the effective use of sustainable distributed energy resources, refining the positive business model for a range of microgrid deployments, and sharing real-world case studies in both grid-tied and off-grid environments.

The event will focus on:

- Microgrid feasibility, design, and implementation
- Refining the business case for hybrid, renewable energy microgrids
- Solar + storage advances
- Utilization of energy storage for microgrid scenarios
- Advanced battery, fuel cell, and flow battery technologies
- Microgrid power control, management, and grid integration
- Optimizing the management of distributed renewable energy resources
- Effective project evaluation, implementation, and management
- Microgrids as a grid resiliency and reliability strategy
- Standards and interoperability issues
- Market drivers and opportunities worldwide

The audience for the Forum includes microgrid project developers, owners, and entrepreneurs; utility and energy provider executives; renewable energy professionals; energy storage providers, technology researchers, investors and regulatory representatives, and more.

"The was a great networking opportunity. Speakers were interesting in and of themselves, but the mix (tech, policy, regulatory, markets) made for deeper conversations than most events provide."

-- Paul Roeger, Vice President - Strategic Initiatives, Typhoon HIL

Gold Sponsor:



Silver Sponsors:



Organized by:



Schedule at a Glance

Subject to change. Last Update: 3/16/19

Monday, March 18, 2018

7.30 - 8.30 am	Registration and Continental Breakfast	
8.30 – 9.00	Recent Microgrid Market Trends and Developments - Peter Asmus, Research Director-Microgrids, Navigant Research	
9.00 – 10.15	Key Microgrid Initiatives and Takeaways to Date - Paul DeCotis, Senior Director-Energy & Utilities Practice, West Monroe Partners - Bob Foxen, CEO, Global Common - Michael F. McGhee, Executive Director, U.S. Army Office of Energy - <i>Additional panelists TBA</i>	
10.15 – 10.45	Coffee Break	
10.45 – 12.00	Learning from the Leaders: Tech Innovator Perspectives - Ross Malme, Principal, Skipping Stone - Senior Vice President, Grid Infrastructure and Compliance, North Carolina's Electric Cooperatives - Andy Haun, SVP - Chief Technology Officer, Microgrid Business, Schneider Electric - John Glassmire, Senior Microgrid Advisor, ABB	
12.00 – 1.00	Lunch Break	
	Track A	Track B
1.00 – 2:15	Overcoming Commercial Obstacles for Multi-User Microgrids - Richard T. Stuebi, President, Future Energy Advisors - Andy Haun, CTO for Microgrids, Schneider Electric - Will Agate, VP of Microgrids, Ameresco - Dr. Liuxi Zhang, Manager of Emerging Technologies, Smart Grid & Innovation, Commonwealth Edison - Michael Yambrach, Capital Projects, Department of General Services, Montgomery County	Regulatory Issues and Challenges Facing Utility-Scale and Community Microgrids - Patrick L. Morand, Associate, Duane Morris LLP - Larisa Dobriansky, Chief Business & Regulatory Innovations Officer, General MicroGrids - Jared Leader, Senior Associate, Advisory Services, Smart Electric Power Alliance
2.15 – 2.45		Integration of Energy Storage, Demand Flexibility and Distributed Intelligence Microgrid Control to Enable New Business Models - Giovanni Polizzi, Energy Solutions Manager, Minsait
2.30 – 3.00	Coffee Break	
3.00 – 4.00	Microgrid Hub Launch: An Online Showcase of Projects for Commercial and Industrial Off-Takers - Mariana Heinrich, Manager-Climate & Energy, WBCSD - John Vernacchia, Segment Manager, Renewable Energy Solutions, Eaton - James Goudreau, Head of Climate, Novartis	Leveraging a Cyber-Secure Building Automation System to Optimize Microgrid Operations - Kevin Smith, Chief Technology Officer, Tridium - Scott Boehm, Director, Vykron Building Energy Security, Tridium
4.00 – 4.30	Managing Complex Energy Portfolios, Risk and Capital - Zachary Power, Director of Strategy, Analytics Edison Energy	New Jersey Town Center Distributed Energy Resource Microgrids: Technical Feasibility & Project Updates - Joseph T. Sullivan, Vice President, Energy Policy & Development, Concord Engineering
4.30 - 4.45	Coffee Break	
4.45 – 5.15	Insights on the Microgrid Market Opportunity - Jonathan Stewart, Industry Director, Utility Products and Systems Division, NEMA	The Industrial Internet Consortium Microgrid Testbed: Design, Implementation, and Lessons Learned - Erik Felt, Market Development Director, Future Grid, RTI
5.15 – 6.15	Drink Reception	

Tuesday, March 19, 2018

8.00 - 8.30	Continental Breakfast
8.30 – 9.30	<p>C&I Microgrids: Current Case Studies, Market Status, and Directions Forward</p> <ul style="list-style-type: none"> - Navigant Research - Gregg Murphy, Vice President, Blue Planet Energy Systems - Allan Schurr, Chief Commercial Officer, Enchanted Rock - Steve Pullins, Vice President, Development, Dynamic Energy Networks
9.30 – 10.30	<p>Resilient, Sustainable and Local: Establishing Microgrids with Waste-to-Energy Facilities</p> <ul style="list-style-type: none"> - Sami Kabbani, Senior Vice President of Energy, Covanta - Andrew H. Kricun, Executive Director, Camden County Municipal Utilities Authority - Jeffrey P. Price, Managing Partner, Bluewave Resources, LLC
10.30 – 10.45	Networking Coffee Break
10.45 – 11.30	<p>Microgrids In MISO and Their Reliance on T&D Infrastructure: University of St Thomas Renewable Energy Facility Microgrid Case Study</p> <ul style="list-style-type: none"> - Rao Konidena, Rakon Energy LLC - Greg Mowry, Professor and Program Director, Renewable Energy and Alternatives Laboratory, Univ. of St. Thomas
11.30 – 12.00	<p>The MassCEC Community Microgrids Program: Program Direction, Preliminary Findings and Outcomes, and Lessons Learned</p> <ul style="list-style-type: none"> - Michael J. Zimmer, Washington Counsel, Microgrid Institute
12.00 – 12.45	Lunch Break
12.45 – 1.45	<p>Rethinking the Grid: Nanogrids for Home Owners, Businesses and Communities</p> <ul style="list-style-type: none"> - Anna Demeo, PhD, Director of Smart Grid R&D Racepoint Energy, LLC - Aron Bowman, Chief Operating Officer, ELM FieldSight
1.45 – 2.15	<p>RIAPS: An Open Source Microgrid Operating System</p> <ul style="list-style-type: none"> - Ken Dulaney, Director of Industry and Innovation, FREEDM Systems Center, NC State University
2.15 – 2.30	Coffee Break
2.30 – 3.30	<p>Synergistic Microgrid Business Models</p> <ul style="list-style-type: none"> - Shiv Mani, Senior Analyst, FERC* - James Ellis, Senior Director, Utility Solutions, ChargePoint - Brian G. Morrison, Principal, Industrial Economics (IEc)
3.30 – 4.00	<p>EV Charging DC Microgrids as an Answer to the Sharp Grid Capacity Demand Rise From EV Fast Charging Infrastructure</p> <ul style="list-style-type: none"> - Aleksey Toporkov, President, ARDA Power
4.00 – 4.30	<p>Optimizing Microgrids with Long-Duration Energy Storage</p> <ul style="list-style-type: none"> - Hugh McDermott, Senior Vice President-Business Development & Sales, ESS Inc.

Wednesday, March 20, 2018

9.00 – 12.20 pm	<p>Workshop: Microgrid Economics, Business Models and Project Financing</p> <ul style="list-style-type: none"> - Arnaud Henin, Managing Director, Gommyr Power Networks
-----------------	---

**Note: This panelist is participating in a private and individual capacity and he is not representing the Federal Energy Regulatory Commission or any other United States government agency. The views and opinions expressed in this presentation are the author's views and do not reflect the opinions of the Federal Energy Regulatory Commission or any other U.S. government agency.*

Sessions Details

Subject to change. Last update: 3/16/19

Monday, March 18, 2019

Recent Microgrid Market Trends and Developments

Monday, March 18, 2019 | 8:30 - 9:00 am

This opening session provides an overview of the latest findings from Navigant Research regarding the state of the microgrid market in North America and globally. Research Director Peter Asmus will discuss key growth areas, microgrid deployment by type and sector, and opportunities for growth for vendors and energy providers alike.

- Microgrid business models currently being pursued by utilities and C&I end users
- Marketplace status and growth projections by region
- Trends in microgrids by technology type and configuration
- Key developments in North America and internationally affecting the future of microgrid deployment



Peter Asmus, Research Director-Microgrids, Navigant Research

As a Research Director at Navigant, Peter Asmus has emerged as a leading global expert on microgrids and virtual power plants. With 25 years' experience, Peter is author of four books on energy and environmental issues, and has served as a consultant to many leading corporations (General Electric, Sunpower, Clipper Wind), government agencies (California Energy Commission, California Air Resources Board) and non-profit agencies (Center for Energy Efficiency & Renewable Technologies, Governor's Wind Energy Coalition, Independent Energy Producers, Center For Resource Solutions.) His prime expertise is integration of renewable energy to the grid, public policy analysis, writing and public speaking.

Key Microgrid Initiatives and Takeaways to Date

Monday, March 18, 2019 | 9:00 - 10:15 am

Development of microgrids started as simply as local generation serving loads at multiple buildings in a given geographic location. PURPA and its incentives to qualifying facilities paved the way for more efficient distributed energy resources being sited closer to load with the benefit of improving reliability, power quality, and resiliency. Fast forward to today, and we see greater interest in microgrids by customers and developers to control energy costs and adopt more on-site, renewable energy generation to meet public policy and environmental stewardship goals. This panel will focus on real-life installations of microgrids and the benefits and costs faced by host sites, utilities, and customers. Panelists are in the business of planning, investing, and facilitating development of and will share lessons learned and best practices for successful microgrid installation and operation.



Paul DeCotis, Senior Director-Energy & Utilities Practice, West Monroe Partners

Paul is an accomplished and respected executive and thought leader with deep expertise in trends and issues facing today's energy and utility leaders. Among other responsibilities, he works with utilities, independent power and distributed energy generators, and state agencies to help plan their response to the U.S. Environmental Protection Agency's (EPA) preliminary rules requiring states to reduce carbon dioxide emissions by 30 percent or more by 2030.

Paul joined West Monroe Partners in 2014 from Long Island Power Authority, where he served as managing director

for contract oversight and previously as vice president of power markets. His responsibilities included oversight of the PSEG Long Island (Public Service Electric & Gas) utility services contract for transmission and distribution operations, customer service, business services, and emergency planning and storm restoration. He was a member of the utility's Risk Management Committee. As vice president of power markets, Paul oversaw power generation, project development, integrated resource planning, and FERC and RTO market policy.



Robert J. Foxen, P.E., C.E.M., Chief Executive Officer, Global Common, LLC

Mr. Foxen is a proven energy project developer and engineering consultant with over 30 years of experience in the energy and environmental fields. He recently managed microgrid feasibility studies funded by NYSERDA in Southampton, Greenport, and Port Jefferson, Long Island, New York. He previously developed and operated a variety of energy projects, including a 54-MW peaking plant in Greenport, New York; two 12.5-MW biomass fired power plants in California; a 500-kW anaerobic digester/cogeneration project in New York; and a 150,000-ton per year wood pellet plant in Georgia.

Robert previously co-founded and was CEO of ERM-New England, Inc., a leading environmental consulting company for Fortune 500 Companies. ERM was acquired in 2001 by 3i Group, plc, a London-based private equity firm. He also co-founded a boutique investment bank and insurance brokerage firm that arranges financing and insurance for brownfield site development. Also, Mr. Foxen has had first-hand environmental regulatory and policy experience with the US Environmental Protection Agency, Office of Water Programs. Mr. Foxen has a Bachelor of Science from Villanova University and a Masters of Engineering from Manhattan College. He also completed the Owner/President Management program at Harvard Business School. He is a registered professional engineer, a Certified Energy Manager, and a Technical Assistance Partner with PSEG-Long Island, and a PACE Funding Partner.



Michael F. McGhee, Executive Director, U.S. Army Office of Energy Initiatives

Mr. Michael F. McGhee is the Executive Director of the U.S. Army Office of Energy Initiatives and is responsible for the development of large-scale renewable and alternative energy projects which enhance energy security and resiliency for Army installations by leveraging private sector financing. Mr. McGhee's responsibilities include the development of projects for onsite energy generation, and control systems to ensure availability of power for Army installations energy requirements. Prior to joining OEI, Mr. McGhee held multiple positions in the office of the Assistant Secretary of the Air Force for Installations, Environment and Energy for 10 years. Mr. McGhee holds Masters Degrees in National Resource Strategy, Business Administration, and Management, and a Bachelor of Science in Mechanical Engineering. He is a licensed Professional Engineer, former Congressional Fellow, and former U.S. Air Force officer.

Microgrid Technology Innovations and Use Cases

Monday, March 18, 2019 | 10:45 am - 12:00 pm

This session will focus on some of the latest microgrid technology innovations and use cases focusing on reliability, resiliency, cyber security and renewable energy integration.



Ross Malme, Partner, Skipping Stone

Ross is an Owner, Partner and Member of the Skipping Stone Board of Directors. Ross joined Skipping Stone in May of 2011 and leads Skipping Stone's Smart Grid and Demand Response Practice. This practice includes leading Skipping Stone's engagement with the US Green Building Council (USGBC) which is enabling LEED points for commercial buildings participating in wholesale

and retail electricity demand response programs. With more than 25 years of experience in the energy services and technology business, Ross is recognized as an international leader in the development of new products and services to serve the energy industry.



**Lee Ragsdale, Senior Vice President, Grid Infrastructure and Compliance
North Carolina's Electric Cooperatives**

Lee leads the power supply team responsible for NCEMC's asset management & compliance (environmental and regulatory), grid infrastructure (transmission, engineering, and grid modernization), and portfolio & resource optimization. He is a member of the NCEMC CyberSecurity steering group and manages the company's EPRI involvement. Prior to his current role, Lee was Vice President of Asset Management at NCEMC, where he led teams responsible for the management and operation of NCEMC-owned power plants, jointly owned resources, and power supply energy operations. He holds a B.S. in electrical engineering from Georgia Institute of Technology, and an MBA in economics from Georgia State University.



Andy Haun, SVP - Chief Technology Officer, Microgrids Business, Schneider Electric

Andy is responsible for driving technology roadmaps necessary to align Schneider Electric's product offer portfolio evolutions in order to simplify and enable the deployment of effective grid-edge solutions. Aligned to this mission, his most recent technology attention has been around the combination of advanced battery-based energy storage solutions coupled with highly efficient inverters as enabling sub-systems for broadly integrated distributed energy resources. Beginning with Square D Company in 1985, Andy has led a variety of key product development and technical innovations during his 30+ year tenure with Schneider Electric and holds 21 patents relating to circuit protection, relaying and power control. He has a Bachelor's Degree in Electrical Engineering from the University Iowa and an MBA from Duke University.



John Glassmire, Senior Microgrid Advisor, ABB, Inc.

John Glassmire is a senior advisor for microgrids, battery energy storage and distributed energy at ABB. Trained as a mechanical/electrical engineer, John has extensive experience in the modeling and design of both distributed and traditional energy supply systems. For over a decade, he has performed cost modeling and design optimization for energy systems ranging from small isolated systems, to isolated Arctic diesel grids, to utility inter-connected microgrids, to Pacific and Caribbean islands. An accomplished speaker, he has led training workshops on the issues integrating renewables into electrical grids for hundreds of clients worldwide. Prior to joining ABB, he was the Director of Engineering at HOMER Energy. BSME (Rice), MSME (Northwestern).

Overcoming Commercial Obstacles for Multi-User Microgrids

Monday, March 18, 2019 | Track A | 1:00 - 2:30 pm

To date, there are relatively few multi-user microgrids (MUMs) in operation, in large part because of a number of significant barriers associated with implementing this novel business model. Exacerbating this, there is a dearth of comprehensive study on these barriers. Consequently, the goal of this research carried out by the Institute for Sustainable Energy at Boston University and the Northeast Clean Energy Council (NECEC) is to provide a first

investigation into the barriers to MUM development and some early hypotheses on potential remedies that would facilitate MUM development.

- Seven primary barriers to MUM development
- Actions that are helpful in addressing these barriers and facilitate successful development of MUMs
- Recommended activities by stakeholders committed to advancing MUM viability
- Topical areas that merit additional research to improve the ability to successfully develop MUMs where they can create significant value for customers



Richard T. Stuebi, President, Future Energy Advisors

Richard Stuebi is a prominent energy innovation executive who has pursued commercial opportunities associated with new energy technologies and innovative business models as an entrepreneur, investor, consultant, advocate and executive. Throughout his diverse career, Richard has served in senior executive roles at large energy sector corporations and energy-related ventures, as a venture capitalist, angel investor and entrepreneur, and in energy-related public advocacy. He has launched new energy businesses, co-founded two venture-funded companies, and led start-ups. Richard is founder and President of Future Energy Advisors (FEA), a management consulting practice providing advisory services to clients pursuing innovative growth strategies related to energy. FEA particularly specializes in opportunities within the rapidly growing and changing distributed energy, renewable energy and energy storage segments of the energy sector.

Prior to founding FEA, Richard was Vice President, US Strategy & Group Technology at National Grid, a multinational electric and gas utility with a \$50+ billion market capitalization. Here, he led strategies for US operations and evaluated technology innovations and emerging businesses models for the company's US and UK businesses.



Dr. Liuxi Zhang, Manager, Emerging Technology, Commonwealth Edison

With more than ten years experience in power energy field, Dr. Liuxi (Calvin) Zhang is now Key Manager of Emerging Technology at ComEd. His team evaluates emerging technologies and their business models for ComEd Smart Grid initiatives, as well as lead and manage smart grid projects, such as microgrid, distributed energy resources (DERs), smart inverter and energy storage. Before joining ComEd, he was lead of distribution systems analytic team in Nexant, where he leads the research, software development and product management of Smart Grid analytic platforms. His expertise includes modeling and analytics of power transmission and distribution systems with renewable energy, EMS/DMS/DERMS applications such as state estimation, load flow and optimization with renewable energy, as well as PMU applications.

Dr. Zhang has led/managed several projects for major Utility companies in US, Europe and Asia. Dr. Zhang is IEEE Senior Member. He is core member of several working groups in IEEE PES Technical Committees. He has been frequently invited as panelist/session chair in major IEEE conferences. Dr. Zhang obtained his Ph.D. from Northeastern University, Boston, MA and his M.S. and B.S. from Shanghai Jiao Tong University, Shanghai, China. He is the recipient of 2013 IEEE PES Outstanding Young Engineer Award in Boston Chapter and 2012 IEEE Student Achievement Award in Boston Chapter.



Robert Morin, Senior Project Developer, Ameresco

Robert Morin has more than 25 years of energy industry experience and leadership in sales, development, and supply chain. He joined Ameresco in 2011 and leads energy project development efforts in the Eastern region focused on distributed energy resources, including Combined Heat & Power (CHP), microgrids, energy storage, and renewable technologies.

Rob leverages technical and commercial skills gained from an engineering background and nearly 20 years working with GE's energy and finance business units. He has fossil and renewable energy expertise, having developed central plant projects, CHP, and peaking generation, as well as renewable projects including biogas, and commercial and utility-scale solar. Rob has developed and implemented business plans in the US and abroad. He received a BS in mechanical engineering from Rensselaer Polytechnic Institute and attended executive training courses at John F. Welch Leadership Development Center, including Six Sigma training and certification.



Michael Yambrach, Capital Projects, Department of General Services, Montgomery County

Michael is responsible for managing and developing capital energy projects for the largest county in Maryland, which has over 400 facilities with close to 1,000 utility accounts. He provides project management for three microgrid systems for high security facilities, managing 15 solar PV projects and implementing energy management software. He is also currently an Advisor in the United States Treasury's Office of Technical Assistance, where he advises international counterparts to the Office of Technical Assistance on energy related matters.

Prior to his current position, Michael was Principal at SEPCOR, where he consulted on the origination of revenue streams from middle east locations, including Dubai, Qatar and Abu Dhabi, and Oman. Prior to that he was Energy Program Manager for the District of Columbia for three years, where he raised \$26 million over two years to implement energy efficiency and renewable projects. In this role Michael had functional responsibility for the supply and demand of all commodities consumed by the District.

- **Andy Haun, SVP - Chief Technology Officer, Microgrids Business, Schneider Electric**

Microgrid Hub Launch: An Online Showcase of Projects for Commercial and Industrial Off-Takers

Monday, March 18, 2019 | Track A | 3:00 - 4:00 pm

The REscale project, led by the World Business Council for Sustainable Development, aims to reach scale in the deployment of renewable-based microgrids by presenting innovative business models and encouraging collaboration across industries and sectors. In this session, companies involved in the project are launching the global Microgrid Hub, an online showcase of microgrid projects that shares learnings on implementation and operation of low-carbon microgrids. The Microgrid Hub features project summary snapshots to inform C&I companies of existing microgrids globally and describes key components considered in the project design phase such as financing, regulation and social benefits. The aim of the Hub is to use existing project case studies to help C&I companies to overcome barriers to development for new microgrid projects in different geographies across the world.



Mariana Heinrich, Manager-Climate & Energy, World Business Council for Sustainable Development

Mariana Heinrich is a Manager in the Climate & Energy team at the World Business Council for Sustainable Development (WBCSD). She is responsible for the Renewable business solution as part of the Low Carbon Technology Partnership initiative (LCTPI), where she leads different working groups that aim to increase corporate procurement of renewable energy, accelerate the deployment of low-carbon microgrids and improve integration of renewables into electricity markets. Mariana is also in charge of the utility program working to decarbonise the power sector and creating new business models for energy companies. Mariana was previously a Senior Consultant with Pöyry Management Consulting for 7 years. In this role, she led projects in the electricity sector focused around the integration of renewables into electricity markets, including market modelling and advising clients on investment decisions. Mariana has a Master's degree in Economics from the Christian-Albrechts-University in Kiel.



John Vernacchia, Segment Manager, Renewable Energy Solutions, Eaton

John Vernacchia is the Segment Manager for Renewable Energy solutions within Eaton's electrical business. Vernacchia has over 35 years of experience in marketing, sales, product management and operations. He has played a major role in the development of Eaton's Renewable Energy solutions to help customers connect solar, wind and energy storage resources to buildings and the utility grid. Vernacchia is a member of the IEEE Power & Energy Society and Smart Grid Community and holds a Bachelor of Science in Mechanical Engineering from Virginia Tech.



James Goudreau, Head of Climate, Novartis

James Goudreau currently serves as the Head of Climate for Novartis Business Services. He crafts strategy and policy for Novartis to increase climate resilience, reduce GHG emissions and increase energy resilience across their global operations. These efforts include managing a diverse portfolio of efforts in technology, partnerships, procurement and climate risk assessments designed to achieve efficiency, resilience and greater shareholder value. Prior to joining Novartis, he culminated a military career as a U.S. Navy Captain working on energy and climate resilience issues in the Pentagon. As the Acting Deputy Assistant Secretary of the Navy (Energy) he focused on increasing operational capabilities and resilience globally for the U.S. Navy and U.S. Marine Corps.

He is a member of the Climate Security Action Group at the Center for Climate and Security at the Elliot School of International Affairs at George Washington University. He also works to improve sustainability and climate resilience in the Boston area as a member of the Board of Directors for the Cambridge Compact for a Sustainable Future and a member of the Board of Directors for A Better City. James holds a Bachelors of Science degree from Norwich University, a Masters in Management degree from Troy University and has completed the Tuck Executive Program at the Dartmouth College Tuck School of Business.

Managing Complex Energy Portfolios, Risk and Capital

Monday, March 18, 2019 | Track A | 4.00 - 4.30 pm

This presentation will detail the methodology being employed by market leading corporations to change the way energy is managed, capital is deployed and sustainability goals are achieved. We will review a use case of a company's U.S. operations to highlight how energy management decisions can be viewed differently through the lens of Treasury, Finance, Sustainability, Energy, and Facilities. Then we will walk through the methodology being

used to tie these stakeholders together to evaluate capital projects, renewable energy opportunities, capital investment decisions and risk management strategies. The presentation audience is corporate energy managers, sustainability professionals, procurement specialists and engineers.



Zachary Power, Director of Strategy, Analytics, Edison Energy

Zach advises on energy strategy development and execution for our clients, having directly contributed to large contracts across utility scale and distributed generation assets. In this role Zach works directly with clients from early stage market assessments and risk mapping through competitive supply solicitations, finance and risk evaluations, internal approvals and commercial negotiations.

Zach joined Edison Energy in 2012 after studying economics at Elon University, where he graduated magna cum laude and Phi Beta Kappa.

Microgrid Policy Barriers and Solutions

Monday, March 18, 2019 | Track A | 4:45 - 5:15 pm

Some of the most significant barriers to microgrid deployment are created by policy and regulatory environments that were not designed to enable microgrids. A variety of regulations do not anticipate the interaction of microgrids with the macrogrid and can have unanticipated effects on microgrid ownership, operation, and design. In general, barriers exist because existing policy regimes have not been efficiently adapted to make use of microgrid capabilities and to maximize the benefits of microgrids for all stakeholders. The resulting regulatory barriers inhibit microgrid deployment in three ways: by prohibiting the deployment of microgrid technologies, by imposing additional planning and design costs, and by preventing microgrids from operating in the most economically efficient way. Although various solutions to these barriers exist, uncertainty about which solutions will be ultimately chosen inhibits microgrid planners from making choices and investments in specific technologies today. NEMA published a study in 2018 identifying these issues and discussing proposed solutions.



**Jonathan Stewart, Industry Director, Utility Products and Systems Division
National Electrical Manufacturers Association (NEMA)**

Jonathan is Industry Director in the Utility Products and Systems Division at NEMA, where he coordinate member activities related to energy management and grid modernization across 10 product sections. Prior to his current position, he was manager of government relations at NEMA.

Prior to NEMA, Jonathan was a director at Andreae & Associates, a boutique international government relations consulting firm advising multinational corporations on strategic government engagement and political risk management. Jonathan holds a Doctor of Law (JD) from the UC Hastings College of Law, and a BA in philosophy from Brigham Young University.

Regulatory Issues and Challenges Facing Utility-Scale and Community Microgrids

Tuesday, March 19, 2019 | Track B | 1:00 - 2:15 pm

Electricity regulation has mostly remained unchanged for the last 100 years. States enter into a "regulatory compact" with electric utilities whereby the State grants the utility an exclusive franchise right to provide electric service to customers within a specific service territory in exchange for the utility consenting to be regulated by the State. This monopoly regulation allows the electric utility to be vertically integrated, meaning that it owns the generation assets, the transmission lines, and the distribution system. Under this regulatory compact, the barriers to entry for utility-scale microgrids owned by third-parties are extraordinarily high. In markets where competition has been introduced, the traditional electric utility must divest its generation assets, making it difficult for an electric utility

to own all the components of a utility-scale microgrid itself. Thus, a new regulatory compact is required to allow for the development of utility-scale microgrids by traditional electric utilities and third-parties alike.

In particular, advanced microgrids could "Uberize" local energy assets to catalyze smart community growth and development and assure robust electricity services. Employing information, communications and control technologies, these dynamic microgrids could enable resource integration, efficiencies and optimal energy investments across end use sectors, such as buildings, transportation, telecommunications, water and waste systems. However, our siloed regulatory structures present a significant barrier to unlocking value delivery. Growing electrification, digitalization and distributed energy are challenging us to modernize our regulatory approaches. Using case examples, this session will address different types of regulatory innovations (including service platforms, coordinated utility and community resource planning and development processes, local energy networks) that could help open the way to developing and managing local energy seamlessly and interchangeably within communities.



Larisa Dobriansky, Chief Business & Regulatory Innovations Officer, General MicroGrids

Larisa Dobriansky is Chief Business & Regulatory Innovations Officer at General MicroGrids. She focuses on regulatory, institutional and financial changes that can leverage the capabilities of advanced microgrids to deliver integrated energy solutions to power systems and communities. Ms. Dobriansky has served in senior management positions within the private sector and U.S. Government. She formerly served as Deputy Assistant Secretary for National Energy Policy at the U.S. Department of Energy, where she spearheaded and secured legislative authorization for the Department's first loan guarantee program for clean energy technologies to address the "Valley of Death" and move technologies out of demonstration and into the marketplace.



Patrick L. Morand, Associate, Duane Morris LLP

Patrick L. Morand practices in the area of energy regulatory law and renewable energy development. Mr. Morand counsels energy clients, including electric and gas utility companies, regional transmission organizations, renewable energy developers, and financial institutions in a wide range of energy regulatory matters before the Federal Energy Regulatory Commission and other federal and state agencies.



Jared Leader, Senior Associate, Advisory Services, Smart Electric Power Alliance

Jared Leader joined SEPA in June 2017, where he joins SEPA's Advisory Services team of experts consulting with multiple utility clients researching, designing and implementing renewable energy programs and business models. Engagements involve community solar and green tariff program design, facilitating industry stakeholder engagement workshops and microgrid planning and preliminary economic analysis. Jared is the staff lead for SEPA's Microgrid Working Group and co-leads SEPA's consulting engagement with the D.C. Public Service Commission facilitating the grid modernization (MEDSIS) working group process in the District. Prior to joining SEPA, Jared spent three years as a consultant at Arcadis US. Jared was responsible for the design, implementation, and management of several environmental programs for both municipal and commercial clients in the energy and water sectors. Jared holds a bachelor's degree in civil and environmental engineering from the University of Virginia, where he conducted research on algae-based bio-fuels and focused in sustainable practice. He is currently earning his MS in Energy Policy and

Climate from Johns Hopkins University in Washington, DC.

Integration of Energy Storage, Demand Flexibility and Distributed Intelligence Microgrid Control to Enable New Business Models

Monday, March 18, 2019 | Track B | 2.15 - 2.45 pm

The Monash Microgrid connects 25 retrofitted buildings with 3.5MW of highly flexible peak demand, 11 substations, 1.5MW of solar PV with smart inverters and solar forecasting, electric vehicle charging and the recently installed large energy storage (1MWh hybrid flow and Li-ion). The microgrid operates as a smart city with each building treated as an individual customer to ensure replicability to a range of energy markets.

This session will discuss how Monash is using a high penetration of DER, layered intelligence, distributed optimisation and a next-generation IoT communication system to design and implement a cyber-secure, peer-to-pool energy market which will maximise cost effective and contestable optimisation for precinct customers, seamlessly provide electrical stability and resilience to the local embedded network (DSO), and be able to sell network services to the broader grid. Monash University and its international partners in this project are creating a living laboratory that will provide solutions to meet the challenges of the energy trilemma.



Giovanni Polizzi, Energy Solutions Manager, Minsait (an Indra company)

Giovanni holds an engineering degree and a post-graduate diploma in Renewable Energy Technology and another in Processes Innovation. For the past 15 years, Giovanni has been leading several innovative technology projects to support distribution of electricity and gas and power generation, in international energy companies as Enel, Enel Green Power, Cambridge Water and Gas, Endesa, Union Fenosa Gas, Gas Natural Fenosa, in Europe and in Latin America. From 2015, he is leading the Business Development for Energy Solutions in Australia and collaborating with the power industry to design the grids of the future.

Leveraging a Cyber-Secure Building Automation System to Optimize Microgrid Operations

Monday, March 18, 2019 | Track B | 3:00 - 4:00 pm

While most if not all buildings within a microgrid have some level of building automation system (BAS), not much thought is typically given these systems when considering operating the microgrid. Certainly, the microgrid controller coordinates the supply- and demand-side activity in conjunction with the point of common coupling with the external grid. The degree to which that controller effectively integrates with the broader BAS, however, varies greatly. Complicating matters are the varied cybersecurity requirements in place in the different DoD services and civilian agencies.

This panel discussion will feature speakers from customer microgrid sites as well as BAS personnel to provide an update on what is being done and the technical and economic limitations to the art of the possible.

- DoD cyber requirements as they impact BAS and microgrid control systems
- Capabilities of BAS in regards to how they can interoperate with microgrid controllers
- Benefits of a somewhat 'seamless' integration between the two control systems.



Kevin T. Smith, Chief Technology Officer, Tridium

Kevin T. Smith is the Chief Technology Officer of Tridium, providing technology strategy and direction for the company. The author of seven technology books on the subjects of cybersecurity, semantic interoperability, and software engineering, he is a frequent speaker at industry conferences on various topics, including a focus on cybersecurity and building control systems. For more than 25 years, Kevin has led technology organizations and endeavored to develop highly secure, data-focused software solutions for a wide variety of customers, including the US government and commercial industry.



Scott Boehm, Director, Vykron Building Energy Security, Tridium, Inc.

Scott is highly experienced in building automation and intelligent building projects. Joining Tridium in 1999, Scott served many roles in the company during its startup phase. He has planned and specified open automation infrastructures for some of the most progressive building owners and property managers in both the public and private sectors. Honorably discharged from the USAF, Scott was/is a key player in Belimo Aircontrols and Tridium, two notable companies which have reshaped the commercial controls market.

New Jersey Town Center Distributed Energy Resource Microgrids: Technical Feasibility & Project Updates

Monday, March 18, 2019 | Track B | 4:00 - 4:30 pm

The NJ Board of Public utilities has awarded 13 Towns with phase 1 grants to perform studies for developing multiuser microgrids. As of October 30, 2018 3 studies have been submitted. This presentation will provide a summary of the TCDER program and status and explore in depth the studies for Hoboken, Trenton, Neptune and Galloway. The technical feasibility as well as regulatory and financing issues will be discussed. To the extent that additional studies are submitted by the time of the conference they will also be included.



Joseph T. Sullivan, Vice President, Energy Policy & Development, Concord Engineering

Joseph Sullivan has forty one years of supervisory, management, and executive experience in the energy sector, joining Concord Engineering as Vice President of Energy Policy and Development in June, 2011. Prior to this he served as Director of the Division of Economic Development and Energy Policy at the New Jersey Board of Public Utilities (NJBP). He also previously served as the BPU's Business Energy Ombudsman.

As the Director of The Division of Economic Development and Energy Policy his responsibilities included the development of policies that promote competitiveness and facilitate New Jersey's growth and success. The Division was also responsible for the New Jersey Energy Master Plan, the management of the American Recovery and Reinvestment Act funds in New Jersey as well as the Clean Energy and Renewable Energy programs. The overall mission of the Division under his supervision was to create jobs, retain existing jobs, and stimulate industrial and commercial growth in New Jersey through BPU policies and strategies in the utilities sector. This involved partnering with communities and the private sector to foster job creation by promoting innovation in all regulated areas.

The Industrial Internet Consortium Microgrid Testbed: Design, Implementation, and Lessons Learned

Monday, March 18, 2019 | Track B | 4:45 - 5:15 pm

With well over 200 members, the Industrial Internet Consortium (IIC) is the world's leading organization accelerating the networked future of industrial systems. The IIC mission is to develop the guidance needed to securely connect and profitably deploy intelligent systems across devices, edge, and cloud. The IIC microgrid testbed addresses the computing architecture for future DER systems. DER systems will require a fast, reliable, synchronized distributed network. The IIC testbed seeks to prove that microgrid designs can leverage the modern software architectures developed in "Industrial IoT" industries. The technology is proven in thousands of applications, including autonomous vehicles, air traffic control, military systems, and hospital device networks. It is also being used for large power systems, including the massive Grand Coulee Dam hydropower plant and Siemens Gamesa wind turbines. This talk will explain how the testbed uses and extends the OpenFMB design developed and used by Duke Energy, Oak Ridge National Labs, and others.



Erik Felt, Market Development Director, Future Grid, [Real-Time Innovations](#)

Erik Felt is the Market Development Director for Future Grid at RTI where he is focused on bringing the benefits of IIoT standards and systems into the utility market. Erik joined RTI after spending seven years with GE Power (including five years with Alstom Grid prior to the GE acquisition) in the Software Solutions/Energy Connections business unit. His focus was on software solutions in the areas of SCADA, Energy Management Systems (EMS), Generation Management Systems (GMS) and Synchrophasor applications. Throughout his career, Erik has worked with utilities, generation companies and ISO/RTOs worldwide where the rapid changes in technology and the market's diverse needs required implementation across the utility spectrum. Early in his career, he worked in distribution engineering at two Midwestern utilities and in a consulting role on numerous automation projects for utilities across the Midwest.

Tuesday, March 19, 2019

C&I Microgrids: Current Case Studies, Market Status, and Directions Forward

Tuesday, March 19, 2019 | 8:30 - 9:30 am



Gregg Murphy, Vice President, Business Development, [Blue Planet Energy Systems](#)

Gregg Murphy first found his passion for renewable energy in 1994 where he built an off grid solar powered home. Gregg's home was featured in The Solar Home Tour. From that point he founded Solar Northwest where he taught college extension courses on renewable energy and helped many people cut the cord to carbon based fuel utility power. Gregg most recently was a Partner and Director of Sales at Revolusun in Honolulu. He developed the (RevoluSun Way) selling process and authored the (Solar Masters) training course. Under Gregg's leadership Revolusun won numerous awards, locally and nationally. He was pivotal in growing Revolusun as a market leader, as well as developing and managing franchisee's whom purchased a RevoluSun Franchise. Currently Gregg is the V.P. of Business Development for Blue Planet Energy responsible for a 4X increase in sales volume with locations in Hawaii, Puerto Rico, and California. Gregg manages multiple channel selling strategies, building, developing and managing a sales team to help decrease our nation's dependency on carbon based fuels for energy.



Steve Pullins, Vice President, Development, [Dynamic Energy Networks](#)

Mr. Pullins is Vice President of Development for Dynamic Energy Networks ("DEN") and has more than 40 years of utility industry experience in operations, maintenance, engineering, microgrids, and renewables project development. Mr. Pullins previously was a Vice President, Energy Solutions at Hitachi America. Prior to his time at Hitachi Mr. Pullins led the nation's Modern Grid Strategy for DOE's National Energy Technology Laboratory. Mr. Pullins has worked with more than 20 utilities in Smart Grid strategies, renewables strategies, power system optimization, and microgrids. Mr. Pullins has designed more than 60 microgrids. Mr. Pullins is the past Chair of the IEEE PES Intelligent Grid Coordinating Committee, a member of the Transactive Energy Association, an Advisor to the Microgrid Institute, a member of the World Alliance for Decentralized Energy, and an Advisor to Xendee. Mr. Pullins has advised several international utility and government organizations on Smart Grid technologies and operations, microgrid development, integrating intelligence, new power generation, and waste to energy issues. He holds a BS and MS in Engineering.



Allan Schurr, Chief Commercial Officer, [Enchanted Rock](#)

Allan Schurr joined the Enchanted Rock team in 2018 and brings go-to-market expertise from over 30 years of experience in commercial and industrial energy services and innovative utility solutions. Allan is responsible for direct sales, corporate and product marketing, and channel sales functions. Prior to joining Enchanted Rock, Allan was founding president of Edison Energy LLC, an energy advisory and solutions unit of Edison International, was vice president for IBM's Energy and Utilities industry, led marketing and business development at Silicon Energy, a pioneer in enterprise energy management software that was later acquired by Itron, and utility and non-utility senior roles at Pacific Gas and Electric. Allan holds a Bachelor of Science degree in mechanical engineering from the University of California, Davis, a masters degree in business administration from St. Mary's College in California, and is a registered Professional Engineer in the State of California. He is co-inventor on seven patents related to distributed energy.

- [Peter Asmus, Research Director-Microgrids, Navigant Research](#)

Resilient, Sustainable and Local: Establishing Microgrids with Waste-to-Energy Facilities

Tuesday, March 19, 2019 | 9:30 - 10:30 am

Waste-to-Energy (WTE) facilities can be a resilient source of energy, generating power when other energy sources cannot and are often located adjacent to or nearby other critical infrastructure. By establishing a microgrid with WTE facilities as anchor power generators, communities will gain the ability to operate independently from the power grid during emergencies and maintain power supply to connected critical infrastructure - such as hospitals, police and fire departments and wastewater treatment. In addition to their ability to remain operational during emergencies such as hazardous weather, WTE facilities can manage waste from those events and thus facilitate more- rapid recovery. These facilities provide sustainable and renewable power from locally generated fuel - waste from the community in which they operate. Along with partners, Covanta has been exploring the development of several microgrids throughout the United States. During this session, the presenters will discuss current microgrid and related development projects in Camden, NJ, Fairfax County, VA and Onondaga County, NY and the important considerations when exploring microgrid opportunities.

- Feasibility assessment
- Stakeholders roles and responsibilities

- Integration/isolation with the current grid
- Enabling rules and regulations
- Capital funding and business model
- Microgrid operations



Sami Kabbani, Senior Vice President of Energy, Covanta

As the Senior Vice President of Energy at Covanta, Sami Kabbani is responsible for addressing energy issues (power, gas, and steam) associated with the company's plants located various regions of the United States. His responsibilities include origination and marketing of energy and renewable products, energy contract structuring, restructuring and negotiations, pricing and analytics, ISO scheduling/bidding activities and energy growth business development. In addition, Sami oversees the company's Energy Risk Management program and associated hedging activities as well as the retail sales program. He has been involved with the power industry since 1987 and served in different positions addressing a wide array of issues covering both supply-and demand-side areas, retail sales, development, financing, and power market assessments in both domestic and international power markets.



Andrew H. Kricun, Executive Director / Chief Engineer, Camden County Municipal Utilities Authority

Andrew H. Kricun is the Executive Director and Chief Engineer of the Camden County (NJ) Municipal Utilities Authority, which operates an 80 million gallon per day wastewater treatment plant and a large regional sewer system that services over 500,000 customers in southern New Jersey. Andrew graduated with honors from Princeton University with a bachelor's degree in Chemical Engineering. He also has a professional engineer's license in civil engineering and over 25 years of experience in environmental engineering. He has also been selected as a Board-Certified Environmental Engineer by the American Academy of Environmental Engineers. Andrew recently received an *Environmental Quality Award* from the U.S. Environmental Protection Agency (EPA) and was also the 2012 recipient of the *Praxis Award for Professional Ethics*.



Jeffrey P. Price, President, OnGrid Options, LLC

Jeffrey P. Price founded OnGrid Options, LLC to bring Secure Power Enclaves projects to market. He developed the patent-pending technology for Secure Power Enclaves that can provide resilient electric service to critical infrastructure. Jeff is an expert on electric power markets and technologies. His work for over four decades has focused on those markets and technologies as well as resource choices for the electric power sector, both in the United States and internationally. Much of this work has been on microgrid and secure power enclave development, the design of retail electric markets and business models for those markets, and the integration of distributed energy resources. Jeff previously was Cofounder and Managing Partner of Bluewave Resources, LLC, a management and economic consulting firm focused on the electric power sector.

Microgrids In MISO and Their Reliance on T&D Infrastructure: University of St Thomas Renewable Energy Facility Microgrid Case Study

Tuesday, March 19, 2019 | 10:45 - 11:30

Microgrids' primary purpose might be research, reliability, resiliency or off-grid. However, microgrids in Midcontinent ISO (MISO) region in our experience continue to rely on T&D infrastructure and hence would need transmission network. The University of St. Thomas Renewable Energy Facility (USTREF) Microgrid Project funding is provided by customers of Xcel Energy through a grant from the Renewable Development Fund. Discussing USTREF in depth, this session focuses more on the real life experience of bringing a microgrid concept to life.



Greg S. Mowry, Professor and Program Director, Renewable Energy and Alternatives Laboratory (REAL), University of St. Thomas, St Paul, MN

Dr. Greg Mowry came to the University of St. Thomas in 2003 with 25 years of bleeding-edge engineering, research, and product development experience in nanotechnology based companies. Dr. Mowry has performed both fundamental and applied research as well as the engineering required to transform research concepts into successful high-volume products. More recently Dr. Mowry has focused his efforts on power, power electronics, and distributed hybrid alternative energy systems which find use in industry and in developing countries. His concern for the environment and the energy future of civilization has resulted in Dr. Mowry leading student project teams into countries such as Moldova, Tanzania, and Uganda where hybrid energy systems have been deployed -- all for the common good.



Rao Konidena, President, Rakon Energy LLC

Rao Konidena is President of Rakon Energy, a firm which provides wholesale energy market expertise to distribution system experts focusing on energy storage and distributed energy resources. Prior to Rakon, Rao was Principal Advisor-Policy Studies at Midcontinent Independent System Operator (MISO). He began his work with MISO in the areas of resource adequacy and transmission planning. He and his team developed demand side and clean technology options as alternatives to generation in the 20 year long term transmission expansion planning process.

The MassCEC Community Microgrids Program: Program Direction, Preliminary Findings and Outcomes, and Lessons Learned

Tuesday, March 19, 2019 | 11:30 am - 12:00 pm

The Commonwealth of Massachusetts has supported energy resiliency improvements throughout the state with a series of incentives and study programs aimed at public facilities, hospitals, and communities. As part of the current MassCEC Community Microgrid Program, Microgrid Institute is performing project feasibility assessments in both Eversource and National Grid territories. Community partners supporting the projects include, respectively, the City of Boston (Boston Planning and Development Agency), City of Pittsfield, and Town of Palmer, together with other government and commercial customers in the project communities.

Microgrid Institute is engaging community stakeholders and coordinating the team's multidisciplinary assessment of technical, financial, and business factors, including cost-benefit analysis. All three of the studies being led by MGI will assess potential to integrate solar photovoltaic generation together with battery energy storage to support resilient energy service for critical facilities in the microgrid areas. Additional resources and technology options being analyzed include hydropower and natural gas-fired combined heat and power, in multiple configurations including new district heating and cooling networks. During this session, Microgrid Institute Washington Counsel Michael

Zimmer will discuss Massachusetts the direction and outcomes of energy resiliency programs, as well as preliminary findings, outcomes, and lessons learned from MGI's feasibility assessment work in Massachusetts.



Michael J. Zimmer, Washington Counsel, [Microgrid Institute](#)

Mr. Zimmer is Washington Counsel to Microgrid Institute, and previously served as senior counsel with Thompson Hine LLP, practicing in the firm's Energy unit in the Corporate Transactions Group in Washington, D.C. He focused on natural gas, electricity, water and utility regulation, dispersed energy, cogeneration and micro grids, renewables and environment, and energy corporate acquisition and project finance transactions nationwide. He has been involved since 1985 in mergers, acquisitions, construction, development and project financing assignments in the non-utility generation, renewables, natural gas and electric, rural cooperatives, clean tech energy, emissions trading, and manufacturing sectors. Some of these transactions involve financings for some of the largest undertakings in the United States in these industries, with a composite value in his career exceeding \$15 billion. He has over a decade's international experience on energy and renewables transactions in over 25 countries, and has served on the development of energy and infrastructure projects in over 35 states in almost 40 years of service.

Rethinking the Grid: Nanogrids for Home Owners, Businesses and Communities

Tuesday, March 19, 2019 | 12:45 - 1:45

The electricity grid is in the midst of a paradigm shift. Consumers are rapidly turning into prosumers coupled with a demand for more insight and control over energy production and consumption. Whether motivated by financial savings, environmental stewardship, or concerns of safety and security in the face of increased power outages, individuals, business owners and communities are investing in their own personal nano grids. Reducing electricity costs when the utility grid is functioning and supplying readily configurable power during grid failures, smart micro grids consist of solar, storage and dynamic load management offering full smart home energy control. This talk will discuss the social, economic and technical drivers for adopting nanogrids and how such adoption can be a win-win for consumers and utilities.



Dr. Anna Demeo, Director of Smart Grid R&D, [Racepoint Energy](#)

Dr. Anna Demeo is the Director of Smart Grid R&D for Racepoint Energy. She has worked in industry as an electrical engineer specializing in system design for over 20 years. She has worked in numerous industries including telecom, IP network infrastructure, marine systems, power systems and smart-grid technology. Dr. Demeo's current research focuses on monitoring and control of adaptive smart grids with high penetration of renewable energy that leverage current and future markets. A related area of research is utilizing a systems engineering approach to model and design community-scale renewable energy solutions for small businesses and municipalities, compatible with incremental capital investment. Dr. Demeo has a B.S. in Electrical Engineering from the University of Colorado, an MS in Marine Bio Resources from the University of Maine and a PhD in Engineering in the Natural Sciences from Mechanical Engineering at University of Maine, Orono. She has consulted with businesses and universities in the U.S. and Europe and was a Visiting Professor at the Energy Center at EPFL in Lausanne, Switzerland in 2017/2018. Dr. Demeo's academic teaching was featured in the business section of the *NY Times*.



Aron Bowman, Chief Operating Officer, ELM FieldSight

Aron has been with ELM since 2014. After majoring in manufacturing engineering at Bradley University, Aron spent 15 years at eServ, a product and processes development firm that was acquired by Perot Systems in 2006 which in turn was acquired by Dell Technologies in 2009. Over the course of his career Aron has held positions as mechanical engineer, lead engineer, technical account manager and account executive for customers including Caterpillar, Harley Davidson, Whirlpool, General Dynamics, Northrop Grumman and Raytheon. Over the last 5 years at ELM, Aron has been responsible for leading the FieldSight product line which provides IoT-based products for smart energy, microgrid, distributed energy and compliance-as-a-service solutions while also managing relationships with both customers and strategic partners such as Dell, Intel and Microsoft. In his personal time Aron participates as an advisory board member for a technology startup in Frisco, TX, volunteers for multiple activities at his children's schools and has coached football, basketball and baseball as they have grown up.

RIAPS: An Open Source Microgrid Operating System

Tuesday, March 19, 2019 | 1:45 - 2:15

Can microgrids achieve massive scalability and are there lessons from other fields to apply to the power system? Yes. The Linux Foundation has achieved global transformation of telecommunications, financial services, healthcare and other industries through the creation of open source, vendor agnostic operating systems supported by thousands of contributors. Consider Apache Web Server which started in 1995 and became the first server software to run over 100 million websites. You can think of Apache as the "plumbing" of the internet.

LF Energy, a new program of the Linux Foundation, plans to lead a similar revolution for the power system again using open source, vendor agnostic operating systems. The Resilient Information Architecture Platform for Smartgrids (RIAPS) is a Linux-based OS ready for deployment and new app development. Developed by a consortium of Universities with DOE funding, RIAPS handles the "plumbing" of microgrid control (e.g., abstract functions, time synchronization, and I/O accessibility) so you can focus on value added processes (e.g., energy management, system stability, and distributed control). This engaging presentation will provide details on how the platform works as well as demonstrations of the programming environment and sample applications.



**Ken Dulaney, PE, Director of Industry and Innovation
FREEDM Systems Center, NC State University**

Ken is Director of Industry and Innovation at NC State University's FREEDM Systems Center. In this role he manages and provides member services, supports the Industrial Advisory Board, creates and manages innovation programs for students and faculty, and manages licensing and commercialization of Center developed intellectual property. Prior to his current position he was a contractor at the Electric Power Research Institute (EPRI), Vice President of Engineering at Advanced Energy Corp, and a mechanical engineer at URS Corporation. He holds a Masters degree in mechanical engineering from The University of Texas at Austin, a Bachelors in mechanical engineering from Georgia Institute of Technology, and a Bachelors in physics from Furman University.

Synergistic Microgrid Business Models

Tuesday, March 19, 2019 | 2:30 am - 3:30 pm

One of the challenges in developing community microgrids is how a combination of essential community facilities may be integrated into a microgrid in an economically viable manner. Unlike commercial microgrids that may easily justify paying a substantial premium for the reliability provided in the context of high value operations in a single facility, a community may not be able to afford to include a broad range of facilities into a microgrid. A synergistic microgrid business model may offer the potential to leverage a range of community assets (load and generation) where the varying characteristics of those assets enable the creation of an economically viable portfolio. A key aspect of a synergistic microgrid is to identify opportunities to enhance the value of a portfolio of resources by leveraging resource characteristics.

One example of such a synergistic microgrid would be the development of a community microgrid including electric vehicle charging facilities. The microgrid may or may not be commercially feasible excluding the vehicle charging facilities; however, due to the networked and programmable ability of the charging facilities and the price benefits of charging during the hours when rates are low or even negative (system over-generation), this type of microgrid provides a greater ability to arbitrage compared to an EV charging facility combined only with storage. Thereby, the value created by the whole microgrid (including the EV charging facilities) is greater than the sum of its parts.

The purpose of this panel is to explore and possibly identify such opportunities explicitly with the objective of providing examples where a combination of resources expands the value of the whole portfolio.



Shiv Mani, Senior Analyst, Federal Energy Regulatory Commission*

Shiv Mani develops, leads, and implements national electricity policy with respect to new energy technologies, renewable energy, distributed resources, microgrids and innovative electricity market design as a senior analyst in the Office of Energy Policy and Innovation at the Federal Energy Regulatory Commission (FERC). His background spans the whole spectrum of electricity markets from wholesale power generation, transmission and retail distribution including utility regulation and third party supply. Shiv has played a leading role in the restructuring and deregulation of the power industry, in the development of demand response and in developing national transmission policy.

Over the past 20 years, he has provided executive level strategic and technical leadership to energy companies, RTOs/ISOs, utilities, governments, corporations, financial institutions and consumer advocates in transmission planning, retail energy solutions, electricity market design, natural gas market dynamics, incentive regulation, energy efficiency, demand response and the integration of distributed generation and variable resources. Shiv has a B.A. (Hons.) in Economics from the University of Delhi and a M.S. degree in Environmental and Regulatory Economics from the University of Wyoming.

**Note: This panelist is participating in a private and individual capacity and he is not representing the Federal Energy Regulatory Commission or any other United States government agency. The views and opinions expressed in this presentation are the author's views and do not reflect the opinions of the Federal Energy Regulatory Commission or any other U.S. government agency.*



James Ellis, Senior Director, Utility Solutions, ChargePoint

James Ellis is the Senior Director of Utility Solutions for ChargePoint, the world's largest electric vehicle (EV) charging network. In this role, James advises electric utilities and other key stakeholders on electric vehicle trends, market engagement and investment opportunities, and supports the development of policies and programs to accelerate the adoption of EVs and EV charging equipment and services. Prior to joining ChargePoint, James served as the Director of Electrification and Electric Vehicles for Pacific Gas and Electric Company with a focus on developing products and programs to support customer needs in the fastest growing EV market in the United States (US). During this time, James also served as

a board member for the California Electric Transportation Coalition and the California Plug-In Vehicle Collaborative, working with government and industry stakeholders to identify and advocate for accelerated transportation electrification through incentives, infrastructure, education and outreach initiatives. James has also held additional leadership positions in the automotive and utility industries, including EV Regional Manager for Nissan North America in the Corporate Planning and Sales & Marketing organizations and Senior Manager for Transportation and Infrastructure in the Environment and Technology Innovation organization at the Tennessee Valley Authority, developing and implementing electrification programs and metrics, leading utility plug-in readiness activities and carbon reductions strategies.



Brian G. Morrison, Principal, Industrial Economics (IEc)

Mr. Morrison specializes in the analysis of regulations and programs designed to preserve environmental quality, enhance health and safety, and improve the management of natural resources. His expertise ranges from applied economics and risk assessment to the development of guidance and outreach materials to support program implementation. Mr. Morrison has employed these skills in a wide range of projects for public agencies, including Environment Canada, Fisheries and Oceans Canada, Health Canada, the National Oceanic and Atmospheric Administration, the U.S. Army Corps of Engineers, the U.S. Department of Justice, the U.S. Department of Transportation, the U.S. Environmental Protection Agency, and the U.S. Fish and Wildlife Service. Mr. Morrison is a graduate of Harvard University's John F. Kennedy School of Government, where he earned a Master's degree in Public Policy and was awarded a Harvard University fellowship. He received his B.A. from St. Lawrence University, where he graduated *summa cum laude* with Honors.

EV Charging DC Microgrids as an Answer to the Sharp Grid Capacity Demand Rise From EV Fast Charging Infrastructure

Tuesday, March 19, 2019 | 3:30 - 4:00

In the next several years the utility grid will experience a new phenomena - a sharp rise in demand for capacity from a completely new type of load - EV Fast Chargers. Major plans are underway to install thousands of fast charging points just in the next 2-3 years with growth anticipated to accelerate after with the rising adoption of EVs. With smallest fast chargers at 50kW, and larger ones at 150Kw or higher, a typical station can easily be 500-600kW in peak load. This new massive load with massive proliferation will come at a high capital and operational costs for the electrical energy market stakeholders and strain already strained grid.

Can microgrids address this? Is DC Microgrid technology the answer to this? What is missing for this technology to address the challenge? What efforts are underway in this direction? What other benefits the EV Charging DC Microgrid approach can generate from the assets?

- DC Microgrid is indeed the technology to address the proliferation of EV Fast Charging infrastructure
- Capital Cost associated with installation and interconnection cost get significantly reduced
- Demand charges and energy cost is lowered
- EV Charging DC Microgrid can generate value streams in addition to charging, e.g. reduction of demand charges and backup services to other loads at the host facility



Aleksey Toporkov, President, **ARDA Power**

Aleksey was ARDA's first investor and has been leading the company since 2013. Prior to joining ARDA Aleksey was co-owner and CEO of a Schindler Elevators and Escalators' JV in Russia. Upon completion of an exit for the JV founders Aleksey joined Schindler USA where he managed their Cost Leadership and Industrialization Programs.

Long-term Optimization of Microgrids and Energy Storage

Tuesday, March 19, 2019 | 4:00 - 4:30

This session will discuss strategies for microgrid sizing and techno-economic dispatch optimization based on model predictive control. We will examine the foundations for Enernet Global's optimization models and a number of learnings and challenges in its development and adoption.



Stephen Schneider, Chief Information Officer, **Enernet Global**

Stephen Schneider is the Chief Information Officer at Enernet Global, a 20-person company focusing on microgrid project development with offices in New York, Adelaide, and Manila. Stephen leads a small Systems Engineering team, which develops an internal product called Gridscape for microgrid sizing and techno-economic dispatch optimization based on model predictive control. Stephen holds a Biomedical Engineering undergraduate degree from Boston University and Masters in Civil and Environmental Engineering from Stanford University. There, he focused on the technical and economic aspects of renewable power systems and distributed generation, as well as numerical computing, controls, and modeling. He has worked in a number of sectors, including biofuels (Codexis), electric vehicles (Better Place), software development (MathWorks), and now project development and financing (Enernet).

Wednesday, March 20, 2019

Workshop: Microgrid Financing and Economics

9:00 am - 12:20 pm

Location: Constitution Hall, American University

The microgrid sector is experiencing high growth rates and rapid evolution as microgrids become an increasingly cost-effective alternative for integrating renewables, ensuring reliable power and electrifying off-grid sites. However, both the technical operations and economics of microgrids differ significantly from conventional power plants and grid-tied renewable plants. Microgrids are typically more complex systems that can offer a broader range of services and benefits to their energy-users than conventional power options; all of which need to be considered and evaluated when determining the feasibility of microgrid projects.

In addition, microgrids are capital intensive projects requiring significant upfront investment. The system economics directly impact the ability and cost of financing which will often determine whether a project is able to go ahead. Investors and financiers will evaluate projects according to a range of standardised metrics and risk criteria.

This half-day workshop is intended for project owners, developers and investors who are preparing microgrid projects and need to consider the economic and financial aspects in order to obtain financing or sell projects. It will

also be of interest for participants in other sectors, including equipment suppliers and advisors, who may be asked to participate in project financing or for whom project economics are relevant.

The workshop will be a mix of educational sessions and more interactive session with participants expected to participate. Participants are encouraged to forward questions, issues or case studies ahead of time for these to be included or covered in the workshop.

Agenda

8:30 - 9:00 am Registration and coffee

9:00 - 9:45 am **Review of Microgrid economic concepts and component economics**

- Applicable economic and technical terms relating to microgrid systems
- Main components of microgrid systems (generation, distribution, balance of plant)
- Component economics and use cases

9:45 - 10:30 am **Economic and financial evaluation of projects**

- Key system economic metrics including LCOE, capex, cashflow, pay-back period, IRR
- System financing
- Consideration depending on stakeholder perspective

10:30 - 10:50 Coffee Break

10:50 - 11:30 **Case studies - village system and commercial system**

- Practical overview of two case studies - one village system and a commercial system
- Comparison of microgrid system with alternatives

11:30 - 12:10 **Interactive session on improving Microgrid project economics**

- Identification of key drivers of microgrid economic performance
- Discussion on options for improving economics (increasing or broadening revenues, reducing capex or operating costs)

12:10 - 12:20 **Wrap up and questions**



Workshop Facilitator

Arnaud Henin, Managing Director, **Gommyr Power Networks**

Arnaud Henin is managing director of Gommyr Power Networks, a microgrid and distributed generation-focused advisory firm, where he leads work on distributed renewable generation, energy storage, and microgrid projects. Arnaud brings more than 12 years experience in the renewable energy and finance sectors covering business, economic and technical issues. He is focused on working on sustainable business models for deploying renewable energy in microgrid and localised power solutions, and covers Europe, Africa and the Middle East.

Previous Microgrid Innovation Forum Attendees Include:

- 127 Energy
- 3Angle Capital
- Aalborg University
- ABB
- [Acciona Energía](#)
- Adaptive Balancing Power
- [Akuo Energy](#)
- Alliance for Rural Electrification
- [Altairnano](#)
- Ameren
- American Public Power Association
- [Anbaric Power LLC](#)
- APESF
- Aquion Energy
- ARDA Power
- [Arelis Group](#)
- [Associação de Energias Renováveis](#)
- BC Institute of Technology Centre
- [Benoolend](#)
- Black & Veatch
- Blue Pillar
- Boeing Research & Technology Europe
- Boreal Renewable Energy Development
- BU Africa
- Burns & McDonnell
- Canadian Solar
- Catalonia Institute for Energy Research (IREC)
- CENER
- Center for Climate and Energy Solutions
- CERTS Microgrid Project
- CEZ Distribuce Corp.
- Circular Energy
- Colorado State University
- [ComRent International](#)
- CPG Advisors
- CPS Energy
- CSEM SA
- Customized Energy Solutions
- [cyberGRID GmbH](#)
- DC Public Service Commission
- DEG - German Investment Corporation
- [Deutsche Investitions- und Entwicklungsgesellschaft mbH](#)
- Distributed Generation Ltd
- Distributed Sun LLC
- DNV GL
- Duke Energy
- Dynamic Energy Group
- [Dynapower Company](#)
- E.ON UK
- EDA RENOVAVEIS
- EDF Renewable Energy
- Edison Electric Institute
- Edison International
- EDP
- EDP DISTRIBUIÇÃO
- [Efacec Power Solutions](#)
- Electric Power Research Institute (EPRI)
- Emerge Alliance
- Emerson Network Power
- [Enbala Power Networks](#)
- Enchanted Rock
- [Eneco B.V.](#)
- [EnerCo](#)
- Enercon GmbH
- [Enercutim](#)
- Energy Storage Report
- [EnergyIN](#)
- [EnerNex](#)
- [Engie](#)
- [Enphase Energy](#)
- [Ensol Tanzania Ltd](#)
- Eos Energy Storage
- ERDF
- EREN RENEWABLE ENERGY
- ETAP
- EURELECTRIC
- Exelon
- FERC
- Fluidic Energy
- [Fluktuat](#)
- FREEDM Systems Center, NC State
- [Freie Universität Berlin](#)
- [Fronius España S.L.U.](#)
- Fronius International GmbH
- Frost & Sullivan
- [FuelCell Energy](#)
- GDF Suez
- GE Power & Water
- General Microgrids
- [Gildemeister Energy Storage](#)
- [Gommyr Power Networks](#)
- Grupo Impresa
- Hatch Electro-Technologies
- Honeywell
- HSB Engineering Insurance
- Hydro-Quebec
- Idaho Power Company
- [Industrie Canada](#)
- [Ingeteam Power Technology, S.A.](#)
- [Innhotep Think Tank for Innovation in Energy & Cleantech](#)
- INTRACOM DEFENSE ELECTRONICS
- IPERC
- IREC
- [janom s.r.o.](#)
- K2J Environmental
- Keystone Steel & Wire
- Korea Polytechnic University
- Landis + [Gyr](#)
- Lawrence Berkeley National Lab
- [Leclanché SA](#)
- Leidos
- Lockheed Martin Energy
- Lux Research
- Marsh Creek LLC
- Martifer Solar
- MC Consulting
- Microgrid Institute
- [MinesParisTech](#)
- Mitsui & Co. Ltd.
- Morrison Foerster LLP
- [MotuSolar](#)
- [Narada Power Source Europe](#)
- Navigant Research
- NEDO
- [Nemotec](#)
- NY Independent System Operator
- NY State Smart Grid Consortium
- NextEra Energy
- Northern Power Systems
- [NovaTech LLC](#)
- [Olidata spa](#)
- [Omnetric Group](#)
- Omron
- OPAL-RT Technologies
- Oxford University
- Pareto Networks
- Peerless Lighting
- Pepco Holdings
- Power Analytics
- Princeton Power Systems
- [QIDO Energy Development](#)
- [Qinous GmbH](#)
- R.E.S. Ltd.
- [Redflow Europe GmbH](#)
- RELUMO
- [REpower Systems Inc.](#)
- [ResoTek, Inc.](#)
- Rhombus Energy Solutions
- [Robert Bosch España S.L.U.](#)
- RVE.SOL
- S&C Electric
- [Saft America](#)
- Sail Capital Partners
- San Diego Gas & Electric
- Sandia National Lab
- Saudi Aramco
- [Saviva Research LLC](#)
- Schneider Electric
- SCLE SFE
- sg++
- [Shaldor](#)
- Shimizu Corporation
- Siemens AG
- SMA Ibérica Tecnología Solar, S.L.U.
- Smart Com d.o.o.
- Smart Electric Power Alliance
- Smart Hydro Power
- SOFRECO
- Southern California Edison
- Spanish National Center on Hydrogen
- [Spirae, Inc.](#)
- [Sunco Energy SL](#)
- SunEdison
- [Sunverge Energy](#)
- Support2develop
- Susi Partners
- Sustainable Power Systems
- TECNALIA
- Tetra Tech
- The Boeing Company
- The Hartford Steam Boiler Inspection and Insurance Company
- [Tractebel](#)
- [Trama TecnoAmbiental](#)
- Trojan Battery Company
- U.C. San Diego
- U.S. Department of Commerce
- [UniEnergy Technologies](#)
- Universidad Carlos III de Madrid
- University College London, Electronic and Electrical Engineering
- University of Alberta
- University of California, Irvine
- UCLA
- University of Idaho
- University of Maryland
- University of Texas, El Paso
- University of the Basque Country UPV/EHU
- University of Wisconsin, Milwaukee
- [Varentec](#)
- Vattenfall AB, R&D
- [Vestas](#)
- [Vieira de Almeida](#)
- [Viridity Energy](#)
- Wells Fargo Bank
- West Monroe Partners
- Win Inertia
- Winch Energy
- World Bank
- [Wuhan Huayuan Fukang Electric](#)
- World Business Council for Sustainable Development

Microgrid Global Innovation Forum 2019 – N. America: Sponsorship Options

Platinum Level Sponsor

Value: \$5,000

- Positioning as top-level event sponsor
- Special recognition in opening remarks on all three days of event
- Tabletop exhibit in networking break and reception area
- Speaking opportunity, stand-alone or in panel (as available)
- 4 complimentary conference passes
- 30% off additional registrations
- Corporate description, logo, and hyperlink on Sponsors web page
- Prominent logo recognition in on-site banners and signage
- Top-level logo recognition on event home webpage
- Logo on event program and registration materials
- Company information or insert included in registration bags
- Attendee List (provided one week following the event)

Gold Level Sponsor

Value: \$2,900

- Tabletop exhibit in networking break and reception area
- 3 complimentary conference passes
- 20% off additional registrations
- Logo positioning in Official Program Guide, event website, and email communications
- Corporate description with hyperlink on event website
- Prominent logo recognition in on-site banners and signage
- Logo on event program and registration materials
- Company information or insert included in registration bags
- Attendee List (provided one week following the event)

Silver Level Sponsor

Value: \$1,700

- Tabletop exhibit in networking break and reception area
- 2 complimentary conference pass
- 15% off additional registrations
- Logo positioning in Official Program Guide, event website, and email communications
- Corporate description with hyperlink on event website
- Prominent logo recognition in on-site banners and signage
- Logo in event program and registration materials
- Company information or insert included in registration bags

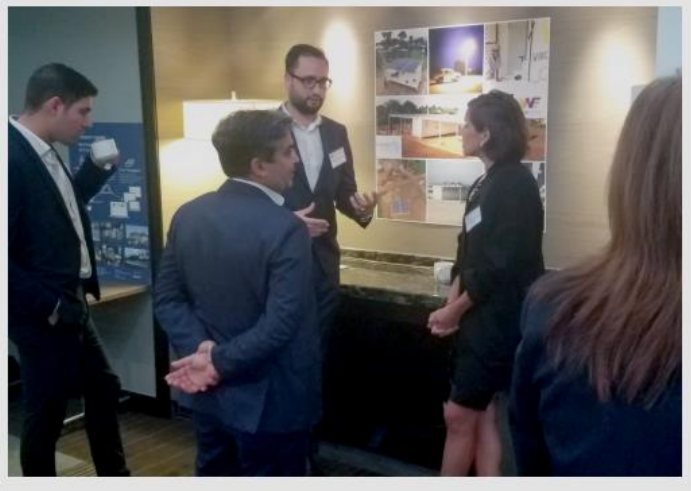
Bronze Level Sponsor

Value \$1,200

- 1 complimentary conference pass
- 10% off additional registrations
- Logo positioning in Official Program Guide, event website, and email communications
- Corporate description with hyperlink on event website
- Prominent logo recognition in on-site banners and signage
- Logo on event program and registration material

Previous Editions:

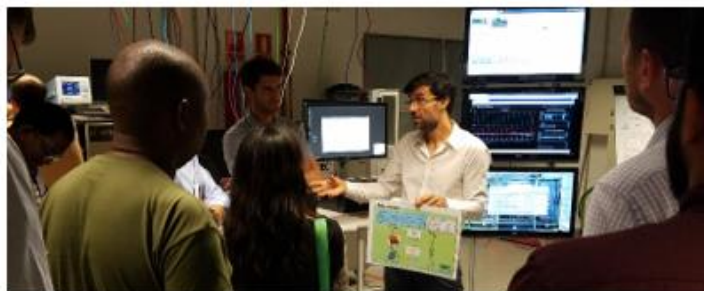
London, September 2018



Washington D.C., March 2018



Barcelona, September 2017



Feedback on the 2018 Editions (in Washington, D.C. and London)



"Intra-disciplinary approach leads to this Forum as the premier program in microgrid innovations and thought leadership."

-- Michael J. Zimmer, Washington Counsel, Microgrid Institute

"Excellent. I have benefitted from hearing quite an array of perspectives and case studies. You have brought together a wealth of talent that generated great dialog and will stimulate cross-fertilization."

-- Larisa Dobriansky, Chief Business & Policy Innovation Officer, General Microgrids

"One of the best, with highest quality presenters on timely topics."

-- David E. Geary, PE, Co-Founder and Principal Engineer, DC Fusion

"The conference had a very good mix of academia, research, manufacturers, developers and investors."

-- Dr. Maria Bruccoli, Research Engineer - Smart Energy Systems, EDF Energy R&D UK Centre

"Very good! It touched multiple aspects of microgrids, from financing to engineering to technology, which helped to give an overview of the industries in and around microgrids. Great networking possibility."

-- Parvathy Chittur Ramaswamy, Technical Manager - Energy Transition, Tractebel - Engie Group

"So constructive and learnable with fruitful interaction amongst participants. First-day workshop was very informative with actual economic figures."

-- Susumu Takahashi, United Nations Industrial Development Organization (UNIDO)

To arrange your participation, contact: **Daniel Coran, Program Manager**
dcoran@smartgridobserver.com | +1-815-310-3343

Forum Venue:

Constitution Hall, American University

3501 Nebraska Ave NW, Washington, D.C. USA



If you are driving or taking a taxi / Uber, the best address to use will be **3501 New Mexico Ave NW**. This will put you at the corner of New Mexico Ave and Nebraska Ave. Then follow the signs along the walking path to Constitution Hall entrance.

There is a surface parking lot which can be accessed off Nebraska Ave (please note you cannot turn left into the lot).

About the Organizer



The *Smart Grid Observer* is an online information portal and weekly e-newsletter serving the global smart energy industry. SGO delivers the latest news and information on a daily basis concerning key technology developments, deployment updates, standards work, business

issues, and market trends driving the smart grid industry worldwide. Visit www.smartgridobserver.com to sign up for a complimentary subscription.

Previous Sponsors of SGO Programs Include:



Registration

Your registration includes:

- Attendance at networking breakfasts, coffee breaks, lunches, and drink receptions
- PDF copy of all presentations
- Copy of attendee list
- Access to pre-conference messaging platform for arranging meetings with fellow attendees

Attendee Category

Standard - Equipment, Software, or Services Provider

Conference Only (March 18-19)	\$995.00
Site Tour / Workshop Only (March 20)	\$395.00
Conference + Site Tour / Workshop (March 18-20)	\$1,295.00

Government, Academic, and Non-Profit Organizations

Conference Only (March 18-19)	\$795.00
Site Tour / Workshop Only (March 20)	\$295.00
Conference + Site Tour / Workshop (March 18-20)	\$995.00

To register securely online, visit:

<http://www.microgridinnovation.com/Washington/register.htm>