

ELECTRIC VEHICLES 101

An Energy Industry Primer on EV Planning, Integration, & Maximizing the EV Opportunity

April 16-17, 2020
Online | Mountain Time

EUCI ONLINE COURSE

In lieu of recent developments with COVID-19 we have, for the health and safety of our speakers and attendees, decided to move many of our events to Online Courses. This will enable you to view the courses from the comfort of your location while still benefitting from the depth of knowledge provided at our courses. The option is available on the registration page of all of our courses and hope you will be able to take advantage!

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course

OVERVIEW

American consumers and policy makers are increasingly seeing Electric Vehicles (EVs) as a vital part of achieving sustainable transportation and emission reduction goals of greenhouse gases and other pollutants. The EV industry is growing at an astounding pace, as major automobile manufacturers increasingly develop new electric car products, and overall affordability for EVs is increasing to allow for more consumers to purchase EVs than ever before.

This course will provide a thorough primer on Electric Vehicles (EVs), with a special emphasis on the relevance of the rapidly growing EV industry to utilities and the energy industry. It will deliver insight into the technologies that make EVs possible, real-world cost and performance, comparing them to traditional vehicles. Attendees will gain an awareness of the overall EV marketplace, relevant policy measures and trends, charging/charging infrastructure, and learn about overall challenges and opportunities the EV industry presents for the energy industry. There will be technical sessions addressing power related issues, load forecasting, strategic planning, and utility case studies related to EV program design, product development, and rate design. It will untangle the complex issue of vehicle to grid integration (VGI), detailing the technical and economic challenges that EVs impose on electricity grid operations, and the relationship of EVs to renewable energy.

LEARNING OUTCOMES

- Discuss a brief history of electric vehicles (EVs) & their status today
- Review the environmental benefit of EVs & their growing in climate change and clean energy policies
- Describe EV market landscape, consumer perspectives, & future projections on the EV industry
- Assess how the EV industry is impacting utilities and related challenges & opportunities for the energy industry
- Describe how utilities are structuring rate design, demand charging & customer programs for EVs
- Evaluate elements of effective design for utility EV programs & EV product development
- Analyze EV charging technologies, considerations for access and efficiency, and charging analytics
- Review charging infrastructure planning & deployment case studies
- Assess how to successfully plan for EV charging infrastructure to meet policy goals through modeling tools & program design
- Analyze cutting edge research and case studies on optimizing electric vehicle grid integration (VGI)
- Evaluate planning and operational analytical tools to optimize how EVs function on the grid



“Great overview of the EV space with real life examples to take back to the utility for a better experience for customers.”

Senior Regulatory Counsel,
PSEG Long Island



“Excellent opportunity to obtain detailed knowledge on the full breath of activity in the EV space.”

Director of Business Development,
Clean Power Research

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AGENDA

THURSDAY, APRIL 16, 2020

8:00 – 8:30 am

Login and Welcome

8:30 – 9:45 am

The Rise of the Electric Vehicle (EV): A Key Disruptive Technology in the Clean Energy Era

- A brief history of EVs
- How the EV is transforming the traditional automobile industry
- The environmental benefit of EVs
- Federal, state, and local regulations and how they interact with one another
- The role of EVs in state and federal policy
 - o Regional climate action plans
 - o Electrification initiatives
- Where EV policies are emerging
- EVs and renewable energy
- EV Technologies, types & brands
 - o Foundational characteristics & concepts of an EV
 - o Types of EVs, their parts & functions
 - o comparison of combustion engine, hybrid and electric
 - o type of emission and fuel use
 - o efficiency, speed/acceleration, maintenance, mileage, cost

9:45 – 10:00 am

Morning Break

10:00 – 10:30 am

Total Cost of Ownership Assessment for Electric Vehicle (EV) Adopters

- Analysis of cost efficiency of EVs compared to conventional vehicles
 - o Purchase cost
 - o Registration tax
 - o Vehicle road tax
 - o Maintenance
 - o Tires and technical control cost
 - o Insurance cost
 - o Battery leasing
 - o Battery replacement
 - o Fuel and/or electricity costs
- Fleet owners cost assessment
- Commercial & Industrial (C&I) owner cost assessment

10:30 – 11:15 am

The Electric Vehicle (EV) Marketplace & Consumer Trends

- The electric vehicle (EV) car market
 - o overview of types of cars, major brands & top market sellers
 - o Projections and plans from the auto manufacturer industry
- Consumer trends
 - o Consumer purchasing trends to date
 - o Emerging trends
 - o Consumer education & awareness on EVs

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AGENDA

THURSDAY, APRIL 16, 2020 (CONTINUED)

11:15 am – 12:00 pm

Electric Vehicles (EVs) & Utilities: Impacts and Opportunities

- Impacts of EVs for utilities and the energy industry – now and in the future
- Understanding the utility-EV opportunity
- Strategic planning for EVs:
 - o Evaluating grid impacts
 - o Load forecasting
 - o Charging infrastructure management
 - o Informing rate design
- Trends in utility EV program design
- Optimizing the utility's role in the EV landscape

12:00 – 1:00 pm

Lunch Break

1:00 – 2:15 pm

Electric Vehicle (EV) Charging & Analytics

- Overview of the EV charging process & equipment
- EV charging equipment
 - o Electric Vehicle Supply Equipment (EVSE)
 - o Level 1 chargers
 - o Level 2 chargers
 - o DC Fast Chargers
- Addressing key charging challenges: Access & efficiency
- What is smart charging?
 - o Smart charging value chain
 - o Specific customer examples & real applications
- EV charging analytics

3:00 – 3:15 pm

Afternoon Break

3:15 – 5:00 pm

Utility Charging Infrastructure Planning for Electric Vehicles (EVs)

- Overview of EV Infrastructure
- Charging infrastructure modeling & deployment
- Technical charging installation
- Utility – EV manufacturer coordination on infrastructure deployment
- Enabling programs and technologies for infrastructure needed in a specific region
- Assessment of charging infrastructure needs in support of electric vehicle deployment and emission reduction goals
- New policy concepts encouraging cost-effective infrastructure buildouts and mechanisms to finance the installation of charging infrastructure while encouraging private investment
- Key technologies that enable interoperability and smart charging
- Best practices for modeling & assessing needs for charging infrastructure

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AGENDA

FRIDAY, APRIL 17, 2020

8:30 – 9:45 am**Vehicle Grid Integration (VGI)**

Vehicle Grid Integration (VGI) tools and processes support the optimization of electric vehicle (EV) connection and interaction to the electric grid. This session will provide an overview of VGI, discussing:

- Benefits of VGI:
 - Supporting customers needs at times that are beneficial to the grid
 - Support for utilities and grid operators with grid balancing services
 - Optimization of available use of power on the grid
- Analysis of EV use profiles, benefits, and battery life
- Optimizing VGI dynamics to ensure
 - Lower customer rates
 - Utilization of higher proportions of renewable energy
 - Efficient use of EVs as grid assets
- Policies that incentivize VGI technology solutions
- Needs for grid interoperability standards
- Evaluating grid services technology opportunities

9:45 – 10:00am**Morning Break****10:00 – 11:45 am****Utility Electric Vehicle (EV) Programs & Case Studies**

- Utility approach to setting up EV programs
 - Designing optimal EV programs
 - Rolling out pilot programs
 - Expanding upon pilots & rolling out larger programs
 - Home charging programs for residential customers
 - Education
 - EV adoption
 - Cost savings for customers
 - Rebates & time incentives
 - Public charging for utility customers
 - Fleet electrification adoption
 - Charger options to help expand EV market
 - Infrastructure preparedness strategies
 - Planning, operating & managing EVs on the grid
 - Optimizing charging processes & rate design
- Long-term assessment & analysis of EV

11:45 am**Program Adjourns**REGISTER TODAY! CALL **303-770-8800** OR VISIT **WWW.EUCI.COM**

INSTRUCTORS



Andrew Dillon

Senior Principal/ West Monroe Partners

Andrew Dillon is a Senior Principal at West Monroe Partners, where he leads the DER Interconnection solution platform. He has more than 20 years' experience focusing on grid modernization technologies, most recently managing a project to introduce DER interconnection processes to EV charging infrastructure. He previously founded the real-time grid control company Varentec. Andrew is a co-author of two patents on advanced grid control using smart inverters.



Stacey Simms

Senior Portfolio Manager – EV Fleet Strategies / Xcel Energy

Stacey Simms works at Xcel Energy as a Senior Portfolio Manager in EV Fleet Strategies. She is responsible for the development and deployment of programs and strategies for the electrification of the transportation sector, focusing on fleets and mass transit. She works to achieve Xcel Energy's goals to decrease the carbon intensity of the transportation industry, further promote the transition to a carbon free energy future and keep customer bills low. She currently helps manage and support an Electric Vehicle (EV) assessment program and EV Supply Equipment (EVSE) assessment and construction program in MN, programs which will be deployed in future to all of Xcel Energy's service territories.



Nigel Zeid

Electric Vehicle Specialist & Educator/ Nissan

Nigel Zeid has worked at Boulder Nissan since 2007. Over the last 12 years, he has evolved from a car salesman into an ecumenical electric vehicle (EV) educator and pollinator. He is actively involved in EV regional policy and industry discussions and initiatives. Nigel is a top salesman at Nissan and is passionate about helping others along the EV road. He is originally from London and taught animation there for a decade before beginning his career in EV sales.

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INSTRUCTIONAL METHODS

PowerPoint presentations, interactive group exercise, and group discussion will be used during this course.

REQUIREMENTS FOR SUCCESSFUL COMPLETION

You must be logged in for the entire presentation and send in the evaluation after the course is completed.

IACET CREDITS



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ONLINE COURSE DELIVERY & PARTICIPATION DETAILS

We will be using Microsoft Teams to facilitate your participation in the upcoming event. You do not need to have an existing Teams account in order to participate in the broadcast – the course will play in your browser and you will have the option of using a microphone to speak with the room and ask questions, or type any questions in via the chat window and our on-site representative will relay your question to the instructor.

- You will receive a meeting invitation which will include a link to join the meeting.
- Separate meeting invitations will be sent for the morning and afternoon sessions of the course.
 - o You will need to join the appropriate meeting at the appropriate time.
- If you are using a microphone, please ensure that it is muted until such time as you need to ask a question.
- The remote meeting connection will be open approximately 30 minutes before the start of the course. We encourage you to connect as early as possible in case you experience any unforeseen problems.

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REGISTRATION INFORMATION

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APRIL 16-17, 2020: US \$1295

Online Course Delivery & Participation Details

See page 5 for information

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OR Enclosed is a check for \$ _____ to cover _____ registrations.

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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 March 6, 2020 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.

