FUNDAMENTALS OF DISTRIBUTED ENERGY RESOURCE (DER) PLANNING
What Utilities and Other Power Organizations Need to Know to Plan, Integrate and Maximize DER System Contributions

September 16-17, 2019
EUCI Office Building Conference Center
Denver, CO

“This course contained more information than anticipated and gave me surprising new insight to take back to my business.”

Analyst, Portland General Electric

EUCI is authorized by IACET to offer 1.3 CEUs for the course
OVERVIEW

The growth of distributed generation (DG) and distributed energy resources (DERs) is challenging many of the assumptions upon which traditional utility system planning relies. In many regions already, DER penetration is reaching levels at which it has a measurable impact on system planning and operations. For example, DERs are creating two-way power flows on the distribution and transmission grids that legacy equipment was not designed for. DERs are also confounding conventional load forecast methodologies and complicating system modeling by introducing new kinds of generation sources or modifying load profiles.

DER adoption is driven by three major developments:
1. Advances in technologies that accommodate multi-directional, rather than uni-directional, power flows
2. Fundamental shifts in generation, distribution and transmission grid profiles
3. Changing, “more democratic” concepts about the relationship between utility service models and customer pricing

DERs, though, are not just one thing; rather, they are many things. Therefore, a treatment of the system impacts of DER must address several elements that comprise DERs, and how they produce different impacts.

This program is a primer. It is intended to collect — in one forum — the content necessary for utilities, load-serving entities (LSEs), grid operators, project developers and others to develop their own internal system for evaluating the impact of DG and DER development on their system(s). It is not intended to be an advocacy forum for or against the adoption of these technologies, nor for their implementation. Nor is it intended to offer detailed instruction in the analytical instruments referenced during the program. It will, however, provide a useful cross-disciplinary blueprint for reference, adaptation and refinement.

LEARNING OUTCOMES

Through presentations and panel discussions, attendees will have the opportunity at this course to consider the following elements as to how distributed energy resources (DER) are changing utility and power industry norms:

• Evaluate the different types and classes of DERs and their special requirements
• Identify the operational differences between renewable and conventional energy DERs
• Review regulatory matters that determine how DERs are governed on a jurisdictional basis
• Examine long-term planning assessment and analysis that properly incorporates DERs
• Discuss challenges that DERs present to existing utility compacts/business models and what options are available to address these issues
• Assess system data access and transparency requirements to facilitate DERs
• Evaluate operational tools required for real-time DER modeling and forecasting
• Discuss DER interconnection issues at the distribution, sub-transmission and transmission levels

WHO SHOULD ATTEND

This program will inform professionals at:
• Utilities (IOUs, Municipal and public power) and local distribution companies (LDCs)
• Solar, wind and other project developers and third-party owners (TPOs)
• Regulators (PUCs)
• Engineering and other consulting firms that support wind, solar and other DER project developers
• Attorneys
• Solar and renewable energy advocates
• Community organizations interested in promoting community and solar gardens
• Integrated resource (IRP) and long-range planning

REGISTER TODAY! CALL 303-770-8800 OR VISIT WWW.EUCI.COM
AGENDA

MONDAY, SEPTEMBER 16, 2019

7:30 – 8:00 am  Registration and Continental Breakfast
8:00 – 8:15 am  Welcome, Overview and Introductions

I. Foundation Concepts, Types and Characteristics of DERs
   - Types
     o PV
     o Energy storage
     o Electric vehicles and EV charging equipment
     o Wind energy
     o Microgrids
     o Virtual power plants (VPPs)
     o Demand side management
   - Size and Location
     o Proximity/relationship to distribution utility
     o DER locational and temporal factors

II. DER Development and Control
   - Applicable technologies and resources
     o DER control capabilities
     o DER with storage
     o DER integration opportunities and challenges
     o DER visibility to system operators Sensors
     o AMI Telemetry to the DER
     o Behind-the-meter vs utility side-of-the-meter
     o Analytics

9:45 – 10:00 am  Morning Break

“The EUCI DER Fundamentals course exceeded my expectations and was certainly a great learning experience.”

Director – DER Integration & Analysis, Arizona Public Service

“Utility-focused and quality content to get you up to speed for the future.”

Team Lead, ENMAX

“This course has helped utilities better prepare for the challenges and opportunities DER technology has to offer, especially around the concepts of hosting capacity, power quality concerns, protection and coordination concerns, and infrastructure offset opportunities.”

Manager – Distribution Planning, EPCOR
AGENDA

MONDAY, SEPTEMBER 16, 2019 (CONTINUED)

10:00 – 11:15 am  III. DER Interconnection and System-Level Aspects
   • Standards and jurisdictions
   • Criteria for interconnection
   • Interconnection practices and rules
   • Workflow and customer experience
   • Smart inverters
   • Hosting capacity and load profile analysis
   • Voltage impact and system-wide assessment
   • Operational considerations and experience
     o Distribution level
     o Sub-transmission level
     o Transmission level

11:15 am – 12:15 pm  IV. How DER System Analysis Differs from Traditional Distribution System Analysis
   • Power flow
   • Power quality
   • Dynamic impacts of DER
   • Hosting capacity solutions
   • Voltage issue mitigation methods
   • Strategic utility planning for DER

12:15 – 1:15 pm  Group Luncheon

1:15 – 2:00 pm  V. Challenges to Existing Utility Compact/Business Model
   • System stability and protection
   • Load (and corresponding revenue) revenue reduction
   • Cost / value methodology selection and analysis
   • Cost / value application and imposition process
   • Cost allocation
   • Tariffs and utility rate structures
   • Risk evaluation w/respect to reliability
   • Economic and of DERs for regulators

“High quality speakers with excellent expertise in DER planning, operations, economic analysis, regulatory and business models and methodology/tools; jam-packed with great content.”

Manager, Black & Veatch

“Intensive, informative and engaging.”
Senior Economist, NYISO
AGENDA

MONDAY, SEPTEMBER 16, 2019 (CONTINUED)

2:00 – 3:00 pm VI. Strategic Impact of DERs
• Strategic drivers of DER integration
• Value of DER data
• Locational value of DERs
• Time shifting of DERs
• Smart inverter impact
• New DER business models
• Aligning DERs to grid value

3:00 – 3:20 pm Afternoon Break

3:20 – 4:45 pm VII. System Data Access, Transparency and Utilization
• DER data analytics
• DER optimization via data analysis
• Customer information access
• Smart inverter optimization
• Leveraging DER data value
• Utility – customer partnerships
• Valuing locational costs and benefits
• Case studies

4:45 pm Program Adjourns for Day

4:45 – 5:30 pm Platform Demonstration (Optional)

“Great value, good material, excellent speakers from different sectors in power.”
Consultant, UC Synergetics

“This course was informative, thorough and well put-together. All speakers were extremely knowledgeable on the topics they presented, which allowed for some very intriguing and thought-provoking discussions to take place.”
Associate Engineer, Lower Colorado River Authority

“A must for utilities entering into the game-changing world DERs present.”
Manager, Distribution Planning, ATCO Electric

“A great balance of big picture and fine detail regarding DERs.”
Analyst, California Public Utilities Commission

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TUESDAY, SEPTEMBER 17, 2019

7:45 – 8:15 am  Continental Breakfast

8:15 – 10:00 am  VIII. Strategic Planning: Long-term Assessment and Analysis
• Determining impact studies required
• DER planning and roadmaps
• System power flow modeling
• Hosting capacity requirements and availability
• Mitigation measures identification for protection/safety limit violations
• Valuing locational costs and benefits
• Monitoring and control options and requirements
• Infrastructure requirements for DER
• Revenue impacts from DER

10:00 – 10:20 am  Morning Break

10:20 am – 11:45 am  IX. DER Integration — Value Optimization
• System impacts
• Participation in wholesale markets
• Customer adoption rate
• Relationship of incentives to load shapes
• ADMS systems
• DERMS
• DER integration value stream
• Demand response – load shifting value
• DER trends in storage and transportation electrification
• Case studies

11:45 – 1:00 pm  Group Luncheon

1:00 – 2:30 pm  X. Case Studies of DER Scenarios, Asset Decisions and Field Deployments

2:30 – 2:45 pm  Afternoon Break

2:45 – 4:00 pm  XI. Emerging Trends in DER Planning and Management
Panel Discussion

4:00 pm  Symposium Adjourns

“Experts talking to — and with — professionals in a cordial, focused setting.”

Power Resource Manager, Burbank Water & Power

“This course provided a good overview of the definitions and issues associated with increased DER systems. It also provided a great opportunity to network with experts in the industry.”

Research Associate, National Renewable Energy Laboratory
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.

Daniel Haughton
Manager – Distribution Engineering and DER Interconnections, Arizona Public Service (APS)

Daniel Haughton is Manager of Distribution Engineering and DER Interconnections at Arizona Public Service (APS). He manages teams that plan the future distribution infrastructure for the rapidly growing state of AZ, as well as residential and commercial renewable technology integration. He has worked at Arizona Public Service (APS) since 2012 in various engineering and technical leadership roles, including Transmission Planning, Transmission Operations Engineering, and Distributed Energy Resource (DER) Engineering. Dr. Haughton is also an advisor to EPRI and NREL Technical Advisory Committees on DER Interconnection practices and Distribution Planning Modernization. Before joining APS, he served in various roles at Tampa Electric, CAISO, Intel Corp and Belize Electricity Limited. He is an adjunct professor of electrical engineering at Arizona State University.

Aram Shumavon
CEO, Kevala, Inc.

Aram Shumavon is co-founder and CEO at Kevala Analytics. He has more than 15 years of experience in regulated energy markets, with a focus on high penetration distributed and renewable energy resources. Prior to forming Kevala, he was the founder and executive director of the non-profit organization, Distributed Energy Consumer Advocates. He has helped develop state and federal policy, managed the development of regulatory strategies, and created innovative market infrastructure and policy analysis tools. Mr. Shumavon’s work includes more than a decade as a senior analyst at the California Public Utilities Commission where he headed the state’s analysis of key wholesale electricity market design and environmental compliance efforts and led long-term procurement and planning efforts focused on California’s high renewables penetration future and renewables integration strategies.

“Diverse mix of speakers was informative and thought-provoking.”

Vice President – Advisory Services, Kinect Energy Group
REQUIREMENTS FOR SUCCESSFUL COMPLETION OF PROGRAM

Participants must sign in/out each day and be in attendance for the entirety of the course to be eligible for continuing education credit.

INSTRUCTIONAL METHODS

Case studies and PowerPoint presentations will be used in this program.

IACET CREDITS

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

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EVENT LOCATION

EUCI Conference Center
4601 DTC Blvd., B-100
Denver, CO 80237

NEARBY HOTELS

Preferred Hotel
Hyatt Place Denver Tech Center
8300 E. Crescent Parkway, Greenwood Village, CO 80111 (0.9 miles away)
Call Central Reservations at 1-888-492-8847 and ask for the corporate rate under the Group Code: 102338 or visit https://denvertechcenter.place.hyatt.com/en/hotel/home.html?corp_id=102338 for the current EUCI rate.
(Hot Breakfast included and Free Shuttle to and from EUCI)

Other Nearby Hotels
Hyatt Regency Denver Tech Center
7800 E. Tufts Ave
Denver, CO 80237
Phone: 303-779-1234
0.3 miles away

Hilton Garden Inn Denver Tech Center
7675 E. Union Ave
Denver, CO 80237
Phone: 303-770-4200
0.6 miles away

Denver Marriott Tech Center
4900 S. Syracuse St
Denver, CO 80237
Phone: 303-779-1100
0.7 miles away

REGISTER 3, SEND THE 4TH FREE

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

☐ FUNDAMENTALS OF DISTRIBUTED RESOURCE (DER) SYSTEM PLANNING COURSE
SEPTEMBER 16 – 17, 2019: US $1495
Early bird on or before August 30, 2019: US $1295

How did you hear about this event? (direct e-mail, colleague, speaker(s), etc.)

Print Name ___________________________ Job Title ___________________________

Company __________________________________________

What name do you prefer on your name badge?

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CREDIT CARD INFORMATION

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OR Enclosed is a check for $ ___________________________ to cover ___________________________ registrations.

Substitutions & Cancellations
Your registration may be transferred to a member of your organization up to 24 hours in advance of the event. Cancellations must be received on or before August 16, 2019 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.

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