

DISTRIBUTION SYSTEM PLANNING & OPTIMIZATION

January 16 – 18, 2019
EUCI Office Building
Conference Center
Denver, CO



TAG US #EUCIEvents
FOLLOW US @EUCIEvents



EUCI is authorized
by IACET to offer 1.9
CEUs for this event

OVERVIEW

Optimizing distribution system assets are a more difficult task as distributed energy resources become a bigger player on the distribution system. Analyzing load data is essential to developing an effective forecast. This course will take attendees through traditional distribution system planning practices and move quickly into modern and future trends to be considered. Practical examples and case studies will compare a variety of capacity planning solutions (short term planning). Long Term Planning topics include spatial analysis and the effects of higher distribution voltages.

The course dives deep into distributed generation, providing descriptions and categorizing them with respect to their dispatchability along with other qualities. Energy storage (including EVs) has an even greater set of issues, specifically whether these devices are a source or load. System modeling must take all these components into account to create a homogenous plan for the distribution system.

The course concludes with a discussion of capital project justification and the consideration of risks associated with alternatives.

LEARNING OUTCOMES

- Review the load data industry trend – history, present day, tomorrow
- Discuss system growth – Existing customer vs. new business
- Identify sources of load profile data
- Review load forecasting rules of thumb and other assumptions
- Assess calculating loss of life due to overload for critical equipment
- Discuss the effect of system losses with regard to voltage profile and power quality
- Review options to resolving capacity issues
- Identify long term planning for substation location and capacity
- Review distributed generation classifications
- Discuss sustainability of solar generation
- Review energy storage systems
- Discuss integrating distributed energy resources
- Define microgrid, characteristics and applications

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

AGENDA

WEDNESDAY, JANUARY 16, 2019

8:00 – 8:30 am Registration and Continental Breakfast

8:30 am – 5:00 pm Course Timing

12:00 – 1:00 pm Group Luncheon

System Loading

- Load Diversity/Coincidence
- Load Data
- Industry Trends
 - o Then vs. Now
 - o EV's, Blockchain, Grow Houses, Batteries
- System Growth
 - o Organic Growth (vertical – existing customers)
 - o New Business (horizontal growth)
- Load Profiles – sources
 - o Distribution Management Systems
 - o Data Historians
- Load Forecasting
 - o Growth Assumptions and Rules of Thumb
 - o Weather Impacts

Equipment Loading Practices

- Calculating Load Factor
- Normal Load Rating
- Emergency Overloads
 - o Calculating Loss of Life
 - o Documenting Emergency Overload Events

Calculating System Losses

- Effects System Losses on Voltage Profile

Short Term Planning - Resolving Capacity Issues

- Comparing Options
 - o Phase Balancing
 - o Shifting Load to Adjacent Circuits
 - o Volt/VAr Management & Options
 - o Reconductoring
 - o Non-Traditional/Innovative Options
 - Conservation Voltage Reduction
 - Distribution Automation

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

AGENDA

THURSDAY, JANUARY 17, 2019

8:00 – 8:30 am **Continental Breakfast**

8:30 am – 5:00 pm **Course Timing**

12:00 – 1:00 pm **Group Luncheon**

Long Term Planning

- Spatial Planning
 - o Substations
 - o Size & Location
- Effects of Higher Distribution Voltages
- Demand Side Management
 - o Demand Response
- Energy Efficiencies
- Considerations for Electrification
 - o Summary of Study to Electrify American Indian Reservations

Distributed Energy Resources

- Definitions
- Distributed Generation Classifications
 - o Utility/Commercial Scale vs. Consumer Scale
 - o Renewable vs Non-Renewable
 - o Dispatchable vs. Non-Dispatchable.
 - o Inertia vs. Non-Inertia Based
- Sustainability of Solar Generation
- Energy Storage Systems
 - o Potential Energy
 - o Battery Storage
 - o EV Contributions

System Modeling

- Model Assumptions
 - o Seasonal, Daily and Hourly Profiles (ATILDA Software)
- Modeling DER
 - o DG - Inverters vs. Inertia Based DG
 - o Batteries - EVs

Distributed Generation Integration Issues

- Inverter Capabilities
- Islanding
- Load Profile vs. Photovoltaic (PV)
 - o Output with the Effect of Batteries or EVs
- High Penetration of PV on Distribution Circuits
- Non-Technical Issues

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

AGENDA

FRIDAY, JANUARY 18, 2019

8:00 – 8:30 am **Continental Breakfast****8:30 am – 12:00 pm** **Course Timing****Introduction to MicroGrids**

- Definitions & Characteristics
- Industry Standards for MicroGrids
- Applications
 - o High Reliability Requirements
 - o Remote Locations
 - o Third World
 - o Military Bases (resiliency requirements)
 - o Case Study: The Brooklyn Microgrid
- Blockchain Transactions

Justifying Capital Projects

- Engineering Economics
 - o Net Present Value
 - All Accumulated Costs
 - All Accumulated Benefits
 - o Considering Risks
 - Qualitative vs. Quantitative

COURSE INSTRUCTORS

Chris Sticht

Senior Consultant, UC Synergetic

Mr. Sticht is a specialist in utility system planning, load analysis, planning software, underground, solar and Smart Grid. Chris has extensive background in planning, design, operations and protection. His background includes work on transmission systems, distribution systems, substations, and commercial building electrical systems. He has managed teams of engineers, designers and electricians. His experience includes consulting, contracting, work at two power flow software companies, and at several major utilities. He holds a MSEE from the University of Washington and a BSEE from Georgia Tech.

Jerry Josken

Senior Consultant, UC Synergetic

Jerry holds a BS in Electrical Engineering Technology from the Milwaukee School of Engineering and a MBA from North Central College. During his 30+ year career with Eaton's Cooper Power Systems Jerry served in a variety of engineering capacities. Past leadership positions include Chair of IEEE Rural Electric Power Conference (2012) and GLEMS Distribution Equipment /Controls (2013-2014). Presently, Jerry coordinates UCS Professional Development Programs.

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

REQUIREMENTS FOR SUCCESSFUL COMPLETION

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.

EVENT LOCATION

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

NEARBY HOTELS

Suggested Hotel

Hyatt Place Denver Tech Center

8300 E. Crescent Parkway, Greenwood Village, CO 80111 (0.9 miles away)

Click on the following booking link:

https://denvertechcenter.place.hyatt.com/en/hotel/home.html?corp_id=102338

and use **Group Code: EUCI** or Call Central Reservations at **888-492-8847** and ask for the EUCI rate of \$149 under the corporate/group code EUCI

Other 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 event may send 1 FREE for every 3 delegates registered. Please note that all registrations must be made at the same time to qualify.

IACET CREDITS



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

EUCI is authorized by IACET to offer 1.9 CEUs for this course.

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

REGISTRATION INFORMATION

EVENT LOCATION

Mail Directly To:

EUCI
4601 DTC Blvd., Ste. 800
Denver, CO 80237

OR, scan and email to: conferences@euci.com

WWW.EUCI.COM**p: 303-770-8800****f: 303-741-0849****EUCI Office Building Conference Center****4601 DTC Blvd, B-100****Denver CO, 80237***See nearby hotels on page 6*

PLEASE REGISTER

DISTRIBUTION SYSTEM PLANNING & OPTIMIZATION

JANUARY 16 – 18, 2019, US \$2195

Early bird on or before January 4, 2019: US \$1995

ENERGIZE WEEKLY

EUCI's Energize Weekly e-mail newsletter compiles and reports on the latest news and trends in the energy industry. Newsletter recipients also receive a different, complimentary course presentation every week on a relevant industry topic. The presentations are selected from a massive library of more than 1,000 current presentations that EUCI has gathered during its 30+ years organizing courses.

Sign me up for Energize Weekly

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?

Address

City

State/Province

Zip/Postal Code

Country

Phone

Email

List any dietary or accessibility needs here

CREDIT CARD INFORMATION

Name on Card

Billing Address

Account Number

Billing City

Billing State

Exp. Date

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

Billing Zip Code/Postal Code

OR Enclosed is a check for \$ _____ 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 December 14, 2018 in order to be refunded and will be subject to a US \$195.00 processing fee per registrant. No refunds will be made after this date. Cancellations received after this date will create a credit of the tuition (less processing fee) good toward any other EUCI event. This credit will be good for six months from the cancellation date. In the event of non-attendance, all registration fees will be forfeited. In case of course cancellation, EUCI's liability is limited to refund of the event registration fee only. For more information regarding administrative policies, such as complaints and refunds, please contact our offices at 303-770-8800. EUCI reserves the right to alter this program without prior notice.

