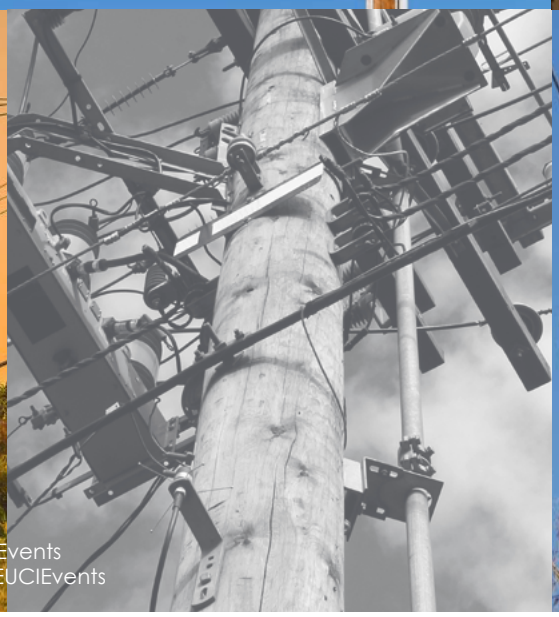
EUCI
SYMPOSIUM

BEST PRACTICES FOR WOOD POLE STRENGTH AND LOADING

November 13-14, 2018
The Millennium Knickerbocker
Chicago, IL



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OVERVIEW

When it comes to wood utility pole strength and loading, the experts say, "know the code!", the National Electric Safety Code or California's General Order 95 that is. In the everchanging world of electric utility and telecommunication companies, knowing the codes, regulations, and best practices, is vital to not only keeping the power on, but to ensure the safety of linemen and the public. With the advent of 5G on the horizon, telecommunication and wireless companies are eager to attach additional equipment to utility poles, thus making it more important than ever for electric utility and telecommunication companies to know and follow the codes!

In this symposium, attendees will hear from Nelson Bingel, the Chairman of the NESC and Chairman of the ASC O5 Wood Pole Committee. Pole strength capacities will be explained along with the loading criteria of the NESC and GO 95. An overview along with hands-on examples of basic pole loading calculations will help with understanding the important aspects and variables that impact how a pole is loaded. Variations of the third-party attachment processes around the country will be briefly explained and followed with an emphasis on the importance of wire and equipment clearances and the make ready process. Managing wood pole data including strength and loading details will also be discussed.

This symposium will include case studies from electric utility and telecommunication companies including their experiences with pole strength and loading, various software programs, and "best practices". The goal of this program is to not only educate the attendees on the topic, but to also facilitate a discussion amongst the group to share their insights.

LEARNING OUTCOMES

- Explain ANSI O5.1 wood pole manufacturing and dimension standards
- In-depth review of NESC strength and loading criteria along with an overview of GO 95 criteria
- Comparisons of key NESC requirements to similar GO 95 requirements
- Identify clearance basics
- Discuss the process for third-party attachments
- Comparisons of pole loading software programs
- Discuss best practices for managing wood poles and the tremendous amount of related data
- Discuss best practices for adding attachments to existing poles

WHO SHOULD ATTEND

- Distribution engineers
- Operations managers
- Directors of operations and engineering
- Line staking engineers
- Consulting engineers
- Legal advisors
- Pole procurement specialists
- Asset/Investment recovery specialists
- Wireless carrier's operations and engineering personnel

AGENDA

TUESDAY, NOVEMBER 13, 2018

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

8:30 am – 5:00 pm **Symposium Timing**

12:00 – 1:00 pm **Group Luncheon**

Wood Pole Management
- Early electrical systems
- Comparison of pole materials
- Expectations for safety, reliability and resiliency
- Effective asset management

Wood Pole Manufacturing and Strength
- ANSI O5.1 – Dimensions and Specifications for Wood Pole manufacturing
  - o AWPA – American Wood Protection Association standards for treating wood poles

Pole Loading Basics
- Transverse, longitudinal and vertical Loading
- Loading and strength formulas
- Bending analysis
- Buckling analysis
- Linear and non-linear analysis
- Deterministic and probabilistic
- Load resistance factored design
- Wire tensions
- Grades of construction

NESC Loading & Strength Requirements

Overview of California GO 95 Loading & Strength Criteria

Wood Pole Decay & Strength loss
- Bending vs. Buckling

NESC/GO 95 Strength & Loading Comparisons and Ongoing Collaboration

Nelson Bingel, Chairman of NESC and Chairman of the ASC O5 Committee, President of Nelson Research

> ***"Great conference!"***
>
> Electric Estimator, City of Palo Alto UTC

AGENDA

TUESDAY, NOVEMBER 13, 2018 (CONTINUED)

Pole Loading and AT&T West's Pole Remediation Program
A report from AT&T West on their comprehensive pole assessment and remediation program. This presentation will give an overview of AT&T's pole loading process, how AT&T handles pole maintenance in CA, and in the tenant process, including those pole load calculations. AT&T's program, discuss the driving factors behind the evolution of pole loading in California, and highlight the challenges the team has overcome in order to adapt to new pole loading rules and regulations.
Josh Mathisen, Senior-Tech Project Management, ATO-Construction & Engineering-West and ATT&T West, Staff Support
Ray Coleman, ATT&T West, Staff Support

Clearance Basics
- Vertical clearances over surfaces
- Clearances between wires on different supporting structures
- Clearances of wires from buildings, bridges, swimming pools, and others
- Clearances for wires carried on the same structure
- Climbing Space
- Working Space
- Edition of the Code

Pole Loading Examples
- Typical assumptions
- Tangent pole basics
- Angle pole basics
- Guying basics
- Calculation
- Examples
    - o Tangent poles
    - o Angle poles
    - o Un-guyed
    - o Guyed
    - o Junction poles
    - o Dead end poles
    - o Added Equipment

Nelson Bingel, Chairman of NESC and Chairman of the ASC O5 Committee, President of Nelson Research

Questions and Wrap-up

AGENDA

WEDNESDAY, NOVEMBER 14, 2018

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

8:30 am – 12:00 pm **Symposium Timing**

Third Party Attachment Processes
- California
- Pole owner in-house processes
- Pole owner subcontract all or part of the process
- Oregon Joint Use Association

Adding Attachments to Existing Poles
- Field processes for determining existing load
- Remaining strength if necessary
- Additional load added
- Make Ready – making the pole ready for an additional attachment

Nelson Bingel, Chairman of NESC and Chairman of the ASC O5 Committee, President of Nelson Research

Middle Tennessee's Joint Use Application of Pole Loading Software
The Joint Use team of Middle Tennessee Electric Membership Cooperative found the need for additional pole loading analysis tools to ensure safety and reliability of its distribution system. With the use of pole loading software, the team has been able to accurately model pole field conditions to ensure additional joint use attachments will not cause pole failure and that the poles follow current NESC rules.
Allison Ragsdale, Joint Use Designer, Middle Tennessee Electric Membership Corporation

Pacific Gas and Electric Pole Loading Database System
PG&E will speak about our vision for the potential, high level structure of a shared pole loading system. We believe we are aligned with the goal of the CPUC for a statewide pole and conduit database. Our demonstration will use conceptual images and discussion to convey three points: (1) How could we give our end users and business partners self-service access to information about available pole capacity? (2) How would a view of available capacity transition to an electronic application or request to attach? (3) How could a user be profiled to be given visibility into a list of historical submissions and their statuses?
Brian Nugent, Principal Engineer, Engineering Center of Excellence, Pacific Gas and Electric

Open Discussion

INSTRUCTORS

Nelson Bingel

Chairman of NESC and Chairman of the ASC O5 Committee President
Nelson Research

Nelson Bingel received a BSME degree from Purdue University and worked for 30 years at Osmose Utilities Services. Nelson was responsible for engineering and other technical aspects of wood, steel, concrete and fiberglass utility poles, and structures. This covers a wide range of activities such as inspection, maintenance, restoration, and repair along with mitigation of deterioration and corrosion.

Nelson has been active on the NESC for over 25 years and became chairman in 2016. The American Standards Committee O5 develops the standards for new wood poles and cross arms and is also chaired by Nelson.

Brian Nugent

Principal Engineer, Engineering Center of Excellence,
Pacific Gas and Electric Company

Brian Nugent grew up in Elk Grove, CA, has a BS in Mechanical Engineering from Cal Poly San Luis Obispo, and now resides in Fresno. He is a licensed P.E. (Mechanical) in the state of California.

He has worked for PG&E for the last 33 years; the early part of his career focused on promoting energy efficiency to commercial/industrial customers.

For the last 20 years Brian has worked for PG&E's San Francisco office focused on improvements to Engineering/Design, Estimating, and Billing processes & tools for electric and gas distribution Engineering Estimators. For the last 3 years Brian has been primarily focused on pole loading.

Brian's forte is optimizing data architecture for business processes. He has a track record of migrating paper intensive to database driven processes by discovering business logic datasets, designing business driven algorithms, and building data integration between systems.

Josh Mathisen

Senior-Tech Project Management
ATO-Construction & Engineering-West and ATT&T West, Staff Support

Josh Mathisen is currently Senior-Tech Project Management in the Construction & Engineering Department for AT&T California. Josh has held a variety of positions in the 17 years that he has been at AT&T California.

Over the last 13 years, his work has been focused on pole design and inspection. Josh chairs the Joint Facilities Committee of the General Order 95/128 Rules Committee.

INSTRUCTORS

Ray Coleman

Senior-Tech Project Management
ATO-Construction & Engineering-West and ATT&T West, Staff Support

Allison Ragsdale

Joint Use Designer
Middle Tennessee Electric Membership Corporation

Allison is originally from Massachusetts. She graduated from MTSU with a BS in Business Management and Organizational Leadership. Allison worked in leadership roles in many different industries before entering the utility world. Ms. Ragsdale started at MTEMC in 2013 in the Joint Use Department. During that time she wrote a joint use manual for Middle Tennessee Electric Membership Corporation designers to use when working jobs, helped to write a new contract, and worked to create an efficient and cohesive workflow between MTEMC and all of our joint use partners.

INSTRUCTIONAL METHODS

Case Studies, classroom exercises, open discussion will be used at this event.

REQUIREMENTS FOR SUCCESSFUL COMPLETION

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

IACET CREDITS

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

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EVENT LOCATION

The event is located at The Millennium Knickerbocker, 163 E. Walton, Chicago, IL 60611. A room block has been reserved for the nights of November 12-15, 2018. Room rates are US $229.

please call **1-800-621-8140** or **visit the website. Please mention Group Room Block Code 1811EUCINV**. The cutoff date to receive the group rate is October 12, 2018 but as there are a limited number of rooms available at this rate, the room block may close sooner. ***Please make your reservations early.***

REGISTER 3, SEND THE 4TH FREE

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

PLEASE REGISTER

○ **BEST PRACTICES FOR WOOD POLE STRENGTH AND LOADING SYMPOSIUM**
NOVEMBER 13-14, 2018: US $1495
EARLY BIRD on or before OCTOBER 26, 2018: US $1295

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

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Exp. Date | Security Code (last 3 digits on the back of Visa and MC or 4 digits on front of AmEx) | Billing Zip Code/Postal Code

OR Enclosed is a check for $ _____ 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 October 12, 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 conference 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 (201) 871-0474