

**IEEE Distribution Subcommittee
Meeting Minutes
July 29, 2015
Denver, CO**

ADMINISTRATIVE

Chair Julio Romero Aguero called the IEEE Distribution Subcommittee meeting to order at 1:30 p.m. with 17 members and 15 guests present. Introductions were the first order of business followed by approval of the 2015 JTCM minutes. No corrections were suggested and a motion to accept the minutes was made by Joe Viglietta, Seconded by Fred Friend and the vote to approve was passed.

CHAIR REPORT – Julio Romero Aguero, *Distribution Subcommittee*

I have been serving as Editor of IEEE Transactions on Power Delivery (TPWRD), assisting the Editor-in-Chief, Prof. Wilsun Xu from University of Alberta, in the review of distribution related papers. I have been involving several of our distribution subcommittee members in these reviews, as well as other colleagues. I am Guest Editor-in-Chief of the following special issue:

- Protection and Real-Time Monitoring of Transmission and Distribution Systems with High Penetration of Distributed Generation and Microgrids
<http://www.ieee-pes.org/images/pdf/calls-for-transactions/Special%20Edition%20of%20IEEE%20Transactions%20PD-DER-Protection-SubmissionChange.pdf>
- Guest Editorial Board
 - Walmir Freitas, University of Campinas (UNICAMP), Brazil
 - Solveig Ward, Quanta Technology, USA
 - Robert Uluski, UISOL, USA
 - Fred Friend, American Electric Power (AEP), USA
 - Bartosz Wojszczyk, Decision Point Global, USA
- 95 extended abstracts were received and 86 were selected for submission of full papers, papers are currently being received, 29 papers have been received so far, 27 are being reviewed, and 2 have been rejected.

I have been serving as Editor of IEEE Transactions on Smart Grid (TSG), assisting the Editor-in-Chief, Dr. Jianhui Wang from Argonne National Laboratory, in the review of papers pertaining to smart grid applications in distribution.

I have been serving as Vice Chair of the IEEE Working Group on Distributed Resources Integration, in that role I helped Bob Arritt (Secretary) organize a panel session on “DG Interconnection Considerations” that was held as part of the Working Group meeting in the 2015 IEEE PES GM in Denver, CO.

I participated as speaker in the tutorial on Smart Distribution Systems, organized by the Working Group on Smart Distribution and help on July 29, 2015 as part of the 2015 IEEE PES GM <http://www.pes-gm.org/2015/tutorials#SDS>

I met with Shay Bharamirad, Vice Chair, to discuss responsibilities for next meetings. Shay will be in charge of working with Working Group and Task Force Chairs and TCPC in the organization of panel and combo sessions for upcoming meetings (JTCM, T&D and GM). I will remain representing the Distribution Subcommittee as Editor of IEEE TPWRD.

VICE CHAIR REPORT – *None for this meeting*

WORKING GROUP REPORTS

DISTRIBUTION RELIABILITY – Minutes not yet submitted

SWITCHING AND OVERCURRENT PROTECTION – Fred Friend, Chair

Chair Fred Friend (fafriend@aep.com) called the meeting to order at 10 am with 20 participants present followed by introductions of WG members and visitors. The Garden Grove, CA, Jan 13, 2015 meeting minutes were reviewed and approved without comment. The IEEE required slides for working Groups were presented.

The Panel session "Placement of Automated Distribution Protective and Switching Devices for Reliability" presented jointly by the WG and Reliability WG on July 27 was discussed by Fred Friend as being very successful and well attended. The room had been set up for 45 attendees with approximately 75 in attendance.

Session Titles

- "How many Reclosers / Smart Switches are Too Many? - Sectionalizing to 300 customer zones using only local intelligence", Andrew J Kasznay
- "Self-Healing Network (Centralized Restoration Gateway)", Casey Thompson
- "Identification, Prioritization, and Placement of Automatic Sectionalizing Devices at PECO", John Reid
- "Reliability-Centered Auto-Isolation Device Placement at PacifiCorp", Heide Caswell

Larry Clark (Alabama Power) asked for volunteer help with emphasis on "Protection" in developing a guide (P1854) being produced in the Smart Distribution Working Group. Contact Larry glclark@southernco.com or Fred fafriend@aep.com if you would like to contribute to this work.

The WG reviewed P1806 Guide for Reliability Based Placement of Overhead and Underground Switching and Overcurrent Protection Equipment Up to and Including 38 kV, Verbiage change on Scope to wait until closer to balloting. Chairman Fred Friend asked for all review to be completed and submitted back by October 30, 2015. Meeting adjourned at 11:59 am.

SMART DISTRIBUTION – Larry Clark, Chair

Larry Clark welcomed the Group that included 60 representatives of utilities, vendors, and academic institutes. The SDWG leadership, Larry Clark-Chair, Bob Uluski-Vice Chair and Fred Friend-Secretary, were introduced. Larry reviewed the IEEE policies on patents, copyrights, etc. The minutes of the last meeting (Garden Grove, CA, January 2015) were discussed including online availability and were subsequently approved unanimously.

Dr. S.S. (Mani) Venkata was recognized as the winner of the Douglas M. Staszkesy DA for 2015. Congratulations to Dr. Venkata for a well-deserved recognition. The award will be presented to him at the Awards Dinner at the GM in Denver. Anil Pahwa, chair of the DMS DA Award selection committee, is accepting nominations for the 2016 award. The Nomination deadline for the 2016 award is extended to January 31, 2016. Nomination and the supporting letters should be submitted to Anil Pahwa by the nominator by the deadline through email (Pahwa@ksu.edu) with the subject of the email message being "2016 IEEE PES Douglas M. Staszkesy Distribution Automation Award - Nomination".

The 'Smart Distribution Systems' tutorial (1/2 day version working with the IEEE PES IGCC) was performed on Tuesday, February 17, 2015 at the ISGT meeting in Washington, DC. The invited panel session 'Smart Distribution Applications', Chair: Shay Bahramirad was performed at the IEEE PES 2015 ISGT meeting on February 18, 2015.

The 'Smart Distribution Systems' tutorial (Full day, 8-hour course) was performed on Sunday, July 26, 2015 at the GM in Denver, CO. There was capacity attendance with 41 registered participants.

The Smart Distribution Working group is sponsoring 3 invited panel sessions at the 2015 GM in Denver, CO. The 3 panel topics are 'Role of DERMS/DMS in managing Distributed Energy Resources (DERs)', Chair: Bob Uluski; 'Volt/VAR Control in the Era of the Smart Grid', Chair: Le Xu; and 'Protection design for Smart Distribution', Chair: Nouredine Hadjsaid and Georges Simard.

Larry Clark reviewed the requirements for the development of an invited panel proposal. For the IEEE PES 2016 GM, invited panel proposals need to be submitted during 4th quarter 2015. The proposal is to include the title, description (150 words maximum) and the moderator with the list of 4 panelists for the invited panel proposal.

Larry facilitated a roundtable discussion of Smart Distribution member project reports.

Shay Bahramirad updated the progress of the P1854 Project and, identified remaining gaps within the guide and the need for additional volunteers. The PAR expiration date is 31-Dec-2016.

The next SDWG meeting is at 2016 IEEE PES JTCM in Memphis, TN at Sheraton Memphis Downtown Hotel in Memphis, TN on January 10-14, 2016.

DMS TASK FORCE (DMSTF) – Bob Uluski, Chair

Bob Uluski welcomed the group which included 30 representatives of utilities, vendors, and academic institutes. Bob briefly reviewed the IEEE policies on patents, copyrights, etc. Minutes of the last meeting (Garden Grove, CA, January 2015) were accepted without amendment.

Bob reviewed the results from the DMS TF survey.

Bob reminded the task force of the PES reorganization discussions and suggestions. A potential outcome is the move of the DMS TF from the T&D committee to the PSPO committee.

Bob facilitated a roundtable discussion of Distribution Management Systems.

In the event that the PES organization changes are delayed or not made, the next DMS TF meeting is at 2016 IEEE PES JTCM in Memphis, TN at Sheraton Memphis Downtown Hotel in Memphis, TN on January 10-14, 2016.

VOLT/VAR (VVTF) TASK FORCE – Larry Conrad, Chair

Bob Uluski, Vice Chair, facilitated the meeting, since Larry Conrad had conflicting meeting obligation, and welcomed the group which included 34 representatives of utilities, vendors, and academic institutes. Larry Clark briefly reviewed the IEEE policies on patents, copyrights, etc. Minutes of the last meeting (Garden Grove, CA, January 2015) were accepted without amendment.

Bob Uluski introduced upcoming smart distribution and volt-VAR control related conferences and the panel session “volt-VAR control in the era of the smart grid” at the 2015 general meeting.

Murty Yalla provided a status report of the proposed tutorial on Distribution Volt-Var Control and Optimization at the 2015 general meeting in Denver. The tutorial will cover basic principles, approaches, challenges, results as well as case studies from GA Power, BC Hydro, and Duke Energy. The tutorial has 9 contributors.

Bob Uluski provided a progress report on P1885/D01 – Draft Guide for Assessing, Measuring and Verifying Volt-Var Control Optimization on Distribution Systems. The draft is expected to complete by next January for internal review, expected to submit to the IEEE SA for initial sponsor ballot by July 30, 2016, and expect to complete for submittal to RevCom by January 23, 2017.

Le Xu, Secretary, presented a preview of the VVTF sponsored panel at 2015 general meeting, the group discussed the sharing of panel presentation materials using task force website.

Bob Uluski presented related work effort from smart inverter working group and the group discussed the potential collaboration between VVTF and SIWG.

Bob facilitated a roundtable discussion of Distributed Resources.

The next VVTF meeting is at 2016 IEEE PES JTCM in Memphis, TN at Sheraton Memphis Downtown Hotel in Memphis, TN on January 10-14, 2016.

VOLTAGES IN PRIVATELY AND PUBLICLY ACCESSIBLE LOCATIONS – Chuck DeNardo, Chair

The Stray & Contact Voltage Working Group met at the 2015 IEEE PES General Meeting on the afternoon of Monday July 27th at the Sheraton Hotel in downtown Denver, CO. There were approximately 30 people in attendance.

Prior to the meeting the Mandatory Editorial Coordination of Draft D1 was completed and the required changes were incorporated into Draft D2. An initial ballot invitation was sent to several committees and working groups that might have an interest in the topic of stray & contact voltage. A balanced pool of 79 balloters was formed, and the ballot was open for comments during the month of May.

At the close of the ballot there was an 88% response and an 84% approval rating. 397 comments were submitted. These included the rogue comments that had been received at the 2015 Anaheim meeting and by e-mail. 212 of the received comments were technical, 111 were editorial and 74 were general. Prior to this working group meeting the Comment Resolution Committee spent many hours addressing all comments and drafting the disposition status for each. The disposition status was then included on the Comment Resolution Spreadsheet.

Following review and approval of the Anaheim meeting minutes we began the long and tedious task of reviewing the Comment Resolution Spreadsheet, including all comments and their disposition status. When the meeting ended at 5:00 P.M. we had made it through all technical and general comments, and were reviewing editorial comments. All accepted and revised changes will now be incorporated in Draft D3.

If all goes as planned, the recirculation ballot for P1695/D3 Guide to Understanding, Diagnosing and Mitigating Stray and Contact Voltage will take place prior to the next working group meeting (i.e. PES JTCM Memphis, January 2016).

LIAISON REPORTS

Insulated Conductors – Harry Hayes

Working Groups are trying to harmonize the terminator and splice standards. Working Groups are also revising the separable connector standard and the application guide for faulted circuit indicators. Work is underway to develop a submerged designation for medium voltage cables. This is a cooperative effort of the ICEA and AEIC CEC. There have been a number of discussions regarding the performance of connectors used in premolded splices. Work continues in this area. ANSI C119 is planning to issue all of the point documents later this year with major changes. A new C119.0 standard will be released that contains all of the common connector tests and instructions for performing the tests. The point documents, that address specific connector designs, will retain the tests unique to that family of connector. ANSI is also developing a new standard (C119.7) for connectors designed to operate above 93°C. A Round

Robin test was completed to gain initial data on these connectors and test parameters. The information obtained during these tests indicated that additional testing is required in order to develop an effective standard. ANSI is seeking funding for a second Round Robin test. Industry support is needed for this testing.

Power System Communications

No report is available.

Power Systems Instrumentation and Measurement (PSIM)

No report is available.

Power System Relaying Committee – Fred Friend

The next meeting will be at the San Diego Marriott La Jolla, La Jolla, CA, 14 – 17 Sept 2015.

Subcommittees of the PSRC are Systems Protection, Line Protection, Relaying Communications, Relaying Practices, Rotating Machinery and Substation Protection. Meeting minutes can be viewed from the following link: <http://www.pes-psrc.org/Aminutes.html>

The following items may be of special interest to the Distribution Subcommittee members of the T&D Committee.

Working Group C2, chaired by Alex Apostolov, is nearing completion of a report to the PSRC to identify the functions and data available in Protective Relaying Devices used at different functional levels and different applications within a Smart Grid.

Joint Working Group C17, co-chaired by Dean Miller, Reigh Walling, and Ron Harley completed a report on Fault Current Contributions from Wind Plants. A tutorial was given at the PES GM.

Working Group C25, chaired by Martin Best, is preparing a report on the Protection of Wind Electric Plants to provide guidance on relay protection and coordination at wind electric plants, covering protection of generator step up transformers, collector system feeders, grounding transformers, collector buses, reactors, capacitors, main station transformers, tie lines and points of interconnection and associated arc flash issues.

Working Group D28, chaired by Brian Boysen, is revising and updating C37.230 – Guide for Protective Relay Applications to Distribution Lines.

Working Group I22, chaired by Bob Beresh, is preparing a report to the PSRC titled “End of Life Assessment for P&C Devices for determining the end of useful life for protection, control, and monitoring devices.

Link to completed PSRC reports http://www.pes-src.org/Reports/Apublications_new_format.htm

Transformers Committee – Fred Friend

The next meeting will be at the Peabody Memphis, Memphis, TN, 1 – 5 Nov 2015.

Subcommittees of interest may be Distribution Transformers, Insulating Fluids, Insulation Life, Instrument Transformers, Performance Characteristics, Standards, and Underground Transformers and Network Protectors.

The following is a link to their homepage: <http://www.transformerscommittee.org/>

The following standards are being revised or developed.

C57.12.20, Standard for Overhead Type Distribution Transformers, 500 kVA and Smaller, High-Voltage 34500 Volts and Below; Low-Voltage, 7970/13800 Y Volts and Below.

C57.12.34, Requirements for Pad-Mounted, Compartmental-Type, Self-Cooled, Three-Phase Distribution Transformers, 2500 kVA and Smaller: High-Voltage, 34 500GrdY/19 920 Volts and Below; Low Voltage, 480 Volts and Below

C57.12.39, Standard Requirements for Distribution Transformer Tank Pressure Coordination

60076-57-15, IEEE Standard Requirements, Terminology, and Test Code for Step-Voltage Regulators (Was C57.15, changed to reflect work with IEC)

P60076-16, Standard Requirements for Wind Turbine Generator Transformers

C57.12.23, IEEE Standard for Submersible Single-Phase Transformers: 250 kVA and Smaller; High Voltage 34 500GrdY/19 920V and Below; Low Voltage 600 V and Below

C57.12.40, IEEE Standard for Network, Three-Phase Transformers, 2500 kVA and Smaller; High Voltage, 34 500 GrdY/19 920 and Below; Low Voltage, 600 V and Below; Subway and Vault Types (Liquid Immersed)

C57.12.44, IEEE Standard Requirements for Secondary Network Protectors

SCC 21 – Bob Saint

1547.8: Extended use pf 1547 – balloted and recirculated, will be published soon.

1547.1: Testing Standard – balloted and should be out soon.

1547A: Amended 1547 and should be out soon.

STANDARDS

NESC – Rusty Soderberg

Two meetings of the NESC were held in Denver. A Subcommittee 5, “Strength and Loading” meeting was held on Monday, July 27, 2015 and the Working Group on TP&C Changes to the NESC met on Tuesday, July 28, 2015. The following is a summary of the two meetings.

A short presentation in the Tuesday meeting was regarding the 100th anniversary of the NESC. For the first time an NESC summit was held this year to provide users of the NESC more

information regarding the past, present, and future of the NESC and to get more people involved in the revision process. Discussions revolved around the need for a Code and changes that are up-coming. These summits are planned to be held every two years. The next summit will concentrate on the changes to the 2017 code for 2022.

Comments were due on the preprint of the change proposals (CP) to the 2017 Code by May 1, 2015. There were 751 total change proposals and 746 comments on those change proposals. The majority of the change proposals and comments are in the clearance section and in the strength and loading section.

Discussed in both NESC meetings this week were key change proposals for the 2017 Code which I discussed in the distribution subcommittee meeting and are listed below.

CP 4701 was written to provide simplicity and clarity in Rules 215 C2-C8 regarding guy wire grounding and insulation. Discussions revolved around the possibilities of guys breaking/sagging into energized conductors. There were 14 comments on this CP.

CP 4683 is a proposed change to use the resulting sags from Rule 250D, "Extreme ice with concurrent wind loading" for clearances over roadways etc. in addition to using the district map. This may require the use of taller poles for utilities. There were 3 comments on this CP.

CP 4694 is proposing to add load factors to insulators. This may impact both utilities and manufacturers, with the possibility of utilities having to move to stronger insulators in some cases. In the NESC meetings this week we discussed the impacts on utilities, but the load factors are not agreed upon yet, so the utility impact if this change proposal passes is still unknown. There were 15 comments on this CP.

CP 4506 would change the safety factors if using non-linear analysis methods. This may have an effect on distribution depending on what version of this CP we are discussing. The subcommittee will finalize and settle on a version of the CP to vote on. There were 19 comments on this CP.

CP 4700 During the Subcommittee 5 meeting in September 2013 a proposal was made to make Grade B construction applicable not only when crossing a limited access highway, railroad, or navigable waterway, but also applicable to any lines running along these areas (if the line could fall into them). This would be a big change for distribution that is not justified. The voting on this was close. There were 17 comments on this CP.

CP's 4602 4603 4606 4609 are change proposal to remove Grade N from the Code. Currently it looks like there will only be editorial changes to sections that define Grade N, and there will not be the changes that were originally submitted. There were 15 comments on this CP.

CP 4651 is a change proposal to eliminate the k factor (the constant listed in Table 251-1) in the Code. This may affect companies sag and tension tables (more work for the utilities) with no increase in safety. This proposal was voted down. There were 3 comments on this CP.

CP 4641 is replacing the extreme ice maps. This will negatively impact some northern states and perhaps other states in the nation as well. In one example the wind increased from 40 mph to 50 mph, this will most likely mean an increase in pole size for some northern states. If the 60 foot exemption is removed from the Code this could mean big changes for some utilities. It was mentioned in the NESC Subcommittee meeting this week that ASCE suggests that 700 year ice and wind maps should be used in the NESC, meaning more ice and higher wind loads. There was 1 comment on this CP.

CP 4610 is regarding the modification/removal of the 60' exemption. The 60' exemption allows most distribution poles to be exempt from certain analyses. During the IEEE winter meeting in Garden Grove, Robert Harris and Kevin Jordan gave a presentation titled, "Engineering Analysis of Possible Effects of 2017 NESC Change Proposal to Modify or Remove 60' Exemption." This presentation reflected the 30 comments that were received on this CP (all but one of the comments opposed modifying/removing the 60' exemption). Because of these and other reactions to this CP in the utility industry, the chairperson of Subcommittee 5 stated we will not be spending any more time on this subject.

PANEL SESSIONS

Panel Sessions planned are:

1. T&D 2016: *Strategies to Improve Outage Response during Major Events*, Tom Short Moderator

Send any proposals for new panel sessions to shay.bahramirad@comed.com

PRESENTATIONS

Title: *Directional element in the presence of distributed generation – advances and limitations*

Presenter: Yoav Sharon

Title: *Difficult Choices for Inverter Effective Grounding*

Presenter: Larry Conrad

Presentations from this meeting and those from previous meetings are posted at the Distribution Subcommittee website:

<http://grouper.ieee.org/groups/td/dist/presentations/>

NEW BUSINESS

IEEE PES Award for Excellence in Distribution Engineering

A link to the award site is:

<http://grouper.ieee.org/groups/td/dist/distaward.html#DistExcel>

Send the completed forms to John.McDaniel@nationalgrid.com

Shay B. Please Note: Smart Grid WG wants JTCM room by invite only for 4 hours, contact Larry Clark

PAR Number	Title	Working Group	Chair
P1243	Guide for Improving the Lightning Performance of Transmission Lines	Lightning Performance of Distribution Lines WG	John McDaniel
P1695	Trial-Use Guide for Assessing Voltages at Publicly and Privately Accessible Locations	Voltages at Publicly and Privately Accessible Locations WG	Charles DeNardo
P1782	Guide for Collecting, Categorizing and Utilization of Information Related to Electric Power Distribution Interruption Events	Distribution Reliability WG	Val Werner
P1854	Guide for Smart Distribution Applications	Smart Distribution WG	Larry Clark
P1885	Guide for Assessing, Measuring and Verifying Volt-Var Control Optimization on Distribution Systems	Smart Distribution WG	Larry Clark
P1806	Guide for Reliability Based Placement of Overhead and Underground Switching and Overcurrent Protection Equipment	Switching and Overcurrent Protection WG	Fred Friend

Appendix: Current Membership Roster

Chair: Julio Romero Aguero, Raleigh, NC

Vice Chair: Shay Bahramirad, Chicago, IL

Secretary: Val Werner, WI

Bahramirad, S., Oak Brook, IL
 Bouford, J., Augusta, ME
 Caswell, H., Portland, OR
 Clark, L., Birmingham, AL
 Cole, J., Bozeman, MT
 Conrad, L., Plainfield, IN
 Delmas, H., Montreal, QC
 DeNardo, C., Milwaukee, WI
 Friend, F., Columbus, OH
 Gilmer, D., Kerrville, TX
 Hayes, H., St Louis, MO
 Isom, M., Oklahoma City, OK
 Jones, T., Portland, OR
 Lambert, F., Forest Park, GA
 McDaniel, J., North Syracuse, NY
 McGranaghan, M., Knoxville, TN
 Miller, L., Kennewick, WA
 McGranaghan, M., Knoxville, TN

Miller, L., Knoxville, TN
 Patterson, M., Boise, ID
 Rafferty, M., Jacksonville, FL
 Robinson, R., Topeka, KS
 Romero Aguero, J., Raleigh, NC
 Sabin, D., Beverly, MA
 Saint, B., Arlington, VA
 Smith, J., Phoenix, AZ
 Soderberg, R., Jackson, MI
 Venkata, M., Redmond, WA
 Viglietta, J., Philadelphia, PA
 Ward, D., Richmond, VA
 Werner, V., Milwaukee, WI
 Xu, L., Raleigh, NC