

IEEE Power and Energy Society Entity Annual Report

2020

Entity: Transmission & Distribution
Website: <https://cmte.ieee.org/pes-td/>
Chair: Surya Santoso
Vice-Chair: Eriks Surmanis
Secretary: Julio Romero Agüero
Immediate Past Chair: Gary Chang

1. Significant Accomplishments

There are 7 subcommittees and approximate 80 WGs/TFs under T&D Committee. Currently there are several standards are under revision or waiting for approval.

CAPACITOR SUBCOMMITTEE

- IEEE Std 1036, Guide for the Application of Shunt Power Capacitors has been out to Ballot. A last version has been submitted to RevCom. Publication expected in spring 2021.
- IEEE Std 1531-2020, Guide for the application specification for Harmonic Filters has been Officially Published 26 January 2021
- IEEE Std 824 was submitted to Ballot, comments came back and were reviewed during the last JTCM in January.
- IEEE Std 18: Special test on Fuseless capacitor: New annex C has been split in two parts, annex C and D and are now under discussions.

DISTRIBUTION SUBCOMMITTEE

- The draft for IEEE P1806, Guide for Reliability Based Placement of Overhead and Underground Switching and Overcurrent Protection Equipment Up to and Including 38 kV, is complete and was entered ballot.
- IEEE P1885 - Guide for Assessing, Measuring and Verifying Volt-Var Control Optimization on Distribution Systems, has a PAR extension.

ENGINEERING IN THE SAFETY, MAINTENANCE AND OPERATION OF LINES (ESMOL) SUBCOMMITTEE

- IEEE 1048 Guide for Protective Grounding of Power Lines is active and expires in 2026.
- IEEE 1067 Guide for In-Service Use, Care, Maintenance, and Testing of Conductive Clothing for Use on Voltages up to 765 kV AC and +/-750 kV DC. A PAR will be submitted for revising the guide by the end of 2022.
- IEEE P1071 Draft Application Guide for an Engineered Restoration Program for Failed Transmission Structures was published in April, 2022, expires in 2029.
- IEEE 1070 Guide for the Design and Testing of Transmission Modular Restoration Structure Components: PAR is expiring in 2022 and no major changes expected during the revision process.

- IEEE 1307 Standard for Fall Protection for Electric Utility Transmission and Distribution on Poles and Structures was balloted and approved in 2018, expires in 2028.
- IEEE P1882 Draft Guide for Establishing, Benchmarking, and Maintaining a Working Program for Energized Transmission Lines is in the committee ballot process. IEEE ballot process completion expected later this year, PAR expires in 2024.
- IEEE 516 Guide for Maintenance Methods on Energized Power Lines is in the IEEE ballot comment resolution phase. Publication is expected before the PAR expires in December 2021.
- IEEE 957 Guide for Cleaning Insulators is in draft development stage. PAR expires December 2022.
- IEEE 1654 IEEE Guide for RF Protection of Personnel Working in the Vicinity of Wireless Communications Antennas Attached to Electric Power Line Structures will be abandoned as a similar and more descriptive guide is already active within C95.7.

HVDC & FACTS SUBCOMMITTEE

The subcommittee participated in meetings with State Grid Corporation of China (SGCC) facilitated by the IEEE Standards Association related to the establishment of three working groups for new standards related to Unified Power Flow Controllers. These meetings resulted in the submission of three new PARs to IEEE SA:

- Working group provided associate editor and authors for HVDC themed issue of IEEE Power and Energy Magazine: “New Developments in High-Voltage DC”, May/June 2019
- Provided speakers for 3 PES webinars related to HVDC transmission
- Sponsored 4 panel sessions at the PES General Meeting
- IEEE Std. 2745.1: Guide for Technology of Unified Power Flow Controllers (UPFC) Multilevel Converter Part 1: Functions, was published.
- Submitted ne PAR of IEEE P2745.2 Guide for Technology of Unified Power Flow Controllers (UPFC)- Multilevel Converter Part 2: Terminology
- Submitted ne PAR of IEEE P2745.3 Guide for Technology of Unified Power Flow Controllers (UPFC)-Multilevel Converter Part 2: Thyristor Bypass Switch
- A Subcommittee liaison member participated in the kick-off meeting of the recently established IEEE Medium DC Transformer Working Group_ P2892

OVERHEAD LINES SUBCOMMITTEE

- The IEEE P1542 Guide for Installation, Maintenance, and Operation of Irrigation Equipment Located Near or Under Power Lines closed its balloting and has been submitted to RevCom.
- IEEE 563, Guide on Conductor Self-Damping Measurements, is in revision. Balloting was complete.
- IEEE P1227, Guide for the Measurement of DC Electric-Field Strength and Ion Related Quantities is in revision. Balloting began in Spring 2019 (PAR expires 12/31/2023).
- IEEE P539, Standard Definitions of Terms Relating to Corona and Field Effects of Overhead Power Lines. Balloting began in Spring 2019. (PAR expires 12/31/2023).
- The following new PARs have been submitted:
 - IEEE P751 Guide for Wood Structures Used for Overhead Electric Transmission Lines
 - IEEE P1218 Trial-Use Guide for Maintenance of Wood Transmission and Distribution Line Structures
 - IEEE P2683 Guide to Strength Loss in Tubular Steel Poles

- IEEE P2746 Guide for Evaluating AC Interference on Linear Facilities Co-Located Near Transmission Lines
- IEEE P2772 Test Method for Energy Loss of Overhead Conductors
- IEEE P2797 Guide for Forecast and Early Warning of Icing on Overhead Transmission Lines in Micro-topographic Areas
- IEEE P2819 Measuring EMF in AC/DC Hybrid Areas
- IEEE P2821 Guide for Unmanned Aerial Vehicle-based Patrol Inspection System for Transmission Lines
- IEEE P2828 Guide for Measuring Method of Overhead Power Transmission Line Galloping Based on Monocular Video
- IEEE P2833 Guide for Overhead Transmission Lines with Composite-Insulated-Crossarm Supports
- IEEE PC135.100 Standard for Line Hardware on Overhead Line Construction

POWER QUALITY SUBCOMMITTEE

- A Webinar on Incipient Fault Detection Using Equipment Failure Signatures and Power Quality Monitors was held in April 2020. A Panel Session to promote the WG report on Signatures of Equipment Failures was held during GM 2020.
- IEEE Std 1453 for Recommended Practice for the Analysis of Fluctuating Installations on Power Systems, PAR expires 2021, start balloting end of the 2020.
- IEEE Std 519 for Recommended Practice and Requirements for Harmonic Control in Electric Power Systems is under revision.

TRANSMISSION SUBCOMMITTEE

- Newly established subcommittee. No standards development activities in 2020.

WORKING GROUP ON LIGHTNING PERFORMANCE OF OVERHEAD LINES

- New PAR P1243 Revision to IEEE Standard 1243-1997 was approved on 03 Dec 2020. The PAR expires on 31 Dec 2024
- PAR P1410 Revision to IEEE Standard 1410-2010 was approved on 07 Nov 2019. The PAR expires on 31 Dec 2023.

2. **Benefits to Industry and PES Members from the Committee Work**

The scope of the Transmission and Distribution Committee is the treatment of all matters related to the design, theoretical and experimental performance, installation, and service operation of parts of electric power systems which serve to transmit electric energy between the generating sources and substations or customer points of common coupling through AC or DC lines. In 2020, the committee has provided benefit to industry by:

- Developing and managing standards and guides pertaining to capacitors, distribution systems, lightning, HVDC/FACTS, power quality, and overhead lines.
- Providing panel sessions on timely topics including HVDC and FACTS, Application of Power Quality Data Analytics to Equipment Condition Monitoring, Low Frequency HVAC Transmission Systems, and Time-Varying and Interlaced Harmonics.

- Providing industry with a venue for participating in cutting edge research and best practices dialogs; and participating in the standards making process.

3. Benefits to Volunteer Participants from the Committee Work

The IEEE PES Transmission & Distribution Committee provides benefits to its volunteer participants in the following ways:

- Offering participants an opportunity to work with acknowledged leaders in shaping the T&D industry and informing on T&D issues
- Affording industry leadership role for volunteer participants
- Providing a forum for networking with peers from the T&D industry

4. Recognition of Outstanding Performance

The following members of the T&D Committee was elevated to IEEE Fellow this past year:

- Dr. Oriol Gomis Bellmunt- for contributions to grid integration of renewable energy sources
- Prof. Dragan Jovicic- for contributions to improvements in multi-terminal HVDC transmission grids and development of HVDC transformers

Other Award winners include

- IEEE PES Award for Excellence in Power Distribution Engineering: Thomas R. Beckwith
- Uno Lamm HVDC Award: Hartmut Huang
- IEEE PES Nari Hingorani FACTS Award: R. P. Sasmal
- IEEE PES Prize Paper Award: Xiongfei Wang and Frede Blaabjerg for the paper, “*Harmonic Stability in Power Electronic-Based Power Systems: Concept, Modeling and Analysis*”

5. Coordination with Other Entities (PES Committees, CIGRE, Standards, etc.)

- PES Energy Internet Coordinating Committee
- PES Intelligent Grid and Emerging Technologies Coordinating Committee
- PES Marine Systems Coordinating Committee
- PES Renewable Systems Integration Coordinating Committee
- Liaisons with numerous IEC, CIRED and CIGRE committees
- Liaisons with numerous NESC and ANSI committees.
- Liaisons with US National Committee for CIRED via IEEE PES Distribution Subcommittee and IEEE PES Power Quality Subcommittee
- Liaison with NEMA via Capacitor Subcommittee
- Liaison with Power and Energy Magazine.

6. Global Involvement

PES is looking to increase involvement with members from Regions 8, 9 and 10 (Africa, Europe, Middle East, Latin America, Asia and Pacific). Please provide the following information.

Total Number of committee members 1300~1400	Officers from regions 8,9 and 10 1	Subcommittee officers from regions 8, 9 and 10 0	Subcommittee members from regions 8, 9, and 10 30
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7. Problems and Concerns



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Need to get the members' information from different subcommittees. The 123signup platform has been established and administrators for each subcommittee and working group are identified.

8. Significant Plans for the Next Period

The six subcommittees of the T&D Committee have brought several standards to complete or near complete draft within 2021. Many of the working groups completing these standards have stated intentions to have these new drafts in ballot in 2021.

The committee also actively participate in standards developed by the IEEE Entity process. A further collaboration with China's T&D Satellite Committee is undergoing.

Submitted by: Gary Chang

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