

# IEEE Power and Energy Society Entity Annual Report

2015

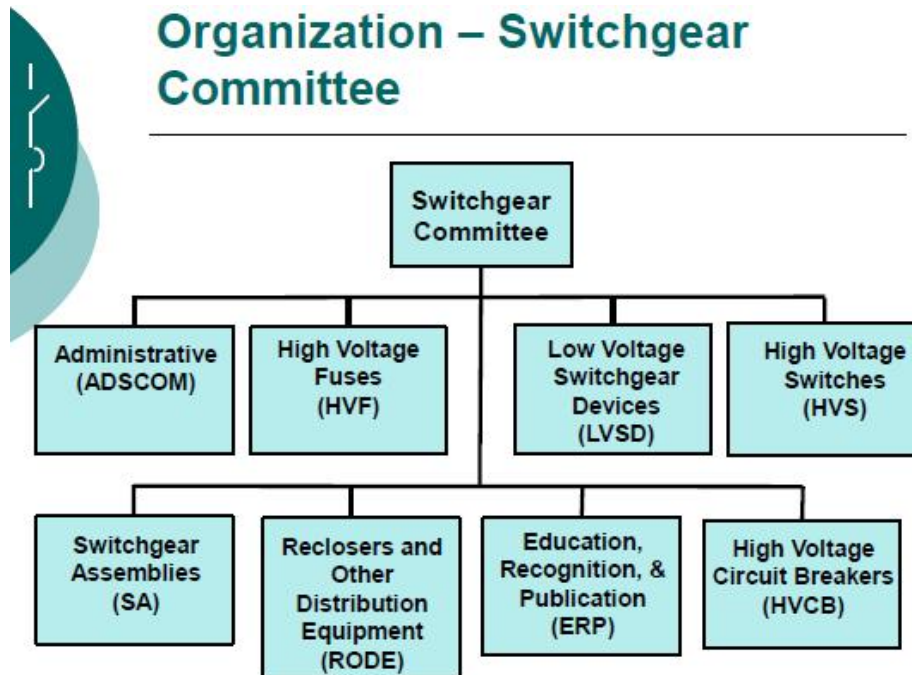
11-December-2015

Entity: Switchgear Committee

	2015	2016
Chair:	T. W. Olsen	Paul Sullivan
Vice-Chair:	Paul Sullivan	Todd Irwin
Secretary:	Todd Irwin	Keith Flowers
Registrar:	Ken Edwards	Ken Edwards
Past Chair	Ken Edwards	T. W. Olsen

## 1. Significant Accomplishments:

The Switchgear Committee has six technical subcommittees (HV Circuit Breakers, HV Fuses, HV Switches, LV Switchgear Devices, RODE [Reclosers and Other Distribution Equipment], and Switchgear Assemblies), with approximately 35 active working groups or task forces preliminary to formation of working group. The Switchgear Committee has approximately 60 standards. The list of active working groups fluctuates, with working groups disbanded as their projects are completed, and with new working groups forming on a continuing basis.



An active plan is in place to revise any and all relevant standards that are due for administrative withdrawal at the end of 2018, to comply with the changes enacted by IEEE-SA in 2008 that ended reaffirmations and imposed a requirement to revise or withdraw standards that were not revised within ten years of approval. While significant work remains, all of the documents due to expire at the end of 2018 will be revised before they expire.

The Switchgear Committee actively works to harmonize requirements in various standards with the requirements of the relevant IEC standards. At present, requirements for HV circuit breakers are fundamentally harmonized. Requirements for other portions of the Switchgear Committee standards are harmonized with IEC to varying degrees, determined primarily by differences in the user practices between the IEC and ANSI/IEEE markets.

The Switchgear Committee P&P for standards development were accepted by IEEE-SA in December, 2012. The Working Group P&P were created using the PES TechCouncil template in September, 2013, and found to be without issue by AudCom and the IEEE-SA Standards Board in December, 2013. The operating procedures for the committee were approved by the committee at its April 2015 meeting and were approved by the PES TechCouncil in August, 2015.

In 2015, eight standards, guides, or recommended practices updated or created by the Switchgear Committee, or co-sponsored by the Switchgear Committee, have been published, and four more were approved by the Standards Board in December, 2015. These include:

- C37.20.1 IEEE Standard for Metal-Enclosed Low-Voltage Power Circuit Breaker Switchgear (published July 2015)
- C37.20.2 IEEE Standard for Metal-Clad Switchgear (published September 2015)
- 62271-37-013, Standard for High-Voltage Switchgear and Controlgear – Part 37-013: Alternating current generator circuit-breakers (published October 2015)
- C37.11 Standard Requirements for Electrical Control for AC High-Voltage (> 1000 V) Circuit Breakers (published February, 2015)
- C37.74 IEEE Standard Requirements for Subsurface, Vault, and Pad-mounted Load-Interrupter Switchgear and Fused Load-Interrupter Switchgear for Alternating Current Systems up to 38 kV (published March, 2015)
- C37.14 IEEE Standard for DC (3200 V and below) Power Circuit Breakers Used in Enclosures (published June 2015)
- C37.20.6 IEEE Standard for 4.76 kV to 38 kV Rated Ground and Test Devices Used in Enclosures (published April 2015)
- C37.30.2 IEEE Guide for Wind Loading Evaluation of High Voltage (>1000 V) Air Break Switches (published December 2015)
- C37.13 IEEE Standard for Low-Voltage AC Power Circuit Breakers Used in Enclosures (approved by Standards Board December 2015)

- C37.23 IEEE Standard for Metal-Enclosed Bus (approved by Standards Board December 2015)
- C37.27 IEEE Guide for Low-Voltage AC Power Circuit Breakers Applied with Separately-Mounted Current-Limiting Fuses (approved by Standards Board December 2015)
- C37.302 IEEE Guide for Fault Current Limiter (FCL) Testing FCLs rated above 1000 V ac (approved by Standards Board December 2015)

We expect a comparable level of published standards documents in 2016.

Two of our members are valued contributors to the IEEE Standards Association governance process, Ted Burse and Ted Olsen. Both are members of the 2015 Standards Board and Ted Burse is Chair of the 2015 Standards Review Committee (RevCom).

The Switchgear Committee holds two meetings each year, one in the Spring and one in the Fall. Attendance at these meetings is on an upward trend, rising from around 110 participants in 2003 to 252 participants in Spring, 2015 at the meeting in St. Pete Beach, FL, and 231 in the Fall, 2015 meeting in San Diego. Fall meeting attendance is normally lower than the Spring meeting. The Switchgear Committee is in sound financial condition. Contracts have been signed for the seven of the next eight meetings, as shown below:

Spring 2016	April 24-28, 2016	Sonesta Resort Hilton Head Island, SC
Fall 2016	October 9-13, 2016	Sheraton Station Square Hotel Pittsburgh, PA
Spring 2017	April 23-27, 2017	Hilton Charlotte University Charlotte, NC
Fall 2017	October 8-12, 2017	Marriott Portland Sable Oaks Portland, ME
Spring 2018	April 22-26, 2018	Disney's Contemporary Resort Lake Buena Vista, FL
Fall 2018	Tentative	Nashville, TN
Spring 2019	April 28-May 3, 2019	Hilton Burlington Burlington, VT
Fall 2019	October 6-10, 2019	Catamaran Resort Hotel San Diego, CA

The Switchgear Committee website has been updated to a more interesting format and continues to include access to minutes of past meetings (from 1990 to date), and many technical presentations.

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

The Switchgear Committee creates and maintains standards that benefit the stakeholders in many ways, including these:

- Users, producers, testing firms, and third-party certification bodies benefit by having performance requirements that are consistent and that give confidence that products carrying equal ratings exhibit equal performance.
- Users and producers benefit by having known performance-oriented requirements rather than rote construction mandated (but not necessarily performance-oriented) requirements. This allows producers to introduce new technologies that produce equal performance without conflicting with arbitrary standards-mandated construction requirements.
- Users, producers, testing firms, and third-party certification bodies benefit from having relatively stable standards for products, as revisions of standards are generally made except at intervals of seven to ten years.
- Users, producers, testing firms, and third-party certification bodies benefit from the creation of new standards covering areas previously not addressed in standards, such as testing of equipment under conditions of internal arcing faults, special interrupting applications such as transformer-limited faults, and conversions of existing equipment to accommodate newer technologies. The guide for internal arcing tests is particularly significant as the document (C37.20.7) has been expanded over the years to cover significantly more equipment varieties, providing a consistent set of testing requirements over a range of product types.

### **3. Benefits to Volunteer Participants from the Committee Work:**

- Participation in standards activities provides a solid basis for education of new participants, while providing a forum to capture the knowledge of experienced participants.
- The Switchgear Committee has participation by a significant number of persons who have formally retired from the business world, yet continue to participate, in several cases without financial support from their former employer or some other firm. It is reasonable to surmise that such individuals would not do so except that participation provides them some measure of satisfaction.
- Participants in the standards process benefit from recognition within their employer organizations as “experts” in their technical field, and particularly if they participate in some officer capacity in working groups or in the committee structure.
- The Switchgear Committee provides recognition to working group members and committee officers, typically with a plaque. When standards are published, the participants are also recognized in the front matter of the document.

### **4. Recognition of Outstanding Performance:**

Education, Recognition, and Publication (ERP) Subcommittee oversees all the activities related to nominations, recognitions, awards, prizes, and certificates of appreciation for exceptional individuals and groups. Annually ERP considers nominations for the following awards:

- PES Prize Paper award
- PES Outstanding WG award
- PES Award for outstanding Standard or Guide
- TC award for prize paper
- TC award for outstanding service to the Committee
- TC award for outstanding Working Group.

In 2015 we presented the following awards:

- Mietek Glinkowski for TC award for distinguished service to the Switchgear Committee (award presented April 2015)
- C37.20.3 [Metal-Enclosed Interrupter Switchgear (1 kV – 38 kV) / C37.20.4 (Indoor AC Switches 1 kV to 38 kV) for Use in Metal-Enclosed Switchgear), both chaired by C. Ball, for TC outstanding WG award (award presented April 2015).

The Switchgear Committee has had a very high level of quality nominations. For example, in the nine years of PES Prize Papers the Committee's nominations were awarded six out of eight years (6/8= 75% success rate).

In addition all outgoing officers, including subcommittee chairs, are presented with certificates of appreciation.

ERP stimulates and encourages nominations for Senior Membership of IEEE and IEEE Fellows.

In addition, ERP oversees the paper review process for all papers that relate to Switchgear Committee technical areas, whether for conferences such as the IEEE PES T&D, the PES General Meeting, for Transactions, or other publications.

##### **5. Coordination with Other Entities (PES Committees, CIGRE, standards, etc.):**

Switchgear Committee keeps a close liaison with CIGRE Study Committee A3 (High Voltage Equipment). Nenad Uzelac is an official US Representative to CIGRE SC A3 as well as the liaison between IEEE Switchgear Committee and CIGRE A3.

A number of projects and standards are in process or published that are joint efforts with other IEEE PES sponsors or with the IEC. Among these are:

- IEEE/IEC 62271-37-013, dual logo, IEEE/IEC, High-Voltage Switchgear and Controlgear – Part 37-013: Alternating-current generator circuit-breakers. (published October 2015)
- IEC 62271-111 / IEEE C37.60, dual logo IEEE/IEC, High voltage switchgear and controlgear – Part 111: Overhead, pad-mounted, dry vault, and submersible automatic circuit reclosers and fault interrupters for alternating current systems up to 38 kV. (revision in process)

- PC37.20.9, Metal Enclosed Switchgear Rated 1kV to 52 kV Incorporating Gas Insulation Systems, co-sponsored by IEEE PES Substations Committee (project in process)
- C37.122, High Voltage Gas-Insulated Substations Rated Above 52kV, sponsored by IEEE PES Substations Committee, co-sponsored by IEEE PES Switchgear Committee.
- IEC 62271-37-082, dual logo, IEEE/IEC, High-voltage switchgear and controlgear - Part 37-082: Measurement of sound pressure levels on alternating current circuit-breakers.

## **6. New Technologies of Interest to the Committee:**

The committee has several projects or task forces involved in new technologies:

- IEEE Std 37.302, Guide for Fault Current Limiter (FCL) Testing. This document describes the testing of fault current limiters operating on condition based impedance increase for AC systems 1000 Vac and above. It does not cover such devices as series reactors or current-limiting fuses. This guide was approved by the IEEE-SA Standards Board in December, 2015.
- The solid dielectric task force (SDTF) is exploring materials, application and environmental conditions, and tests for new insulation systems in which insulation is molded as an integral element of an assembly that includes the interrupting or switching device, e.g., such as for an outdoor distribution recloser. The task force anticipates issuing their final report in the near future.
- Task force for controls for distribution equipment is developing a technical report with recommendations for microprocessor-based controls for equipment over 1000 Vac up to 38 kVac for overhead and underground distribution lines, including test and application information. Such controls typically would include the protection associated with the switching device, as well as the controls devices (open, close, etc.) with communications capability. The control device would serve in place of traditional relays and control devices that are appropriate for high voltage circuit breakers but not suitable for distribution equipment mounted on power poles or below grade. Completion of the report is anticipated in the Spring of 2016.

## **7. Problems and Concerns:**

At present, the Switchgear Committee has no pressing issues and concerns.

- The major issue of the mandated expiration of standards at the end of 2018 seems to be well under control, as plans and projects are in place to address each standard before 2018.
- Creation of acceptable P&P for standards development, including sponsor P&P and working group P&P, has been accomplished. This was a carryover major issue from previous years.

- Relations with IEEE-SA, in sad condition some years ago, are now EXCELLENT, and IEEE-SA staff personnel have been extremely helpful to the Switchgear Committee.

**8. Significant Plans for the Next Period:**

- P&P for standards development and for working groups, will be revised after IEEE-SA Standards Board releases new baselines (approved by the Standards Board December 2015) and after PES TechCouncil issues new template. We expect to contribute significantly to the creation of the new PES baselines templates.
- Continue to monitor standards scheduled for withdrawal in 2018 to assure that ongoing projects are completed before withdrawal.
- Work with selected subcommittees having a heavy workload of standards to be revised to assure that the workload can be handled within the available resources and time. This requires that projects need to be completed within the four year validity of a PAR. Long duration projects, six, eight, or more years in duration, can no longer be supported.

At the end of 2015, officers will rotate according to normal practice. 2016 officers will be:

Chair:	Paul Sullivan
Vice-Chair:	Todd Irwin
Secretary/Treasurer:	Keith Flowers
Registrar	Ken Edwards
Past Chair:	T. W. Olsen

**Submitted by: T. W. Olsen  
Chair, IEEE PES Switchgear Committee**

**Date: 11-December-2015**