

## IEEE Power and Energy Society Entity Annual Report

2021

<b>Entity:</b>	<b>Substations Committee</b>
<b>Website:</b>	<a href="https://cmte.ieee.org/pes-substations/">https://cmte.ieee.org/pes-substations/</a>
<b>Chair:</b>	<b>Patrick Fitzgerald</b>
<b>Vice-Chair:</b>	<b>Joe Warner</b>
<b>Secretary:</b>	<b>Matt Bauer</b>
<b>Immediate Past Chair:</b>	<b>Joseph Gravelle</b>

### 1. Significant Accomplishments:

Standard development and Maintenance – The Substations Committee currently manages forty-one (41) standards. Of those, thirty-four (34) were active at the end of 2021 with three (3) additional in the balloting phase of approval and three (3) more with approved ongoing Project Authorization Requests. Additionally, at the end of 2021, the substations Committee has thirty (30) approved Project Authorization Requests (PAR) to create and maintain its standards.

The Substations Committee has maintained active participation and standards development work through the COVID-19 pandemic with teleconference and virtual meetings. Due to COVID-19 travel and meeting restrictions, the committee was tasked with negotiating cancelled and delayed in person conference contracts and actively pursued and promoted the need and benefits of returning to in-person meetings.

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

The IEEE PES Substations Committee is the professional home for designers and engineers involved in the design, construction and operation of electrical substations used for generation, transmission, and distribution. Moreover, committee activities include development of not only industry standards, but also educational material, for instance, technical papers, white papers, presentations, tutorials, and panel discussions related to areas of interest.

The most notable activity of the Substations Committee is standard development and maintenance. This work includes the creation and revision of standards and guides through subcommittees and working groups. These standards are widely utilized and provide the most direct benefit to the industry and PES Members.

The Substations Committee has five technical subcommittees supporting forty-four technical working groups. The technical subcommittees and their scopes are as follows:

- a. Electrical Substation Design Subcommittee (SCD0): Responsible for treatment of matters pertaining to the electrical design and construction of transmission and distribution substations. These matters include air insulated station clearances and insulation levels, cable

- systems, air insulated bus design, seismic design, specification development and auxiliary systems.
- b. Substation Civil Design (SCE0): Responsible for treatment of matters relating to the civil and environmental design and construction of transmission and distribution substations. These matters include community acceptance, oil spill containment, fire protection, animal deterrents and physical and Electronic Security.
  - c. Substation Grounding and Lightning (SCG0): Responsible for treatment of matters relating to grounding and lightning design of transmission and distribution substations. These matters include safety, direct lightning stroke shielding, measuring earth resistivity, ground impedance and surface potentials of a grounding system, grounding safety and permanent connections.
  - d. FACTS & HVDC Stations (SCIO): Responsible for treatment of all matters relating to design, construction, and operation of AC substations using HV power electronics as part of the electrical power system, including FACTS and HVDC converter stations at the Transmission and Distribution level. This includes the application of HV power semi-conductor equipment and all other components insofar as they affect the design, construction, and operation of such substations. Interest in such components is limited to their effects on overall station parameters and does not include the detailed design of the equipment itself.
  - e. Gas Insulated Substations (SCK0): Review, study and document design, application, installation, testing, operating and maintenance practices for gas insulated substations (GIS) and transmission lines (GIL). Identify the need for and sponsor the preparation of criteria, guides, tutorials, and standards as related to the gas insulated substations and transmission lines.

PES member involvement in working groups and subcommittees provides invaluable industry insight and knowledge sharing to members. Participant benefits are further outlined below.

The Substations Committee also has a program to help support young professionals and experienced contributors by starting an assistance program that will allow members from these groups to get financial assistance for meeting registration and hotel accommodations to attend working group meetings.

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

Participants have benefited from their collaboration on technical problems with industry leaders and experts, discussing contemporary industry problems and concerns, and the satisfaction of creating standards and guides that are useful to the industry. Committee meetings have included presentations of experts in specific fields and debating of ideas and industry practices, including CIGRE member input. Substations Committee members have also benefited from their exposure to technical paper reviews and technical paper presentations.

Active participants also have opportunities to take on leadership roles and improving their leadership skills as well as mentoring skills working with teams with a variety of experience in technical and organizational activities.

Substations are considered strategic assets, and many components are now reaching the end of their original design life. Valuable information is exchanged on modern design approaches and explaining new technology, as well as the issues specific to new technology and suggested improvements for the



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electric power industry market; for example, Voltage-Source Converters (VSC) and alternative gases for insulation.

**4. Recognition of Outstanding Performance:**

Due to the COVID-19 pandemic interruptions, no formal awards were presented in 2021.

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

The PES Substations Committee has determined that it is desirable to establish formal and direct liaisons with other IEEE Societies or groups, or other bodies, for the purpose of maintaining an efficient exchange of information on activities and related areas of mutual interest. This information exchange is accomplished through liaison representatives, appointed by the Substations Committee with the agreement and approval of the other group with which the liaison is to be established. The liaison representative will provide reports to the Substations Committee on activities of the other group, based on personal participation in these activities if possible. Depending on the preference of the other group, the liaison representative may also report to them on Substations Committee activities. Active Substation liaisons include:

- a. Cigre B3 – George Becker
- b. NESC – David Guzman
- c. IEC – Hermann Koch
- d. Switchgear Committee– George Becker

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

No new significant technologies of interest to the Committee were identified in 2021.

**7. Global Involvement**

Total Number of committee members	Officers from regions 8,9 and 10	Subcommittee officers from regions 8, 9 and 10	Subcommittee members from regions 8,9, and 10
569	0	6	50



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

The Substation Committee is currently working on updating our Organization and Procedures Manual to the newest PES template. We hope to complete this effort in 2022. This will bring more clarity and organization to the operation and scope of the Substations Committee and are associated subcommittees and working groups. Significant areas of update include officer and liaison representative positions and responsibilities and subcommittee, working group and task force scopes, membership requirements and responsibilities.

With the change in Membership Management Systems. The Substations Committee is also taking this opportunity to better organize its committee, subcommittees and working groups membership rosters.

Last, The Substations Committee plans to promote IEEE Webinars as a valuable platform to share standard information. Traditionally, this has been done with in person tutorials but with the current void in in person attendance webinars are a valuable alternative.

Submitted by: *Matthew W. Bauer*, Matthew W. Bauer

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