IEEE Power and Energy Society
Entity Annual Report
2022

Entity:   Substations Committee
Website:  https://cmte.ieee.org/pes-substations/
Chair:    Patrick Fitzgerald
Vice-Chair:  Joe Warner
Secretary:  Matt Bauer
Immediate Past Chair:  Joseph Gravelle

1. **Significant Accomplishments:**

   The Substations Committee hosted its first in person Annual Meeting since 2019 due to the COVID-19 pandemic. The meeting took multiple renegotiations and schedule changes due to the pandemic. The meeting was held in Nashville, Tennessee on May 21st through the 26th.

   The Substations Committee currently has forty-four (44) working groups organized in five (5) subcommittees. They work on forty-two (42) standards. At the end of 2022, the substations Committee had twenty-seven (27) approved Project Authorization Requests (PAR) for standards work. Eight (8) of those were to create new standards and the remainder to maintain existing standards.

   The Substations Committee sponsored an eight (8) hour tutorial at the 2022 IEEE PES T&D meeting titled “Stabilizing the Future Transmission Grid Using Dynamic Var Technologies,” as well as a four (4) hour panel session titled “Harmonic Voltage Distortions in Static Var System Applications.”

   The Substations Committee also sponsored two (2) four (4) hour panel sessions at the 2022 IEEE PES General Meeting, one titled “Towards interoperability in VSC-HVDC Networks,” and the other titled “Large-scale Interconnected HVdc Networks – Value Proposition/Plans, Technologies, and Gaps.”

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 such as technical papers, white papers, presentations, tutorials, webinars, 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 (SCI0): 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 for members.

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 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 the substations committee withheld multiple years of awards to be presented in person. The following individual awards were presented at the 2022 Substation Annual Meeting for appreciation for outstanding service:

- **DJ Moreau**: IEEE PES Substations Committee Award of Appreciation For outstanding service as the Chair of the D0 Electrical Substation Design Subcommittee of the IEEE PES Substations Committee 2019 – 2020

- **Jorge Marquez-Sanchez**: IEEE PES Substations Committee Award of Appreciation For outstanding service as the Chair of the M0 Meetings Subcommittee of the IEEE PES Substations Committee 2014 – 2020

- **Matthew Bauer**: IEEE PES Substations Committee Award of Appreciation For outstanding service as the Chair of the E0 Civil Substation Design Subcommittee of the IEEE PES Substations Committee 2015 – 2020

- **Matthew Vacha**: IEEE PES Substations Committee Award of Appreciation For outstanding service as the S0 Standards Coordinator Chair of the IEEE PES Substations Committee 2015 – 2020

- **Joe Gravelle**: IEEE PES Substations Committee Award of Appreciation For outstanding service as the Chair of the IEEE PES Substations Committee 2019 – 2020

- **Patrick Fitzgerald**: IEEE PES Substations Committee Award of Appreciation For outstanding service as the Vice Chair of the IEEE PES Substations Committee 2019 – 2020

- **Joe Warner**: IEEE PES Substations Committee Award of Appreciation For outstanding service as the Secretary of the IEEE PES Substations Committee 2019 – 2020

- **Alex Kladiva**: IEEE PES Substations Committee Award of Appreciation For outstanding service as the Chair of the E0 Civil Substation Design Subcommittee of the IEEE PES Substations Committee 2020 – 2021

- **Steven (Scott) Scharf**: IEEE PES Substations Committee Award of Appreciation For outstanding service as the Chair of the K0 Gas Insulated Substations Subcommittee of the IEEE PES Substations Committee 2018 - 2020
Michael Nadeau

IEEE PES Technical Committee Technical Committee Distinguished Individual Service Award. For outstanding service in leading to the successful revision, balloting, and publication of IEEE 1267 – Guide for Development of Specifications for Turnkey Substations.

The following IEEE PES Technical Committee Working Group Awards were also presented at the 2022 Substation Annual Meeting:

IEEE PES TECHNICAL COMMITTEE WORKING GROUP AWARD

Jesse Rorabaugh, Chair
Jon Martin, Vice Chair
David Lane Garrett, Past Chair

Ehsan Azordegan
Bryan Beske
William Carman
Jeffrey Drummond
Joseph Gravelle
Martin Havelka
Terri Hopkins

Richard Keil
Reginaldo Maniego
Carl Moller
Stephen Palmer
Anil Babu Poda
Eduardo Ramirez Bettoni
Christian Robles

Will Sheh
Curtis Stidham
Brian Story
Keith Wallace
Don Wengerter

IEEE PES TECHNICAL COMMITTEE WORKING GROUP AWARD

Arthur Graves, Chair
Mark Smedvig, Secretary

Greg Ardrey
Matthew Bauer
Gary Beane
Geoffrey Biela
Mike Brown
Christopher Carson
W. Bruce Dietzman
Brian Farmer

Keith Graham
Alan Gaetz
Roderick Giron
Charles Haahr
Paul Kruger
Chun (Charlie) Li
Reginaldo Maniego
Olivialin Miller

Jeremy McNutt
Charles Steven McCarley
Shaskikant Patel
Craig Preuss
Thomas Proios
Alonso Rodriguez
Jesse Shank
Logan Trombley
IEEE PES TECHNICAL COMMITTEE WORKING GROUP AWARD

Ryan Stone, Chair
Arnaud Ficheux, Vice Chair
Jennings Graham, Secretary

George Becker
Eldridge Byron
Vincent Chiodo
Edward Crockett
Markus Etter
Patrick Fitzgerald
Cullen Gabler
David Giegel
Pablo Gonzalez Touza

Peter Grossmann
Alexander Jaeger
Sang Tae (Brandon) Kim
Hermann Koch
Chun (Charlie) Li
Nicholas Matone
Jeremy McNutt
Michael Novev
Pathik Patel

Bobby Rich
Jesse Rorabaugh
Pravakar Samanta
Steven (Scott) Scharf
Tyler Schumacher
Devki Sharma
James Stage
Carl Schuetz
Xi Zhu

IEEE PES TECHNICAL COMMITTEE WORKING GROUP AWARD

Dave Giegel, Chair
Jennings Graham, Vice Chair
William Munn, Secretary

Arun Arora
George Becker
Edward Crockett
Markus Etter
Patrick Fitzgerald
Pablo Gonzalez Touza
Peter Grossmann
Alexandra Jaeger
Hermann Koch

Billy Lao
Chun (Charlie) Li
Jorge Marquez-Sanchez
James Massura
Nicholas Matone
Dave Mitchell
Michael Novev
Pathik Patel
Bobby Rich

Jesse Rorabaugh
Pravakar Samanta
Steven (Scott) Scharf
Devki Sharma
Dave Solhtalab
James Stage
Ryan Stone
IEEE PES TECHNICAL COMMITTEE WORKING GROUP AWARD

Douglas Sharpe, Chair
Michael Nadeau, Vice Chair
Matthew Vacha, Secretary
Aaron Wilson, Technical Editor

Gary Beane
Joshua Berkow
Nicholas Matone
Jonathan McDonald
Robert Nowell
Shashikant Patel
Brian Pearson
Boris Shvartsberg
Vivek Singh

Static VAR Compensators Task Force 2 Designing a STATCOM/SVC – Harmonic Analysis from Input to Impact. For demonstrating Technical Skill and leadership in the area of Transmission dynamic reactive power converters, specifically harmonic performance.

David Langner – Chair

Sep Boshoff
Martin Cameron
John Chahwan
Mikael Halonen
Geeza Joos
Julie Lacroix
Jan Paramalingam
Joe Warner

IEEE PES TECHNICAL COMMITTEE WORKING GROUP AWARD

Charles Haahr, Chair
David Stamm, Vice Chair
Keith Graham, Secretary

Radoslav Barac
Vipul Bhagat
Steven Brown
Kevin Buhle
Dennis Decosta
Bruce Dietzman
Arthur Graves
Dave Kelley

Debra Longtin
Reginaldo Maniego
William Munn
Robert Nowell
Brian Pearson
Reynaldo Ramos
John Randolph
Christian Robles

Donald Rogers
Hamid Sharifnia
Oscar Santos
Boris Shvartsberg
Ryan Stargel
Kenneth Strahl
Kha Tran
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
- b. NESC
- c. IEC
- d. Switchgear Committee

Additionally, the Substation Committee works on fifteen (15) co-standards shared with other IEEE PES Technical Committees. Committees include Switchgear, Power System Communications and Cybersecurity, Transformers, Power System Relaying and Control, and Transmission and Distribution.

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

No new significant technologies of interest to the Committee were identified in 2022.

7. **Global Involvement & YP Involvement**

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

Due to the loss of our Membership Management System and the ongoing delays with implementing a new system. Updated membership numbers and details are not accessible for 2022. The numbers below represent our 2021 numbers which should be a good representation of 2022.

<table>
<thead>
<tr>
<th>Total Number of committee members</th>
<th>Number of Young Professionals (under 35 years of age) – Including committee &amp; subcommittee</th>
<th>Officers from regions 8, 9 and 10</th>
<th>Subcommittee officers from regions 8, 9 and 10</th>
<th>Subcommittee members from regions 8, 9, and 10</th>
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<td>6</td>
<td>50</td>
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8. **Problems and Concerns:**

Committee membership management, working group roster management, and participant communication has been a significant challenge in 2022 without a Membership Management System.

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

The Substations Committee will be hosting its next Annual meeting in Philadelphia, PA. on May 1-5 in 2023.

The Substation Committee is currently working on reviewing and updating our Organization and Procedures Manual. This effort will bring more clarity and organization to the operation and scope of the Substations Committee and are associated subcommittees and working groups.

Submitted by:

Matthew W. Bauer  
IEEE Substations Committee Secretary

**Date:** January 31, 2023