

Chair: Michael Thompson
Vice-Chair: Gene Henneberg
Secretary: Jim Niemira
Standards Coordinator: Don Lukach

SIGNIFICANT ACCOMPLISHMENTS IN 2023

- ❖ **Standards, Guides Approved by SA in 2023** (PSRC Committee maintains 60 IEEE standards, guides, and recommended practice documents)
 - C37.92-2023 IEEE Standard for Analog Inputs to Protective Relays from Electronic Voltage and Current Transducers. (Published)
 - C37.110-2023 Guide for the Application of Current Transformers Used for Protective Relaying Purposes. (published)
 - C37.233 Guide for Power System Protection Testing. (published)
 - C37.90.3 Standard Electrostatic Discharge Tests for Protective Relays. (published)
 - 1613 Standard for Environmental and Testing Requirements for Devices with Communications Functions Used with Electric Power Apparatus.
 - C37.109 Guide for the Protection of Shunt Reactors.
 - C37.102 Guide for AC Generator Protection.
- ❖ **Technical Report and Papers**
 - Technical Report, “Mathematical Models for Current, Voltage and Capacitively Coupled Voltage Transformers” PES-TR117 November 2023.
 - Technical Report, “Practical Applications of Artificial Intelligence/Machine Learning in Power System Protection and Control. PES TR-112 September 2023.
- ❖ **Presentations made at PES General Meeting; JTCM; CIGRE; Western, Georgia Tech, and Texas A&M Protective Relay Conferences:**
 - “IEEE Standard C37.92-2023 Simplified Relay Input Interfacing and Testing.” By Eric Udren.
 - “IEEE C37.234 Guide for Protective Relay Applications to Power System Buses Revision 2021.” By Alla Deronja.
 - “Understanding and Participating in the IEEE Transactions Publications.” By Bogdan Kasztenny.
 - “Protection of Wind Electric Plants”. By Dean Miller
 - IEEE C37.104, “Guide for Automatic Reclosing on AC Distribution and Transmission Lines.” By Manish Patel.
- ❖ **Supported PES meetings**
 - PES General Meeting 21 papers given; PSRC sponsored 4 panel sessions.
 - PES JTCM meeting
 - PES T & D 2024: PSRC proposes one tutorial and 5 panel sessions.



❖ **Pac World Magazine**

- Cathy Dalton authored four articles.

BENEFITS TO INDUSTRY AND PES MEMBERS

- ❖ These activities keep our industry up to date with technology, improve power system reliability, and help solve the most common protective relaying problems.
 - We are working on cybersecurity and standards with NERC, PES and IEC.
 - We are addressing grid stability with guides and standards in protection, control, and communication.
 - Our meetings allow significant interaction between the PSRC, NERC, CIGRE, IEC and PES to share our interest, knowledge, and accomplishments.

BENEFITS TO VOLUNTEER PARTICIPANTS

- ❖ Working Groups and Task Forces provide fertile ground for participants to increase their personal knowledge. Their companies enjoy more personal productivity from their employees and contribute to the standards and practices of our industry.

OUTSTANDING PERFORMANCE RECOGNITION

- ❖ Fellow Awards to PSRC Members:
 - Gabriel Benmouyal
 - Normann Fischer
 - Gene Henneberg
- ❖ Fellow Awards with PSRC Involvement:
 - Herb Falk
 - Michael Ropp
 - Robert Cummings
- ❖ PSRC Outstanding Standards
 - IEEE C37.230-2022
 - IEEE 37.91-2021
- ❖ PSRC Outstanding Technical Report
 - WG C32 “Protection Challenges and Practices for Interconnecting Investor Based Resources to Utility Transmission Systems”. Chair: Mukesh Nagpal.
- ❖ PSRC Distinguished Service Awards: Hugo Monterrubio
- ❖ PSRC Outgoing Chair: Murty Yalla 2021-2022
- ❖ IEC Technical Committee: 2022 IEC 1906 awarded to Dr. Normann Fischer for his expertise with IEC TC 95.

COORDINATION WITH OTHER ENTITIES

- ❖ IEEE Standards Association Board of Governors: Phil Winston serving.
- ❖ IEC TC 95: Murty Yalla serving as Chair.
- ❖ IEC TC 95: Eric Udren is Technical Advisor and Normann Fischer is Deputy Technical Advisor to USNC.
- ❖ IEC TC 95 Financial and Administrative Support: US DOE Pacific Northwest National Laboratories, Jeff Dagle TAG Administrator.
- ❖ IEC TC 95, IEC standard 60255-187-3 development supported by PSRC WG D34, Normann Fischer, Chair.
- ❖ IEC TC 95: IEC Standard 60255-216-1 supported by PSRC WG H47, Mital Karabar, Chair.
- ❖ IEC TC 95, IEC Standard 60255-24/JWG with PSRC C37.111 COMTRADE dual logo revision project underway, Mark Adamiak, Chair.
- ❖ IEC TC 95: Functional and Product Design Standards 60255-21, 60255-27, 60255-132, 60255-167 and 60255-216-3: PSRC WG's and experts coordinate IEEE and IEC content and contribute to IEC drafts for consistent requirements.
- ❖ IEC TC 57: WG 10 continues to develop IEC 61850 Edition 2.1. Convenor is Christoph Brunner.
- ❖ PES Renewable Systems Integration Coordinating Committee, Kamal Garg is Liaison.
- ❖ CIGRE WG B5, Automation and Control: Mladen Kezunovic is the US Regular Member.
- ❖ CIGRE WG B5.55 "Application of Travelling Wave Technology for Protection and Automation," Convener is Armando Guzman.
- ❖ CIGRE WG B5.64 "Methods for Specification of Functional Requirements of Protection, Automation, and Control." In circulation for comments.
- ❖ CIGRE WG B5.69 "Experience Gained and Recommendations for Implementation of Process Bus in Protection, Automation and Control Systems," Convenor is Alex Apostolov.
- ❖ CIGRE WG B5.82 "Education, Qualification and Continuing Professional Development of Engineers in Protection, Automation and Control," Convenor is Mladen Kezunovic.
- ❖ CIGRE Technical Brochure 843: "Life Cycle Testing of Synchrophasor Based Systems used for Protection, Monitoring and Control." Published.
- ❖ CIGRE Technical Brochure 854 "Analysis and Comparison of Fault Location Systems in AC Power Networks." Published
- ❖ CIGRE Green Book "IEC 61850 Principles and Applications to Electric Power Systems." Published.
- ❖ PSRC regularly met during 2023 with several subcommittees of Substation and with the Power Systems Communications and Cyber Security committees.
- ❖ PSRC participated in the PES JTCM for the 16th year.
- ❖ PSRC is in consistent liaison with NERC, IEC, EPRI, CIGRE and IAS.



- ❖ Joint Committee Standards that PSRC Supports:
 - P2800 Standard for Interconnection and Interoperability of Inverter Based Resources Interconnecting with Associated Transmission Electric Power Systems.
 - P2800.2 Recommended Practice for Test and Verification Procedures for Inverter-based Resources (IBRs) Interconnecting with Bulk Power Systems.
 - P1854 Guide for Smart Distribution Applications
 - P0018 Standard for Resilient Positioning, Navigation and Timing (PNT) End-User Equipment.
 - PC37.431.20 Guide for Modern Protection System for Static Var Compensators.
 - IEEE 1547 Standard for Interconnection and Interoperability of Distributed Energy Resources with Associated Electric Power Systems Interfaces. (Joint Sponsor)
- ❖ Industry Technical Support Leadership Committee (ITSLC) support.
 - Murty Yalla is a member of the ITSLC and a liaison between PES and NERC.

GLOBAL INVOLVEMENT

Regions 8,9 & 10	Total Number
Attendees	12
Main Committee Members	2
Officers	0
Subcommittee Officers	0
Subcommittee Members	2

NEW TECHNOLOGIES OF INTEREST

- ❖ Cybersecurity
- ❖ Wide area grid data collection with Synchrophasors
- ❖ Smart Grid Initiatives
- ❖ Grid stability under stressed conditions
- ❖ Inverter based resources
- ❖ Power Line induced wildfire ignitions
- ❖ Centralized Protection and Control Technology

SIGNIFICANT PLANS FOR 2024

- ❖ Support three meetings per year.
 - One hybrid JTCM January 7-11, New Orleans, LA
 - Two in-person meetings:
 - May 13-16, Buffalo, NY
 - September 9-12, Scottsdale AZ
- ❖ Improve the meeting experience for first time attendees and young professionals.
- ❖ Support the Power System Communications and Cybersecurity Committee with meeting planning.
- ❖ Improve the PSRC/PSCCC meetings with enrichment activities such as technical tours, lunch, and learn events.

PROBLEMS/CONCERNS

- ❖ Developing expertise in the area of DC transmission and distribution system protection technologies.

Submitted by: Michael Thompson

January 30, 2024