POWER SYSTEM RELAYING AND CONTROL COMMITTEE
of the IEEE POWER AND ENERGY SOCIETY
MINUTES of the MEETING in Garden Grove, California, USA

January 13-16, 2025, In-Person Meeting held at
Hyatt Regency Orange County, Garden Grove, CA

I. Call to order / Introductions and Chair's Report: Gene Henneberg

Chair Gene Henneberg, called the Main Committee meeting to order at 7:30 AM (PST) on Thursday, January 16, 2025.

Following tradition, attendees introduced themselves. First time attendees reintroduced themselves and were recognized.

A quorum check was conducted and verified that quorum was achieved. As of January 1, 2025, there are 120 Main Committee Voting Members. PSRC Rules require 50% attendance for quorum for groups larger than 50, so 60 Voting Members constitute quorum. Manual count indicated there were 69 Main Committee Voting Members present, so quorum was achieved. Attendance at the meeting was recorded via in-person sign-in sheets. Attending this Main Committee meeting were 124 people. Main Committee Meeting attendance breakdown is summarized in the following table:

Main Committee Meeting Attendance January 16 2025	Voting Members	Guests	Total*
In person	69	55	124

There were no objections or additions to the previously published meeting agenda. The final (Draft 7 with on site revisions) meeting agenda is included in Addendum A of these Minutes.

Chair's Report - Gene Henneberg

PSRC and PSCCC attendees at JTCM

PSCCC 42 (includes both in-person and virtual attendees)
PSRC 233
Total 275

Leadership Transitions:

Standards Coordinator – Erin Jessup
January 2025 new officers:

- Michael Thompson – Past Chair
- Gene Henneberg – Chair
- Jim Niemira – Vice Chair

- Gary Kobet – Secretary /Treasurer

Special thanks to:

- **PSCCC** – **James Formea** and **Craig Palmer** for help with conference phones and Webex meetings, and especially, internet access.
- Thanks to **Taylor Lineberger** and the **IEEE PES staff**
- Thanks to the **Hotel Staff** and **Chef** and the **A/V Staff**!

II. Approval of Minutes / Financial Report: Gary Kobet

The September 2024 from Scottsdale Arizona minutes had been previously posted to the PSRC website. Russ Patterson made a motion for approval, seconded by Angelo Tempone. The minutes were unanimously approved.

PSRC is on solid financial footing with reasonable operating reserve.

September meeting ran at small revenue deficit. Goal is to be near revenue neutral, so we will try to increase the operating reserve.

January meeting financed by PES JTCM, little impact to PSRC.

Future Meeting Plans – Jim Niemira

May 12-15, 2025, Portland, OR

Hilton Portland Downtown

September 8-11, 2025, Richmond, VA

DoubleTree by Hilton, Richmond-Midlothian

January 11-15, 2026, (JTCM) Atlanta, GA

Courtland Grand Hotel

May 11-14, 2026, Cleveland, OH

The Weston Downtown

September 14-17, 2026, Reno, NV

Peppermill Hotel and Casino

Post Pandemic Plans

- PSRC Committee has returned to pre-pandemic format for two of three meetings per year
    - January JTCM has supported hybrid format
    - May and September PSRC meetings will be face-to-face
        - Individual WGs might support hybrid on their own.
- PSCCC will support hybrid format at all their meetings

Association Management System Update – Jim Niemira

No update on MemberPlanet.

III. Reports of Interest

A. Technical Paper Coordinator's Report: Jim Niemira

IEEE Copyright

You may run across posts on LinkedIn or elsewhere that share IEEE standards documents. If you see this, please forward information including any links to the post to: infringement@ieee.org to alert IEEE.

2025 Grid Edge, January 21-23, 2025, San Diego, CA

- IEEE PES Grid Edge Technologies Conference & Exposition
- 1 PSRC Panel
- Renewable Energy and Protection Challenges, Kamal Garg chair

2025 PES General Meeting, July 27 - 31, Austin, TX

- IEEE PES 2025 General Meeting
- Paper Review Volunteers for 40 Papers: Prabin Adhikari, Jeffrey Barsch, Ellery Blood, Joerg Blumshein, Brian Boysen, Sukumar Brahma, Steve Conrad, Kevin Damron, Manish Das, Alla Deronja, Mike Dood, Paul Elkin, Evangelos Farantatos, Robert Fowler, Fred Friend, Robert Fowler, Kamal Garg, Phani Harsha Gadde, Gene Henneberg, Michael Higginson, Juergen Holbach, Yi Hu, Rich Hunt, Anthony Johnson, Kevin Jones, Theo Laughner, Gary Kobet, Brandon Lewey, Chase Lockhart, Bruce Mackie, Ken Martin, Rene Midence, Pratap Mysore, Mukesh Nagpal, Bracy Nesbit, Jim O'Brien, Manish Patel, Trupal Patel, Russ Patterson, Clair Patti, Craig Preuss, Daniel Ransom, Jose Ruiz, Suresh Subramanian, Steve Turner, Eric Udren, Jim van de Ligt, Ted Warren, Amin Zamani - THANK YOU!!!!

2025 GM – Important Paper Review Dates

Jan 14, 2025 – Reviewer on-line entries to accept or revise papers (you should be done already!)

Feb 4, 2005 – Authors' paper revisions loaded

Feb 11, 2005 – Revised papers assigned to reviewers

Feb 24, 2025 – Final accept/reject decisions entered by paper reviewers

IEEE PES 2025 General Meeting – Super Sessions

Resource Adequacy and Energy Assurance

Supply Chain Issues and Raw Material Availability

Challenges of Engineering Power System Decarbonization

New Technologies

IEEE PES 2025 General Meeting – PSRC Panel Sessions

Five proposed PSRC panel sessions

Final decisions coming in the next several weeks.

IEEE PES 2025 General Meeting – PSRC Tutorials

One proposed tutorial

Power System Protection for the IBR Dominated Power Grid = Kamal Garg, chair

Approvals by PES decided in March

B. CIGRE Report – Jonathan Sykes, (US Rep., B5, Protection and Automation)

Organization and Leaders

Chair: Volker Leitloff FR (Past Chair: Rannveig Løken)
Secretary: Peter Bishop NZ (Past Secretary: Richard Adams)
Webmaster: Peter Bishop / Richard Adams
5 Advisory Groups
26 Working Groups (including 2 JWG)
5 Completed Working Groups (including 1 JWG)
Scope:
Power system protection
Substation control and automation
Remote control systems and equipment
Metering systems and equipment

US National Committee (USNC) Leaders

The USNC website is located at Link: USNC . A good way to see what has been happening is to review the newsletters: CIGRE Newsletters
President Matthew Gardner , Immediate Past President Chris Root
Women In Energy (WIE) Jessica Lau , Next Generation Network (NGN) James Berger John D. McDonald CIGRE USNC VP Technical Activities
August 29, 2024 - CIGRE NGN (Next Generation Network) and WiE Mentorship Program Webinar—Transmission Grid Technical Requirements, Skills, Career Opportunities by 2050

USNC Organization and Leaders – Study Committees

A1: Rotating Electrical Machines
Howard Penrose hpenrose@motordocllc.com
A2: Power Transformers and Reactors
Craig Swinderman craig.swinderman@meppi.com
A3: Transmission and Distribution Equipment
John Webb john.c.webb@us.abb.com
B1: Insulated Cables
Tom Zhao tzhao@epri.com
B2: Overhead Lines
Erik Ruggeri eruggeri@powereng.com
B3: Substations and Electrical Installations
George Becker george.becker@powereng.com
B4: DC Systems and Power Electronics
David Roop david.roop@meppi.com
B5: Protection and Automation
Jonathan Sykes jsykes@quanta-technology.com
C1: Power System Development and Economics
Mark Lauby mark_lauby@yahoo.com
C2: Power System Operation and Control
Renuka Chatterjee rchatterjee@misoenergy.org
C3: Power System Environmental Performance
Mandy Olson akolson@burnsmcd.com
C4: Power System Technical Performance
Gaurav Singh gsingh@epri.com
C5: Electricity Markets and Regulation
Jeff Bladen bladen@meta.com

C6: Active Distribution Systems and Distributed Energy Resources
Jouni Peppanen jpeppanen@epri.com
D1: Materials and Emerging Test Techniques
Ibrahima Ndiaye ndiaye@ge.com
D2: Information Systems, Telecommunications and Cybersecurity **Chen-Ching Liu** ccliu@vt.edu

Paris General Session

SC B5 - Protection and Automation. The study committee met in Paris August 29, 2024.

- General information about the SC B5 activities: https://b5.cigre.org/.
- The active WGs and their TOR (SOW) are listed at: https://b5.cigre.org/GB/technical-activities/working-groups-list

WG Activity - New

New Working Groups are proposed, discussed and voted on at each SC B5 Annual Meeting (held at the Paris Session in even years or the SC B5 Colloquium in odd years) CIGRE SC B5 > Working Groups list.
Each WG has several US representative, so if someone is interested in participating and is a CIGRE member, please contact John McDonald, CIGRE USNC VP, Technical Activities, at johndougmcd@gmail.com . A list of the WG recently posted are shown on the next couple of slides.
MOU between IEEE/CIGRE executed that enables open exchange.

WG Activity – New/Recent (2023/2024)

TOR-WG B5.83_Protection for modern distribution network, Convenor: Tang Yi, Date: February 16th, 2023
TOR-WG B5-86_PACS interfaced asset management and condition monitoring using innovative technologies, Convener: Alex Apostolov (US), Posted 08/14/24
TOR-JWG C2_B5.46_System Integrity Protection Schemes and the (N-1) criteria, Convener: Emil Hillberg (SWEDEN), Posted 05/24/24
2024-11-07 : Agenda, Files and Minutes : **US –** : lifting up different type of definitions and values of previous IEEE and CIGRE work, especially the CIGRE/IEEE joint report on industry experience on SIPS with survey from 2009
TOR-WG B5.85_Protection, control and supervision principles of “grid stabilizing generation”, Convener: Andreas Gehm (DE), Posted 03/11/24
TOR-WG B5.84_Recommendations and constraints for development and interfacing of virtual IEDs implemented in PACS , Convener: David Macdonald (GB), Posted 02/15/24

WG Activity – New/Recent (2025)

TOR-WG B5.88_Implementation Guide for fully digital IEC 61850-based Protection, Automation and Control Systems , Convener: Patriot de Sigueira Iony (Brazil), Posted 01/??/25

THE WG APPLIES TO DISTRIBUTION NETWORKS: YES
PURPOSE/ OBJECTIVE/ BENEFIT OF THIS WORK :Provide a comprehensive guide with recommendations ("dos and don'ts") for utilities planning to deploy IEC 61850- based PACS. Explications and information related to the listed aspects are to be kept short, as this TB cannot go into depth in the different subjects. For explication and discussion of IEC 61850, refer to other publications (e.g.. the BS Green Book [4]. One of the aspects to be covered is the chain for applying settings to different PACS functions.

CIGRE Meetings

CIGRE Calendar of Events: https://www.cigre.org/GB/events/next-events
Calendar of Events JANUARY 2025 to OCTOBER 2025

GridCon 2025 – Powergrid, 3/9 -3/11, Yashobhoomi, Dwarka, Delhi, India (link)
Changes needed in the power system for the Energy Transition (Symposium)
5/12 – 5/15, Trondheim, Norway, (link)
5th SEERC Conference – 6/4 – 6/5, Sarajevo, Bosnia and Herzegovina, (link)
CIGRE SCB5 Colloquium
- Osaka, Japan, 6/30 – 7/6. More information to come. (link)

USNC Meetings

The US National Committee has organized and/or supported the following events:

2024 Annual Luncheon and Meeting
- at the IEEE GM, Austin, TX, USA – 7/29/2025

Grid of the Future 2025
- TBD - Raleigh NC, USA, Monday, 11/2025

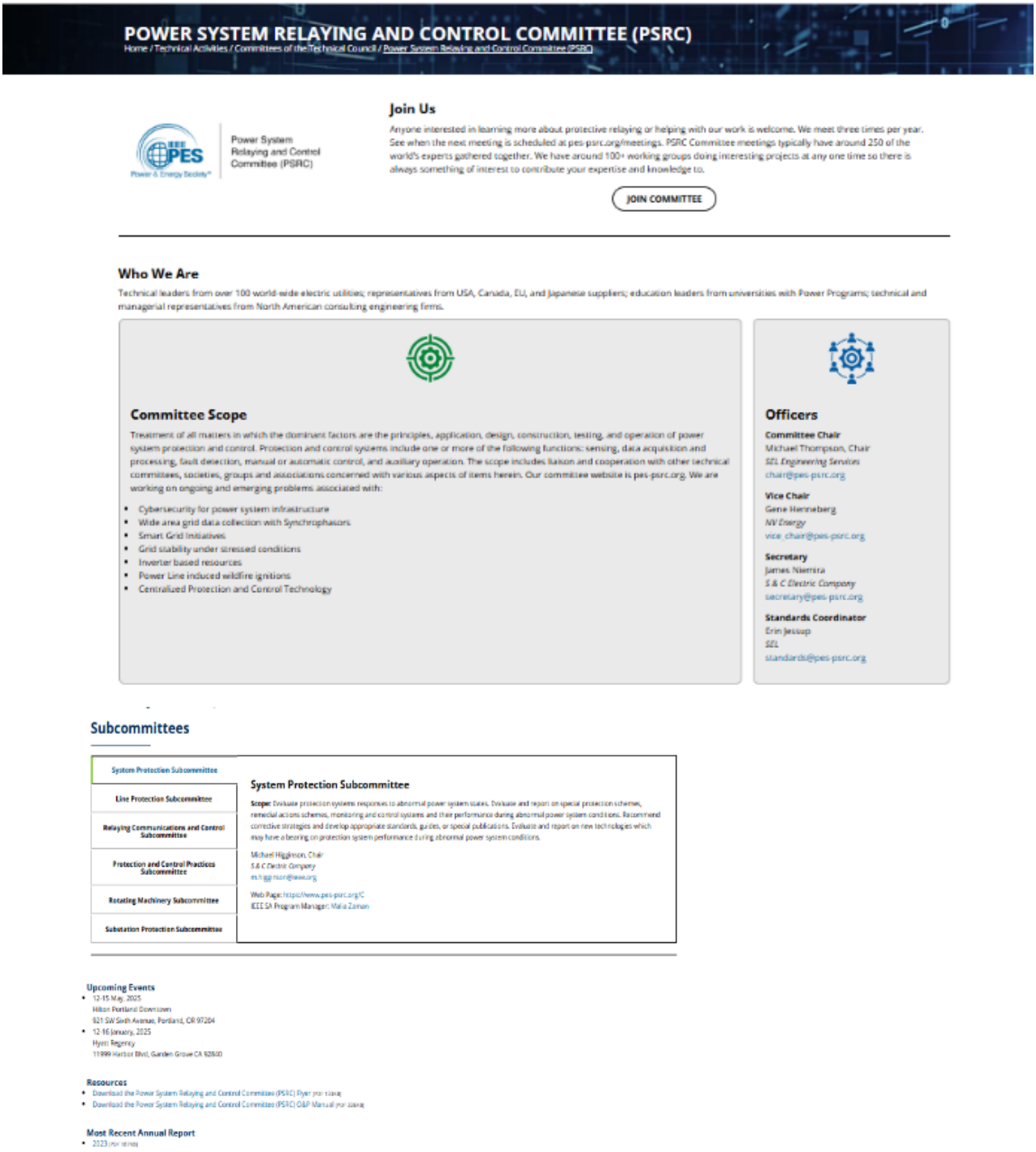
Smart Grid Synchronized Measurements & Analytics (SGSMA)
- CIGRE / IEEE – Santiago, Chile – 6/1 – 6/4/2026

C. IEEE PES Report – Abira Alvater, IEEE PES Program Manager

IEEE PES Technical Committees Program Management

Contact Abira For:
- Any General Questions about PES and Technical Activities
- Website Updates on PES Website (Technical Activities pages)
- Committee Officer/Roster Changes
- Annual Reports (Submission Process, Questions)
- Technical Reports, White Papers (Resource Center Submission Guidelines)
- PES Conferences/Guidelines/Processes for getting PES Technical Sponsorship of a Conference
- Anything Else – Abira can get you in touch with the correct folks at PES or IEEE

Looking forward to working with you!
NEW: Technical Committee Websites on PES Website



POWER SYSTEM RELAYING AND CONTROL COMMITTEE (PSRC)

Home / Technical Activities / Committees of the Technical Council / Power System Relaying and Control Committee (PSRC)

Power System Relaying and Control Committee (PSRC)

Join Us

Anyone interested in learning more about protective relaying or helping with our work is welcome. We meet three times per year. See when the next meeting is scheduled at pes-psrc.org/meetings. PSRC Committee meetings typically have around 250 of the world's experts gathered together. We have around 100+ working groups doing interesting projects at any one time so there is always something of interest to contribute your expertise and knowledge to.

JOIN COMMITTEE

Who We Are

Technical leaders from over 100 world-wide electric utilities; representatives from USA, Canada, EU, and Japanese suppliers; education leaders from universities with Power Programs; technical and managerial representatives from North American consulting engineering firms.

Committee Scope

Treatment of all matters in which the dominant factors are the principles, application, design, construction, testing, and operation of power system protection and control. Protection and control systems include one or more of the following functions: sensing, data acquisition and processing, fault detection, manual or automatic control, and auditory operation. The scope includes liaison and cooperation with other technical committees, societies, groups and associations concerned with various aspects of items herein. Our committee website is pes-psrc.org. We are working on ongoing and emerging problems associated with:

- Cybersecurity for power system infrastructure
- 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

Officers

Committee Chair
Michael Thompson, Chair
SEL Engineering Services
chair@pes-psrc.org

Vice Chair
Gene Henneberg
NV Energy
vice_chair@pes-psrc.org

Secretary
James Nieman
S & C Electric Company
secretary@pes-psrc.org

Standards Coordinator
Erin Jessup
SEL
standards@pes-psrc.org

Subcommittees

- System Protection Subcommittee
- Line Protection Subcommittee
- Relaying Communications and Control Subcommittee
- Protection and Control Practices Subcommittee
- Rotating Machinery Subcommittee
- Substation Protection Subcommittee

System Protection Subcommittee

Scope: Evaluate protection systems responses to abnormal power system states. Evaluate and report on special protection schemes, remedial actions schemes, monitoring and control systems and their performance during abnormal power system conditions. Recommend corrective strategies and develop appropriate standards, guides, or special publications. Evaluate and report on new technologies which may have a bearing on protection system performance during abnormal power system conditions.

Michael Higginson, Chair
S & C Electric Company
m.higginson@ieee.org

Web Page: https://www.pes-psrc.org/C
IEEE SA Program Manager: Malia Zaman

Upcoming Events

- 12-15 May, 2025
  Hilton Portland Downtown
  921 SW Sixth Avenue, Portland, OR 97204
- 12-16 January, 2025
  Hyatt Regency
  11999 Harbor Blvd, Garden Grove CA 92840

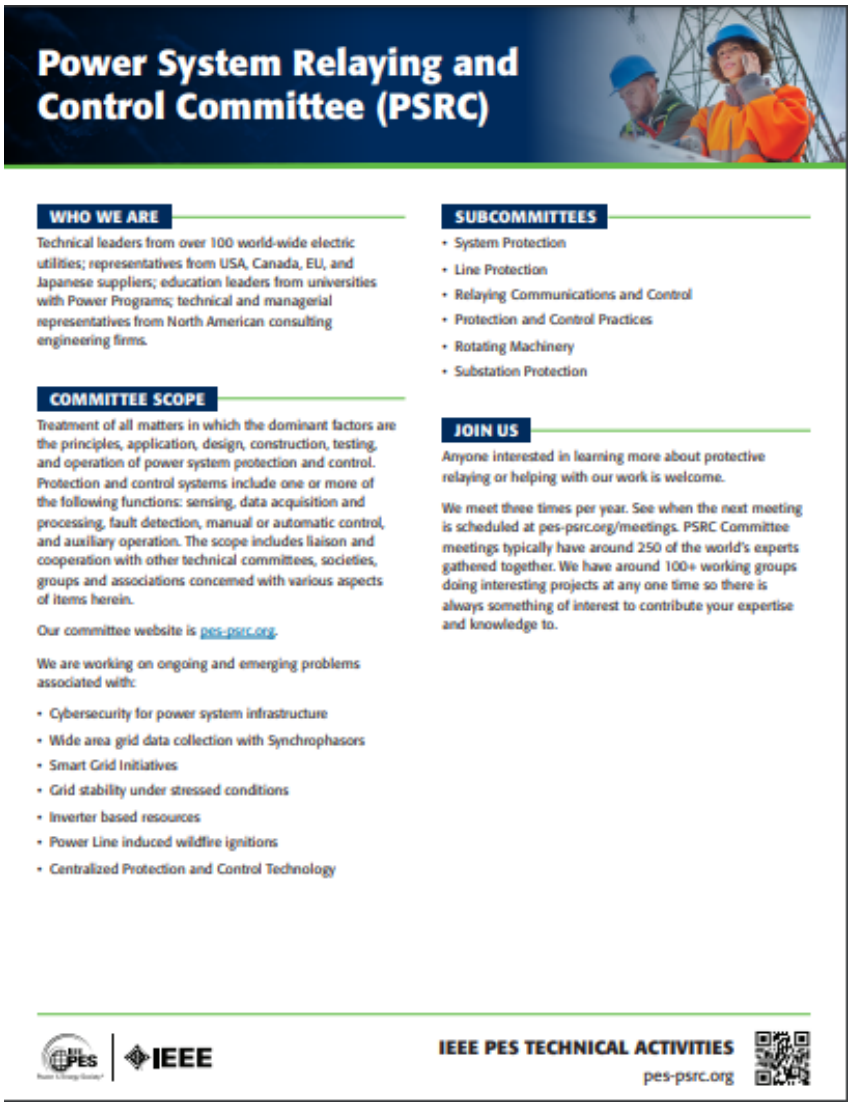
Resources

- Download the Power System Relaying and Control Committee (PSRC) Flyer (PDF 1.5MB)
- Download the Power System Relaying and Control Committee (PSRC) O&P Manual (PDF 2.6MB)

Most Recent Annual Report

- 2023 (PDF 187MB)

Technical Committee Brochures



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SUBCOMMITTEES

- System Protection
- Line Protection
- Relaying Communications and Control
- Protection and Control Practices
- Rotating Machinery
- Substation Protection

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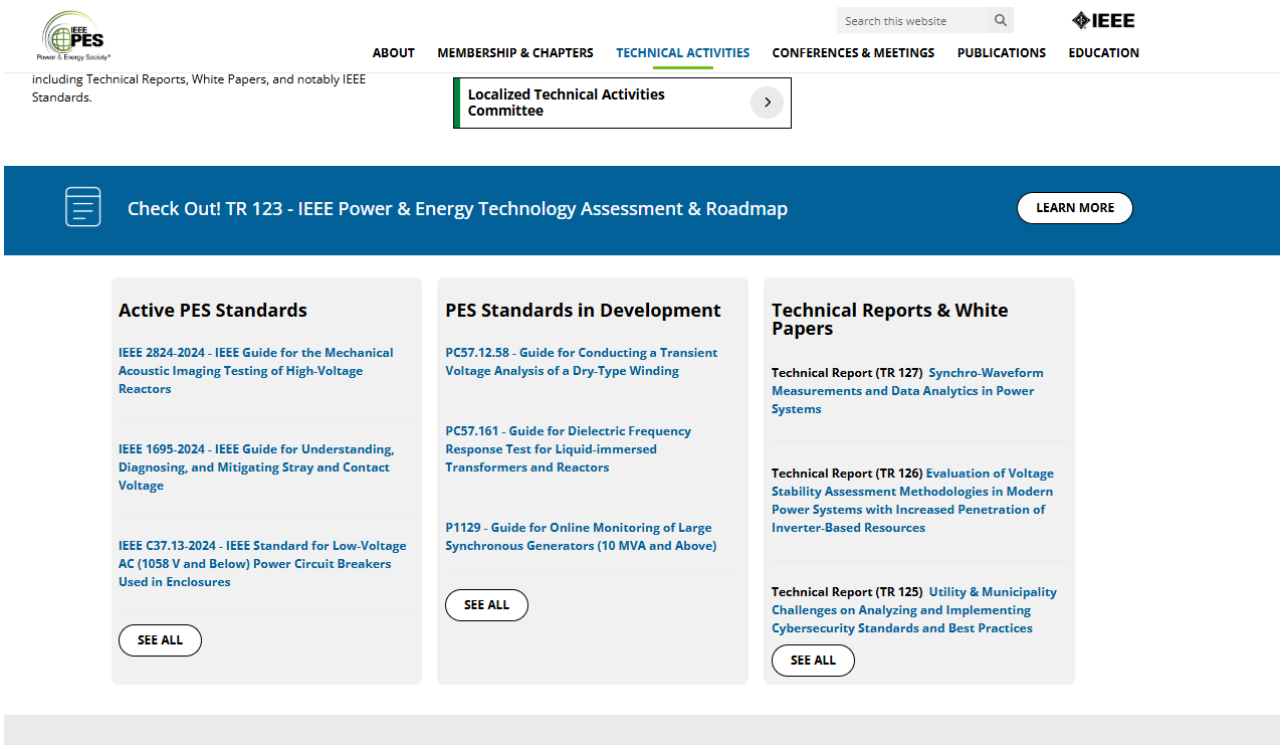
PES | IEEE

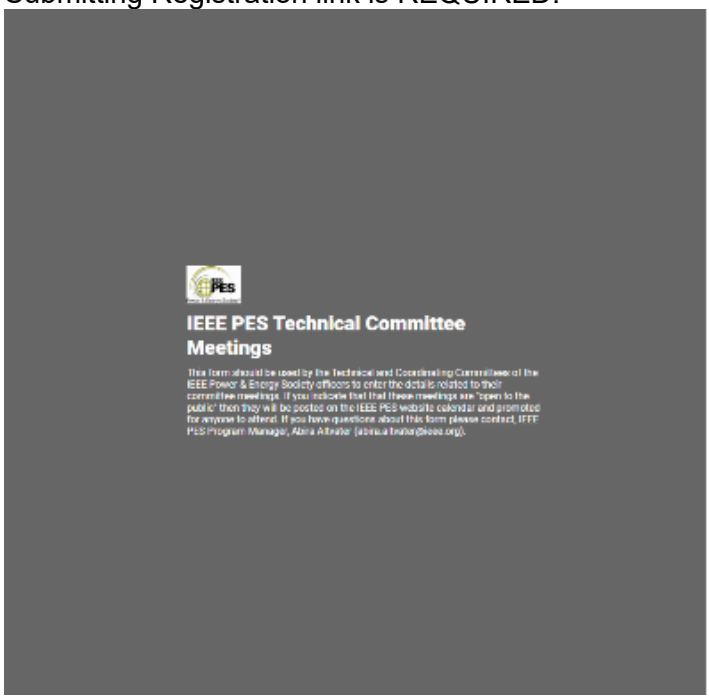
IEEE PES TECHNICAL ACTIVITIES
pes-psrc.org

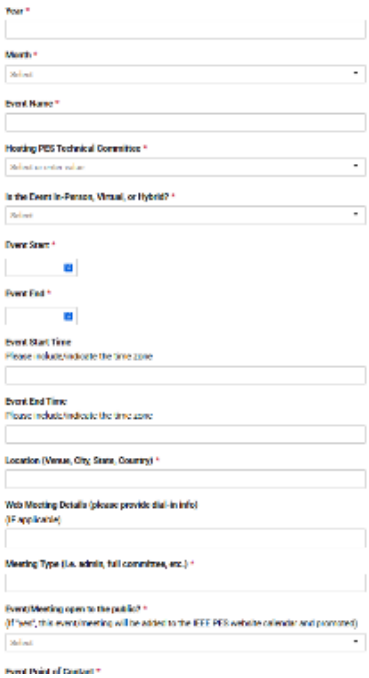
NEW – Standards Feed on PES Website
Worked with SA Team
Fed directly from SA website
Incudes PES Standards and PES Standards in Development
40% of Standards are from PES

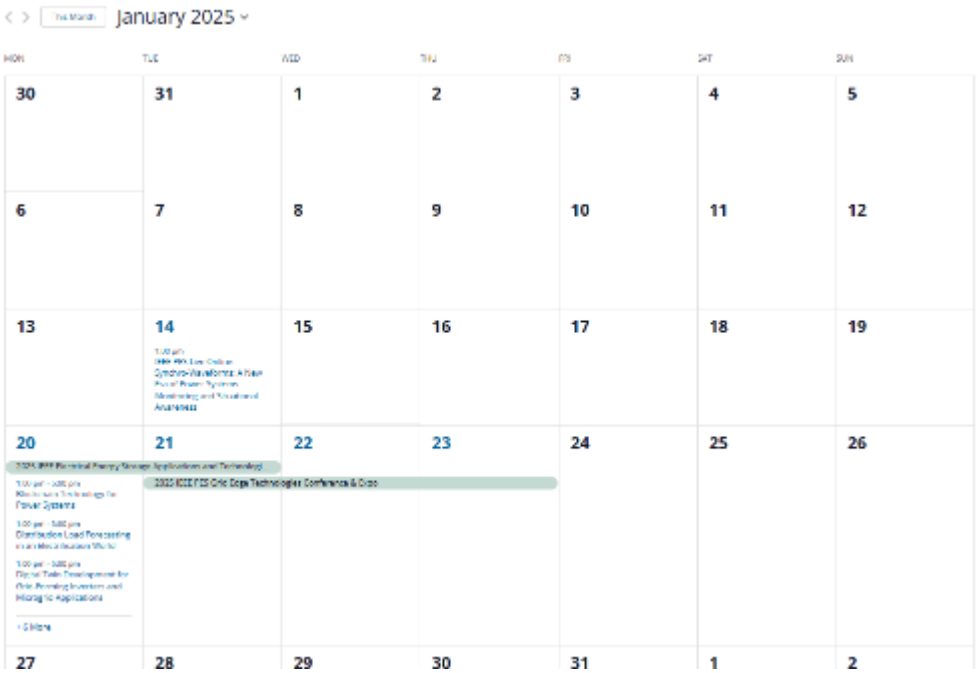


PES Technical & Coordinating Committee Meetings Promotions

Submitting Registration link is REQUIRED!







Administrative Support

IEEE Listservs

- IEEE offers listservs to allow for easier communications to large groups (ex. Technical Committees, Subcommittees, Working Groups, Task Forces, etc.)
- IEEE Listservs can be requested by IEEE PES volunteers for ownership and management: https://listserv.ieee.org/request/add-listserv.html
- IEEE PES Program Manager (A. Altvater) maintains listservs for IEEE PES Technical Council as well as IEEE PES Technical Committee Program Chairs (TCPCs)

Shared PES WebEx Accounts

- IEEE PES Technical Council currently has 4 shared IEEE PES WebEx Accounts for use by PES Tech & Coordinating Committee Use
- If you need credentials for WebEx account(s), email Abira Abira.Altvater@ieee.org
- These 4 shared accounts are offered by the IEEE PES, but IEEE Standards Association (SA) also offer WebEx accounts for active standards working groups

Resources & Templates

Resources for Technical Committees

Visit the IEEE PES Resource Center to browse completed work (i.e. Technical Reports, Webinars, Tutorials, etc.)

Technical Report & Paper Templates
Annual Report Templates
Association Management System (AMS)
PDH Credit Form Template
Presentation, Powerpoint, Webinar & Tutorial Resources
Operations & Procedures (O&P) Templates
Additional Resources

Technical Report & Paper Templates

PES LaTex Template – December 2022
PES Resource Center Technical Report Submission Checklist – October 2023 [MS Word docx]
PES Technical Report Template – January 2019 [MS Word docx]
PES Technical Paper Compendium Template – January 2016 [MS Word docx]
PES White Paper Template – January 2022 [MS Word docx]

IEEE Entity Web Hosting

This service is intended to meet the needs of PES Technical Committees that want to develop, create and maintain their own websites on an IEEE host. The PES Technical Committees are responsible for their contents, their maintenance and their conformance to IEEE policy. PES Technical Committees are expected to choose a single webmaster who is skilled in managing web contents. Visit the IEEE Entity Web Hosting page to request a new web page.

Already managing a PES Technical Committee website and need some guidance? Find more info on our PES Webmasters Resources page.

PES Resource Center - 2024

- TR 116 - PSCCC: Report on Analog Leased Line Withdrawal of Service and Transition Options for Power System Applications **published March 14**
- TR 121 - PSRC: Practices for Generator Synchronizing Systems **published April 30**
- TR 123 - Tech Council: PES Roadmap: **published July 1**
- TR 125 -PSCCC: Utility & Municipality Challenges on Analyzing and Implementing Cybersecurity Standards and Best Practices **published Oct 1**
- TR 126 - PSDP: Evaluation of Voltage Stability Assessment Methodologies in Modern Power Systems with Increased Penetration of Inverter-Based Resources Published Nov 8
- TR 127 – AMPS: IEEE Task Force on Big Data Analytics for Synchro-Waveform Measurements: **Published Dec 20**

PES Trending Technologies

Submissions for 2026 Topics will open in FALL 2026 – ANY Subcommittee, Working Group, Task Force can submit!

2025 Trending Topic Month	PES Technical or Coordinating Committee Name	Topic
January	Industry Technical Support Leadership (ITSLC)	Digital Twins
February	Transformers	IEEE C57.91 - Guide for Loading Mineral-Oil-Immersed Transformers and Step-Voltage regulators
March	Power System Communications & Cybersecurity (PSCC) Power System Operation, Planning & Economics (PSOPE) Renewable Systems Integration (RSICC)	Distributed Energy Resource Management System (DERMS)
April	Marine Systems (MSCC)	Earthing of marine systems
May	Power System Relaying and Control (PSRC)	Design of Microgrid Protection Systems
June	Power System Dynamic Performance (PSDP)	Machine learning for resilient Microgrid and Smart power grid EMS, control and operation
July	Nuclear Power Engineering (NPEC)	Application of IEEE-603 Safety System Criteria to Advanced Reactors
August	AMPS	Inverter Based Resource (IBR) Modeling
September	Industry Technical Support Leadership (ITSLC)	Flexible loads
October	Smart Buildings, Loads and Customer Systems (SBLCS)	Behind-the-meter DC Microgrid
November	Energy Development & Power Generation (EDPG)	Battery Energy Storage Systems (BESS) for Grid Sustainability, Stability, Reliability, and Resilience
December	Power System Communications & Cybersecurity (PSCC)	IEEE-2664 Standard for Streaming Telemetry Transport Protocol

Submit a Topic for a PES Webinar

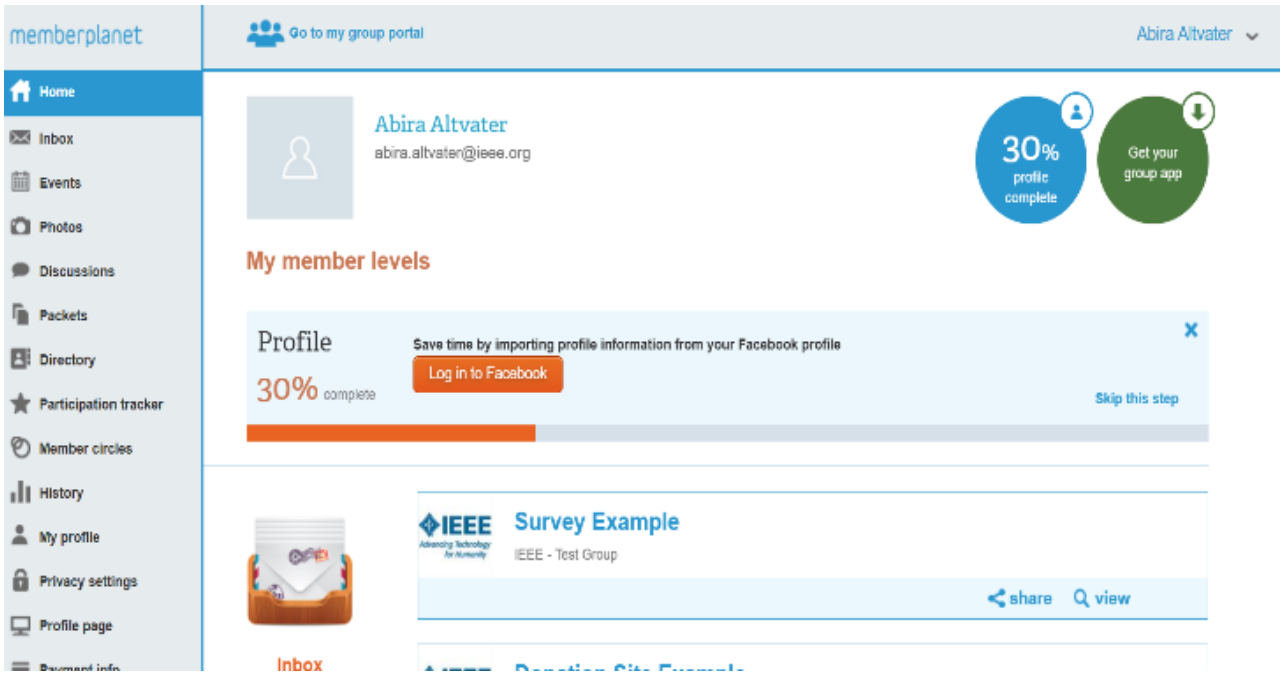
The focus of the webinar can be technical, professional development, or current issues/hot topics in the power industry.

Opportunity to share recent work in this area

Submit a Proposal: https://app.smartsheet.com/b/form/127ee5dbb2044d62bd13bcbb02e5fe57

MemberPlanet

- Power System Relaying and Control (PSRC) ...
  - PSRC: Substation Protection Subcommittee ...
  - PSRC: Rotating Machinery Subcommittee ...
  - PSRC: Protection and Control Practices Subcommittee ...
  - PSRC: Relaying Communications and Control Subcommittee ...
  - PSRC: Line Protection Subcommittee ...
  - PSRC: Systems Protection Subcommittee ...
  - PSRC: Administrative Subcommittee ...



PES Global Membership

Over 42,500 members and 870 chapters (as of calendar year end 2023)

REGION 1-7

136 chapters | 72 student chapters | 17,000 members

REGION 8

47 chapters | 92 student chapters | 6,000 members

REGION 9

36 chapters | 119 student chapters | 3,000 members

REGION 10

48 chapters | 231 student chapters | 16,000 members

Technical Community

- 21 technical committees (plus 20 satellite technical committees)
- Active/Published Standards: 487 IEEE PES standards out of 1,129 total IEEE SA Standards
- 65 PES Standards published in 2023
- Active PARs (projects): 366 IEEE PES PARs out of 1,067 total IEEE SA PARs

Conferences and Meetings

- Over 30 global conferences annually
- PES T&D Conference & Exposition – largest IEEE event
    - 6-9 May 2024 - 60th anniversary of IEEE PES T&D
    - 13,818 registrations from 78 countries
    - 872 exhibitors from 32 different counties
    - 263,700 square footage exhibit space occupied - T&D record
    - 58 panel sessions (including 6 super Sessions), 42 stage presentations
    - 102 conference papers presented at poster session

- PES Grid Edge Technologies Conference & Exposition
    - 21-23 January 2025 in San Diego (US) - New tradeshow and conference, non-T&D years
    - First year (2023) 2,000 attendees and 150 exhibitors
    - Collaborative forum, bringing together a variety of organizations helping to deliver enhanced productivity, efficiency, and interoperability to the grid
    - Will feature 72 Panel Sessions, 3 Keynote Sessions, and 6 Super Sessions
    - Registration opens soon!

Publications

- Hybrid journals – allowing either traditional manuscript submission or Open Access
    - *IEEE Transactions on Energy Conversion*
    - *IEEE Transactions on Energy Markets, Policy and Regulation – launched in 2023*
    - *IEEE Transactions on Power Delivery*
    - *IEEE Transactions on Power Systems*
    - *IEEE Transactions on Smart Grid*
    - *IEEE Transactions on Sustainable Energy*
- Open Access only
    - *IEEE Open Access Journal of Power and Energy*
- Three magazines
    - *P&E Magazine also available in Spanish*
    - *Electrification Magazine – IEEE TEC becoming lead*
    - *In 2025 Q1 launching IEEE Energy Sustainability Magazine*

Education

- Industry-related portfolio of live and on-demand educational products
- All online Tutorials, Plain Talks, ad educational credits (CEUs and PDHs) free for active PES members
- PES Resource Center
    - Most extensive library in the world devoted to power and energy content
- PES University
    - Access to knowledge and learning platforms for professional growth and development
- Interactive Online Courses
    - Series of interactive continuing education courses for non-engineers and adjacent professionals working in the power industry

Workforce Initiative

- This multi-year initiative has been established to increase the value of membership for those seeking:
    - New professional opportunities
    - Improving skill-sets
    - Assisting our industry participants in identifying qualified candidates
    - Supporting STEM education programs
    - and more
- Virtual and in-person job fairs, mentorship, scholarships, events, etc.
- For members of all ages and career level
- Exploring certification/designation opportunities

Climate Change Initiative

- High level goals…
    - Position PES as a global leader on climate change awareness and response

  - Increase visibility and positive awareness of PES and its members
  - Produce a steady stream of value-creating media relations
  - Build a robust thought-leadership program for PES
  - Facilitate PES subject matter participation in strategic media opportunities relating to climate change
- Collaborating with the many initiatives and projects across all of IEEE

AI Initiative
- High level goals…
  - Establish an AI Committee
  - Publish findings
  - Engage policymakers
  - Collaborate with other organizations
  - Develop training materials/education

D. IEC Report – Eric A. Udren

IEC Technical Committee (TC) 95, Measuring relays & protection systems
- Chair – Andrea Bonetti, SE
- Past Chair – Dr. Murty Yalla, US
- Secretary – Thierry Bardou, FR
- 22 participating member nations
- US Technical Advisory Group to USNC for TC 95
- Eric Udren, Technical Advisor to US Natl. Committee of IEC (hosted by ANSI)
- PSRC I4 – hosts topic reviews
- Normann Fischer, Deputy TA and Vice Chair of I4
- Financial & administrative support for US & USNC work in TC 95 standards:
- US DOE - Pacific Northwest National Laboratories (PNNL)
- Jeff Dagle, PNNL, TAG Administrator
- PNNL covers ANSI fees and keeps US engaged in IEC TC 95 standards.

TC 95 Working Structure

Maintenance Teams
- MT 1 - Vocabulary and terminology
- MT 2 - Electromagnetic Compatibility (EMC) Requirements (US – Bill Morse, Travis Mooney, Dean Tedesco)
- MT 3 - General, environmental and product safety requirements (US – Bill Morse, Travis Mooney, Dean Tedesco)
- MT 4 - Functional standards (US – Murty Yalla, Convenor; Travis Mooney, Dean Tedesco, Craig Colopy)

Working Groups
- WG 2 - Protection functions with Digital Input/Output
- WG 3 - Functional requirements for the protection of direct current (DC) transmission and distribution networks (US – Armando Guzman, Daqing Hou)

Ad-Hoc Groups
- ahG 4 - Travelling waves (TW) based protection and fault location (US – Yanfeng Gong, Co-convenor; Normann Fischer, Armando Guzman, Daqing Hou)
- ahG 6 - Extension of Standards numbering (US – Eric Udren)

Joint Maintenance Teams

- JMT DLMT Dual Logo Maintenance Team (IEC/IEEE 60255-24) (US – Murty Yalla, Convenor)

Joint Working Groups

- JWG 1 - IEC/IEEE, Synchrophasor measurements for power systems (US – Ken Martin, Convenor; Eric Udren, Dan Dwyer, Allen Goldstein, Harold Kirkham)
- TC 8/JWG 12 Requirements for measurements used to control DER and loads (Managed by TC 8) (US – Normann Fischer; Alex McAechern, TC8)

Project Teams

- PT 60255-216-3 - Test specification for protection data communication of Line Current Differential Protection (US – Normann Fischer, Veselin Skendzic, Eric Udren)

Standards Projects

Relay product design and type test standards up to date with recent added requirements including configuration of relays under test.

Approved and published:

- 60255-1 Ed 2 - Common Requirements
- 60255-26 Ed 4 - EMC requirements
- 60255-27 Ed 3 - Safety requirements
- 60255-27 Ed 3 AMD1 – fixed bugs.

New amendment projects launching in 2025:

- 60255-1 Common Requirements AMD1 – detail fixes listed in I4 1/25 agenda/minutes (vote to proceed due 2/21)
- 60255-26 Ed 4 EMC requirements AMD1 – detail fixes from users in Korea and Netherlands, listed in I4 1/25 agenda/minutes (work passed vote to proceed)
- Revision of - 60255-21-1,2,3 – vibration, bump, shock, seismic requirements – merging into new standard 60255-21 – new CD is drafted and under review.
- Update from MT3 member - new 60255-21 is reported to be just a consolidation with minor editing, with no major changes to requirements or testing approaches.

IEEE–IEC alignment - our effort since 2000:

- Comparable type tests should have the same test setups and procedures.
- Align test levels and values – differences only as clearly justified.
- Result – vendors and labs can run one set of compliance tests for both IEC and IEEE standards – huge cost, efficiency, and product reliability benefits.
- Reminder to PSRC Standards WG chairs – please check for IEC overlap.

100 Series functional and product performance test standards:

- 60255-167 - Functional standard for directional relays – US, CA, other reviewers found hundreds of issues – *busy MT4 needs better QC process*.
- Discussions underway seeking fixes of editing processes and core direction of content handled by Chinese editor.
- 60255-187-3 – *Functional standard for line differential relays* – restarted in MT4.
    - PSRC D34 is running when needed (Fischer).
    - TS 60255-216-3 - 87L channel functional test guide in separate project - next.
    - Discussions underway seeking fixes of editing processes and core direction of content as with 167.
- 60255-187-2 – *Functional standard for busbar differential relays* – after we finish 187-3.
- 60255-132 – *Functional standard for directional power relays* – CD was due in 2024 but is presently on hold.

200-series application guides

- TS 60255-216-1 – *Digital Interface - Requirements for relays with digital I/O (e.g., merging units)* – Technical Report now being revised as a technical standard (TS) – New draft due in 3/2025. *H47 can add comments. Project on track.*
- 60255-216-3 - *Digital Interface – Test specification for protection data communications for line current differential protection* – CD stalled.
    - 87L protection with TDM or Ethernet.
    - Specify tests for comms for 87L function during range of power system conditions, data quality, changes of latency, asymmetric latency, path interruptions/re-routing, and jitter or packet delay variation (PDV).
    - *Convenor departed and TC still seeks a new Convenor.*
- WG3 on Functional requirements for the protection of direct current (DC) transmission and distribution networks is waiting to start.
    - Hasn't met yet – co-chairs are to start the work.
- AHG4 on Traveling wave (TW) based protection and fault location – Chair from CN still has not begun work; TC appointed US Co-Convenor to get the work moving.

Standards collaboration summary

- US has participants in TC 95 working groups and maintenance teams – thanks to supportive employers.
- US participants are supporting ongoing strategy development.
- We establish PSRC WGs to support complex IEC standard projects to contribute to IEC content and evaluate drafts.
- PSRC product standard WGs have been aligning with IEC TC 95 – especially test procedures for manufacturers.
- Compliance with aligned international standards improve robustness, safety, and performance of relays.
- IEEE PSRC and IEC TC 95 are collaborating more than ever to bring the best relays and applications internationally.

E. B11 Working Group - SC21 and P1547 – Ben Kazimier

B11: <u>SC21 Distributed Resources Standard Coordination</u>
Chair: Benjamin Kazimier
Vice Chair: Mat Garver
Output: Standard Coordination
Established Date: September 15, 2022
Expected Completion Date: Undetermined
Draft: N/A
Assignment: Coordination of SC21 & P1547 standards
Chair: Benjamin Kazimier
Vice Chair: Mat Garver
Meeting Date: Jan 14 2025
Output: Standard Coordination
Established Date: September 15 2022
Expected Completion Date: Undetermined
Draft: N/A
Assignment: Coordination of SC21 & P1547 standards

Meeting Participants:

Name	Affiliation	Voting Status (voting member, non-voting member, Participant)
Benjamin Kazimier	Bender	Chair
Mat Garver	Hubbell (Beckwith)	Vice-Chair
Sean Carr	ComEd	Liaison
Galina Antonova	Hitachi Energy	Voting Member
Charlie Sufana	Retired	Voting Member
Chip Christmann	Basler Electric	Participant
Daniel Ernstmann	EPRI	Participant
Gene Henneberg	NV Energy	Voting Member
Craig Holt	S&L	Participant
Mark Sira	Sunbelt Rentals	Voting Member
Nathanael Kamm	SGC Engineering	Participant
Jim Niemira	S&C	Participant
Seth Nelson	Basler Electric	Participant
Stephen Miller	Energy Emissions Intelligence	Voting Member
Juan Gers	Gers USA	Voting Member
Brian Boysen	WEC Energy	Participant

Time called to Order and Chair's remarks: The meeting was called to order at 8:00am PST and introductions were made.

IEE**E Policy Reminders (patents and copyrights):** N/A.

Confirm that call for Patent issues was made and record any responses: N/A.

Times of any recesses and time of final adjournment: adjourned @ 9:10AM local time

Date, time, and location of next meeting: May 2025, Portland, OR
MMR: Request that B11 continue show "open to all" on the agenda and that we try to find a better time slot for the meeting. Attendance is still down possibly due to conflicts to scheduled time.

MMR:
Please speak to Mat Garver for conflicts prior to scheduling meeting time for PSRC May meeting.

*****Mat is also Vice Chairing K25 & I36 and Subgroup lead for D45. It would be desirable not to have B11 coincide with those meetings either.
*******Galina is Secretary of D47. It would also be desirable not to have B11 coincide with D47 either.

Topics discussed:

- Sean Carr gave an update on the 1547 groups (see PPT).
- Galina Antonova gave an update on 1547.10 (See PPT).
- A lot of discussion and general consensus on TF3's clarifications to the definition of the term "TRIP" and the addition of the term "Exit Service".
- Consensus that significant progress was made in the definition clarification between Trip and Exit Service.
- A lot of discussion about how Zones of protection are defined in the appendix.

- Request was made to add more granularity to definition of zones of protection.
- Open phase detection was a large topic of discussion as well.

Action Items:

- Try and get a more participation in B11
- Try to get better time slot for B11
- Sean Carr to connect Charlie Sufana and Craig Holt with Dr, Mike Ropp regarding 1547.7 WG for secondary Networks.

F. Standards Coordinator Report - Erin Jessup
PSRC Standards (Standards, RPs, Guides)

The PSRC performs a multitude of standard related work including 22 active PARs that the PSRC leads, 8 PARs in non-lead Joint Committee relationships, and multiple additional liaisons with IEEE and external standards organizations. For the current status of all Standards and active PARs refer to the following location https://development.standards.ieee.org/myproject-web/public/view.html#landing

As of the January meeting 10 PARs will expire at the end of 2025. The status for each of these as of 1/12/2025 included below.

PARs due in 2025

Project Number	Project Type	WG	Project Title	Approval PAR Date	Project Status
PC37.1.2	New	H40	Guide for Databases Used in Utility Automation Systems	3-Dec-20	SA Ballot: Comment Resolution
PC37.96	Revision	J22	Guide for AC Motor Protection	8-Dec-21	Draft Development
PC37.243	Revision	D47 (Co-Standard with PSCC)	Guide for Application of Line Current Differential Protection Using Digital Communications	8-Dec-21	Draft Development
PC37.239	Revision	H51	Standard for Common Format for Event Data Exchange (COMFEDE) for Power Systems	25-Mar-21	Draft Development
PC37.232	Revision	H52	Standard for Common Format for Naming Time Sequence Data Files (COMNAME)	8-Dec-21	Draft Development
PC37.251	New	H27	Standard for Common Protection and Control Settings or Configuration Data Format (COMSET)	5-Feb-16	SA Ballot: Comment Resolution

P1646	Revision	H41	Standard Communication Delivery Time Performance Requirements for Electric Power Substation Automation	23-Mar-17	Draft Development
P2030.12	New	C38	Guide for the Design of Microgrid Protection Systems	27-Sep-18	**RevCom Agenda(29 Jan 2025)**
PC37.1.3	New	H46	Recommended Practice for Human Machine Interfaces (HMIs) used with Electric Utility Automation Systems	21-Mar-19	SA Ballot: Comment Resolution
PC37.99	Revision	K25	Guide for the Protection of Shunt Capacitor Banks	5-Sep-19	Draft Development

Completed PAR projects in 2024*:*

In 2024, PSRC published 2 Standards and 3 Guides. PSRC also received SASB approval on 2 Standards and 3 Guides.

Four PARs were completed since our September meeting. PC37.90.1 Standard for Relays, Relay Systems, and Control Devices used for Protection and Control of Electric Power Apparatus-Surge Withstand Capability (SWC) and Electrical Fast Transient (EFT) Requirements and Tests was completed and published. Additionally, PC37.90.2 Standard for Withstand Capability of Relay Systems to Radiated Electromagnetic Interference from Transceivers, PC37.300 Guide for Centralized Protection and Control (CPC) Systems within a Substation, and PC37.249 Guide for Categorizing Security Needs for Protection and Automation Related Data Files were all completing and pending publishing.

The following list includes all PSRC work completed or published in 2024.

Completed in 2023, Published in 2024

Project	Title	Chair	V Chair	WG	Status
P1613	Standard for Environmental and Testing Requirements for Devices with Communications Functions used with Electric Power Apparatus	Brian Mugalian	Craig Preuss	I31	SASB Approval 21SEP23 Published 26FEB2024
PC37.109	Guide for the Protection of Shunt Reactors	Kamal Garg	Ilia Voloh	K26	SASB Approval 6DEC23 Published 14MAY24
PC37.102	Guide for AC Generator Protection	Manish Das	Gary Kobet	J17	SASB Approval 6DEC23 Published 28JUN24

Completed in 2024, Published in 2024

Project	Title	Chair	V Chair	WG	Status
PC37.252	Guide for Testing Automatic Voltage Control Systems in Regional Power Grids	Xiaopeng Li	Kai Liao	C39	SASB Approval 21MAR24 Published 07JUL24
PC37.90.1	Standard for Relays, Relay Systems, and Control Devices used for Protection and Control of Electric Power Apparatus-Surge Withstand Capability (SWC) and Electrical Fast Transient (EFT) Requirements and Tests	Roger Whittaker	Todd Martin	I40	SASB Approval on 30SEP24 Published 10DEC2024

Completed in 2024, Published TBD

Project	Title	Chair	V Chair	WG	Status
PC37.90.2	Standard for Withstand Capability of Relay Systems to Radiated Electromagnetic Interference from Transceivers	Chase Lockhart	Mat Garver	I36	SASB Approval on 30SEP24 Published TBD
PC37.300	Guide for Centralized Protection and Control (CPC) Systems within a Substation	Ratan Das	Paul Myrda/ Mital Kanabar	H45	SASB Approval on 11DEC24 Published TBD
PC37.249	Guide for Categorizing Security Needs for Protection and Automation Related Data Files	Amir Makki	Cesar Calix	H22	SASB Approval on 11DEC24 Published TBD

Joint Committee PAR projects that PSRC is in a Non-Lead Role*:*

8 joint committee PAR projects with PSRC in a non-lead role, including one Entity work, EPM P3416 Guide for Test Sets and Tools for Testing Protective Relays. Two of these projects are on an upcoming RevCom agenda.

Project Number	Committee	Co-Standards Committee	Project Title	Expiration PAR Date	Project Status
P1854	PE/T&D/SDWG	PE/PSCC, **PE/PSRC C**	Guide for Smart Distribution Applications	31 Dec 2026	**RevCom Agenda(26 Mar 2025)**
P2800.2	PE/EDPG/ P2800.2 - T&V of	**PE/PSRC C**,	Recommended Practice for Test and Verification	31 Dec 2025	Draft Development

	BPS-connected IBRs	PE/AMPS, PE/T&D, PE/EM	Procedures for Inverter-based Resources (IBRs) Interconnecting with Bulk Power Systems		
P1547	BOG/SC21/1547_revwg	PEL/SC, PE/T&D, COM/PLC, PE/EDPG, PE/EM, PE/PSCC, **PE/PSRCC**	Standard for Interconnection and Interoperability of Distributed Energy Resources with Associated Electric Power Systems Interfaces	31 Dec 2026	Draft Development
P1547.10	BOG/SC21/P1547.10 DER GP WG	PE/T&D, PE/EDPG, PE/PSCC, **PE/PSRCC**, COM/PLC	Recommended Practice for Distributed Energy Resources (DER) Gateway Platforms	31 Dec 2026	Draft Development
EPM P3416	BOG/CAG/TSTT	**PE/PSRCC**	Guide for Test Sets and Tools for Testing Protective Relays	31 Dec 2027	Draft Development
PC37.431.20	PE/SUB/SCI0/WGI9	**PE/PSRCC**	Guide for Protecting Transmission Dynamic Reactive Power Compensators	31 Dec 2025	SA Ballot: Comment Resolution
P1547.7	BOG/SC21/1547.7 WG	PE/AMPS, **PE/PSRCC**	Guide for Conducting Impact Studies for Distributed Energy Resource Interconnection	31 Dec 2028	Draft Development
P2004	PEL/SC/HIL	IES/IES, **PE/PSRCC**	Hardware-in-the-Loop (HIL) Simulation Based Testing of Electric Power Apparatus and Controls	31 Dec 2025	**RevCom Agenda(29 Jan 2025)**

G. PSCCC Committee Report to PSRC – Eric Thibodeau, Secretary PSCCC:

- 42 JTCM attendees registered with PSCC as their main committee
- 8 being first time attendees
- Main committee officer transition occurring this week, with James Formea becoming our Past Chair and Marc Benou our Chair, after our Main Committee meeting. Earlier this week Craig Palmer started to act as Vice-Chair and Eric Thibodeau as Secretary
- Published work:
  - IEEE C37.118.2, Standard for Synchrophasor Data Transfer for Power Systems has been published last December
  - IEEE 1854, Guide for Smart Distribution Applications, is about to be published. This was a joint effort, with the T&D committee as the main sponsor
- New work:

- P0 subcommittee will request a new PAR for an amendment to IEEE 2664-2024, Standard for Streaming Telemetry Transport Protocol (STTP) with the intent to add a standardized file-based format for off-line historical data requests.
- F0 subcommittee will request a PAR to start revision of IEEE 1591.2-2017, Standard for Testing and Performance of Hardware for All-Dielectric Self-Supporting (ADSS) Fiber Optic Cable. This is initiated as standard lifecycle maintenance
- For those interested in these activities, stay tuned as their working groups activities should start at the May meeting

H. IEEE SA Staff Update – Malia Zaman, IEEE Senior Program Manager, Operational Program Management

Updates and Reminders for Standards Committee Officers

- Committee financial reports are due 2/15/25, email notification went out around 12/17/24, please submit as soon as possible
- Committee and WG officers to complete: Understanding IEEE SA's Antitrust, Competition, and Commercial Terms Policies
- WG Annual Roster review and submission to SA - Upload via myProject or email the WG Membership Roster to your PM for Standards Development WGs
- The roster should include - Last Name, First Name, Email address and Involvement level(Voting/Non-Member)
- Upcoming Policy on Taxes on Meeting Expenses
- Standards Committees or Working Groups shall collect as a part of standards development meeting fees any applicable indirect and direct tax payments for the meetings
- Removal of AI bot attendees from Webex and all virtual meetings
- Follow the IEEE Privacy Policy – PII, Sign in sheets

NesCom/RevCom Submittal Deadlines for 2025

SASB Meeting Calendar

- 14 February 2025 (for March 2025 mtgs)
- 28 March 2025 (for May 2025 mtgs)
- 09 May 2025 (for June 2025 mtgs)
- 31 July 2025 (for September 2025 mtgs)
- 12 September 2025 (for October 2025 mtgs)
- 20 October 2025 (for December 2025 mtgs)

IEEE SA Policy Updates – Mandatory Training

- Understanding IEEE SA's Antitrust, Competition, and Commercial Terms Policies training shall be completed by Standards Committee/Working Group Officers within 90 days of appointment:
- Understanding IEEE SA's Antitrust, Competition, and Commercial Terms Policies
  - Approximately 45 minutes
- Training is available through the IEEE Learning Network (ILN).
    - How do I log in/recover/unlock/change my IEEE account password for the ILN Volunteer Training site?
    - How do I complete an online course in the ILN Volunteer Training site?
    - How do I get a certificate after completing an eligible course in the ILN Volunteer Training site?

- Questions on the training? E-mail satrainingdevelopment@ieee.org

MyProjeCT – WG roster and awards

- SCs and WGs are required to submit annually to IEEE SA Staff an electronic list of persons participating in standards projects during the prior year. To meet this requirement, IEEE SA PMs are assisting to upload the participant list in myProject.
- **IEEE SA Working Group Awards in myProject**
  - Once there is final approval of a project by the IEEE SASB, it is an important opportunity to recognize standards development participants with working group awards (plaques for officers and certificates for members)
  - This myProject feature allows Working Group Chair or Vice-Chair to populate a list of award recipients based on involvement levels set in the Working Group roster
  - The system pulls the recipient's address from their IEEE account profile if they have provided one
    NOTE: Roster needs to be up to date in order to populate the awards list
  - Select the type of award the individual should receive and select a delivery method.
  - Once all selections are made, the information can be submitted to the IEEE SA Awards Administrator for processing
  - Steps to Upload WG roster in myProject
  - Upload/Download Roster

National Electrical safety code (NESC-C2)

- 2028 Code Cycle
  - Kicked off February 1, 2024, with change proposal submissions.
  - Technical Subcommittees met in the fall of 2024
  - Pre-print (document showing proposed comments to the code) to be published July 1, 2025
  - Comments on the pre-print will be accepted August 1, 2025- March 24, 2026
  - Final publication August 1, 2027
  - Membership Opportunities
  - If looking to get involved reach out to Jennifer Santulli at nesc-support@ieee.org.
  - Save the Date –NESC Workshop
  - Continue to check the NESC website for details.

Contact US!
Malia Zaman
Senior Program Manager
m.zaman@ieee.org
(732) 850 6608
Committees supported: PE/EM, PE/PSRC

I. NERC Report: Rich Bauer
No report

I. Renewable Systems Integration Coordinating Committee (RSICC) Update – Kamal Garg
No report

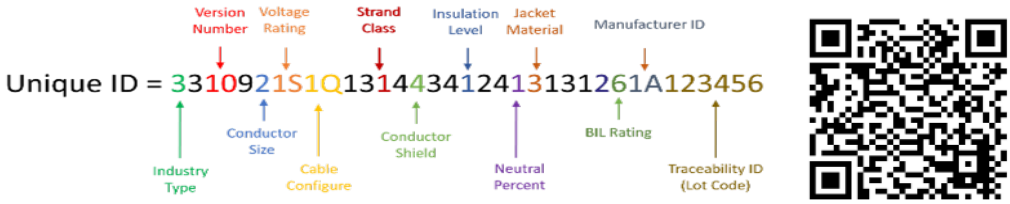
J. Other Reports of Interest

Supply Chain and Asset Traceability for the Energy (SCATE)
P3476 Work Group Update
Alicia Farag

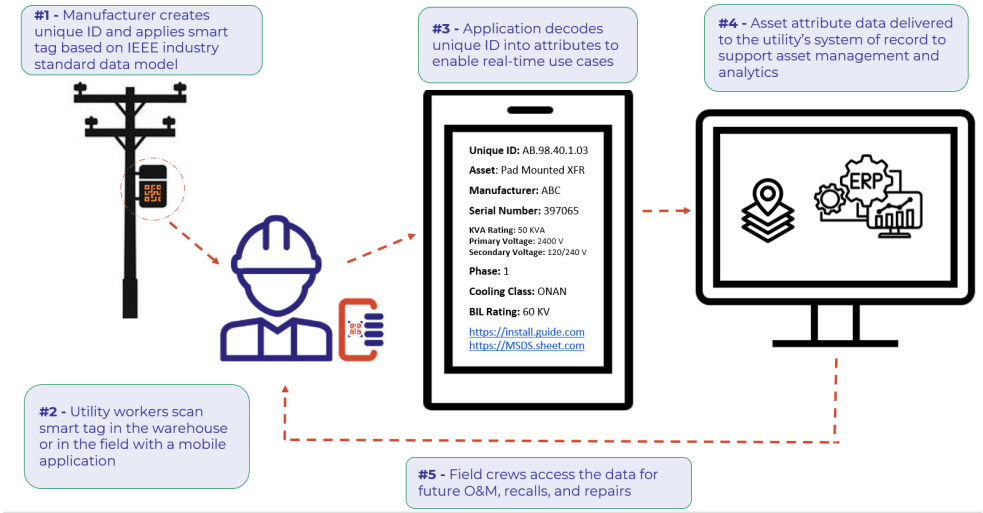
T&D Committee

P3476 Work Group

- IEEE Transmission and Distribution Committee Sponsor
- Scope - decentralized unique IDs and smart tags (QR codes) for supply chain and asset traceability of electric grid assets



- Supply Chain and Asset Traceability for the Electric Grid (SCATE)



- Subwork Group
  - Energy Transformation Devices
  - Interrupting Devices
  - Switching Devices
  - Relays
  - Connectors
  - Insulators
  - Hardware
  - Structures and Supports
  - Conductors
  - Surge Protection Devices
  - Controls
  - Communication Devices - inactive
  - Measurement and Sensor Devices
- PSRC
  - SCATE use cases for Control Devices
    - Mutual Assistance and Interchangeability Analysis
    - Cybersecurity
      - SBOM traceability

- Asset Management
  - Recalls
  - Asset performance analytics
- O&M
  - Tracking inspections and repairs

- Request for participation in SCATE Control Device Work Group

IV. Advisory Committee Reports: - Gene Henneberg

B1: Awards and Technical Paper Recognition Working Group
Chair: Andre Uribe
Vice Chair: Mal Swanson
Secretary: Miguel Rios

Minutes of the B1 WG Meeting, met Tuesday January 21, 2025 at 2:00 PM EST, virtual
B1 Awards and Technical Paper Recognition Working Group
Assignment: Nominate PSRC sponsored papers, standards, and reports for PES Technical Council and IEEE awards. Nominate individual members and WG's for award recognition.

1. Introductions/New Members
   A. Tod Martin for I-subcommittee
   B. Jason Eruneo for J-subcommittee
2. Review of awards for nominations
   A. 2024 SA Standard **Medallion** Award
      i. July deadline
      ii. https://standards.ieee.org/about/awards/med/
      iii. Mike Meisinger – nominated by Brian Mugalian
         1. Working on his paperwork and application
         2. Send application link
      iv. Ilia Voloh – nominated by Alla Deronja
   B. 2024 **Prize Paper** Awards –
      i. https://ieee-pes.org/about-pes/awards-scholarships/ieee-pes-prize-paper-award/
      ii. Due January 31st
      iii. Must be published within the last 3 years
   C. 2024 SA Individual Awards
      i. Standard Awards requires
         1. Letter of endorsement, 3 to 5 ideal
         2. Letter endorsement from the chairman is recommended.
      ii. Share criteria for standard awards

   D. Nominations for PSRC 2024 **Young Professional Award**
      i. https://ieee-pes.org/about-pes/awards-scholarships/ieee-pes-outstanding-young-engineer-award/
      ii. Potential nominees
         1. Alla Matchyaraju
         2. Dase Kanchanrao
         3. Melvin Moncey Joseph – C & D
         4. Louie Brandon -

5. Raghraman Priya
6. Muhammed Hamid - D

3. **PSRC Award Certificates for WG completion**
   C. Manish Patel - absent
   D. Alla Deronja – none for now
   H. Mital Kanabar - absent
   I. Tod Martin – I-40 has been submitted
   J. Jason Eruneo - absent
   K. Kamal Garg – absent

4. Old / New business
   A. We like meeting a week after our committee meetings.
   B. Mal will send out the different types of SA awards we can nominate.
5. Adjournment

B2: <u>Fellows Award Working Group</u>
Chair: Jonathan Sykes
Vice Chair: Ken Martin
Secretary: Eric Udren
Output: Advisory Group
Assignment: Identify potential Fellow nomination candidates, nominators, and references. Advise nominators and references on the nomination process and documentation required. This is a coordinated effort of PSRCC B2 and PSCCC A2TF.

A2TF/B2 met on 1/13/25 at 2:20pm (California Time)
Members = IEEE Fellows of PSRCC and PSCCC
Attendance = 10 total, 8 in room, 2 online

Jonathan opened the meeting with the following:
- **Introductions**
- **Agenda Item #1** – The recently elevated IEEE PSRC members were recognized, and their nominators, endorsers and references were congratulated.
  - PSRC Members Elevated in 2024: C.R. Huntley, Nirmal Nair, Michael Thompson.

- **Agenda Item #2** - The status of on-going nominations were discussed. The status of each nomination, the nominator, references, and endorsements were discussed. The list is not provided in these meeting minutes and is discussed at every meeting. Several nominations may be moved to 2026.

- **Agenda Item #3** - Several additional individuals were identified as potential nominations (see list above).

- **Agenda Item #4** – All current Fellows and current Nominators will be included on the A2TF/B2 meeting invitation.

- **Agenda Item #5** – During Open and round table items, the team discussed the details and timeline needed to put together the nomination package.
  - The nomination should cite a significant contribution to the industry as per categories available.
  - It can take 2-3 months of work to put a nomination package together and should be started by

November based on February finish date.
o References and Endorsements should compliment the nomination but not necessarily be focusses on all the same points as covered in the nomination.

• For the next meeting, A2TF/BE will need a room for 20 people, a computer projector, and conference bridge (speaker). We will also need a WebEx with password.

Attendance: Jonathan Sykes, Ken Martin, Eric Udren, Yi Hu, Gene Henneberg, Michael Thompson, Alex Apostolov, Vahid Madani, Phil Winston (remote), Nirmal Nair (remote).

B3: Membership Working Group
Membership Activity Report - January 16, 2025
Membership Chair: Mal Swanson
Membership Vice Chair: Cathy Dalton
Established Date: Circa 1995
Expected Completion Date: On-going
Assignment: Assist in searching for new attendees. Requesting support from attendees' employers.

Attendance during the January 13 JTCM meeting was 233. This is close to our normal attendances for a JTCM meeting.

11 attendees were in our Newcomers Orientation meeting on Tuesday. Cathy Dalton sent follow up meeting emails to each newcomer, to support our retention program. In that way we are encouraging each of the newcomers to continue their attendance and participation.

One management support letters was sent. If any attendee or potential attendee needs stronger management support for PSRC participation, we encourage them to let us know.

Respectively,
Malcolm Swanson, Chair

B4: Long Range Planning Working Group
Chair: Murty Yalla
No report

B5: Publicity Working Group
Chair: Cathy Dalton
Vice Chair: Malcom Swanson
Secretary: Melvin Moncey-Joseph
Assignment:
•Promote IEEE PES PSRC activities globally.
•Facilitate global outreach using tools such as social media, webinars, tutorials, trade publications, social events, and other similar methods.
•Strengthen PSRCC awareness by preparing technical articles as may be required for the promotion of technical committee working group activities about the art of relaying, and the work of the PSRC.

Publicity WG met January 14, 2025, 9:20-10:30 PST, Garden 1 Room.

. 1. Meeting commenced at 9:20am PST in Garden Grove, CA. Welcome to members of B5 for second in person meeting.

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. In person Attendees included Mat Garver (Hubbell), Chase Lockhart (Burns & McDonnell), Melvin Moncey Joseph (Burns & McDonnell), Cathy Dalton (EPRI)

. Webex attendees included Malcolm Swanson.

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. 2. Review Minutes from the September 2024 face to face meeting.

. Edits to September minutes—Mat and Rick are continuing to work on ppt template slide for all PSRC members to use at technical conferences to publicize technical and social value of PSRC participation.

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. 3. Review current meeting's agenda.

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. 4.Future Meetings – See "Future Meetings" page on PSRC website: May 12-15, 2025 – Portland, OR; September 8-11, 2025—Richmond, VA; January 11-15, 2026—Atlanta, GA; May 11-14, 2026—Cleveland, OH; September 14-17, 2026—Reno, NV.

.

5.Discuss Background for formation of expanded working group (WG): Based on some great feedback from other PSRC members in late 2024, Cathy Dalton requested to expand the Publicity working group and invite new members to assist with all the great ideas we would like to implement. This is based on the need to continue to actively raise awareness of PSRC, to recruit additional members, and to retain existing members. She requested that we add a B5 WG meeting to the PSRC agenda on Tuesdays after the Newcomers Orientation session (9:20-10:30am). Volunteers were requested at Main committee meeting. Initial volunteers included: Andre Uribe (Marketing on LinkedIn, other social media), Melvin Moncey Joseph (Young Prof Network, conference collaboration), Rick Gamble (Website), Mat Garver (conference template). Still needed are others who are passionate about raising awareness of PSRC. Since initial conversation, our team has grown to include Mital Kanabar, Muhammad Hamid, Erin Jessup.

At the first meeting in September 2024, we discussed Young Professional Network and possibly adding a social event on Wednesday evenings. Melvin Moncey Joseph is taking the lead to work with Gary Kobet, with support from other WG members as needed. In Sept. 2024, Mike Thompson (Chair at the time) agreed that we could monetarily support such an event. Melvin is already starting this network with JTCM, but not yet at the PES general meeting. We would like to start this initiative at PSRC, possibly in May 2025 in Portland, OR.

PACWorld Update: Cathy Dalton submitted PSRC update for December 2024 issue. Will do so for March 2025 issue based on January meeting.

6. Initiatives underway or being considered (from Aug 2024 Webex meeting, Sep face to face meeting and Jan 2025 face to face meeting):

a. B5: Publicity Report—need to submit to PSRC officers after January PSRC discussions, for inclusion in January 2025 PSRC Meeting Minutes by PSRC Secretary. —Cathy

b. Young Professionals Network—organize Wed eve social event? Melvin shared that he presented at Tech Council, and that a task force will be formed to build a YPN council. A member will come from each PES committee. In addition, we would like to schedule a Wednesday eve social at PSRC meetings. We spoke with PSRC leadership to request having a newcomers Meet & Greet for all PSRC members to participate. Cathy mentioned idea at

Sept 2024 AdComm meeting and again in January 2025 at AdComm., Continue to discuss with Gary Kobet, PSRC Secretary, regarding food/beverage expenses/allocation, and adding to schedule for Portland meeting. Can we use some funds from food and beverage minimum to host an additional event? Ideally, we would like to schedule event in both May and September. If no funding is available from PSRC budget, other options include: (1) ask for bar space allocation for all to sit together and share at own expense, or (2) Chase Lockhart's suggestion--ask a company to sponsor a newcomers meet & greet event like how some companies currently sponsor coffee breaks.

c. Conference collaboration (Texas A&M, GA Tech, WPRC, etc.)—Raise awareness for participation in Standards development Mat and Rick will share template to use at these meetings to advertise PSRC. It will be posted as a resource on PSRC website. Intent is to capture value of PSRC; not only to encourage newcomers but to share technical value of PSRC. Template may include three segments: (1) PSRC overview, (2) link to tech example (std. guide); (3) recruitment and encouragement of new members to join). Example (per Mat Garver) --Manish Patel's example.

d. Publications (IEEE PES magazine, PACWorld, etc.)—what to do, if anything, for PES magazine? Melvin will discuss with Abira; perhaps use marketing materials (to be developed) and request a spot in PES magazine, Cathy will continue PSRC update and also possibly include future PSRC advertisement. A lot of material is already available in the newcomers orientation material and on the PSRC website; this material can be converted and used for promotion.

e. Tutorials via Web / conferences—not discussed at this meeting.
f. Website feed to LinkedIn group page—not discussed at this meeting.
g. LinkedIn Group page—" IEEE PES PSRC (Andre initiated 5/13/24)—not discussed at this meeting
h. LinkedIn posts from events such as Awards ceremonies
i. Many other ideas to discover and implement…. Working group members will respond to requests as they arise, to continue to promote PSRC with publicity, and to promote membership and participation.

7. General Discussion for other potential actions to implement:
    a. As newcomers depart orientation session on Tuesday morning, add a ribbon to their name tag. Make it optional. Encourage officers to seek out first time attendees throughout the week. Cathy/team will order ribbons labelled "First time attendee." OR put a star sticker on newcomer registrants' nametags for when they pick up their name tag at registration desk?
    b. Potential idea—booth at protection conferences, or create marketing material and leave at registration desk or what else?……Melvin to check with IEEE Substations committee for their model / create marketing material—who do they use?
    Mat and Melvin/Chase to discuss marketing support to create materials with their companies' resources. Mat will discuss with Aaron Granger, and Melvin/Chase will discuss with Burns & McDonnell marketing team.
    c. Reschedule B5 WG meeting to Monday afternoon? Cathy took a poll and responses were tied; meeting will remain on Tuesday morning for now.

8. Adjournment at 10:30am PST.

B8: O&P Manual Revision and Working Group Chair Training Working Group

Chair: Ritwik Chowdhury
Vice Chair: Jason Eruneo
Output: O&P Manual and Training Material
Established Date: September 2024
Draft: NA
Assignment: Revise and amend PSRC Organization and Procedure Manual when directed to do so by the PSRC Chair. Develop training material and conduct training for working group and subcommittee chairs.

There was no meeting at JTCM in January 2025.

The plan is for WG B8 to develop training material and have them posted on the PSRC website. The material is to include best practices and guidelines to help WG and SC leadership improve efficiency and quality of the work. The first in-person training is tentatively planned for September 2025, possibly Tuesday first timeslot.

Old Business:

Jason Eruneo was appointed as the vice chair in October 2024.

The discussion notes from the September 19, 2024, meeting were approved via email. These notes are included below.

The discussion started at 12:00 PM EDT on Thursday September 19, 2024, in virtual format. This was the kickoff discussion between the PSRC Officers and a volunteer interested in leading WG B8.

There was a discussion on WG B8 membership and approval processes. The following was tentatively decided upon:

- The output of this WG requires a formal approval process for its output. The PSRC Chair, Vice Chair, Secretary, Past Chair, Standards Coordinator, and SC Chairs are to be voting members of WG B8 and are required to approve the training material prior to publication and commencement of training.
- SC Vice Chairs and WG Chairs are non-voting members of this group and can provide comments on the B8 Output for consideration.
- The output of this WG may be primarily developed by the chair with support from the vice chair. Interested participants to help WG B8 output may contact WG B8 Chair and/or Vice Chair. A call for participants may be announced at PSRC Main Committee meetings.

A few objectives of WG B8 output on training are listed below:

- Best practices for leading WG and SC are to be documented. The documentation is to be brief and include a vast majority (e.g., 99 percent) of the procedures and practices commonly needed to lead WGs and SCs.
- A part of the training material is to summarize information from the O&P and P&Ps. When information from the O&Ps and P&Ps are unclear, they can be logged for consideration when revising the O&P and P&Ps. The revision of the O&P and P&Ps may commence based on the direction of the PSRC chair, possibly when a critical threshold has been reached for possible improvements.
- The output would include practices such as technical focus during meetings, etiquette related to motions, schedules and milestones for WG outputs, PAR extension best practices, meeting

frequencies, balloting and approval processes, etc. Material from other PES Technical Committees may be used as reference.
- The focus of this WG is to develop training material that is as brief as possible that meets the objectives of this WG.
- Live training may be provided once every other year during one of the regular PSRC meetings in January, May, or September. The training may be recorded and made available to anyone interested.

Ritwik Chowdhury was appointed as the chair of WG B8 by the PSRC Officers. Ritwik received approval to appoint Jason Eruneo as vice chair, if Jason is interested. The meeting adjourned at 12:56 PM EDT. WG B8 may meet on an as needed basis from January 2025.

Participants List:

First Name	Last Name	Affiliation	Role
Michael	Thompson	SEL Engineering Services/PSRC Chair	NA
Gene	Henneberg	NV Energy/PSRC Vice Chair	NA
James	Niemira	S&C Electric/PSRC Secretary	NA
Erin	Jessup	SEL/PSRC Interim Standards Coordinator	NA
Ritwik	Chowdhury	SEL/Volunteer	NA

B9: Web Site Working Group
Chair: Rick Gamble
Nothing to report.

V. Subcommittee Reports to the Main Committee:

(Editor's note: here are brief summary reports made to the Main Committee that highlight significant Subcommittee activities. Complete Subcommittee Meeting Minutes and WG Minutes are included as Addendum A to these MC Minutes. Subcommittee reports are presented alphabetically by Subcommittee for ease of reference; actual sequence of reporting at the MC meeting was D, C, I, H, K)

Recommendation from the PSRC Secretary: For any Motions made and balloted outside of regular meetings, for example if a SC uses an email ballot to approve a Report, be sure to include the complete wording of the Motion and results of the ballot in the "Old Business" section of the group's next regular meeting Minutes so that the motion and result of the ballot will be included in the record of PSRC activities and posted to the PSRC website. This applies to all groups: WG, SC, or MC.

"C" Subcommittee Report – System Protection
Chair: Michael Higginson
Vice Chair: Manish Patel

The System Protection Subcommittee of the PSRC met on January 15, 2025, at 2:45 PM Pacific Time. Members and guests in presence introduced themselves and indicated their affiliations. A quorum was achieved (35 out of 52 members and 51 guests).

The Subcommittee reviewed the agenda. Alla Deronja made a motion to approve the agenda, Melvin Moncey Joseph seconded, and the agenda was approved with no opposition.

The September 2024 minutes were reviewed. Melvin Moncey Joseph made a motion to approve the September 2024 minutes, Matt Black seconded, and the September 2024 minutes were approved with no opposition.

Advisory Committee and Other Items of Interest

- Prices at future meetings are likely to increase.
- Please register for meetings early. Late registrations are challenging to manage.
- Registration for this PSRC meeting was 233 people, with 12 newcomers.
- Upcoming meetings:
  - May 2025: Portland, OR
  - September 2025: Richmond, VA
  - January 2026: Atlanta, GA
- The Awards Ceremony will take place during the Monday night reception for May and September meetings. Please consider this when making your travel plans.
- Tuesday lunch-and-learn will be regular feature at PSRC meetings.
- Going forward, May and September meetings will be face-to-face only. PSRC will allow very limited hybrid meetings. WG leadership will carry burden of setting up meetings, recording attendance, etc. PSCC will support hybrid meetings. JTCM will support hybrid meetings.
- Working Group (WG) and Task Force (TF) Leadership Guidance
  - Please inform early if WG/TF will not be meeting – scheduling is extensive effort.
  - Working group agendas are required to be posted at least two weeks prior to the meeting.
  - Working group meeting minutes due to Manish and Mike by Friday, January 24, 2025. Please use the provided Word template to capture meeting minutes, including your assignment.
  - PSRC's Policies and Procedures for Working Groups clause 6.4 requires that meeting minutes for Subcommittee, Working Group, and Task Force meetings include a list of attendees. Names and affiliations of attendees are required to be included in meeting minutes. Including membership status is also recommended.
  - Working groups that complete their work are encouraged to present it to the IEEE community through WEBEX. Contact PSRC officers or Cathy Dalton (Publicity Chair) for further information.
  - WG Chair or Vice Chair can request award from IEEE SA after PAR WG completion. Andre Uribe can address any open questions.
  - PAR-related Working Group chairs are required to have IEEE PES and IEEE SA memberships. IEEE PES and IEEE SA membership is encouraged for all working group leaders.
  - Working groups with a PAR must show Copyright Policy, Patent Policy, and Participant Policy (new addition) slides at each meeting. Working groups without a PAR must show Participant Policy (new addition) slides at each meeting.
- The B5 Publicity WG is requesting volunteers. If interested, please contact Cathy Dalton (cdalton@epri.com).
- Looking for volunteers to develop and teach WG leadership training. IEEE has resources available, and your help would be appreciated.
- The roll out of a new member management system (Member Planet) is in progress. Before this new system is implemented, please be sure to follow required confidentiality practices. Ensure the BCC is used so that email addresses of members are not shared for general correspondence.
- All PSRC procedures are available at https://www.pes-psrc.org/knowledgebase.
- All are reminded and encouraged to apply for Senior Membership in the IEEE if you are eligible.

Working Group Reports
The minutes of the Working Groups are attached.

Old Business
None.

New Business

Mike Higginson informed the attendees that IEEE C37.247 Standard for Phasor Data Concentrators for Power Systems expires in 2029. Vasudev Gharpure to lead CTF57 to investigate need for revision of this standard. If revision is not necessary, then task force may discuss an alternative where the PAR is submitted followed by balloting of standard as-is.

Mike Higginson informed the attendees that IEEE C37.250 Guide for Engineering, Implementation, and Management of System Integrity Protection Schemes expires in December 2030. Miguel Rios Rivera to lead CTF58 to investigate the need to revision of this standard.

The C33 WG has finished its assignment. Dean Ouellette made a motion to disband the C33 WG, Dinesh Gurusinghe seconded, and the motion was approved with no opposition. The WG 33 was disbanded.

General Discussion
None.

Adjourned
Alla Deronja made a motion to adjourn the meeting, Dean Ouellette seconded, and the motion was approved with no opposition. The subcommittee meeting adjourned at 4:05 PM Pacific Time.

Subcommittee Meeting Attendees

Manish Patel	Vice-Chair	EPRI
Michael Higginson	Chair	S&C Electric Company
Kevin Malpede	Guest	Com Ed
Abu Zahid	Guest	Hydro One Network Inc.
Michael Kockott	Voting Member	Hitachi ABB Power Grids
Joerg Blumschein	Voting Member	SIEMENS
Addis Kifle	Voting Member	Georgia Transmission Corporation
Daniel Sabin	Guest	Schneider Electric
Daniel Ransom	Guest	GE Renewable Energy
Jared Kline	Guest	
Nuwan Perera	Voting Member	Power Engineers
Dinesh Gurusinghe	Voting Member	RTDS Technologies Inc.
Paul Elkin	Guest	TRC

Brandon Davies	Guest	TRC
Andre Melo	Guest	Schneider Electric
Daniel Lebeau	Guest	Hydro Quebec
Claire Patti	Guest	Portland General Electric
James Niemira	Guest	S&C Electric Company
Matthew Leyba	Guest	GE
Robert Fowler	Voting Member	Southern California Edison
Nathanael Kamm	Guest	TRC Companies Inc.
Kevin Ridley	Guest	TRC
Fredy Bravo	Guest	Duke Energy
Brittany Wagner	Guest	Delaware Electric Coop
Miguel Rios	Voting Member	Southern Company
Scott Hayes	Guest	PACIFIC GAS AND ELECTRIC
Kamal Garg	Voting Member	Schweitzer Engineering Laboratories, Inc.
Evangelos Farantatos	Voting Member	EPRI
Aboutaleb Haddadi	Guest	EPRI
Galina Antonova	Voting Member	Hitachi ABB Powergrids
Jonathan Sykes	Voting Member	Quanta Technology
Yi Hu	Voting Member	Quanta Technology, LLC
Dean Ouellette	Voting Member	Quanta Technology
Erin Jessup	Guest	Schweitzer Engineering Laboratories
Alla Deronja	Voting Member	American Transmission Company
Muhammad Hamid	Guest	Black & Veatch
Melvin Moncey Joseph	Voting Member	Burns & McDonnell
Ethan Grindle	Guest	American Transmission Company
Greg Hataway	Guest	Burns & McDonnell
Aaron Martin	Guest	Bonneville Power Administration
Kenneth Martin	Voting Member	EPG
Alexander Apostolov	Voting Member	OMICRON electronics
James O'Brien	Voting Member	Duke Energy
Ian Tualla	Guest	Duke Energy
Christopher Walker	Voting Member	Mesa Associates, Inc
Sandro Aquiles-Perez	Guest	Siemens
Genariel Hernandez	Guest	Quanta Technology

Quiles		
Fenghai Sui	Guest	Hydro one
Koustubh Banerjee	Guest	Commonwealth Associates, Inc
Ravindranauth Ramlachan	Guest	GE Vernova
April Underwood	Guest	Southern Company Services
Mark Mcchesney	Guest	Oncor
Mathew King	Guest	HDR Inc
Matthew Black	Voting Member	Sargent & Lundy
Duane Buchanan	Guest	HDR Engineering
Chase Lockhart	Guest	Leidos
Gene Henneberg	Voting Member	NV Energy
Sean Carr	Guest	Commmonwealth Edison Company
Abu Bapary	Voting Member	American Electric Power (AEP)
Amin Zamani	Voting Member	GE Renewable Energy
Arun Shrestha	Guest	Schweitzer Engineering Laboratories, Inc.
Robert Kazimier	Voting Member	Bender Inc.
Bernard Matta	Guest	SEL
Dean Miller	Voting Member	POI Engineering
Donald Ware	Voting Member	Qualus Power Services
James van de Ligt	Voting Member	Spark Power Corp.
Juan Pineros	Guest	XM S.A. Colombia Power System Operator
Quintin Verzosa	Voting Member	Doble Engineering
Kevin Jones	Voting Member	Xcel Energy
Manish Das	Guest	GE
Michael Meisinger	Voting Member	S&C Electric
Mukesh Nagpal	Voting Member	BC Hydro
Nirmal Nair	Guest	University of Auckland
Paras Patel	Guest	TRC Companies Inc.
Peiman Dadkhah	Guest	NuGrid Power
Priya Raghuraman	Guest	Siemens
Taylor Raffield	Guest	Duke Energy
Ritwik Chowdhury	Voting Member	SEL

Souvik Chandra	Guest	EATON
Stephen Conrad	Guest	Public Service Co of NM - Retired
Steve Klecker	Voting Member	MidAmerican Energy
Tapan Manna	Guest	Burns & McDonnell
Faris Elhaj	Guest	Burns & McDonnell
Daqing Hou	Guest	Schweitzer Engineering Labs.
Jeysson Gonzalez	Guest	S&C Electric
Ayodele Ishola-Salawu	Guest	Florida Power & Light

Working Group Minutes

C23: Coordination of Synchrophasor Related Activities
Chair: Yi Hu
Vice Chair: Ken Martin
Secretary: N/A
Output: N/A
PAR and PAR expiration: N/A
Established Date: 16 Oct 2015
Expected Completion Date: N/A
Draft: N/A
Assignment: The ongoing task force will provide three main functions: 1) Liaison with NASPI (North American Synchrophasor Initiative) to keep the PSRC/PSCCC in sync with the changes and needs in the industry with respect to the development and usage of synchronized measurement technology. Formalize transfer process of NASPI task teams developed documents to PES PSRC/PSCCC including making recommendations which NASPI task teams activities should be transferred to IEEE reports, guides and standards. 2) Make recommendations to PSRC/PSCCC for assignments that would require the creation of working groups in PSRC/PSCCC and also recommend what the output of those working groups might be (Guides, reports, etc.) based on the needs of the industry. 3) Coordinate related activities with other IEEE PES committees.

Meeting Date and Time: Hybrid meeting, January 13, 2025 at 3:40 pm PST

Attendance: 3 members and 7 guests attended.

M or G	In-person/virtual	First Name	Last Name	Affiliation
M	IP	Yi	Hu	Quanta Technology
M	IP	Ken	Martin	EPG
M	IP	Vahid	Madani	GridTology
G	IP	Ellery	Blood	SEL
G	IP	Ali	Alvi	Quanta Technology
G	IP	Manish	Patel	EPRI
G	IP	Farrokh	Aminifar	Quanta Technology
G	IP	Zhong	Zheng	NYPA
G	IP	Candice	Patton	Agbara
G	V	Patrick	Chavez	NuGrid
G	V	Paras	Patel	TRC Companies
G	V	Evangelos	Farantatos	EPRI

Call to order

Officer presiding: Yi Hu, Ken Martin
Officer recording minutes: Ken Martin

Call for Patents: Slides were not shown since the assignment is non-PAR.

Other IEEE slides: Guidance slides for copyright and expected attendee behavior were not shown

Meeting Agenda: Agenda was shown

Meeting minutes: Not reviewed at the meeting.
Summary of Activities, Discussions, and Action Items

C23 met on Monday, January 13, 2025, at 3:40 PM PST. Attendance was 9 attendees as recorded above.

Yi opened the meeting and attendees introduced themselves.

Yi reviewed the connection with NASPI and NASPI organization, and informed the attendees on the following:

- Showed the diagram of the NASPI organization and invited any interested people to join.
- A summary of the topics at the Oct 2024 NASPI meeting.
- The next NASPI meeting is in Minneapolis, MN, April 15-16, 2025.
- The next CTF55 meeting is Wed, 1/15/2025, 8-9:10 Pacific Time (at the JCTM).

Ken reported that the C41 WG is producing a study—and report—as to whether a new standard is needed for PMUs intended for distribution systems, or the existing measurement standard, 60255-118-1, could be used as is or modified to cover that performance. The report is nearly done and expected to be completed next month. Final approvals could take a couple of months after that. At present, the WG is recommending that the present standard should be modified with another class for distribution. The study indicated that the requirements for measuring in distribution systems are similar to those for transmission systems, and only some modifications of the requirements are needed. It will be up to the IEEE and IEC to initiate standard development WG to use this report and its directions.

Yi discussed the work of CTF55 which is investigating the measurement and recording of waveforms. This could lead to development of a standard or a guide.

There were no further issues or concerns brought up by the attendees.

Meeting adjourned at 4:45 PDT

Upcoming PSRC/PSCCC and NASPI Meetings:

- Next NASPI Work Group Meeting will be in Minneapolis, MN next April 15-16, 2025.
- Next WG C23 meeting will be held in during the PSRC meeting, May 2025, in Portland, OR, USA

Next Meeting:

A Single session in a room for 20 people. HD projector with HDMI connector.

Keep the same meeting time (3:40-450 PM) on Monday afternoon as it is now.

C29: Power System Testing Methods for Power Swing Blocking and Out of Step Tripping
Chair: Kevin W. Jones
Vice Chair: Mike Kockott
Secretary: N/A
Output: Tutorial
Established Date: May 2016
Expected Completion Date: September 2026
Draft: 1.11
Assignment: Create a tutorial on test instructions/parameters to accompany the PSRC documents Application of Out-Of-Step Protection Schemes for Generators, and Tutorial for Setting Impedance Based Power Swing Relaying on Transmission Lines, to aid the users in quality testing of their settings and systems when following the working group outputs which recommend testing of complex relay settings and systems.

Working Group C29 met on Tuesday, January 14, 2025, 10:40-11:50 AM PST, with 6-Voting Members and 13-Guests (19 total attendees).

Following welcome and introductions Kevin reviewed the C29 September 2024 minutes. With no issues being raised, the minutes were deemed approved.

Review of the latest draft

- Kevin thanked Abel, Jacob and Christopher for their work on sections 2 and 3. Kevin has incorporated their contributions into the master document (now version 1.11)
- Kevin went through the master and standardized all “out-of-step” to include the hyphens, and all random use of OST / OOS to OST
- Review and clean up of sections 1, 2 and 3. All volunteers listed below to work independently and send the results of their review to Kevin. Due date is April 15, 2025. The reviews are to be done on the latest clean copy of the document (version 1.11).
    - Section 1: Mike (including compare definitions to those stated in D29)
    - Section 2: Rob, Jun and Dhanabal
    - Section 3: Joshua and Dhanabal
    - Figure 5: Abel to redraw
    - Figure 7: Jun to make corrections
- New work to generate content for sections 4.1 and 4.2: Abel, Jacob, Chris and Dhanabal volunteered
- Following from the September 2024 meeting, Kevin reviewed section 2.4. His recommendation is to remove this section. This will be done.
- Possible new section – discuss where the use of multiple testing formats may be required to achieve full test verification.

All who require a copy of version 1.11 (latest clean version) to request this from Kevin.

Kevin will reshare his COMTRADE power swing calculator with all.

With there being no further business, Kevin thanked all for attending and adjourned the meeting.

Requirements for the next meeting:

A projector and a room for approximately 30 people. Avoid conflicts with B10, C51, D29, D37.

Attendance

Kevin Jones	Xcel Energy	Mike Kockott	Hitachi Energy
Gene Henneberg	NV Energy	Manish Patel	EPRI
Robert Fowler	Entrust Solutions Group	Jacob Loyd	Megger
Christopher Ness	Megger	Yazid Alkraimeen	Siemens
Sandro Aquiles Perez	Siemens	Vahid Madani	Gridtobay
Ryan McDaniel	SEL	Joshua Hughes	Qualus
Chase Lockhart	1898 & Co	Dhanabal Mani	Megger
Abel Gonzalez	Megger	Jun Verzosa	Doble Engineering
Andrew Volk	HDR Inc.	Ding Lin	Hydro One
Zheyuan Cheng	Quanta Technology		

C33: Support for WG-P2004 "Recommended Practice for Hardware-in-the-Loop (HIL) Simulation Based Testing of Electric Power Apparatus and Controls"
Chair: Dean Ouellette
Vice Chair: Sakis Meliopoulos
Secretary: Aaron Findley
Output: Recommended Practice
Established Date: September 2018
Expected Completion Date: 12/30/2023
Draft: D4

Assignment: Support the development of this IEEE recommended practice in cooperation with PELS, IAS, and IES efforts

Working group C33 did not meet at this meeting.

C38: P2030.12 Guide for the Design of Microgrid Protection Systems
Chair: S. S. (Mani) Venkata
Vice Chair: Michael Higginson
Secretary: Geza Joos
Output: IEEE Guide, P2030.12
Draft: 1.6
Expected Completion Date: May 2025
PAR Expiration Date: December 2024

Working group C38 did not meet at this meeting.

C40: Prepare a tutorial from the work of C37.247 Standard for Phasor Data Concentrators
Chair: Vasudev Gharpure
Vice Chair: Mital Kanabar
Secretary: Mital Kanabar
Output: Tutorial planned (Paper, Presentation in future)
Established Date: January 2020
Expected Completion Date: December 2022
Draft: 1.01

Assignment: Develop a publication (transaction and/or conference), a tutorial and a presentation based on C37.247-2019: the standard for Phasor Data Concentrators for power systems.

Working group C40 did not meet at this meeting.

C41: Performance requirements for Distribution PMUs
Chair: K. Martin
Vice Chair: N. Perera
Secretary: D. Gurusinghe
Output: Report
Established Date: January 2021
Expected Completion Date: May 2025
Draft: 2.6

Assignment: WG C41 will prepare a technical report on the measurement performance needs and requirements for PMUs that are intended for use in distribution systems. This will include examination of the measurement environment, detailing the data requirements of phasor-based distribution applications, and supporting liaisons with other groups working with synchrophasors in the distribution environment including other IEEE TC's, NASPI, NERC, and IEC.

Working Group C41 met on Tuesday, January 14, 2025, at 8:00 a.m. (PST) with 3 members and 10 guests. Ken Martin (Chair) welcomed participants and briefed the WG's objective, described in the assignment above.

Ken provided a comprehensive overview of the WG and its history, giving context to its ongoing efforts.

During the discussion, a question was raised regarding the elements included in the figure of merit. Ken explained that while the figure of merit would not be highly specific, it would utilize basic approaches, such as simple least-squares estimates. He also highlighted that phasor estimation during transient or disturbance conditions could be incorporated into the figure of merit, with a possible qualitative classification—such as "good," "reasonable," or "poor"—to indicate performance under such scenarios.

Yi Hu inquired whether the new class was being developed, and Ken confirmed that it would indeed represent a new class specifically to meet the unique requirements of distribution system applications.

Ken further clarified the format of the WG report following a discussion with the C Subcommittee Chair, Michael. He then presented the most recent version of the draft report to the WG members. Ken invited those interested in reviewing the report to contact him directly, offering to share the latest version for their feedback and input.

The subcommittee chair informed us that the report number (it now says TR??) would be supplied after the report was finished and approved. He also explained that once the WG is finished and approves the report, it goes to the subcommittee for their review. Then after any subcommittee comments are resolved and approved by the WG, the report will be numbered and posted.

Lastly, Ken informed the group that the next WG meeting would be held online, tentatively scheduled for February.

Recorded by Dinesh Gurusinghe.

#	Attendee	Affiliation	M/G
1.	Ken Martin	EPG	C
2.	Nuwan Perera	Power Engineers	VC
3.	Dinesh Gurusinghe	RTDS	S
4.	Jorg Blumschein	Siemens	G

5.	Ellery Blood	SEL	G
6.	Ravindra Ramlachan	GE Vernova	G
7.	Craig Preuss	Black & Veatch	G
8.	Evangelos Farantatos	EPRI	G
9.	Ali Alvi	Quanta Technology	G
10.	Nicholas Kraemer	NuGrid Power	G
11.	Yi Hu	Quanta Technology	G
12.	Michael Higginson	S&C	G
13.	Raluca Lascu	DTE (DETROIT Edison)	G

C43: Artificial Intelligence and Machine Learning technologies for power system protection and control applications

Chair: **Yi Hu**
Vice Chair: **Adi Mulawarman**
Secretary: **Carolina Arbona**
PAR expiration: **N/A**
Established: **January 2021**
Completion: **December 2026**
Output: **N/A**
Draft: **N/A**

C43 Assignment: *Revise the report on applications of Artificial Intelligence and Machine Learning technologies for power system protection and control to include latest advancements and findings.*

Meeting Date and Time: Hybrid meeting on January 15, 2025, at 10:40 AM PST

Meeting Location: Hyatt Regency Orange County, 11999 Harbor Blvd, Garden Grove, CA 92840, USA

Attendance: 33 in-person and 22 virtual attendees (19 Members and 36 Guests)

Count	M/G	In-person/Virtual	First Name	Last Name	Affiliation
1	VM	In-person	Yi	Hu	Quanta Technology
2	VM	In-person	Adi	Mulawarman	Xcel
3	G	In-person	Jinlei	Xing	Scheider Electric
4	G	In-person	Sandro	Aguiles-Perez	Siemens
5	VM	In-person	Robert	Fowler	Entrust Solutions Group
6	G	In-person	Christopher	Paredes	Enercon
7	VM	In-person	Alex	Apostolov	Omicron
8	G	In-person	Genariel	Hernandez	Quanta Technology
9	G	In-person	Miguel	Rios	Southern Company
10	G	In-person	April	Underwood	Southern Company
11	G	In-person	Jarvis	Kenerson	Southern Company
12	VM	In-person	Melvin Moncey	Joseph	Burns&McDonnnell
13	G	In-person	Wendy	Al-Mukdad	CPUC
14	G	In-person	Steven	Blair	SYNAPTEC
15	G	In-person	Shahrzad	Mahdavi	HICO America
16	G	In-person	Mohasinina	Kamal	SCE
17	VM	In-person	Jada	Hawaz	SEL
18	G	In-person	Jonathon	Tacke	Idaho National laboratory
19	G	In-person	Brittany	Wagner	Delaware Electric Corp
20	G	In-person	Adrian	Zvarych	QUALUS Corp
21	G	In-person	Christopher	Ness	Megger
22	VM	In-person	Michael	Higginson	S&C
23	G	In-person	Geshan	Wrosinghert	Meinberg-USA
24	VM	In-person	Wesley	O'Quinn	Southern Nuclear
25	G	In-person	Tania	Martinez Navedo	US NRC
26	G	In-person	Frederic	O'Brien	US NRC
27	G	In-person	Isaac	Wang	US NRC
28	G	In-person	Kevin	Ridley	TRC

Count	M/G	In-person/Virtual	First Name	Last Name	Affiliation
29	G	In-person	Lubomir	Sevov	TRC
30	G	In-person	Nathnael	Kamm	SGC Engineering
31	G	In-person	Brandon	Davis	TRC
32	G	In-person	Addis	Kifle	GTC
33	G	In-person	Mike	Basler	BASLER Electric
34	VM	Virtual	Toro	Caleb	
35	G	Virtual	Dan	Nordell	
36	NVM	Virtual	Dhruv	Patel	Hubbell-Beckwith
37	VM	Virtual	Guilherme	Pires	Siemens
38	VM	Virtual	Ayodele	Ishola-Salawu	Florida Power & Light
39	VM	Virtual	Joe	Xavier	ABB
40	VM	Virtual	Jose	Ruiz	Doble Engineering
41	VM	Virtual	Juan	Piñeros	XM
42	VM	Virtual	Matthew	Reno	Sandia National Lab
43	G	Virtual	Milo	Daub	MESA Inc.
44	VM	Virtual	Nirmal	Nair	University of Auckland
45	G	Virtual	Paras	Patel	TRC
46	G	Virtual	Peiman	Dadkhah	NuGrid Power
47	G	Virtual	Priya	Raghuraman	Siemens Industry
48	G	Virtual	Taylor	Raffield	Duke Energy
49	VM	Virtual	Ratan	Das	GE
50	G	Virtual	Sajal	Harmukh	SEL
51	G	Virtual	Shashidhar	Sathu	SEL
52	VM	Virtual	Souvik	Chandra	Eaton
53	G	Virtual	Tapan	Manna	Burns&McDonnnell
54	G	Virtual	Adrian	Zvarych	QUALUS Corp
55	G	Virtual	Patrick	Chavez	NuGrid Power

Call to order: 10:40 AM MST

Officers presiding: Yi Hu, Adi Mulawarman

Officer recording minutes: Adi Mulawarman

Quorum was not checked

Call for Patents: Slides were not shown since the assignment is non-PAR.

Other IEEE slides: Guidance slides for copyright policy and expected IEEE meeting attendee behavior slides were not shown at this meeting.

Meeting Agenda: Agenda was shown and agreed.

Meeting minutes: September 2024 meeting minutes emailed to WG members prior to this meeting.

Summary of Activities, Discussions, and Action Items

- Introduction, 33 in-person, 22 online. Total 55.
- Yi, chair of WG, provided report status.
- Overview outline of the current draft and explanation of outlines in section 4, 6.
- Yi explained data related topics in the outlines will be going to another working group C53 (led by Dan Sabin).
- Review and discuss WG C43 report restructured outline
  - Divided into two parts, Practical Considerations and Practical Applications
  - Old Section 5 will become Part 2, with rest stay in Part 1
  - **Action**: Coordination with the WG C53 led by Dan Sabin and Matt Reno regarding data related topics in current outline.

- Discussions
  - Alex Apostolov, training using recorded vs real time data. Need to pay more attention to this. Training using simulation is not right. Need to define the requirement of training data. Yi responded, there is a different WG that will handle the data definition. Training in this report refers to training the users of the AI, not quite training of the AI.
  - Alex does not think training of the users to use the AI is necessary or needed. The AI will just operate as designed. Alex thinks that training of the people that will train the AI maybe needed but not the end user.
  - Joe Xavier, asked if the report included fault location. Yi responded that it will be or can be included in part 2. He also will share paper and can present.
  - Nirmal Nair, commented on how this report relates to the other report and what is the plan for this report. He suggested to focus on the applications, he asks to be included in the upcoming meetings. Yi asked Nirmal to provide additional examples from CIGRE as he is involved in CIGRE for consideration of inclusion.
  - Ratan Das – will this new report supersedes the old report? This new report will have an updated content. Yi does not know yet. Ratan suggested to keep the same report number and just update it.
- Call for sign-up
  - Ayodele Ishola-salawu, Predicted maintenance application. Using AI to monitor remote areas and provide suggestions on maintenance. Also mentioned the possibility or need for changing or evolving this report to Guide/Recommended Practice/Standard.
  - Wesley - O'quinn interested in contributing to the predicted maintenance and fault detection AI.
  - Souvik Chandra – Interested in contributing and joining the WG. Can contribute with an application, high impedance fault detection using AI\ML. Can contribute on the testing and data collection as well.
  - Wendy Al-Mukdad – asking about wildfire application, and high impedance detection expand the section. Yi responded, yes it can be considered.
  - Caleb Toro – interested in application of/for asset protection, and data collection part and deployment.
  - Caleb Toro, Guilherme Pires interested in contributing and joining the WG.
- Contributions due end of 2025. and Jan 2026 will start review/revision.

Meeting adjourned at 11:40 AM MST.

Next meeting:

- Single session to be held in conjunction with PSRC/PSCCC 2025 May meeting in Portland, OR, USA.
- A room for 40 people.
- HD projector with HDMI connector.

Avoid overlap with following sessions:

- **PSRC:** C23, C41, C45, C53, CTF55, D42, D47, H54, and PSRC B2/PSCC A2TF.

C45: Protection and short-circuit modeling of systems with high penetration of inverter based resources
Chair: Ali Hooshyar
Vice Chair: Manish Patel
Secretary: Ritwik Chowdhury
Output: Report
Draft: 1.1

Established Date: May 2021
Expected Completion Date: 2026
Assignment: To prepare a technical report to investigate short-circuit modeling and protection of systems with high penetration of IBRs as a continuation of the works of WGs C32 and C24

The working group officers introduced themselves. The working group quorum was not met.

Zheyuan Cheng and Matthew Reno presented on "Accuracy of Short Circuit Software for Vendor-Specific Models with Negative Sequence Current." A copy of the presentation is available here: https://psrc.sharefile.com/public/share/web-s8879988acb4f485e8b83172cc5d30a67

There were many great questions and comments from attendees with excellent discussion.

The meeting adjourned at 10:32 AM PST.

Participants List:

First Name	Last Name	Affiliation	Role
Ali	Hooshyar	University of Toronto	C
Manish	Patel	EPRI	VC
Ritwik	Chowdhury	SEL	S
Michael	Higginson	S&C Electric Company	M
Philip	Baker	Duke Energy	G
Evangelos	Farantatos	EPRI	M
Amin	Zamani	Quanta Technologies	M
Jagannath	Wijekoon	RTDS Technologies	G
Aboutaleb	Haddadi	EPRI	M
Michael	Jensen	PG&E	M
Robert	Fowler	ENTrust Solutions Group	NVM
Ali	Bidram	University of New Mexico	M
Stephen	Miller	Energy Emissions Intelligence	M
Sebastien	Billaut	Commonwealth Associates	M
Matthew	Reno	Sandia	M
Duane	Buchanan	HDR	G
Yazid	Alkraimeen	Siemens	M
Kamal	Garg	SEL	M
Yi	Hu	Quanta Technologies	G
Jared	Kline	P&E Engineering	G
Zheyuan	Cheng	Quanta Technologies	G
Jonathan	Sykes	Quanta Technologies	G
Miguel	Rios	Southern Company Services	G
Jim	Van de Ligt	CANA Energy Ltd	G
Adrian	Zvarych	Qualus	G
Carolyn	Sun	Black & Veatch	M
Matchyaraju	Alla	Amazon	M
Genariel	Hernandez	Quanta Technologies	NVM
Addis	Kifle	GTC	G

Sandro	Aquiles-Perez	Siemens	G
Kanchanrao	Dase	SEL	G
Taylor	Raffield	Duke Energy	G
Paras	Patel	TRC	G
Mohammed	Zadeh	ETAP	M
Qun	Qiu	AEP	G
Koustubh	Banerjee	Eversource Energy	NVM
Fredy	Bravo	Duke Energy	G
Scott	Hayes	PG&E	G
Gene	Henneberg	NV Energy	G
Ethan	Grindle	ATC	G
Milton	Quinteros	Entergy	G
Milo	Daub	Mesa Associates	G
Seth	Nelson	Basler	G
Steve	Turner	Sargent & Lundy	G
Juan	Pineros	XM Columbia Power System	G
Claire	Patti	Portland General	G
Souvik	Chandra	Eaton Corp	G
Faris	Elhaj	Burns & McDonnell	G
Kevin	Ridley	TRC	G
Fenghai	Sui	Hydro One	G
Dan	Ransom	GE Vernova	G
Tu	Nguyen	Entergy	G
Nuwan	Perera	Power Engineers	G
Jordan	Bell	SEL	G
Jonathan	Tacke	INL	G
Scott	Munnings	PEC	G
Kevin	Damron	Avista	G
Steve	Hensley	Sargent & Lundy	G

*M = Voting Member, NVM = Non-voting Member, G = Non-member/Guest, C = Chair, VC = Vice Chair, S = Secretary

CTF47: Relay Modeling in Electromechanical Dynamic Simulations
Chair: Evangelos Farantatos (EPRI)
Vice Chair: Mohammad Zadeh (ETAP)
Secretary: N/A
Output: N/A
Established Date: January 2022
Expected Completion Date: January 2026
Draft: 2.0
Assignment: Contribute to the report of the Power System Dynamic Performance (PSDP) committee TF “Integrating Relay Models with RMS Dynamic Simulations”.

CTF47 met on Tuesday Jan. 14, 2025, at 13:00 PDT with 13 in person and 5 online attendees. Chair, Evangelos presided over the meeting. He brought the meeting to order and showed the agenda.

First, the scope and history of the taskforce (TF) were reviewed. The status of PSDP TF was presented.

Two contributions from CTF47 members have been submitted and shared with the PSDP TF chair. Mohammad Zadeh presented his contribution on “Vendor-Specific Relay Modeling in Transient Stability Analysis”. Aboutaleb Haddadi presented his contribution on the “NERC PRC-026 Considerations for Inverter Based Resource Dominated Grids”.

Two TF members volunteered to review the report: 1- Sandro Aquiles-Perez, 2- Milton Quinteros. Finally, it was announced that a panel session titled “Integrating Relay Models with RMS Dynamic Simulations – Protection Perspective” has been proposed by the TF for the IEEE PES GM 25.

For the next meeting, we will need a projector and a room for 20.

Please avoid conflict with C38, C45, C50, C51, B10, K29, D44, H45.

First Name	Last Name	Affiliation
Evangelos	Farantatos	EPRI
Mohammad	Zadeh	ETAP
Milton	Quinteros	Entergy
Raluca	Lascu	DTE
Abu	Zahid	Hydro One
Jordan	Bell	SEL
Aboutaleb	Haddadi	EPRI
Rannveig	S.J. Loken	Statnett / Cigre TC
Yazid	Alkraimeen	Siemens Industry
Sandro	Aquiles-Perez	Siemens Industry
Chase	Lockhart	Burns & McDonnell
Sakis	Meliopoulos	Georgia Tech University
Michael	Higginson	S&C
Online		
Matthew	Reno	Sandia National Lab
Mike	Meisinger	S&C
Qun	Qiu	AEP
Taylor I.	Raffield	Duke Energy
Sajal	Harmukh	SEL

C48: Summary paper of C37.120 IEEE Guide for Protection System Redundancy for Power System Reliability
Chair: Alla Deronja
Vice Chair/Secretary: Melvin Moncey Joseph
Output: Conference paper
Established Date: May 2022
Expected Completion: December 2025
Draft: 3

Assignment: Write a conference/IEEE Transactions papers for C37.120 IEEE Guide for

Protection System Redundancy for Power System Reliability.

WG C48 met on Tuesday, September 10, 2024, in a single session with 7 members and 8 guests attending.

The PSRC May 14 WG meeting minutes were approved. Motion: Don Ware, 2nd: Angelo Tempone.

The conference paper will be presented at the WPRC 2024 and was declined by the 2024 MIPSYCON.

The WG is presently focused on writing an IEEE Transactions paper to increase the visibility of the new guide and promote greater insight into the guide material.

At the meeting, the WG reviewed a writing contribution for a new subclause, now titled *Redundancy using different protection principles*. The redundant material for line protection added separately was ruled already addressed in the paper and, therefore, removed.

As previously discussed, it was stressed that the new paper needs to contain 40-60% of the new material that was not in the original summary paper. This material should be of a research nature and aimed to provide an insight on the background of the material included in the guide.

The paper abstract was corrected to remove the word “summary” as being not appropriate for a transactions paper.

A comment was made to revise the introduction to emphasize the guide’s development per the NERC direction and its importance as a reference to the users to meet the protection system redundancy compliance with the NERC reliability standards. It will be picked up during the WG internal review of the paper.

The many references at the end of the paper appear unnecessary and will be removed. The paper size must be around 8 pages, so this action will help to reduce the paper size.
After that, the chair will create Draft 3 of the paper and, along with the final version of the summary paper (for comparison, to make sure there is no plagiarism issue), will distribute it to the WG members and the Subcommittee C chair for review and approval.

The WG will have 4 weeks for the paper review. After the comments are received and incorporated, a mature draft will be submitted for review by the transaction paper SMEs. Finally, it will be submitted for approval by SC C and PSRC officers before advancing it to the IEEE Transactions for Power Delivery.

For the next meeting, we request a room for 20 people, single session, with a computer projector.

Please avoid conflicts with D42, D47, D37, D52, K31, C52, and I2.

Meeting Attendees

Role	First Name	Last Name	Affiliation
Guest	Duane	Buchanan	HDR
Guest	Peiman	Dadkhah	NuGrid Power
Member	Angelo	Tempone	Duke Energy
Member	Kevin	Malpede	ComEd

Member	Manish	Patel	EPRI
Member	Don	Ware	Power Grid Engineering
Member	Ritwik	Chowdhury	SEL
Member/Chair	Alla	Deronja	ATC
Member/Vice-chair	Melvin	Moncey Joseph	Burns & McDonell
Guest	Luke	Hoffman	PacificCorp
Guest	Michael	Higginson	S&C
Guest	Kevin	Ridley	TRC
Guest	Jonathan	Sykes	Quanta Technology
Guest	Craig	Wester	GE Vernova
Guest	Vijay	Shanmugasundaram	Burns & McDonell

C50: Protection of Inverter-Based Resources
Chair: Brandon Davies
Vice Chair: Amin Zamani
Output: Report
Established Date: September 2022
Expected Completion Date: September 2025
Draft: 0

Assignment: Revise and expand PES Technical Report “PES-TR87: Protection of Wind Electric Plants” to explicitly address protection of other IBR Plants (e.g., Solar PV Systems and Battery Energy Storage Systems).

The WG met (in person) on Jan. 15, 2025, at 09:10–10:30AM PST. There was a total of 35 attendees in the meeting.

Meeting Agenda

- Introductions
- Report status update
- Review of assignment and proposed modifications
- General discussion
- Adjourn

Summary of Meeting Discussion

- The meeting began with attendee introductions; 13 voting members and 22 guests/non-voting members were present, and we were able to form a quorum.
- The minutes of the last meeting were approved.
- The chair reviewed the assignments and status of the report.
- The plan is to hold monthly Webex meetings leading up to the May meeting to ensure continued progress.
- We have received one contribution since the last meeting, and Mohammad Zadeh will provide his contribution for ‘Appendix A’ soon.

- The Chair discussed that the assignment does not prevent us from including offshore WF plants. He asked for insights from the WG on including the offshore WF.
- It was discussed that it would be good to have a placeholder to at least discuss the offshore WF plants/topologies. If the team later identifies the lack of expertise to cover all protection aspects, it can be stated that the report won't discuss the offshore WF protection in full (to be covered in future reports).
- Paul Elkin volunteers to add a section on offshore WF topologies and differences with onshore WF, and the team will later decide if the protection of offshore WF shall be included in the current scope.
- Jason raised a question about if Section 2.10 is part of the scope of this document. Jason requested that the V/f protection should be based on practices and not regulatory requirements. The team discussed that the title and content of this section are (4-5 years) old and should be revised. However, the reader should know the need for coordination with ride-through settings.

For next meeting, we request a room for 30 people with a projector. Please avoid conflicts with C45, D43, K31, and D45.

ATTENDEES:

Name	Employer	Membership	Sign-in
Addis Kifle	GTC	G	X
Amin Zamani	Quanta Technology	VM	X
April Underwood	Southern Company	VM	X
Brandon Davies	TRC	VM	X
Brian Boysen	WEC Energy Group	G	X
Caleb Toro		G	X
Carolyn Sun	Black & Veatch	VM	X
Chase Lockhart	Burns and McDonell	VM	X
Jason Eruneo	Duke Energy	VM	X
Dan Ransom	GE Vernova	G	X
Duane Buchanan	HDR	VM	X
Fernando Calero	SEL	G	X
Genariel Hernandez	Quanta Technology	G	X
Jagannath Wijekoon	RTDS	G	X
Jeff Jordan	Exeter Ground	G	X
Jim van de Ligt	Spark Power Corp.	G	X
Joshua Park	So. Cal. Edison	G	X
Kevin Garrity	NextEra	G	X
Kevin Ridley	TRC COMPANIES INC	G	X
Manish Patel	EPRI	VM	X
Matthew King	HDR	G	X
Matthew Reno	Sandia National Lab	VM	X

Michael Higginson	S&C	G	X
Mohammad Zadeh	ETAP	VM	X
Nathanael Kamm	SGC	VM	X
Nuwan Perera	POWER Engineers, Inc.	G	X
Paras Patel	TRC COMPANIES INC	VM	X
Paul Elkin	EPRO	G	X
Raluca Lascu	DTE	VM	X
Rexa Arani	Toronto Metropolitan University	G	X
Robert Fowler	Entrust Solutions Group	G	X
Sandro Aquiles-Parez	Siemens Ind.	G	X
Scott Mannings	Power Engineers Collaborative	G	X
Stephen Miller	Energy Emissions Intelligence	G	X
Venkatesh Chakrapani	Siemens	G	X

C51: Prepare a technical report on underfrequency excursion mitigation strategies for changing generation resource mixes in the bulk power system
Chair: Kevin W. Jones
Vice Chair: Chase Lockhart
Secretary: N/A
Output: Technical Report
Established Date: January 2023
Expected Completion Date: End of 2026
Draft: TBD

Assignment: Prepare a technical report on underfrequency excursion mitigation strategies for changing generation resource mixes in the bulk power system.

Location: Hyatt Regency Orange County, Garden Grove, CA
Date: January 14, 2025
Time: 5:00pm – 6:10pm PST

C51 held the third meeting as a WG, led by the chair, with 6-Voting Members and 17-Guests present (23 total attendees). Quorum was reached with 6 out of 7 members in attendance. The meeting started with introductions in the room.

Motion: Approve the meeting minutes from September's meeting
1st : Kevin Malpede
2nd : Manish Patel
The minutes from the last meeting were approved unanimously.

The chair shared the draft document that was prepared ahead of the meeting with the update outline from the previous meeting, and the group made slight edits after open discussion.

The chair asked for volunteers and assignments for writing different sections of the report were made.

New Writing Assignment Volunteers:
Chase Lockhart – Introduction
Mohammed Zadeh – Section 3.2
Matthew Reno – RoCoF Calculation
Steven Blair – Synchrophasors for fast frequency response
Jonathan Tacke – Section 3.1.3

The WG will reconvene in May with updates.

The Chair thanked everyone for attending the meeting.

Requirements for the WG meeting: A projector and a room for approximately 30 people. Avoid conflicts with B10, C29, D29, I36.

Name	Company	M/G
Kevin Jones	Xcel Energy	M
Chase Lockhart	Burns & McDonnell	M
Koustubh Banerjee	Eversource Energy	G
Yazid Alkraimeen	Siemens Industry	G
Steven Blair	Synaptec	G
Christopher Ness	Megger	G
Sandro Aquiles-Perez	Siemens Industry	G
Manish Patel	EPRI	M
April Underwood	Southern Company	M
Scott Mannings	Power Engineers	G
Matthew King	HDR Engineering	G
Jared Kline	PTE Engineering	G
Dan Ranson	GE Vernova	G
Robert Fowler	Entrust Solutions Group	G
Jonathan Tacke	Idaho National Labs	G
Brittany Wagner	Delaware Electric Coop	M
Kevin Malpede	ComEd	M
Philip A Baker	Duke	G
Evangelos Farantatos	EPRI	G
Matthew Reno	Sandia National Labs	G
Peiman Dadkhah	NuGrid	G
Sajal Harmukh	SEL	G
Souvik Chandra	EATON	G

C52: Revise IEEE Std C37.246-2017, IEEE Guide for Protection Systems of Transmission – to – Generation Interconnections
Chair: Melvin Moncey Joseph
Vice Chair: Mike Jensen
Secretary: Muhammad Hamid
Output: Guide

Established Date: 01/09/2024.
Expected Completion Date: 2028
Draft: TBD
Assignment: Revise standard C37.246, IEEE Guide for Protection Systems of Transmission-to-Generation Interconnections

a) Officers presiding – Melvin Moncey Joseph, Mike Jensen, and Muhammad Hamid
b) Officer recording minutes – Muhammad Hamid
c) Call to order – Melvin Moncey Joseph
d) Chair's remarks – Copyright, patent and behavior slides presented. No issues identified.
e) Quorum Check – Quorum achieved.
f) Summary of discussions and conclusions including any motions.
    a. Meeting Agenda – Motion for Approval: Ian T., 2nd: Mike Jensen. None opposed.
    b. Sep-24 Minutes – Motion for Approval: Manish P., 2nd: Duane B. None opposed.
    c. Chair showed the timeline and proposed to have monthly meetings from February 2025.
        i. Motion to have monthly meetings – Chase L.,
        ii. Seconded by Daniel L., none opposed.
        iii. Poll to be sent out by email, to finalize time for virtual meetings.
    d. Chair displayed the working document/ previous standard with comments.
    e. It was agreed that a volunteer will be assigned as a lead for section review and present changes/updates in the upcoming meetings.
g) Volunteers & Action Items:
    a. Section 4 Lead: Mike Jensen
    b. Section 5 Lead: Chase Lockhart
    c. Section 6 Lead: Manish P
    d. Section 7 Leads:
        i. 7.1-7.5: Paras P
        ii. 7.6: Manish P
        iii. 7.7 & 7.8: Mohit Sharma
        iv. 7.9: Nuwan P.
        v. 7.10: Mohit Sharma
h) Juan Pineros will provide a write up and present it for the paper he co-authored to the WG. Link to the paper: https://truc.org/wp-content/uploads/Power-System-Cascade-Event-in-a-230-kV-Grid-by-Power-Generators-Loss-of-Field.pdf
i) Recess and time of final adjournment: Adjourned by Melvin at 9:00 AM PDT.
j) **Attendance:** 45 Attendees – 18 Members, 13 Guests
k) Next meeting date and location at: May 2025 in Portland, OR at PSRC Meeting. For next meeting, we request a room for 40 people with a projector. Please avoid conflicts with B3, B5, C45, C48, C50, D37, D42, D53, DTF56, J17, K27, I49/P21

MEETING PARTICIPANTS January 2025:

No.	NAME	AFFILIATION	ROLE
1	Melvin Moncey Joseph	Burns & McDonnell	Chair
2	Mike Jensen	PG&E	Vice Chair
3	Muhammad Hamid	Black & Veatch	Secretary
4	Addis Kifle	GTC	Member
5	Ian Tualla	Duke Energy	Member
6	Joshua Park	So. Cal Edison	Member
7	Lubomir Sevov	TRC	Member

8	Manish Patel	EPRI	Member
9	Chase Lockhart	Burns & McDonnell	Member
10	Daniel Lebeau	Hydro-Quebec	Member
11	Paras Patel	TRC	Member
12	Faris Elhaj	Burns & McDonnell	Member
13	Jim O Brien	Duke Energy	Non-Voting Member
14	Nuwan Perera	Power Engineers	Member
15	Mohit Sharma	SEL	Member
16	Duane Buchanan	HDR	Member
17	Fenghai Sui	Hydro One	Non-Voting Member
18	Mathew King	HDR	Member
19	Alla Deronja	ATC	Non-Voting Member
20	Andrew Nguyen	TVA	Guest
21	Kevin Ridley	TRC	Guest
22	Miguel Rios	Southern Company	Guest
23	Matt Black	Sargent & Lundy	Guest
24	Abu Bapary	AEP	Guest
25	Neil Saia	Entergy	Guest
26	Daqing Hou	SEL	Guest
27	Dean Miller	PacifiCorp	Guest
28	Ding Lin	Hydro MB	Guest
29	Genariel Hernandez	Quanta	Guest
30	Hani Al-Yousef	Eaton	Guest
31	Mike Basler	Basler Electric	Guest
32	Juan F. Piñeros	XM Co	Guest
33	Laurel Brandt	TVA	Guest
34	Milo Daub	Mesa Associates	Guest
35	Taylor Raffield	Duke Energy	Guest
36	Steve Conrad	PNM Retired	Guest
37	Tapan Manna	Burns & McDonnell	Guest
38	Todd Martin	Basler Electric	Guest
39	Jared Kline	P&E Engineering	Guest
40	Julie Lacroix	Hydro Quebec	Guest
41	Yazid Alkraimeen	Siemens Ind.	Guest
42	Mark Mchesney	Oncor	Guest
43	Hillman Ladner	Southern Co.	Guest
44	Dhanabal Mani	Megger	Guest

C53: Artificial Intelligence / Machine Learning (AI/ML) Data Collection Working Group
Chair: Dan Sabin
Vice Chair: Matthew Reno
Secretary: Megha Kamal
Output: Develop a Technical Report
Established Date: January 2024
Expected Completion Date: TBD
Draft: Pre-Draft

Assignment: Develop an IEEE PES technical report summarizing the collection, management, and analysis of protection & control data sets for artificial intelligence and machine learning

applications.
Call to Order: The kickoff meeting of the C53 Working Group meeting convened at 10:42 AM with 25 attendees, 18 of which attended in person. Meeting minutes were recorded by Megha Kamal.

Meeting Discussion:
The working group chair asked the participants to join the IEEE Collabratec site for this WG. Files, minutes, and past presentations are uploaded on the collaborator site. From now on collaborative works would be delegated through the IEEE Collabratec site: Link

Dan Sabin presented the proposed outline of the PES technical report to be developed by the C53 working group. Following topics were discussed during the meeting:

- Matthew Reno to follow-up on applicable data set coming from microgrid and to agree upon the data format, as well as online vs offline dataset.
- Jeff Wischkaemper to follow-up on the Collabratec website on data clean-up.
- About the outline of the report, to not duplicate the C43 report that already discussed AI/ML overviews, so we don't need to. Our focus would be on data sources, requirements, timeframe, sampling, cleaning dataset practices, etc. Jeff Wischkaemper and Alex Apostolov would volunteer this section of usage and guidelines.
- Alex Apostolov to send us virtual IED's contacts.
- Data coming from not only Relay, but also from DFR, OMS, SCADA, even handwritten notes. Theo Laugher will volunteer.
- Review and summarize data characteristics, attributes, and features. Also include security of dataset, i.e., models are not corrupted, not malicious data, encryption in public space or enterprise, etc. Raise the issue of who is responsible for the maintenance of the dataset, rather than the solution.
- Points to include who owns the dataset to share or high level details, what the data look like, and requirements. Our mission is to write report, not to build data.
- Also, there was a discussion about the length of the report. There is no page limit.

Last discussion was based on new Chair, as Dan Sabin is stepping down from this WG. From now on Megha Kamal would be the new Chair, Matthew Reno remains as the Vice Chair, Secretary position is currently open and on next meeting it's going to be raised if someone wants to take the secretary position. Dan Sabin would still serve this group to help new committee members.

Adjournment: The meeting adjourned at 11:45 AM.

Attendees:

First Name	Last Name	Company
Ted	Hlibka	Consultant
Ali	Bidram	UNM
Theo	Laughner	Lifescale Analytics
Dhruv	Patel	Hubbell
Guilherme	Pires	Siemens
Jose	Ruiz	Doble Engineering
Matthew	Reno	Sandia
Milo	Daub	Mesa Ink
Nirmal	Nair	University of Auckland, NZ
Ritwik	Chowdhury	SE Linc
Toro	Caleb	

P	Chavez	NuGrid Power
Rannveig	Loken	CIGRE
Dan	Sabin	Schneider
Alex	Apostolov	OMICRON
Matt	Black	Sargent & Lundy
Robert	Fowler	ENTRUST Solutions Group
Yanfeng	Gong	SEL
Aboutaleb	Haddadi	EPRI
Muhammad	Hamid	Black & Veatch
Dereje	Hawaz	SEL
Genariel	Hernandez	Quanta Technology
Yi	Hu	Quanta Technology
Byungtae	Jang	KEPCO
Mohasinina	Kamal	SCE
Addis	Kifle	GTC
Nicholas	Kraemer	NuGrid Power
Miguel	Rios	Southern Company
Jeff	Wischkaemper	Texas A&M
Karen	Wyszczelski	SEL

C54: Data Centers Protection, Automation, and Control (PAC) Systems
Chair: André Melo
Vice Chair: Priya Raghuraman
Secretary: Iza Pomales
Output: Technical Report
Established Date: January 2025
Expected Completion Date: TBD
Draft: NA

Assignment: Write a technical report to describe common architecture and functional requirements of HV/MV Protection, Automation, Control, and Monitoring Systems for Data Centers.

Introductions
Review of copyright slides
Review of participant behavior slides

Opening Remarks
The first meeting of the Working Group (WG) was convened.

Scope of Work
Exclusion of Low Voltage (LV): The scope focus on Medium Voltage (MV) and High Voltage (HV) components of the data center. If Distributed Generation (DG) is connected to an LV circuit, it would then be part of the scope.

Voltage Levels
The voltage level will depend on the geographic area. The report would not specifically focus on the North American market. The WG can define the voltage levels in the scope of the report.

NDA Concerns
To address NDA concerns regarding design, only publicly available information will be used.

EPMS Points List and Interconnection Requirements
Discussion on adding EPMS points list and interconnection requirements.

- Interconnection can be added as a subsection.
- Ride-through requirements can be a subsection of Section 5.2.

Reliability Requirements
Reliability requirements may differ within the same data center and vary by site and vendor.

Relay Redundancy Design
Relay redundancy design was discussed and will be included in Section 4. Redundancy can also be achieved by adding another ring structure.

Data Center Power Generation
Data centers with PV, wind, hydrogen, or nuclear power generation are considered part of the scope. These can be microgrids, feedback to the utility (not typical), or neither. If these backfeed to the grid, it needs to be included in the scope.

Data Center Load Profiles
Different data centers (AI-ML, crypto, etc.) have varying load profiles. This will be discussed in the report, possibly in the introduction.

NERC DC Efforts
Discussion on NERC DC efforts, including a case with Dominion:

- L-G fault led to a 1.5 MW load loss and a frequency spike, causing loss of operation.
- Onsite generation comes online in 5 minutes, ramping up from 10% to 100% in a few minutes.
- A full report is available in the presentation for reference.

Two NERC white papers are forthcoming.

Call for participants: 21 enrolled as members.

Next Meeting: May 12-15, 2025 – Portland, OR.

Adjournment: The meeting adjourned at 3:30 PM.

Attendee List
The following 38 people attended the Work Group meeting being 25 in person and 13 online.

Name	Last Name	Company	Status
André	Melo	Schneider Electric	Member - L
April	Underwood	Southern Company	Member - L
Ravindranauth	Ramlachan	GE Vernova	Member - L
Ali	Alvi	Quanta Technology	Member - L
Chunming	Ma	Burns & McDonnell	Member - L
Lubomir	Sevov	TRC	Member - L
Addis	Kifle	GTC	Guest - L
Henry	Huang	Argonne National Lab	Member – L
Andreas	Bartels	Powell Industries	Member – L
Dolly	Villasmil	NEI Engineering	Member – L
Iza	Pomales	BIC Electric	Member - L
Mike	Vensen	PG&E	Guest - L
Manish	Patel	EPRI	Guest - L
Michael	Higginson	S&C	Member - L
Priya	Raghuraman	Siemens	Member - R
Deepak	Maragal	LNDTS	Member - L
Dinesh	Gurusinghe	RTDS	Member - L
Muhammad	Hamid	Black & Veatch	Member - L
Mohammad	Zadeh	ETAP	Guest - L
James	Bougie	Albireo Energy	Member – L
Nick	Nakamura	Powerside	Member – L
Kevin	Malpede	ComEd	Member – L
Melvin	Moncey	Burns & McDonnell	Member – L
Reza	Arani	Toronto Metropolitan University	Member – L
Seth	Nelson	Basler Electric	Member – L
Aboutaleb	Haddadi	EPRI	Member - L
Amin	Zamani	Quanta Technology	Guest - R
Amir	Makki	Softstuf	Guest - R
Chase	Lockhart	1898 & Co	Guest - R
Dhruv	Patel	Hubbell	Guest - R
Don	Ware	Power Grid Engineering	Guest - R
Evangelos	Farantatos	EPRI	Guest - R
Kanchanrao	Dase	SEL	Guest - R
Mark	McChesney	Oncor Electric Delivery	Member - R
Qun	Qiu	American Electric Power	Guest - R
Matchyaraju	Alla	AWS	Guest - R
Ryan	Newell	TRC	Guest - R
Sajal	Harmukh	SEL	Guest - R

CTF55: Synchro-Waveform/Continuous Point-On-Wave/Synchronized Measurement
Chair: Shane Haveron
Vice Chair: TBD
Secretary: Jeysson Gonzalez
Output: Recommendation to C-SC
Established Date: May 2024
Expected Completion Date: TBD
Draft: NA

Assignment: Investigate the industry need for a relevant standard or report for synchro-waveform/continuous point-on-wave/synchronized measurement.

The task force CTF55 met on Wednesday, January 15, 2025 at 10 AM local time.

Begin 10:02 AM CT
Discussed application use cases and their different requirements, including some being trialled by some of our members.

10:10 AM CT: discussion of current scope and clarification
Discussed shortcomings of not using point on wave data and shortcoming of using lower resolution synchrophasor data for some applications, and the need to use time synchronized point on wave data rather than simply timestamped as in IEEE 61850 Remote Sampled Values.

10:24 AM CT: Shane to invite Hamed Mohsenian to begin presentation PES-TR127
Reviewed PES TR-127 from the AMPS committee with a very useful presentation from the Task Force chair, Hamed Mohsenian. There is some overlapping ground and the report highlights areas for further work.

10:31 AM: problems with the screen but we will continue.

10:45 AM: Hamed finish the report

10:50 AM sharing report outline
At this time the task force feels that producing a guide may be an appropriate next step for the C subcommittee detailing application based requirements. A recommendation will be submitted to C after the next task force meeting in Portland.

Closing statements 11:11AM CT

Adjourned 11:11 AM CT

Next meeting: We would like a room for 20 if possible, with computer projector.

Attendees: a total of 18 including online.
Jeysson Gonzalez (remote)
Mike Meisinger
Shane Haveron (remote)
Matthew Reno
Hamed Mohsenian
Ellery Blood (Remote and local)
Farrokh Aminifar
Hamed Moshenian

Qun Qui
Ken Martin
Peiman Dadkhah
Michael Higginson

CTF56: IEEE 1547.7 Guide for Conducting Impact Studies for Distributed Energy Resource Integration
Chair: Sean Carr
Vice Chair: Craig Holt
Secretary: Open
Output: NA
Established Date: January 2025
Expected Completion Date: Dec 2027
Draft: NA
Assignment: Liaison between IEEE 1547.7 WG and PSRC

Presiding Officer: Sean Carr
Minutes Recorded by: Craig Holt

Agenda:

1. Introductions/Signup sheet
2. Call for patents
3. Review the assignment
4. Review potential sections for focus
5. Request volunteers for review
6. Discussion of next steps
7. Adjourn

Minutes:

- Meeting started on time at 10:40am (PST) and ended at 11:50am (PST)
- Discussed patent policy with no patent claims arising
- 22 in-person attendance with 7 online
- Most in room had access to IEEE 1547.7 – Michael H is looking into access for the group
- Sean to confirm with 1547.7 WG on access to their WG folder
- 1547.7 PAR expires in 4-years (2028), anticipated ballot will be 2027
- Action Item: group to review 1547.7 and 1547.2
    - Flag subsections for focus, especially for 1547.2
- What study triggers warrant action was already a point of concern
- Mike J may have an old guide for the group that describes the source stiffness test for 10%
- Issue to address, prevent requirements that cause need for periodic restudies
- Focus on practical input rather than academic studies
- Grounding study or transformer configuration and impacts to the study process should be considered
- Mark Siira and Addis Kifle will review previous versions
- March touchbase with the group for comments and input

Role	Name	Affiliation
Chair	Sean Carr	ComEd
Vice-Chair	Craig Holt	Sargent & Lundy
	Addis Kifle	GTC
	Qun Qiu	AEP
	April Underwood	Southern Company
	Mike Jensen	PG&E
	Duane Buchanan	HDR
	Adrian Zvarych	Qualus
	Daniel Ernstmann	EPRI
	Tom Key	EPRI
	Kevin Damron	Avista
	Mark Siira	Sunbelt Rental
	Michael Higginson	S&C
	Anthony Montoya	DOE
	Kevin Malpede	ComEd
	Mohammad Zadeh	ETAP
	Tu Nguyen	Entergy
	Stephen Miller	Energy Emissions Intelligence
	Raluca Lascu	DTE
	Steven Minh Vannuyen	Kiewit PD
	Muhammad Hamid	B&V
	Vitalina Gorbatyuk	Exelon
	Matt Reno	
	Raju Alla	
	Dean Miller	
	Harsh Vardhan	
	Philip Baker	
	Sebastien Billant	
	Shashidar Reddy	

“D” Subcommittee Report – Line Protection

Chair: Meyer Kao
Vice Chair: Alla Deronja

- The Subcommittee meeting met in person (Garden Grove, CA) and virtually (via WebEX) on

January 15, 2025, from 4:20 to 5:45 PM PST.

- Officer presiding – Meyer Kao
- Officer recording minutes – Alla Deronja
- The Subcommittee meeting was called to order by the Chair
- Introductions were made by the attendees
- The meeting was attended by 36 voting members and 40 guests. Quorum was met (36 out of 45).
- Minutes from the September 2024 meeting held in person were approved - motion made by Scott Hayes and seconded by Melvin Moncey Joseph.
- Meeting agenda was approved – motion made by Muhammad Hamid and seconded by Nuwan Perera.
- Welcome to four new subcommittee members: Galina Antonova, Muhammad Hamid, Jack Jester, and Abu Zahid.

The Chair reviewed items of interest from the Advisory Committee.

- WG Chairs: please send up to date minutes to Chair and VC by Friday, January 24, 2025
- In WG and Subcommittee meeting minutes, please include attendees, their affiliation, and their role (member or non-member)
- Advisory Committee items of interest:
  - Attendance (In-person and remote):
    - 223 for PSRC
      - 12 newcomers
    - 42 for PSCCC
  - Future Meetings (posted on the PSRC website)
    - May 2025 – Portland, OR
    - Sept 2025 – Richmond, VA
    - Jan 2026 (JCTM) – Atlanta, GA
    - May 2026 – Cleveland, OH
    - Sep 2026 – Reno, NV
  - MemberPlanet is coming soon:
    - Reminder for those who has not done so, to setup your profile. An individual will only have a single profile under PES, regardless of which committee under PES you are participating.
    - Link to setup your profile can be found on PSRC website, under Membership

IEEE Standards Documents - D Subcommittee

No.	Approval Date	Name
C37.113	2015	Guide for Protective Relay Applications to Transmission Lines
C37.114	2014	Guide for Determining Fault Location on AC Transmission and Distribution Lines
C37.243	2015	Guide for Application of Digital Line Current Differential Relays Using Digital Communication
C37.104	2022	Guide for Automatic Reclosing on AC Distribution and Transmission Lines
C37.230	2020	Guide for Protective Relay Applications to Distribution Lines

Working Group Reports

- WG meeting minutes
  - Assignment
  - Draft number
  - Writing assignments
  - Motions (with name)
  - Attendance records (name/affiliation)
- Meeting requests
  - Next meeting room requirements
  - Number sessions
  - Number participants
  - A/V requirements
  - Avoid conflicts with other WG meetings

Working groups gave reports on their activity.

D29: Tutorial for Setting Impedance-Based Power Swing Relaying on Transmission Lines
Chair: Kevin W. Jones
Vice Chair: Normann Fischer
Secretary: N/A
Output: Tutorial
Established Date: May, 2014
Expected Completion Date: September, 2026
Draft: 1.11
Assignment: Create a tutorial on setting impedance-based power swing blocking and out-of-step tripping functions related to transmission line applications. Specific relay settings examples will be provided. Other methods of detecting out-of-step conditions that exist will be summarized and referenced but will not be discussed in detail.

D29 met on Tuesday, January 14 at 8:00-9:10 am PST with 8-Voting Members, 3-Non-Voting Members and 18-Guests (29 total attendees).

Kevin reviewed the minutes from the September 2024 meeting. With no objections, these minutes were deemed accepted.

Next was a review the status of the draft document. Kevin stressed the need for reviews to be done and for examples to be provided.
Sections 1 and 2 are mostly clean.
Section 3 is also mostly clean, but there are still some outstanding comments.
Review and cleanup of sections 3 and 4 – volunteers to do this: Mike, Sandro and Aboutaleb. The due date is April 15, 2025.

Kevin is presently working on examples. He can supply his power swing calculation file to anyone who needs this to create an example.

Gene to provide a write-up analyzing whether in-service OST is needed or not.

Kevin thanked Gene for making the edits following the load requirement change in PRC-023.

Aboutaleb to make a presentation at the May 2025 meeting on the impact of increased IBR on PRC-026.

Anyone who wants the latest version (v11) can request this from Kevin.

With nothing further, Kevin adjourned the meeting.

Requirements for the next meeting:

A projector and a room for approximately 30 people. Avoid conflicts with B10, C29, C51, D30, D34, DTF52.

Attendance

Kevin Jones	Xcel Energy	Mike Kockott	Hitachi Energy
Andrew Nguyen	TVA	Qun Qiu	AEP
Gene Henneberg	NV Energy	Kevin Damron	Avista
William Loyd	Megger	Christopher Ness	Megger
Yazid Alkraimeen	Siemens	Abu Zahid	Hydro One
Sandro Aquiles Perez	Siemens	Aboutaleb Haddadi	EPRI
Vitalina Gorbatyuk	Exelon	Ted Warren	Southern Co
Joshua Hughes	Qualus	Andrew Kunze	MN Power
Kevin Malpede	ComEd	Fenghai Sui	Hydro One
Chase Lockhart	1898 & Co	Miguel Rios	Southern Co Services
Greg Hataway	Burns & McDonnell	Manish Patel	EPRI
Matchyaraju Alla		Kanchanrao Dase	SEL
Meyer Kao	Qualus	Ding Lin	Hydro One
Paras Patel	TRC	Juan Pineros	XM S.A.
Jun Verzosa	Doble Engineering		

D30: Tutorial on Application and Setting of Ground Distance Elements on Transmission Lines
Chair: Karl Zimmerman
Vice Chair: Ted Warren
Output: Tutorial
Expected Completion Date: Sept 2025
Draft 9.1
Working Group Assignment: Write a tutorial on factors affecting the application and setting of ground mho and quadrilateral distance elements on transmission lines

Working Group D30 met in person on **January 15th, 2025** in Garden Grove, CA from 10:40 to 11:50 AM with a total of 22 attendees, including 7 voting members (5 in-person and two virtual). Thus, a quorum was achieved.

The technical report went to a ballot of the Subcommittee on March 9, 2023. As of Monday, September 18, 2023, we had received 37 responses, 33 approved, 4 disapprove, 11 with comments. To follow PES procedures, the WG is reviewing and responding to all comments received.

All 334 comments have been addressed as of the January 15th meeting. Today's agenda included discussing the next steps and whether we needed to recirculate the revised guide to the subcommittee.
Since the meeting, we learned of one additional comment that had not been addressed. It will be addressed at next online meeting.

Ritwik Chowdhury gave the opinion that re-circulation was best to give all original comments an opportunity to review the revision.

Meyer Kao suggested that at minimum, the guide should be sent to those who disapproved during the 2023 ballot.

After more discussion, Ritwik made a motion that a clean copy of the final revision along with a redline comparison between the 2023 document shared for ballot and the final revision be shared with the D subcommittee. The proposal is to allow the subcommittee up until April 15, 2015 to provide further comment is they desire. Chris Walker offered a second to this motion and the voting members passed the motion.

Karl will endeavor to contact the four persons who disapproved in the original ballot to ask if the revisions satisfy them such that they might change their vote.

Karl and Ted will meet virtually within the last half of January to finalize the document and prepare the two documents to share with the subcommittee. These should be ready to share with the D subcommittee chair by the end of the month.

Meeting was adjourned.

Propose a single session for 30 attendees for May 2025 with computer projector. Please avoid conflict with D44, D47, K35 and K32.

20250115 Attendance, Working Group D30

Voting Members					
Sebastien	Billaut	Commonwealth Associates, Inc	VM	0	
Joerg	Blumschein	SIEMENS	VM	0	
Ritwik	Chowdhury	SEL	VM	1	online
Joshua	Lamb	Ameren	VM	1	
Van	Le	Western Area Power Administration	VM	0	
Ryan	McDaniel	SEL	VM	1	
Carolyn	Sun	SEL	VM	1	online
Christopher	Walker	Mesa Associates, Inc	VM	1	
Ted	Warren	Southern Company Services	Vice-Chair	1	
Zhiying	Zhang	General Electric Company	VM	0	
Karl	Zimmerman	Schweitzer Engineering Labs	Chair	1	
				7	
Other attendees					
Jesse	Kaiser	Ameren		1	
Jared	Kitme	P&E Engineering		1	
Joshua	Hughes	Qualus		1	
Kevin	Malpede	ComEd		1	
Jackie	Jester	Exelon		1	
Gary	Kobet	TVA		1	
Yazid	AlKraween	Siemens		1	

Kevin	Damron	Avista	1	
Robert	James	PG&E	1	
Andy	Kunze	MN Power	1	
Fenghu	Sui	Hydro One	1	
Seth	Barnes	TVA	1	
Tim	Condra	TVA	1	
Scott	Munnings	Power Engineers Collaborative	1	
Philip A	Baker	Duke Energy	1	online
Kanchan	Dase	SEL	1	online
			22	

D34: Coordinate with IEC 60255-187-3 (functional specification for line current differential requirements) and provide feedback)

Did not meet.

D35: Evaluation of Transmission Line Pilot Protection Schemes

Did not meet. The report is ready to be sent to the PSRC officers for review.

D37: Report on Impact of Series Compensation on Transmission Line Protection
Chair: Mike Kockott
Vice Chair: Nuwan Perera
Secretary: Melvin Moncey Joseph
Output: Report
Draft: 1.14
Assignment: Write a report on Impact of Series Compensation on Transmission Line Protection.

First Name	Last Name	Affiliation	Role
Mike	Kockott	Hitachi Energy	Chair
Nuwan	Perera	Power Engineers	Vice-Chair
Melvin	Moncey Joseph	Burns & McDonnell	Secretary
Tapan	Manna	Burns & McDonnell	Member
Abu	Bapary	AEP	Member
Dean	Miller	POI Engineering	Member
Kevin	Ridley	TRC	Guest
Fenghai	Sui	Hydro One	Guest
Sandro	Aquiles-Perez	Siemens Industry	Guest

D37 met on January 16th 2:20pm PT with 9 people in attendance.

The chair said the report is almost ready.

The secretary will send latest draft to everyone on the email list next week with a deadline of end of March.

For the next meeting, we request a room for 15 people, single session, with a computer projector. Please avoid conflicts with B5, C29, C41, C48, C52, D29, D42, D47, J18, I49, B3 and if possible, also D30, D38, J19

D38: Impact of High SIR on Line Relaying

Chair: Chris Walker
Vice Chair: Greg Ryan
Secretary: Greg Ryan
Output: Technical Report
Established Date: January 2018
Expected Completion Date: January 2025
Draft: 2.0
Assignment: Prepare a technical report to the line protection subcommittee to evaluate the impact of high SIR on line protection.

Presiding Officer: Chris Walker
Minutes Recorded by: Greg Ryan

Agenda:

8. Introductions/Sign up sheet/roster
9. Review Working Group Membership and Membership Process
10. Approve previous meeting minutes: first – Muhammad Hamid second – Josh Lamb
11. Discuss status and progress of report
12. Comment Resolution
13. Discussion of next steps
14. Adjourn

Minutes:

- Opened with introductions and reviewed working group membership. Since we have voted the membership is now closed.
- We approved the minutes from September as noted above.
- Report has been sent our for approval to the working group. We have 25 responses with 24 approved/approved with comments and 1 disapproved with comments. We will work to resolve comments and get 80% approval.
- 340 comments with the majority being editorial and obvious technical comments. Chris has scrubbed the report for those and has a smaller group of comments to bring to the working group to resolve.
- Steve Klecker updated during the meeting that his vote is approved.
- Chris walked through the comments with the working group. We discussed comments and worked on resolutions.

- All comments will be addressed and the revised report sent to the working group. We plan to resolve the report comments and send to the D Sub Committee prior to the May meeting.
- The working group discussed that the report focuses on Zone 1 overreach but we don't discuss much about Zone 2 underreach. Robert James is taking an action item to add a statement probably to the take aways section about this issue and will send it out to the working group to review.

We request a meeting space for 40 with a projector in May. Please avoid conflicts with D42, D43, D53 and KTF36.

Meeting Adjourned: 17 Members and 12 Guests for 29 Total in attendance

Role	Last Name	First Name	Affiliation
Chair (Voting)	Walker	Christopher	Mesa Associates, Inc
Vice-Chair (Voting)	Ryan	Gregory	Ameren
Voting Member	Bapary	Abu	American Electric Power (AEP)
Voting Member	Barsch	Jeffrey	American Electric Power
Voting Member	Hamid	Muhammad	Black & Veatch
Voting Member	James	Robert	Pacific Gas & Electric Co.
Voting Member	Jester	Jack	Delmarva Power- Exelon
Voting Member	Klecker	Steve	MidAmerican Energy
Voting Member	Lamb	Joshua	Ameren
Voting Member	Lewey	Brandon	Ameren
Voting Member	Mackie	Bruce	Nashville Electric Service
Voting Member	McDaniel	Ryan	SEL
Voting Member	Pineros	Juan	XM S.A. Colombia Power System Operator
Voting Member	Raffield	Taylor	Duke Energy
Voting Member	Warren	James	Southern Company Services
Voting Member	Zahid	Abu	Hydro One Network Inc.
Non-Voting Member	Sufana	Charles	Retired
Guest	Hughes	Joshua	Patterson Power Engineers, LLC
Guest	Miller	Dean	POI Engineering
Guest	Verzosa	Quintin	Doble Engineering
Guest	Condra	Tim	TVA
Guest	Barnes	Seth	TVA
Guest	Andy	Kunze	
Guest	Quinteros	Milton	Entergy
Guest	Nguyen	TJ	Entergy
Guest	Patta	Cardreo	Aybara
Guest	Harris	Paul	Pacificorp
Guest	Sui	Fenghai	Hydro One Network Inc.
Guest	Elkin	Paul	Epro Engineering

D42: Revise IEEE Std C37.113-2015, IEEE Guide for Protective Relay Applications to Transmission Lines

Minutes for the 01/15/2025 meeting from 9:20 AM – 10:30 AM PST
Chair: Jeffrey Barsch
Vice Chair: Rick Gamble
Secretary: Josh Lamb
Output: Guide
Established Date: 5/5/2020
Expected Completion Date: 2025
Draft: 4.0
Assignment: Revise IEEE Std C37.113-2015, IEEE Guide for Protective Relay Applications to Transmission Lines

l) Officers presiding – Jeff Barsch, Rick Gamble, and Josh Lamb
m) Officer recording minutes – Josh Lamb
n) Call to order – Jeff Barsch
o) Agenda presented
p) Chair's remarks – Copyright and patent slides discussed. No issues identified.
q) Results of call for quorum – Quorum achieved. 21 WG of 30 Voting members participated.
r) Brief summary of discussions and conclusions including any motions.
    a. Minutes presented for approval: Steve Conrad – 1st Motion, Ala Deronja – 2nd Motion, Approved by working group.
    b. Agenda presented for approval: Muhammad Hamid 1st Motion, Chris Walker 2nd Motions, Approved by working group.
    c. Motion to Adjourn by Kamal Garg, seconded by Sebastian Billaut, motion carried.
    d. Discussed PAR Extension and Ballot results:
        i. 108 Ballot Group Members
        ii. 76% returned ballots: (needed 75%)
            1. 79 votes to approve
            2. 4 abstentions
            3. 0 to disapprove
            4. 25 balloters did not vote
        iii. 100% approval rate
        iv. 157 comments
    e. Addressed comments on Figure 29, Figure 8, Figure 62 and 63, Figure 40, (Charlie Sufana to update figures)
s) Recesses and time of final adjournment: Adjourned by Jeff Barsch at 10:30 am Pacific Standard Time.
    a. Next in person meeting will be at the IEEE-PSRC meeting in Portland, OR on May 12-15, 2025.
    b. Group will hold meetings Thursdays 11:00 to 12:30 Eastern Time Starting January 30th to address comments until completed then we will recirculate. Josh Lamb to send out a Microsoft Teams link to meet.
    c. Request room for 40 attendees with a computer projector.
    d. Please avoid meeting conflicts with D30, D35, D38, K25, and K27.

Attendees:

First Name	Last Name	Role	Company
Jeffrey	Barsch	Chair	American Electric Power
Joshua	Lamb	Secretary	Ameren

Richard	Gamble	Vice-Chair	TVA
Abu	Bapary	Voting Member	American Electric Power (AEP)
Joerg	Blumschein	Voting Member	SIEMENS
Ritwik	Chowdhury	Voting Member	SEL
Stephen	Conrad	Voting Member	Public Service Co of NM - Retired
Alla	Deronja	Voting Member	American Transmission Company
Kamal	Garg	Voting Member	Schweitzer Engineering Laboratories, Inc.
Muhammad	Hamid	Voting Member	Black & Veatch
Meyer	Kao	Voting Member	Patterson Power Engineers
Michael	Kockott	Voting Member	Hitachi ABB Power Grids
Andy	Kunze	Voting Member	Minnesota Power
Brandon	Lewey	Voting Member	Ameren
Bruce	Mackie	Voting Member	Nashville Electric Service
Ryan	McDaniel	Voting Member	SEL
Hugo Alexis	Mezco Moncey	Voting Member	Mezco LLC
Melvin	Joseph	Voting Member	Burns and McDonnell Engineering Co
James	O'Brien	Voting Member	Duke Energy
Qun	Qiu	Voting Member	AEP
Charles	Sufana	Voting Member	Retired
Ian	Tualla	Voting Member	Duke Energy
Christopher	Walker	Voting Member	Mesa Associates, Inc
James	Warren	Voting Member	Southern Company Services
Abu	Zahid	Voting Member	Hydro One Network Inc.
Tony	Bell	Non Voting Member	Ametek
Robert	James	Non Voting Member	Pacific Gas & Electric Co.
Steve	Klecker	Non Voting Member	MidAmerican Energy
Claire	Patti	Non Voting Member	Portland General Electric
Juan	Pineros	Non Voting Member	XM S.A. Colombia Power System Operator
Taylor	Raffield	Non Voting Member	Duke Energy
Philip	Baker	Guest	Duke Energy
Koustubh	Banerielf	Guest	Eversource Energy
Seth	Barnes	Guest	TVA
Tim	Condra	Guest	TVA
Jack	Jester	Guest	Excelon
Jared	Kline	Guest	P & E Engineering Co.
Ding	Lin	Guest	Manitoba Hydro
Dean	Miller	Guest	
Michael	Thompson	Guest	SEL Engineering Services, Inc.
Malia	Zaman	Guest	IEEE
Karl	Zimmerman	Guest	
Jordan	Bell	Guest	SEL
Scott	Cooper	Guest	Omicron
Andrew	Nguyen	Guest	TVA

Scott	Hayes	Guest	PG&E
Joshua	Hughes	Guest	Qualus
Sam	Hogue	Guest	GE Vernova
Fenghai	Sui	Guest	Hydro One

D43: Update PSRC Report, Effect of Distribution Automation on Protective Relaying
Chair: Greg Ryan
Vice Chair: Amin Zamani
Secretary: Joshua Hughes
Output: Technical Report
Established Date: January 2021
Expected Completion Date: May 2025 (updated)
Draft: 2.5

Assignment: Update the technical report "Effect of Distribution Automation on Protective Relaying".

Scope: Update the technical report "Effect of Distribution Automation on Protective Relaying" to add/increase discussion on DER integration, volt/var control, reconfiguration and the current complications of adaptation, addition of line sensors, peer-to-peer protocols, distance protection on distribution, telecommunications, DTT for DERs, discussion on IBR (Inverter Based Resources), and Microgrids. The working group will update the existing report and determine if it is advisable to recommend that the subcommittee form a working group to use this report to create an IEEE Guide.

Working Group D43 met in person on Jan. 15, 2025, at 08:00-09:10 AM PST. There were 14 attendees.

Meeting Agenda

15. Introductions
16. Review Working Group Membership
17. Discuss the status of the report and voting plan
18. Discussion of next steps
19. Adjourn

Summary of Meeting Discussion

- The meeting started with introductions (12 people attended in person and 2 people remotely). 4 voting members (out of 9) were present in the meeting.
- The Chair presented the current state of the report.
- The remaining comments on the draft were addressed, and the team decided not to add any new content to the report, as it has already undergone sub-committee review.
- Chair and Vice-chair will work with Sub-committed to refine and finalize the report.
- The WG will meet one more time in May to officially close the assignment.
- The meeting was adjourned at 08:17 AM PST.

For the next meeting, we request a room for 20 people with a projector. Please avoid conflicts with D38, D53, C45, and C50.

Attendees:

1) Greg Ryan Ameren Voting Member
2) Amin Zamani (Online) Quanta Technology Voting Member
3) Joshua Hughes Qualus Voting Member
4) Dan Nordell (Online) Xcel Non-Voting Member
5) Lou Garavaglia G&W Electric Guest
6) Kamal Garg SEL Guest
7) Jim Niemira S&C Guest
8) Adrian Zvarych Qualus Guest
9) Greg Hataway Burns & McDonnel Guest
10) Brittany Wagner Delaware Elec Coop Guest
11) Jagamnath Wijekoon RTDS Guest
12) Seth Nelson Basler Guest
13) Fredy Bravo Duke Energy Guest
14) Juan Gers GERS USA Voting Member

Membership List:

Role	Name
Chair (Voting)	Greg Ryan
Vice-Chair (Voting)	Amin Zamani
Secretary (Voting)	Joshua Hughes
Voting Member	Bruce Mackie
Voting Member	Colleen Konsavage
Voting Member	Don Lukach
Voting Member	Juan Gers
Voting Member	Muhammad Hamid
Voting Member	Nuwan Perera
Non-voting Member	Adi Mulawarman
Non-voting Member	Dan Nordell
Non-voting Member	Deepak Maragal
Non-voting Member	Jackie Wilson
Non-voting Member	Matthew Black
Non-voting Member	Olufemi Oyebanjo
Non-voting Member	Prasad Shrawane
Non-voting Member	Swagata Das

D44: IEEE Guide for Determining Fault Location on AC Transmission and Distribution Lines
Chair: Sebastien Billaut
Vice Chair: Karl Zimmerman
Secretary: Looja Tuladhar
Output: Guide
Established Date: January 2020 PAR ends 12/2026
Expected Completion Date: December 2025

Draft: 3.3 draft with Ballot resolution edits for review of the working group members to approve recirculation.
Assignment: Revise IEEE Std C37.114-2014, IEEE Guide for Determining Fault Location on AC Transmission and Distribution Lines

Working group D44 met on January 15, 2025, at 8:00 AM, with **12** attendees in person and an additional 10 attendees online**.**

6 voting members were present out of **10** current voting members, so **the quorum was met.**

Voting members as of January 2025:

First Name	Last Name	Role
Sebastien	Billaut	Chair
Karl	Zimmerman	Vice-Chair
Looja	Tuladhar	Secretary
Daniel	Sabin	Voting Member
Brian	Boysen	Voting Member
Joerg	Blumschein	Voting Member
Muhammad	Hamid	Voting Member
Robert	James	Voting Member
Swagata	Das	Voting Member
Theo	Laughner	Voting Member

Vice-Chair Karl Zimmerman called the meeting to order, showed the agenda and the IEEE copyright guidelines slide for IEEE working group meetings, and recorded minutes.

The WG approved the minutes from the previous six meetings: January 2023, May 2023, September 2023, January 2024, May 2024, and September 2024. Brian Boysen made the motion to approve these minutes, Robert James seconded, and the WG approved. There was no discussion, and no one opposed.

WG Chair Sebastien Billaut presented and described the ballot resolution to Section 6, notably the sections changing "three-terminal" to "multi-terminal" lines, and described the equation for paralleled cable circuits.

The group discussed and approved the changes. The Chair also provided an update on the progress of the ballot resolution comments. In short, all known comments have been addressed.
Per the Chair, the WG has access to iMeet to view the latest draft and changes. WG members are asked to review and provide any feedback by March 1st, 2025.

For the upcoming May 2025 meeting, a projector and room for 30 attendees will be needed. Avoid conflict with C45, D29, D42, K29, K33, and K35.

Meeting Attendees:

	First Name	Last Name	Affiliation	Role
1	Sebastien	Billaut	Arcadis	Chair
2	Karl	Zimmerman	Ameren	Vice-Chair
3	Brian	Boysen	WEC Energy	Voting Member

4	Joerg	Blumschein	Siemens	Voting Member
5	Robert	James	PG&E	Voting Member
6	Bruce	Mackie	Nashville Electric Service	Guest
7	Dan	Nordell		Guest
8	Meyer	Kao	Patterson Power Engineers/Qualus	Guest
9	Ritwik	Chowdhury	SEL	Guest
10	Peiman	Dadkhah	NuGrid Power Corp	Guest
11	Claire	Patti	Portland General Electric	Guest
12	Koustubh	Banerjee	Eversource Energy	Guest
13	Ron	Pate	G&W Electric	Guest
14	Raluca	Lascu	DTE	Guest
15	Sandro	Aquiles-Perez	Siemens	Guest
16	Frank	Lee	Southern Corporation	Guest
17	Lee	Gustafson	MN Power	Guest
18	Steve	Klecker	MidAmerican Energy	Guest
19	Fernando	Calero	SEL	Guest
20	Jinlei	Xing	Schneider	Guest
21	Joe	Xavier	ABB	Guest
22	Kanchan	Kanchan, SEL	SEL	Guest

D45: Prepare a technical report to the line protection subcommittee to "document protection methods used to reduce wildfire risks due to transmission and distribution lines"

Chair: Jonathan Sykes
Vice Chair: Scott Hayes
Secretary: N/A
Output: Technical Paper
Established Date: September 2020 (1st task force meeting)
Expected Completion Date: May 2025
Draft: Draft 9 (with edits), comments received
Assignment: Prepare a technical report to the line protection subcommittee to "document protection methods used to reduce wildfire risks due to transmission and distribution lines."

D45 WG met on 01/14/25 at 2:20pm (California USA Time)
Members = will be adjusted based on attendance and participation
Attendance = 63 people, 42 in room, 14 members, 49 Guests; Quorum Established (13 of 17)

Jonathan opened the meeting with the following:
• Introductions, a discussion about Patent infringement (slides provided from leadership), the agenda, reviewed the minutes from the last WG, Jan 2024 (minutes approved)
  o Went through the voting and comments received on Draft 8.
    - 14 of 17 voting members approved (no negative votes) , 11 additional positive votes
    - 287 Comments, 199 comments absorbed in the document, 51 comments to be reviewed.
  o Introduced Draft 9 that included all comments received as of 01/12/25. Went through the document and discussed various areas that received numerous comments and discussions over the past meetings.

o Discussed comments and voting received in the past couple of days and went through next steps and Subcommittee D voting.
o Comments over the last few days will be incorporated into the Draft 9 over the next few weeks.
o Introduced Draft 9 and initiated a discussion about various comments and section (described below).

For the next meeting, D45 will need a room for 40 and a computer projector.

Attendance

Membership/Roster	S4	J5	M4	status
1. Jonathan Sykes Chair	x	x	x	m
2. Scott Hayes Vice Chair	x	x	x	m
3. Galina Antonova		x	x	m
4. Hugh Borland	x			m
5. Ritwik Chowdhury		x	x	m
6. Normann Fischer				nvm
7. Matt Garver	x	x	x	m
8. Wayne Hartmann			x	nvm
9. Daqing Hou	x	x		m
10. Robbie James	x	x	x	m
11. Bruce Mackie	x	x	x	m
12. Deepak Maragal		x	x	m
13. Boris Marendic				nvm
14. Tony Marxsen				nvm
15. Nirmal Nair	x	x		m
16. Russ Patterson			x	m
17. Henry Quin				m
18. Dan Ransom	x	x		m
19. Matthew Reno		x	x	m
20. Douglas Taylor	x			nvm
21. Eric Udren				m
22. Ari Wahlroos				nvm
23. Joe Xavier		x		nvm
24. Yujie Yin				nvm
25. Amin Zamani		x	x	m

	1/14/25	5/14/24	9/10/24
Members(m)	17	17	17
Non-Voting Members (nvm)	8	8	8
Moved to guests	0	3	0

Guests 9/10/24	Guests 1/14/25
Micah Fitzgerald	Jinlei Xing
Kevin Damon	Rannveig Lokan
Andrew Nguyen	Steve Turner
Souvik Chandra	Kevin Damon
Tapas Barik	Jesse Rorabaugh
Richard Tuck	Fredy Bravo
Jordan Bell	Andrew Swisher
Charles Sulfana	Steven Blair
Farnoosh Rahmation	Will English
Alexis Mezco	Craig Holt
Craig Holt	Paul Harris
Steve Par	Michael Reynu
Paul Harris	Nplanil Jagirdor
Jacob Loyd	Jordan Bell
Steve Turner	Jeff Wischkaemper
Zach Zaitz	Pratap Mysore
Brian Boysen	Jarvis Kenerson
Aaron Martin	Greg Hataway
Edguardo Carpen	Craig Wester
Jeff Barsch	Kamron Tangney
Mohit Sharma	Joe Grappe
Dolly Villasmil	John Hofman
Swagata Das	Wendy Al-Mukdad
Lou Garavaglia	Candice Patton
Nicholas Kramer	Jared Kline
Luke Hoffman	Karl Zimmerman
	Lou Garavaglia
	Charles Sufana
	Kevin Garrity
	Aaron Martin
	Tom Key
	Sam Hogue
	Jacob Loyd
	Farnoosh Rahmation
	Christopher Ness
	Philip Baker
	Bill Cook
	David Caverly
	Hani E Al-Youse
	Hasnain Ashrafi
	Juan Pineros
	Kanchan Dase
	Mukesh Nagpal
	Sajal Harmukh
	Souvik Chandra
	Dan Nordell
	Genariel Hernandez
	Migel Rios
	Patrick Chavez

D47: Revision of C37.243 IEEE Guide for Application of Digital Line Current Differential Relays Using Digital Communication

Motion: Alla Deronja from the WG D47 motions to submit Draft 10.0 of PC37.243, "IEEE Guide for Application of Line Current Differential Protection Using Digital Communications" to IEEE-SA for Sponsor ballot.
2nd: Melvin Moncey Joseph
The motion passed unanimously.

Chair: Alla Deronja
Vice-chair: Steve Klecker
Secretary: Galina Antonova
Established: January 2021
Output: Guide
Draft: 9.4
Expected Completion Date: December 2025
Assignment: To revise the C37.243 IEEE Guide for Application of Digital Line Current Differential Relays Using Digital Communication

This work is a joint project between the PSRC leading and PSCCC supporting it.

The WG D47 met with 16 voting members, 3 non-voting members, and 14 guests on Tuesday, January 14, 2025, at the JTCM January 2025 meeting.

After the introductions, the WG chair displayed the IEEE-SA Copyright, Patent, and Behavior policy slides as required for the working groups with PAR related activities. There were no issues or objections from the meeting participants.

The meeting agenda was approved. Motion: Chris Walker, 2nd: Joerg Blumschein.

The quorum was met, and the WG approved the PSRC Sep 2024, and Sep 23, Sep 30, Oct 7, Nov 25, Dec 3, and Dec 10 webex meeting minutes. Motion: Jim O'Brien, 2nd: Ian Tualla.

The guide draft was internally recirculated within the WG last November after all the comments from the original WG internal ballot were resolved. Most of the additional comments were received in reference to the new communication clause and are 95% resolved.

A request to go to the IEEE SA sponsor ballot will be made at the January 15 Line Protection Subcommittee D meeting.

The WG proceeded to address some technical topics that arose from the internal recirculation comment resolution webex meetings.

- Addressing/Line Terminal Identification (sub-clause 7.3.4)

  This sub-clause was revised. A question was raised relative to the original material that introduced the historical perspective of the issue and included mentioning legacy e/m schemes with pilot wire communications. This material may be out of scope and was proposed to be removed. At the same time, it was included in the original version, so the WG agreed to retain it for the upcoming IEEE SA sponsor ballot.

- Existing standards used for interoperability (sub-clause 7.4.2)

  A question was raised whether synchrophasors can be used for line current differential protection. One participant indicated that they could be used for classical current differential, but not in the

fast (sub-cycle) applications. Some members proposed to keep this material while other were inclined for it to be removed because of no known existing or proposed applications.

Ken Fodero made a motion to keep the related material in the document submitted for the upcoming IEEE SA ballot. Ian Tualla seconded the motion. 2 voting members supported the motion while 6 opposed. The motion failed. This material will be removed from the guide before it is submitted for the IEEE SA sponsor ballot.

- IEC 61850 substation-to-substation communications (7.4.4)
  Figure 38 will be revised.

- Figures 16 – 20 (7.2.6)
  These figures show optional field(s) shaded. Will add a note to each figure: “Shaded field(s) are optional”.

Webex meetings are tentatively planned for early April to start resolving the sponsor ballot comments.

Next face-to-face meeting is at the May PSRC meeting in Portland, OR. We request a room for 40 people with a computer projector. Please avoid conflicts with C48, K31, D42, C52, I2, and D52.

Meeting Attendees

Role	First Name	Last Name	Affiliation
Guest	Ali	Alvi	Quanta Technology
Guest	Kanchan	Dase	SEL
Guest	Jada	Hawaz	SEL
Guest	Sam	Hogue	GE Vernova
Guest	Erin	Jessup	SEL
Guest	Andy	Kunze	MN Power
Guest	Aaron	Martin	BPA
Guest	Christopher	Ness	Megger
Guest	Andrew	Nguen	TVA
Guest	Priya	Raghuraman	Siemens
Guest	Mohit	Sharma	SEL
Guest	April	Underwood	Southern Company
Guest	Andrew	Volk	HDR
Guest	Joe	Xavier	ABB
Non-Voting Member	Chikashi	Komatsu	Hitachi, Ltd
Non-Voting Member	Kevin	Malpede	ComEd
Non-Voting Member	Karl	Zimmerman	Ameren
Voting Member	Abu	Bapary	American Electric Power (AEP)
Voting Member	Joerg	Blumschein	SIEMENS
Voting Member	Ken	Fodero	Schweitzer Engineering Laboratories, Inc.
Voting Member	Daqing	Hou	Schweitzer Engineering Labs.
Voting Member	Michael	Kockott	Hitachi ABB Power Grids

Voting Member	Bruce	Mackie	Northern Arizona University
Voting Member	James	O'Brien	Duke Energy
Voting Member	Arun	Shrestha	Schweitzer Engineering Laboratories, Inc.
Voting Member	Tuan Anh	Tran	TVA
Voting Member	Ian	Tualla	Duke Energy
Voting Member	Christopher	Walker	Mesa Associates, Inc
Voting Member	Donald	Ware	Qualus
Voting Member	Abu	Zahid	Hydro One Network Inc.
Voting Member/Chair	Alla	Deronja	ATC
Voting Member/I2 Liaison	Matthew	Black	Sargent & Lundy
Voting Member/Secretary	Galina	Antonova	Hitachi ABB Powergrids

Old Business

D47: <u>Revision of C37.243 IEEE Guide for Application of Digital Line Current Differential Relays Using Digital Communication</u>
Chair: Alla Deronja
Vice-chair: Steve Klecker
Secretary: Galina Antonova
Established: January 2021
Output: Guide
Draft: 9.3
Expected Completion Date: December 2025
Assignment: To revise the C37.243 IEEE Guide for Application of Digital Line Current Differential Relays Using Digital Communication

This work is a joint project between the PSRC leading and PSCCC supporting it.

The WG D47 met with 7 voting and 1 non-voting members on Tuesday, December 10, 2024, in webex meeting #23 to continue addressing the comments received from the WG members from the internal WG ballot recirculation of guide revision draft 9.0. The ballot recirculation was conducted Nov. 4 – Nov. 15, 2024.

The WG chair sent the IEEE-SA Copyright, Patent, and Behavior policy slides as required for the working group with PAR related activities before the meeting for the WG members' review.

At this Webex, the WG worked to resolve the comments for 7.4 Interoperability.

The WG will meet in one more webex to resolve the rest of the comments. Next webex meeting is tentatively scheduled for December 17, 2024.

Meeting attendance

Role	First Name	Last Name	Affiliation
Non-Voting Member	Chikashi	Komatsu	Hitachi, Ltd
Voting Member	James	O'Brien	Duke Energy

Voting Member	Qun	Qiu	AEP
Voting Member	Taylor	Raffield	Duke Energy
Voting Member	Thomas	Rudolph	Schneider Electric GmbH
Voting Member	Austin	Wade	SEL
Voting Member/Chair	Alla	Deronja	ATC
Voting Member/Secretary	Galina	Antonova	Hitachi ABB Powergrids

D47: Revision of C37.243 IEEE Guide for Application of Digital Line Current Differential Relays Using Digital Communication
Chair: Alla Deronja
Vice-chair: Steve Klecker
Secretary: Galina Antonova
Established: January 2021
Output: Guide
Draft: 9.2
Expected Completion Date: December 2025
Assignment: To revise the C37.243 IEEE Guide for Application of Digital Line Current Differential Relays Using Digital Communication

This work is a joint project between the PSRC leading and PSCCC supporting it.

The WG D47 met with 8 voting members on Tuesday, December 3, 2024, in webex meeting #22 to address the comments received from the WG members from the internal WG ballot recirculation of guide revision draft 9.0. The ballot recirculation was conducted Nov. 4 – Nov. 15, 2024.

The WG chair sent the IEEE-SA Copyright, Patent, and Behavior policy slides as required for the working group with PAR related activities before the meeting for the WG members' review.

About 160 additional comments were received. They were addressed by the WG chair, and, at this Webex, the WG worked to resolve the ones that required the WG attention.

One of the comments was about a need to use consistent terminology for communication paths: redundant, secondary, or backup? Guide analysis showed that it uses "secondary" for relay ports; "redundant" for communication channels (that can have primary and backup paths); and "backup" for communication paths. The WG agreed to replace "secondary" to "backup" for the relay ports (just a couple of instances) and leave the rest of this terminology as is.

The WG will meet in additional webexes to resolve the rest of the comments as a sub-team although the meeting invitations will be extended to the whole group. Next webex meeting is tentatively scheduled for December 10, 2024.

Meeting attendance

Role	First Name	Last Name	Affiliation
Voting Member	Fred	Agyekum	Schweitzer Engineering Laboratories
Voting Member	Abu	Bapary	American Electric Power (AEP)

Voting Member	Melvin	Moncey Joseph	Burns & McDonnell
Voting Member	Ian	Tualla	Duke Energy
Voting Member	Donald	Ware	Qualus
Voting Member/Chair	Alla	Deronja	ATC
Voting Member/Secretary	Galina	Antonova	Hitachi ABB Powergrids
Voting Member/Vice-Chair	Steve	Klecker	Unaffiliated

D47: Revision of C37.243 IEEE Guide for Application of Digital Line Current Differential Relays Using Digital Communication
Chair: Alla Deronja
Vice-chair: Steve Klecker
Secretary: Galina Antonova
Established: January 2021
Output: Guide
Draft: 9.1
Expected Completion Date: December 2025
Assignment: To revise the C37.243 IEEE Guide for Application of Digital Line Current Differential Relays Using Digital Communication

This work is a joint project between the PSRC leading and PSCCC supporting it.

The WG D47 met with 7 voting members and 1 non-voting member on Monday, November 25, 2024, in webex meeting #21 to address the comments received from the WG members from the internal WG ballot recirculation of guide revision draft 9.0. The ballot recirculation was conducted Nov. 4 – Nov. 15, 2024.

The WG chair sent the IEEE-SA Copyright, Patent, and Behavior policy slides as required for the working group with PAR related activities before the meeting for the WG members' review.

At this Webex, the WG addressed all comments received to date.

The WG may meet as more comments may be received and if there are issues requiring the WG attention. Next webex meeting scheduled for December 3, 2024.

Meeting attendance

Role	First Name	Last Name	Affiliation
Voting Member	Abu	Bapary	American Electric Power (AEP)
Voting Member	Joerg	Blumschein	SIEMENS
Voting Member/Chair	Alla	Deronja	ATC
Voting Member	Gayle	Nelms	Schweitzer Engineering Laboratories, Inc.
Voting Member	Qun	Qiu	AEP
Voting Member	Thomas	Rudolph	Schneider Electric GmbH
Non-Voting Member	Neil	Saia	Entergy
Voting Member	Arun	Shrestha	Schweitzer Engineering Laboratories, Inc.

D47: Revision of C37.243 IEEE Guide for Application of Digital Line Current Differential Relays Using Digital Communication

Chair: Alla Deronja
Vice-chair: Steve Klecker
Secretary: Galina Antonova
Established: January 2021
Output: Guide
Draft: 8.21
Expected Completion Date: December 2025
Assignment: To revise the C37.243 IEEE Guide for Application of Digital Line Current Differential Relays Using Digital Communication

This work is a joint project between the PSRC leading and PSCCC supporting it.

The WG D47 met with 9 voting members and 0 non-voting member on Monday, October 7, 2024, in webex meeting #20 to continue resolving the comments received from the WG members in the result of the internal WG ballot of guide revision draft 8.0.

The WG chair sent the IEEE-SA Copyright, Patent, and Behavior policy slides as required for the working group with PAR related activities before the meeting for the WG members' review.

At this Webex, the WG generally completed reviewing comments for all Clauses. To speed up the process, the chair addressed numerous editorial comments on the side, bringing up to the WG only those that require the WG attention. The comment resolutions are recorded in the comment resolution spreadsheet.

A few action items remain for Clause 7 Communication channels, and they will be resolved by a WG sub-team consisting of the WG officers and Fred Agyekum.

The internal WG ballot recirculation will then be conducted.

The WG does not plan to meet unless there are issues requiring the WG attention. Next webex meeting scheduled for October 14, 2024, will likely be cancelled.

Meeting attendance

Role	First Name	Last Name	Affiliation
Voting Member	Abu	Bapary	American Electric Power (AEP)
Voting Member	Chris	Huntley	Schweitzer Engineering Laboratories, Inc.
Voting Member	Melvin	Moncey Joseph	Burns & McDonnell
Voting Member	Gayle	Nelms	Schweitzer Engineering Laboratories, Inc.
Voting Member	James	O'Brien	Duke Energy
Voting Member	Thomas	Rudolph	Schneider Electric GmbH
Voting Member	Ian	Tualla	Duke Energy
Voting Member/Chair	Alla	Deronja	ATC
Voting Member/Secretary	Galina	Antonova	Hitachi ABB Powergrids

D47: Revision of C37.243 IEEE Guide for Application of Digital Line Current Differential Relays Using Digital Communication
Chair: Alla Deronja
Vice-chair: Steve Klecker
Secretary: Galina Antonova
Established: January 2021
Output: Guide
Draft: 8.20
Expected Completion Date: December 2025
Assignment: To revise the C37.243 IEEE Guide for Application of Digital Line Current Differential Relays Using Digital Communication

This work is a joint project between the PSRC leading and PSCCC supporting it.

The WG D47 met with 6 voting members and 1 non-voting member on Monday, September 30, 2024, in webex meeting #19 to continue resolving the comments received from the WG members in the result of the internal WG ballot of guide revision draft 8.0.

The WG chair sent the IEEE-SA Copyright, Patent, and Behavior policy slides as required for the working group with PAR related activities before the meeting for the WG members' review.

At this Webex, the WG continued reviewing comments for Clause 8 *Application Considerations*. To speed up the process, the chair is addressing numerous editorial comments on the side, bringing up only those that require the WG attention. The comment resolutions are recorded in the comment resolution spreadsheet.

Next webex meeting (#20) is scheduled for October 7, 2024.

Meeting attendance

Role	First Name	Last Name	Affiliation
Non-Voting Member	Neil	Saia	Entergy
Voting Member	Abu	Bapary	American Electric Power (AEP)
Voting Member	Joerg	Blumschein	SIEMENS
Voting Member	James	O'Brien	Duke Energy
Voting Member	Melvin	Monsey Joseph	Burns & McDonnell
Voting Member	Gayle	Nelms	Schweitzer Engineering Laboratories, Inc.
Voting Member/Chair	Alla	Deronja	ATC

D47: Revision of C37.243 IEEE Guide for Application of Digital Line Current Differential Relays Using Digital Communication
Chair: Alla Deronja
Vice-chair: Steve Klecker
Secretary: Galina Antonova
Established: January 2021
Output: Guide
Draft: 8.19
Expected Completion Date: December 2025

Assignment: To revise the C37.243 IEEE Guide for Application of Digital Line Current Differential Relays Using Digital Communication

This work is a joint project between the PSRC leading and PSCCC supporting it.

The WG D47 met with 7 voting members and 1 non-voting member on Monday, September 23, 2024, in webex meeting #18 to continue resolving the comments received from the WG members in the result of the internal WG ballot of guide revision draft 8.0.

The WG chair sent the IEEE-SA Copyright, Patent, and Behavior policy slides as required for the working group with PAR related activities before the meeting for the WG members' review.

At this Webex, the WG continued reviewing comments for Clause 8 *Application Considerations* started at the September 3, 2024, webex. To speed up the process, the chair started addressing numerous editorial comments on the side, bringing up only those that require the WG attention. The comment resolutions are recorded in the comment resolution spreadsheet.

Next webex meeting (#19) is scheduled for September 30, 2024.

Meeting attendance

Role	First Name	Last Name	Affiliation
Non-Voting Member	Kevin	Malpede	ComEd
Voting Member	Abu	Bapary	American Electric Power (AEP)
Voting Member	Joerg	Blumschein	SIEMENS
Voting Member	James	O'Brien	Duke Energy
Voting Member	Thomas	Rudolph	Schneider Electric GmbH
Voting Member	Ian	Tualla	Duke Energy
Voting Member/Chair	Alla	Deronja	ATC

D48: Investigate the need to create report on Single phase trip and reclose on transmission lines

Chair: Kamal Garg
Vice Chair: Ilia Voloh
Secretary: N/A
Output: Report
Established Date: Sep 2021
Expected Completion Date: Dec 2025
Draft: V5.1, 2025

PSRC D48

Date: Wednesday, Jan 15, 2025
Time: 10:40 – 11:50 AM (PST)

Venue: JTCM, Garden Grove, CA

1. Total 36 people (17 remote + 19 in person). Quorum was achieved 17 out of 27 members present.
2. Kamal gave overview of sections and progress.

3. Dev Prasad joined from Powergrid India but due to bad connection Powergrid presentation will be done at later date. Kamal showed some of the slides Dev and Powergrid will present next time. Also, Powergrid is trying to join May in person meeting. (Powergrid has currently 63 number 765kV and 170 number 400kV substations and willing to their practice and lesson learned).
4. Mukesh presently briefly BC Hydro SPT practice.
5. Sajal presented section about secondary Arc method and section to be included in guide.
6. Fernando Quick review of 10.5 section power swings during a single-phase open interval.
7. Kamal Quick mention of CFE and PNM SPT practices. Some discussion on SPT practices and three terminal applications in BPA area.
8. Mike Kockott and Joerg Blumschein will explore if there are SPT practices in the world (Outside North America) at other locations.
9. See the assignments below for review. Each section will have one or two leads. Here is the proposed assignments and review proposal. Return all comments by March 15, 2025. If I missed anything or anybody interested in reviewing any sections, please an email to Ilia and me. Annex A and B Kamal will collect inputs and compile.
10. Meeting Adjourn at 11.45 AM PST.

ASSIGNMENTS:

- Sections 2,4 **(Lead) Pratap/Kamal** and (Reviews) Deepak , Bill Cook, Rajil and Devaprasad(Powergrid India)
- Section 3 **(Lead) Mukesh**, (Reviews) Paul Elkins/Abu/Aaron Martin, Rajil and Devaprasad(Powergrid India)
- Sections 5 and 6- **(Lead) Joerg Blumschein and Mike Kockott** – (Reviews) Jordan/Ding/Daqing/David C
- Sections 7 and 8 – **(Lead) Daqing**, (Reviews) Dinesh, Bill, Ritwik, Ding, Qun
- Section 9 **(Lead) Fernando**, (Reviewers) -Hilmon, Gary Kobet, Steve Klecker, Steve Conrad
- Section 10 **(Lead) Ilia**, Reviews (Pratap/Deepak/Mukesh/Kamal), David Caverly

Voting Members Jan 2025

Bruce	Mackie		David	Lopez
William	Cook		Ritwik	Chowdhury
Ilia	Voloh		John	Town
Pratap	Mysore		Aaron	Martin
Gene	Henneberg		Dinesh	Gurusinghe
Kamal	Garg		Athula	Rajapakse
Mukesh	Nagpal		Alla	Matchyaraju
Stephen	Conrad		Steve	Klecker
Gary	Kobet		Qun	Qiu
Joerg	Blumschein		Abu	Bapary
Mike	Kockott		Daqing	Hou
Fernando	Calero		Ding	Lin
Srivastava	Naveen		Srivastava	Rajil
Prasad	Dev			

Meeting Participant (1/15/2025)

Fist Name	Last name	Affiliation	Role
Kamal	Garg	SEL	M
Abu	Bapary	AEP	M

Mukesh	Nagpal	B&M	M
Bill	Cook	SEL	M
Joerg	Blumschein	Siemens	M
Aaron	Martin	MPA	M
Ding	Lin	Manitoba Hydro	M
Mike	Kockott	Hitachi	M
Steve	Conrad	Retired PNM	M
Ritwik	Chowdhury	SEL	M
Fernando	Calero	SEL	M
Daqing	Hou	SEL	M
Dev	Prasad	Powergrid India	M
Dinesh	Gurusinghe	RTDS	M
Gary	Kobet	TVA	M
Matchyaraju	Alla	Amazon	M
Steve	Klecker	Retired	M
Paul	Elkin	Epro Engineering	G
Qun	Qiu	AEP	G
Ron	Pate	G&W	G
Daniel	Lebeau	Hydro Quebec	G
Lou	Garavaglia	G&W	G
Alexis	Mezco	TRC	G
Deepak	Maragal	LNDTS	G
Jordan	Bell	SEL	G
Jagannath	Wijekoon	RTDS	G
Sajal	Harmukh	SEL	G
Ralcua	Lascu	DTE	G
Hillmon	Ladner	Southern	G
Dean	Miller	Consultant	G
Tappan	Manna	B&M	G
Kanchan	Dase	SEL	G
David	Caverly	Trench	G
Dan	Nordell	IEEE	G
Andrew	Volk	HDR	G

D51: Single Phase Tripping and Reclosing of Distribution Lines
Chair: Brian Boysen
Vice Chair: Jack Jester
Secretary: Sudarshan Byreddy
Output: Technical Report
Established Date: January 2023
Expected Completion Date: TBD
Draft: 1.8
Assignment: To develop a Technical Report to Single Phase Tripping and Reclosing of Distribution Lines.

Presiding Officers: Brian Boysen and Jack Jester

Minutes Recorded by: Brittany Wagner

Agenda:

1. Introductions
3. Review the following completed sections which have not been reviewed at a WG meeting:
   - 4.7 – DER
   - 4.8 – Operational Considerations
   - 2.2 – Other Benefits
   - 4.2 – DA
4. Discuss next steps:
   - Remaining Sections:
     i. 5:Summary: Volunteers?
     ii. Key Words: Reclosing, Single Phase,
     iii. Definitions Section? DER, ST—SLO, DA, etc.
   - Confirm existing and solicit new volunteers to perform detailed review of entire paper prior to WG Member review / approval. Following had volunteered at last meeting: Steve Parr, Craig Holt, Jordan Bell.
   - If time, Brian has a presentation on a real world example.

Minutes:

- The D51 Working Group met at 10:40AM on 1/14/25.
- There were **29** people in attendance (15 Members, 1 New Members and 13 Guests; see below).
- The agenda was reviewed.
- The Sections below were discussed which have been completed and not reviewed at a WG meeting.
  - 4.7 DER: It was mentioned that we should call it Distributed Energy Resources in the title and then reference it as DER below to be used throughout the paper. Sections discussed were: Backfeeding open phases from DERs and Protection to sense an imbalance for the DERs. Should we also address single phase DERs since the section was written with the assumption that the DERs were 3 phase. Expand to include the transfer trip scheme possibilities.
  - 4.8 Operational Considerations: The section brought up clearances and safety for single phase operations and possible backfeeding, manual and remote operations should be 3 phase LO. Verify all references to the modes are the same(i.e., ST-SLO, ST-3LO and 3T-3LO, etc…) we should be able to search for that term and find where it's defined. A few members offered to review the full document for these items. The section brought up the tracking of separate phase operations counters.
  - 2.2 Other Sections: This section will go through revenue gains, fault locating, and it was discussed about single phasing a 3 phase customer or device could be an issue, it will reference the other section. It was brought up we should include the value of saving other phases from damage.
  - Greg Ryan will expand the DA section to include single phase LO schemes and restoration. 5 conclusions were brought up from an EPRI report/study involving single phase reclosing and lockouts in DA schemes (included 14 case studies): including DERs and single phasing motors, etc. Some of these have been brought up in other sections. Brian will send out the EPRI report/study sent in by T Key from EPRI.

- Remaining Sections:

- Summary: Brian Boysen will work on the starting summary; Brittany Wagner will assist.
- Key Words: Reclosing, Single Phase, etc. No other key words were brought up but we may get other words during the full paper review by members.
- Definitions Section? DER, ST-SLO, ST-3LO, 3T-3LO, DA, HLT, volunteers when looking through for cleaning up all of the terms, we will look for other items that may need defining.
- We need to clean up the following: imbalance vs. unbalance, IG vs. Ground vs. Neutral, etc… We need to look for other items that may need more clarity and clean up.

- **The target date for completion of writing assignments is April 15th, 2025.**

- Confirm existing and solicit new volunteers to perform detailed review of entire paper prior to WG Member review / approval. Following had volunteered at last meeting: Steve Parr, Craig Holt, Jordan Bell. New volunteers from this meeting: Brittany Wagner, Paul Harris and Greg Hataway. T Key from EPRI will send over case studies/public references and he volunteered Brian Deaver.

- Mike Meisinger will work with Paul Harris to write a piece on dual voltage sensing directionality and their concerns with single phasing.

- Mohit Sharma brought up we should include Ferro-Resonance with single phase operations. T Key from EPRI has done previous testing with customers and has a few scenarios/documentation he can send or include.

- Brian Boysen gave a small presentation on an event where there was a single phase operation and “A” phase still had full voltage. If you have a three-legged transformer, low load and perfect balancing, you will replicate the missing or opened phase. We need to bring this up in the paper.

Meeting Requirements for May, 2025
Room for 40 with Projector; single session. Meeting Conflicts: D53, K29, K36

Meeting Attendance for the 1/14/25 WG meeting is listed below:

First Name	Last Name	Affiliation	M/G/New Member
Brian	Boysen	WE Energies	M
Jack	Jester	Exelon	M
Brittany	Wagner	Delaware Electric Cooperative	M
Greg	Hataway	Burns and Mac	M
Fredy	Bravo	Duke Energy	M
Daniel	Lebeau	Hydro Quebec	G
Muhammad	Hamid	Black & Veatch	M
Souvik	Chandra	Eaton	G
Steve	Parr	Gridware	G

Lou	Garavaglia	G&W Electric	G
Adi	Mulawarman	Xcel Energy	M
Jada	Hawaz	SEL	M
Meyer	Kao	Qualus	M
Paul	Harris	Pacificorp	M
Bruce	Mackie	Northern Arizona University	M
Mike	Meisinger	S&C Electric	M
Daqing	Hou	SEL	M
Joe	Xavier	ABB	G
Greg	Ryan	Ameren	M
Todd	Martin	Basler Electric	G
Charles	Sufana	Retired	G
Nikhil	Jagirdar	S&C Electric	G
Michael	Reyna	Burns & McDonnell	G
Mohit	Sharma	SEL	M (New member)
Scott	Hayes	PG&E	G
Sam	Hogue	GE Vernova	G
Tom	Key	EPRI	G
Greg	Kamal	SEL	M
Dan	Nordell	Xcel Energy	G

D52: Line Protection based on Transient Quantities
Chair: Kevin Malpede
Vice Chair: Mike Kockott
Secretary: Vijay Shanmugasundaram
Output: Report
Established Date: September 2024
Expected Completion Date: September 2028
Draft: 1.0
Assignment: Create a report on “line protection based on transient quantities”.
Working Group D52 met for the first time on Tuesday, January 14, 2025, 3:40-4:50 pm PST, with 24 in-person attendees and 5 remote attendees.

Following welcome and introductions Kevin reviewed the proposed report outline from the September 2024 DTF52 meeting. During the discussion that ensued, the proposed outline was expanded to include more detail.

Kevin will send this updated report outline to all attendees.

At this point Kevin asked the meeting attendees who were interested in becoming voting members of the working group. 15 attendees volunteered to become voting members (excluding the chair, vice-chair and secretary), i.e. 18 total voting members.

Next volunteers were sought for the first writing assignments. The due date is April 15, 2025. Writing assignments are to be sent to Kevin, Mike and Vijay.

Writing assignments:

2.a: Define what is meant by transient quantities, Historical perspective
Mike, Jörg

2.b.i.1.a Define what is meant by transient quantities, ….., Incremental quantities, Types of incremental quantities
Juan

2.b.i.1.b Define what is meant by transient quantities, ….., Incremental quantities, How they are extracted
Sajal

2.b.i.2.a Define what is meant by transient quantities, ….., Traveling waves, Types of traveling waves
Ryan, Nuwan

2.b.i.2.b Define what is meant by transient quantities, ….., Traveling waves, How are they extracted
Ryan, Nuwan

2.b.i.2.c Define what is meant by transient quantities, ….., Traveling waves, Type of measurement devices and their impact
Jordan

2.b.i.2.c Define what is meant by transient quantities, ….., Traveling waves, Differential
Jörg

With there being no further business, Kevin thanked all for attending and adjourned the meeting.

The WG will meet at the May 2025 PSRC meeting. We request a single session and a room for 30 people with a computer projector. Please avoid conflicts with C29, C48, C51, D29, D37 & D47.

Attendance

Kevin Malpede	ComEd	Mike Kockott	Hitachi Energy
Alla Deronja	ATC	Ryan McDaniel	SEL
Jordan Bell	SEL	Addis Kifle	GTC
Andy Kunze	MN Power	Sandro Aquiles Perez	Siemens
Brandon Lewey	Ameren	Mohit Sharma	SEL
Josh Lamb	Ameren	Steven Blair	Synaptec
Joshua Park	SCE	Lou Garavaglia	G&W Electric
Jagannath Wijekoon	RTDS	Fenghai Sui	Hydro One
Jim O'Brien	Duke Energy	Jörg Blumschein	Siemens
Nuwan Perera	Power Eng	Abu Zahid	Hydro One
Meyer Kao	Qualus	Galina Antonova	Hitachi Energy
Melvin Moncey Joseph	Siemens	Burns & McDonnell	Yazid Alkraimeen
Arun Shrestha	SEL	Juan Piñeros	XM
Matthew Reno	Sandia	Paras Patel	TRC
Sajal Harmukh	SEL		

D53: Report on distribution line protection practices survey

Chair: Muhammad Hamid
Vice Chair: Greg Ryan
Secretary: Brian Boysen
Output: Report
Established Date: September 2023
Expected Completion Date: September 2027
Draft: 0.0
Assignment: Create and issue an industry survey on distribution line protection practices and associated distribution protection topics. The working group will create a report based on the survey results.

Presiding Officer: Muhammad Hamid
Minutes Recorded by: Greg Ryan

Agenda:

20. Introductions/Signup sheet
21. Review the assignment
22. Review previous report
23. Request volunteers for sections of survey
24. Discussion of next steps
25. Adjourn

Minutes:

- Introductions were made and the signup sheet was passed around.
- There were 14 Members and 13 Guests in attendance. Attendance roster is provided below.
- Muhammad displayed the sample survey that he has worked with his company to develop and discussed the format. A statement was brought up that we will update to be able to save the survey and share within a company. This will be able to be done with the software.
- The T&D committee is working on a survey also and we will be coordinating with them to combine the Survey. Steve Parr and Clay Stocklin are going to join and assist the working group to coordinate from the T&D committee.
- The working group discussed a CIGRE survey that was recently sent out to the whole world. We discussed the question if we want to limit our survey and specify it to only a North America survey or send it out to the entire world. It may be more beneficial to everyone in the room if it was limited to North America.
    - Muhammad will reach out to Meyer and Jonathan Sykes to discuss the possibility of coordinating with CIGRE on an international report and/or limiting the survey to a North American survey.
- The working group discussed that we plan to have a comment form for markups and comments on the survey questions rather than have all the comments come in on the entire survey document.
- The working group discussed the scope of our survey.
- Additional volunteers for Section reviews from today's meeting
    - DER Section 10 Tom Key, Craig Holt
    - Wildfire Section or add to section X1 High Impedance Protection - Craig Wester, Tom Key

- Section 4 and 5 – Bernie Matta and Daniel LeBeau
- Adding a communication section – Craig Wester and Daniel LeBeau

We request a meeting for 40 in May 2025 and ask to avoid conflicts with C52, K25, D38, D42, D43, D51, DTF56, K36.

1/15/25 D53 WG Meeting Attendance Roster:

Role	Name	Affiliation
Voting Member	Muhammad Hamid	Black and Veatch
Voting Member	Brian Boysen	We Energies
Voting Member	Greg Ryan	Ameren
Voting Member	Bernard Matta	SEL
Voting Member	Carolyn Sun	Black and Veatch
Voting Member	Charlie Sufana	Retired
Voting Member	Craig Holt	Sargent and Lundy
Voting Member	Craig Wester	GE Verona
Voting Member	Daniel Lebeau	Hydro Quebec
Voting Member	Hani Al-Yousef	Eaton
Voting Member	Paul Harris	Pacificorp
Voting Member	Robert James	PG&E
Voting Member	Steve Parr	Gridware
Voting Member	Tom Key	EPRI
Guest	Bruce Mackie	Northern Arizona University
Guest	Milo Daub	Mesa Associates
Guest	Koustubh Banerjee	Eversource
Guest	Scott Hayes	PG&E
Guest	Fredy Bravo	Duke Energy
Guest	Chip Christmann	Basler
Guest	Souvik Chandra	Eaton
Guest	Seth Nelson	Basler
Guest	Tristan Cline	Neetrac
Guest	Clay Stocklin	Power Engineers
Guest	John Hofman	Quanta Technology
Guest	Steven Minh Vannuyen	Kiewit Power Delivery
Guest	Philip Baker	Duke Energy

D54: Protection Methods for Non-effectively Grounded Distribution Systems
Chair: Russ Patterson
Vice Chair: Hugh Borland
Secretary: N/A
Output: Report to the subcommittee.

Assignment: Develop a report describing protection and fault location methods in use on non-effectively grounded and compensated grounded distribution systems.

Attendees: D54 met Tuesday 1/14/2025 with 2 members and 16 guests. The members and guests present are listed below with affiliations.

	Member/Guest
Russ Patterson (Qualus)	M
Paul Harris (PacifiCorp)	M
Muhammad Hamid (Black & Veatch)	G
Jinlei Xing (Schneider Electric)	New Corresponding Member
Kevin Ridley (TRC)	G
Jacob Loyd (Megger)	G
Eric Udren (Quanta Technology)	G
Robert James (PG&E)	G
Greg Ryan (Ameren)	G
Scott Munnings (Power Engineers Collaborative)	G
Greg Hataway (Burns & McDonnell)	G

After the meeting 1 additional corresponding member was added, Jinlei Xing (Schneider Electric).

The chair told the group that after the September meeting Hugh Borland compiled all of the author contributions into draft R0.7 of the document. Then the chair took that document and went through it homogenizing the document (fonts, figures etc.) into version R0.8 which was sent back to the authors for review. The chair has received responses from authors and will prepare a new draft after incorporating those comments. After that is completed, the new draft will be circulated among working group members.

The remainder of the meeting was comprised of an excellent and comprehensive video presentation by Gernot Druml (Sprecher Automation).

Next Meeting: Room for 30 with computer projector. Avoid conflict with D45, D55, and C45 as possible.

DTF55: Protection of HVDC Systems and DC Distribution Systems

Minutes for the 01/14/2025 meeting from 14:20-15:30
Chair: Brandon Lewey
Established: January 2024
Assignment: Investigate a Future Course of Action for Protection of HVDC Transmission and DC Distribution Systems and set up a liaison with the T&D HVDC Subcommittee
Location: Garden Grove, CA

Formalities:

- The TF met on 01/14/2025.
- Officer presiding – Brandon Lewey
- The meeting was called to order by the Chair.
- Introductions were made.
- The meeting was attended in person with 28 attendees.
- **Presentation Links:**

- Presentation #1 – 3/22/2024 – Impacts of VSC Based HVDC Transmission on AC System Protection
- Presentation #2 – 4/19/2024 – Introduction of DC Protection
- Presentation #3 – 5/14/2024 – Update on IEC Direction
- Presentation #4 – 9/10/2024 – Fundamentals of DC Microgrid Protection & Control
- Presentation #5 – 1/14/2025 – Recent HVDC Projects and Need for Standardization

- **Action Items**:
  - Chair will coordinate and arrange presentations on various topics.
- WG Adjourned

Next Meeting Date: May 2025
Next Meeting Location: Portland, OR
Next Meeting Requirements: Single session, virtual option with room big enough for 40 with a projector
Avoid Conflicts with: D38, D42, D47, C41, **C45**, DTF52, & K25

First Name	Last Name	Affliation
Abu	Zahid	
Ding	Lin	Manitoab Hydro
Josh	Lamb	Ameren
Taylor	Raffield	Duke
Nuwan	Perera	Power Engeers
Brandon	Lewey	Ameren
Meyer	Kao	Qualus
Chip	Christmann	Basler
Mathew	King	HDR
Michael	Thompson	SEL Eng Services
Matt	Black	Sargent & Lundy
Joshua	Park	Southern Cal Edison
Alla	Deronja	ATC
Brian	Johnson	University of Idaho
Mike	Basler	Basler
Jorg	Blumschein	Siemens
Matt	Reno	Sandia Laboratories
Mark	Siira	Power Innov
Matthew	Leyba	GE Verona
Alexis	Mezco	TRC
Brandon	Aalbery	BPA-ROE
Yazid	Alkraimeen	Siemens
Duane	Buchanan	HDR
Jungsoo	Park	HICO
Jimmy	Bae	HICO
Jagannath	Wijekoon	RTDS
Shahrzad	Mahdavi	HICO

Greg	Ryan	Ameren

DTF56: IEC 61850 effect on transmission line protection that is based on Internet communications

DTF56 met Tuesday morning with 14 attendees in person and 2 online.

After the introduction of attendees Alex Apostolov made a short description of why routable communications can be helpful in reducing the fault clearing time of line protection to support the ride-through of IBRs, power quality and other requirements.

This was followed by discussions of what the title of the WG should be, what the output should be and if there is interest in participating.

The proposed WG Name is:
Impact and Application of IEC 61850 based Routable Communications on Line Protection

Assignment will be discussed and finalized during the meeting in May.

The outcome of the WG should be a technical report.

If a WG is established, there is sufficient interest and Volunteer Officers are:
Chair: Ravindranauth Ramlachan
VC: Muhammad Hamid
Sec.: Reza Arani
For May – room for 25 and projector

Liaison Reports

- T&D Committee/Distribution Subcommittee
  - Smart Distribution
  - Volt-VAR
  - Switching & Overcurrent Protection
- We are still in search of a volunteer to be the D-Subcommittee liaison to the T&D Committee/Distribution Subcommittee

Old Business

- Note: if WG meetings were held in between the PSRC regular meetings, meeting minutes would be placed under Old Business

New Business

- Planned new business
  - Criteria for identifying areas in a transmission system with high IBR concentration and their boundaries for protection performance assessment within these areas

  A discussion ensued on this subject. One opinion was that, since IBRs are being built everywhere, the protection needs to be adjusted accordingly. However, in that area, IBRs are proliferating for use in power generation while, in other areas, they are just ramping up. Due to workload, it may not be possible to do protection assessment of the whole system. Therefore, it is desirable to focus on the areas of the system with high IBR concentration because there is risk of misoperation.

At this time, it was decided to defer this topic to WG C45 *Protection and short-circuit modeling in systems with high penetration of inverter-based generation*.

General Discussion

None

Line protection operations of interest

None

Adjournment

The agenda was completed, and the meeting was adjourned.

Meeting Attendees

Role	First Name	Last Name	Affiliation
Member	Galina	Antonova	Hitachi Energy
Member	Sebastien	Billaut	Arcadis
Member	Jörg	Blumschein	SIEMENS
Member	Brian	Boysen	WEC Energy Group
Member	Stephen	Conrad	Public Service Co of NM - Retired
Member	Richard	Gamble	TVA
Member	Kamal	Garg	Schweitzer Engineering Laboratories, Inc.
Member	Muhammad	Hamid	Black & Veatch
Member	Scott	Hayes	PACIFIC GAS AND ELECTRIC
Member	Joshua	Hughes	Qualus Power Services
Member	Jack	Jester	Exelon Corporation
Member	Kevin	Jones	Xcel Energy
Member	Steve	Klecker	Unaffiliated
Member	Gary	Kobet	Tennessee Valley Authority
Member	Michael	Kockott	Hitachi Energy
Member	Joshua	Lamb	Ameren
Member	Brandon	Lewey	Ameren
Member	Bruce	Mackie	Northern Arizona University
Member	Dean	Miller	POI Engineering
Member	Melvin	Moncey Joseph	Burns & McDonnell
Member	Adi	Mulawarman	Xcel Energy
Member	Pratap	Mysore	Pratap Consulting Services LLC
Member	James	O'Brien	Duke Energy
Member	Manish	Patel	EPRI
Member	Russ	Patterson	Qualus Power Services
Member	Claire	Patti	Portland General Electric

Member	Nuwan	Perera	Power Engineers
Member	Gregory	Ryan	Ameren
Member	Jonathan	Sykes	Quanta Technology
Member	Ian	Tualla	Duke Energy
Member	Christopher	Walker	Mesa Associates, Inc
Member	Ted	Warren	Southern Company Services
Member	Abu	Zahid	Hydro One Network Inc.
Member	Karl	Zimmerman	Ameren
Member/Chair	Meyer	Kao	Qualus Power Services
Member/Vice-Chair	Alla	Deronja	American Transmission Company
Non-member	Yazid	Alkrujmeen	Siemens
Non-member	Sandro	Aquiles-Perez	Siemens
Non-member	Abu	Bapary	American Electric Power (AEP)
Non-member	Seth	Barnes	TVA
Non-member	Jordan	Bell	SEL
Non-member	Steve	Blair	Synaptec
Non-member	Fredy	Bravo	Duke Energy
Non-member	Tim	Condra	TVA
Non-member	Peiman	Dadkhah	NuGrid Power
Non-member	Brandon	Davies	TRC
Non-member	Paul	Elkin	E-PRO Engineering
Non-member	Ethan	Grindle	ATC
Non-member	Paul	Harris	Pacific Corp
Non-member	Greg	Hataway	Burns & MCDonnell
Non-member	Genariel	Hernandez	Quanta
Non-member	Yi	Hu	Quanta Technology, LLC
Non-member	Robert	James	Pacific Gas & Electric Co.
Non-member	Mathew	King	HDR
Non-member	Jared	Kline	P&E Engineering
Non-member	Andy	Kunze	Minnesota Power
Non-member	Matthew	Leyba	GE
Non-member	Rannveig	Loken	Statnett
Non-member	Kevin	Malpede	ComEd
Non-member	Bernard	Matta	SEL
Non-member	Mark	Mcchesney	ONCOR
Non-member	Ryan	McDaniel	SEL
Non-member	Hugo Alexis	Mezco	Mezco LLC
Non-member	Juan F.	Piñeros	XM S.A. Colombia Power System Operator
Non-member	Taylor	Raffield	Duke Energy
Non-member	Raumdranauth	Ramlachan	GE
Non-member	Daniel	Ransom	GE Vernova

Non-member	Miguel	Rios	Southern Company
Non-member	Arun	Shrestha	Schweitzer Engineering Laboratories, Inc.
Non-member	Fenghai	Sui	Hydro One
Non-member	James	van de Ligt	Spark Power Corp.
Non-member	Brittany	Wagner	Delaware Electric Cooperative
Non-member	Craig	Wester	GE Vernova
Non-member	Jagannath	Wijekoon	University of Manitoba
Non-member	Malia	Zaman	IEEE

H - Relaying Communications and Control Subcommittee

Wednesday, January 15, 2025, 4:20pm – 5:45pm EST
Hyatt Regency, Garden Grove, CA, USA
Room: SC2 (Hybrid Meeting)
MEETING MINUTES

Chair: Hugo Monterrubio – HugoM@ieee.org
Vice Chair: Mital Kanabar – Mital.Kanabar@ieee.org

Scope: Evaluate and report on the characteristics and performance of protective relaying communications and control systems. Recommend communication requirements, operating and test procedures which assure reliable performance of the overall protection and control system. Report on new relaying equipment designs tailored to specific communication requirements. Included are matters necessary to the function of such systems employed in the generation, transmission, distribution, and utilization of electrical energy, and their effects on system operation. Control systems include data acquisition and processing from devices such as transducers, Intelligent Electronic Devices (IEDs), and Human Machine Interfaces (HMIs) including the low-level interfaces to these systems. Power System control issues associated with Power System Dynamics are excluded from this scope.

1. Welcome and Introductions

2. Subcommittee Membership, Quorum, Signup list

a. Signup list – Please include name and affiliation. Add your email only if there have been any changes since the last meeting.

b. Determine a Quorum (H-SC Members: 46)

Members attending in person:	28
Members attending remote:	10
Total Members in Attendance:	38
Quorum met (min 24)	YES
Guests attending:	15

3. Approval of the current meeting agenda (sent via email with Agenda)

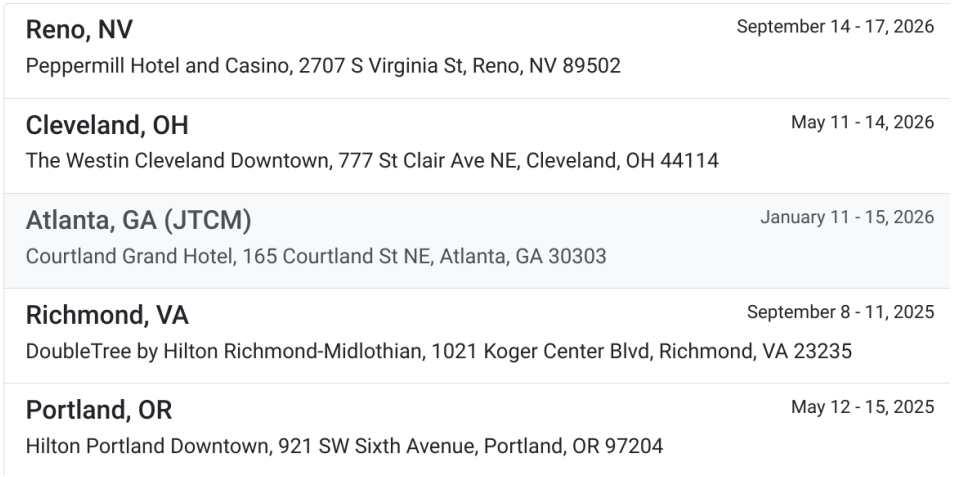
Motion entered by:	Deepak Maragal
Motion seconded by:	Jose Ruiz
Vote Result:	Motion Pass

4. **Approval of the minutes of the previous meeting (sent via email with Agenda)**

Motion entered by:	Amir Makki
Motion seconded by:	Hugo Monterrubio
Vote Result:	Motion Pass

5. **Announcements**
   a. Meeting Minutes and hosting next meeting
      i. WG officers, please help us be in compliance with our P&P procedure (6.4) by **submitting** your WG **meeting minutes within 2 weeks** of your meeting. Email these in word format to all the H SC Officers.
      ii. **Meeting Agenda** to be sent out before a few weeks of the meeting. Keep meeting minutes concise/short.
      iii. To make creating your minutes a bit easier, we have included a **meeting-minute template** at the bottom of the meeting agenda that was emailed to all Members and Guests.
      iv. Include in your email any changes to your Meeting Room Request (MRR). Please be specific on the DAY/TIME even if you want to keep **the same time slot.**
      v. Please report in advance if you won't be hosting a meeting.

   b. New items from ADCOM Meeting
      i. PSRC Attendance for JCTM Meetings
         - 233 In-person, 12 (8 in-person +4online) First Time Attendees overall
      ii. Next PSRC meetings
         - May 12-15, 2025 – Portland, OR - Hilton Portland Downtown
         - Sep 15-19, 2025 - Richmond, Virginia



      iii. Presentations at next meeting - Upon completion of your work, WG's are encouraged to prepare a presentation to the MC. Please let Hugo Monterrubio, Mital Kanabar or Dean Ouellette know if you're interested and able to present during your reports.

   c. New items from Awards and Recognition Meeting
      i. The next PSRC awards ceremony will take place Monday May 12 at 6:00pm in Portland, OR. Please save the date!
      ii. Standards WG awards for completed work (std published) can be requested directly in the myProject System by the WG officers

6. H SC Standards Nearing Expiration (12/31/2025 or earlier):

a. Please review the timeline for the completion of your work. This includes balloting and resolution of comments. If you would not be able to finish by the end of 2025 it will be important to request a PAR extension in time to get RevCom approval before your PAR expires.

H40	PC37.1.2	Recommended practice for databases used in Utility Automation Systems	In Progress, PAR Expires Dec 31, 2025
H52	PC37.232	Standard for Common Format for Naming Time Sequence Data Files (COMNAME)	In Progress, PAR Expires Dec 31, 2025
H51	PC37.239	Standard for Common Format for Event Data Exchange (COMFEDE) for Power Systems	In Progress, PAR Expires Dec 31, 2025
H41	P1646	Standard Communication Delivery Time Performance Requirements for Electric Power Substation Automation	In Progress, PAR Expires Dec 31, 2025
H46	PC37.1.3	Recommended Practice for Human Machine Interfaces (HMIs) used with Electric Utility Automation Systems	In Progress, PAR Expires Dec 31, 2025
H27	PC37.251	Standard for Common Protection and Control Settings or Configuration Data Format (COMSET)	In Progress, PAR Expires Dec 31, 2025

b. 2025 NesCom/RevCom Submittal Deadlines
   i. 14 February 2025 (for March 2025 mtgs)
   ii. 28 March 2025 (for May 2025 mtgs)
   iii. 09 May 2025 (for June 2025 mtgs)
   iv. 31 July 2025 (for September 2025 mtgs)
   v. 12 September 2025 (for October 2025 mtgs)
   vi. 20 October 2025 (for December 2025 mtgs)

7. Working Group Meeting Reports

A. H6: IEC 61850 Application Testing

Chair: C. Sufana
Vice Chair: B. Vandiver
Output: Summary Paper
Established: January 2021
Draft: 1.10.23

Assignment: Assignment is to write a summary paper on PES-TR84 Application Testing Of IEC-61850 Based Protection and Control Systems.

A. Introductions
B. IEEE Patent slides
C. IEEE Copyright slides
D. Approval of previous meeting minutes
E. Updates on IEC-61850 activities
F. Summary paper

Voting members:
Charles Sufana, Benton Vandiver, Jay Anderson, Christoph Brunner, Jason Buneo, Herbert Falk, Dinesh Gurusinghe, Chris Huntley, Aaron Martin, Tim Mathias, Daniel Reckerd, Antonio Riccardo, Mickey Schultz, Harsh Vardhan, Marcos Velazquez, Quintin Verzosa, Emmoji Vundekari, Austin Wade

Non-voting members
Galina Antonova, Oscar Bolado, James Bougie, Nestor Casilla, Darren De Ronde, Xiangyu Ding, Michael Dood, Didier Giarratano, George Gresko, Sughosh Kuber, Richard Liposchak, Deepak Maragal, Daniel Nordell, Silvio Roesler, Dustin Tessier

You can find the technical report at: http://www.pes-psrc.org/kb/published/reports/H6_17.6_Application_Testing_of_IEC_61850_Based_Systems.pdf and at Application Testing of IEC 61850 Based Systems (ieee-pes.org)

Main emphasis of the session was to review the comments received from the officers. The officers mostly had editorial comments that were reviewed. The summary paper had been converted from one format into a template that had been suggested by Erin Jessup. Most of the meeting was spent going through the entire document to fix the formatting that was not changed by the copy/paste operation. Technically the officers have approved the summary paper but the working group will finalize the formatting.

This meeting was in-person and virtually with 5 voting members, 1 non-voting member, and 5 non-members present.

The working group will meet at the next PSRC meeting to go over the summary paper. For the next meeting, we will meet in a single session in a room for 10 to 20 people, and with a computer projector.

H17: Establishing links between COMTRADE, IEC 61850 and CIM

Chair: C. Brunner
Vice Chair: A. Apostolov
Output: Report
Established: 2010
Expected completion date:
Draft: 7

Assignment: Develop a standard approach to link IEC 61850, CIM and COMTRADE so that the COMTRADE channels can be associated to a node in the power network.

– H17 did not meet in September. Work has been completed. SC Officers will reach out to collect the final report and propose a motion to dismiss

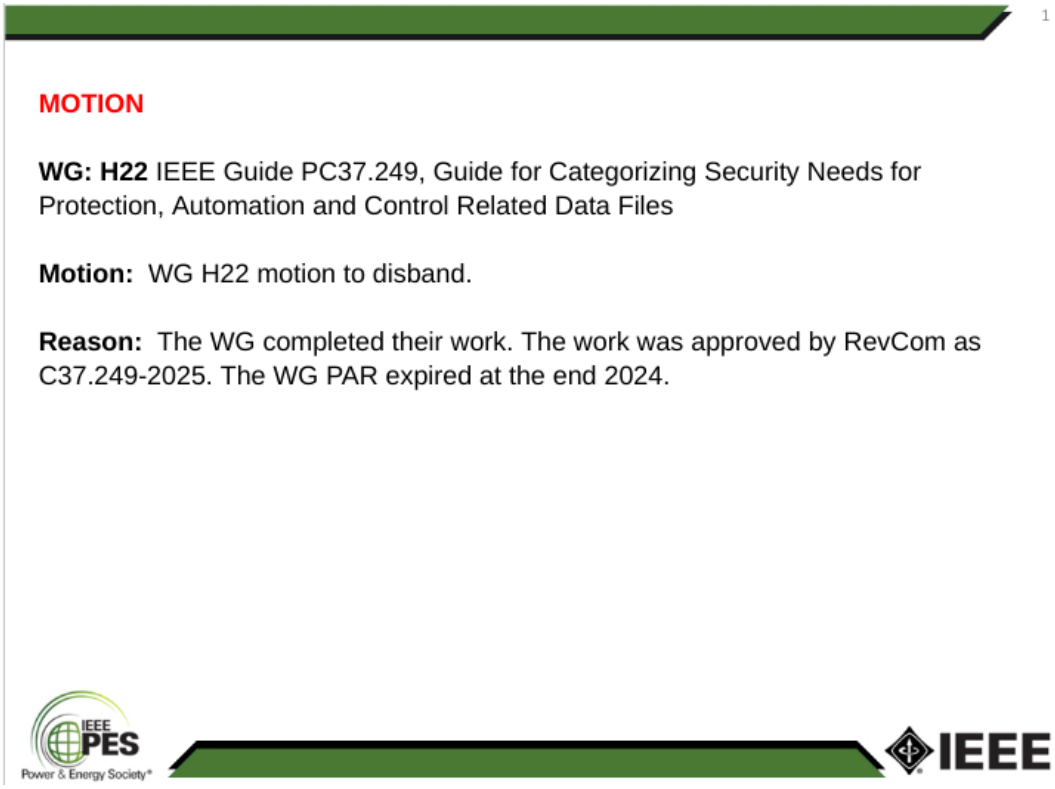
B. H22/C19: Guide for Categorizing Security Needs for Protection Related Data Files

Chair: Amir Makki
Vice Chair: Cesar Calix
Secretary: Hugo Monterrubio
I-Meet Administrator: T.W. Cease
Output: Guide - PC37.249
Established: January 2014
Expected Completion Date: December 2024
Expected Final Draft: 8.20

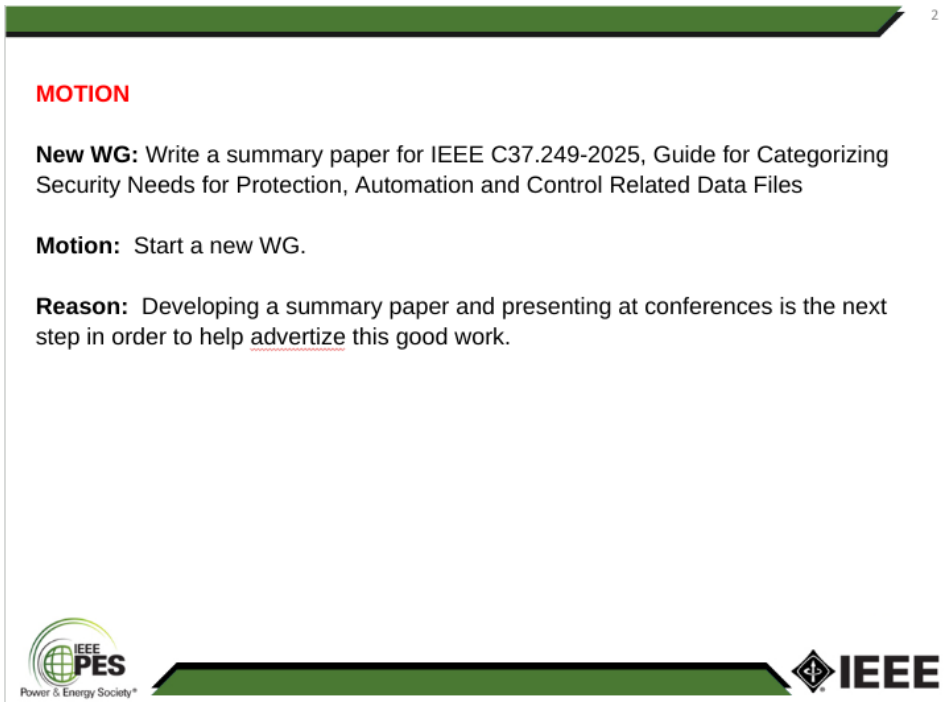
Assignment: Identify and categorize protection, automation and control (PAC) related data files based on content, use, and risk of disclosure or compromise (confidentiality, integrity, and availability). Protection and automation related data files include, but are not limited to, files used for configuration, management, and analysis of protective relaying systems.

1. H22 motion

Motion made by: Amir Makki
Second by: Theo Laughner
Result of H SC vote: Approved



Motion made by: Amir Makki
Second by: Theo Laughner
Result of H SC vote: Approved, New task force is H TF58



C. H27 PC37.251, Standard for Common Protection and Control Settings for Configuration Data Format (COMSET)

Chair: **Mario Capuozzo**
Vice Chair: **Benton Vandiver**
Secretary: **Dan Sabin**
Output: **Standard**
PAR Approval Date: 05 Feb 2016
PAR Expiration Date: 31 Dec 2025
Status: Initial IEEE SA Ballot (Closed on June 20, 2023)

Assignment: Develop a standard file format for exchange of protection and control configuration data between engineering tools and asset management tools

1. **Meeting to order – check attendance for quorum**
2. **Approve agenda**
3. **Review comment resolution status**
4. **Adjourn meeting.**

Call to Order: The meeting was called to order by Chair Mario Capuozzo at 10:40 AM. Meeting minutes were recorded by Benton Vandiver.

Quorum: 5 of 11 working group members attended, resulting in no quorum.

IEEE Patent Slides: Slide information was reviewed and requested. No response.

Initial IEEE SA Ballot: Malia Zaman's assistance the initial SA Ballot opened on April 9 and closed on June 20, 2023. Approval rate of 76%. Malia reminded that this project needs to be expedited as it is in Year 9 and the extension was hard fought.

Comment Resolution: All received comments have been accepted or resolved. The requested schema validation XSD is being prepared with a meeting next week to finalize it. Deepak inquired why the XSD was delayed, Mario explained the CDC check fails since it doesn't exist as a result of the 61850 extension rules not allowing free creation. Herb has a work around based on v2.2 of schema but needs his expertise to validate.
The CR file is being readied for the recirculation ballot as no other changes are expected. WG will vote on approving final docs by virtual meeting.

Next Meetings: The next meeting of the H27 PC37.251 Working Group is targeted for January 29th ; invite to follow next week.

Old Business

Adjournment: The meeting adjourned at 11:15 AM.

Action Items:

The chair will submit a PAR extension to IEEE NesCom.

Attendee List:

First Name	Last Name	Affiliation	M/G
Mario	Capuzzo	Doble	M
Benton	Vandiver	Hitachi Energy	M
Jorg	Blumschein	Siemens	G
Malia	Zaman	IEEE SA	G
Andre	Melo	Schneider	G
Mital	Kanabar	GE	G
Scott	Cooper	Omicron	G
Christoph	Brunner	IT4Power	G
Deepak	Maragal	LNDTS	M
Marcos	Velazquez	Doble	M

D. H30: IEC 61850 User Feedback Task Force Meeting Minutes

Chair: D. Maragal

Vice Chair: D. Tessier
Secretary: A. Martin
Output: User Feedback to IEC 61850 TFUF, UCA, TISSUE Task Force & Vendors
Established: September/2014
Estimated Completion Date: Ongoing
Draft: 1

Assignment: Collect user feedback from utilities and consultants for designing and implementing IEC-61850 based substation automation system. Prepare a report outlining the experienced issues and suggest enhancements to IEC-61850 standard and manufacturer implementations.

The group met on Jan 14th with 20 attendees:

S.No	Name	Affiliation
1.	Deepak Maragal	LND Technical Services
2.	Kevin Ridley	TRC
3.	Jay Anderson	SEL
4.	Dhanabal Mani	Megger
5.	Jagannath Wijekoon	RTDS
6.	Savit Vajpayee	Dominion Energy
7.	Joerg Blumschein	Siemens
8.	Craig Preuss	Black & Veatch
9.	Christoph Brunner	IT4Power
10.	Jarvis Kenerson	Southern Company
11.	Yuchen Lu	EPRI
12.	Jun Versoza	Doble
13.	Jose Ruiz	Doble
14.	Dhruv Patel	Hubbell
15.	Hugo Monterrubio	Hubbell
16.	Joe Xavier	ABB
17.	Michael Cunningham	
18.	Nirmal Nair	University of Auckland
19.	Priyanka Nadkar	SEL
20.	Dan Nordell	NUGrid Power

This H30 meeting focused on the following agenda:

Overview of Testing practices followed at utilities

- Functional Testing
- Maintenance Testing
- In-service Testing

Isolation practices for Testing

- Practices
- Operational impact
- NERC findings

IEC61850 Testing and Simulation Modes

- Room for Human Error

- Sharing experiences on what utilities are currently doing
- Feedback to device vendors for improvement

Below are the notes from the meeting:

- The chair presented the IEEE policy on patent, copyright, participant behavior and did not receive any comments of concern.
- The chair shared the Testing practices followed in utilities in conventional (non-IEC 61850) system and specifically highlighted the purpose of testing and degree of isolation followed during Functional, Maintenance and In-Service Testing.
- The human error factors mentioned below were presented, and the possibility of similar errors in IEC 61850 testing was highlighted.
  - Wrong panel operated for Testing
  - DUT Inputs/Outputs are properly isolated
  - Isolation not done in proper order
  - Other/Remote end not properly isolated (87L/DTT/POTT/BF/Lockouts)
  - Incorrect wiring for the device
  - DUT Inputs/Outputs not properly put back to service
  - DUT settings changed during testing not properly reverted back
- On IEC 61850, additional human error impact was discussed:
  - User forgot to put the DUT in TEST BLOCK mode
  - Can missops on bus trips, BF trips (multiple contingencies)
  - User forgot to put DUT in ON mode after TEST
  - Fails to operate
  - Not acceptable from the principle of black box testing
  - Need publisher-subscriber verification after testing via LGOS, LSVS or custom logic
  - User should always put DUT in TEST/TESTBLOCK 1st and then SIM=TRUE
  - Will miss trip
- The chair indicated the qualifications of testing personnel having 2 years associate/trade degree vs engineers with 4 years bachelor degree and the differences in the skill sets.
  - The need for a clear step-by-step guidance document from PSRC/WG10 on Testing and Isolation was highlighted.
- There is never a practical case when SIMULATION = TRUE and MODE = ON
  - Alex Apostolov commented that this mode may exist during commissioning time. The chair mentioned that the Commissioning tests involve way more activities than just this mode and it is not practical to use the commissioning case for for everything

The following feedback was shared with the group & the group comment are mentioned below:

Feedback 1) Establish Guidance on 61850 Testing so that human errors can be reduced

  - Christoph mentioned providing this feedback to WG10 to improve IEC 61850-10-3 report on this topic.
  - A new working group in PSRC is expected in the future to address this topic

Feedback 2) Mode coupling → In the vendor's ICT or in the relay, set automatically

1. **When LPHD.Sim = TRUE,** automatically set
   - LPHD.MODE = TEST BLOCKED,
   - GCB.TEST = TRUE

- SCB.TEST = TRUE

2. **When LLN0.Test = TRUE, automatically set**

- SCB.TEST = TRUE
- GCB.TEST = TRUE

- The group comments included the following:

– mode coupling can be done through configuration and no change is required
– users should understand the IEC61850 testing modes and simulation flag properly

Feedback 3) Non-instrusive testing → Automatically set

1. GOOSE Receive = Simulation, automatically set

- GOOSE Publish TEST = TRUE
- SV TEST = TRUE

- The group commented that this mode can cause more problems and need more detailed used case.

E. H31: Common Protection & Control parameters for COMSET

Chair: D. Maragal
Vice Chair: A. Apostolov
Output: Report
Established: September 2015
Estimated Completion Date:
Draft: 10

Assignment: Develop generic models and parameters for protection & protection related parameters.

Meeting conducted with 6 members

The group discussed the following items:

- Draft report 12 excel sheet and the word document and its topic/subtopics. The report will be provided with both documents. Christoph mentioned the need to coordinate with IEEE on copyright issues
- The objective statement was reviewed and commented.
- The definitions of the following were discussed and revised:
  - Binary Value
  - Analog Value
  - Enumeration
  - Description
  - Inputs
  - Outputs
  - Settings
- Jun mentioned the need to include Enumeration in both Inputs and Outputs, especially for RREC logical node. The group discussed this topic extensively and decided to include it in the model.
- The chair is expected to complete the draft in an month and send this to members for review.

S.No	Name	Affiliation	Membership
1.	Deepak Maragal	LND Technical Services	C
2.	Christoph Brunner	IT4Power	M
3.	Jun Versoza	Doble	M
4.	Andre Melo	Schneider Electric	M
5.	Craig Pruess	Black & Veatch	M
6.	Mital Kanabar	GE Vernova	M

F. H40: Databases used in SAS

Chair: T. Laughner
Vice Chair: M. Capuozzo
Output: Guide
Established: 2017
Expected completion date:
Draft: 5

Assignment: Develop IEEE Std C37.1.2, IEEE Recommended Practice Guide for Databases Used in Utility Automation Systems

3 members and 4 guests attended.

Quorum not established.

The meeting was used as a ballot resolution committee meeting to resolve ballot comments.

All but one of the ballots comments were resolved. The chair will work to resolve that one and initiate a recirculation ballot.

G. H41: Revision of IEEE 1646 Communication Delivery Time Performance Requirements

Chair: David Dolezilek
Vice Chair:
Secretary: Mike Dood
Output: Standard
Established Date: 05/2017
Expected Completion Date: 12/2025
Current Revision: D5.E3

Assignment: Revision to IEEE Standard 1646-2004

Dave Dolezilek (Chair) presided over the meeting and Mike Dood (Secretary) recorded

minutes

The meeting participants, including affiliation, is listed below

Dave welcomed us to the meeting

We established quorum with 7 members attending

Approved the meeting agenda (motion-Jay Anderson and 2nd-Craig Pruess)

Approved the minutes of the 9/24/24 meeting (motion-Tom Dahlin and 2nd-Mal Swanson)

Dave presented the IEEE SA Patent Policy, Copyright Policy, and Participant Behaviour slides with no comments

Technical Topics:

- Talked about how to define terms like, Transit time, Transfer time, and Transmission time
- We have previously discussed using 2 examples of IEC models based on the IEC 60255 standards and would like to have more. Current differential (87L) was mentioned. Chris Huntley brought up we should look at the Cigre B5.71 report.

Action items

- Create comparison of how 1646 defines the following terms: transit and transfer and transmission and how other relevant and related standards define these terms (Dave)
- We formed a subgroup to do further work on the text on IED logic latency and to make the description of the LAN latency ‘c’ more general (Dave, Jun, Craig, Jay, & Mike). We plan to meet prior to the May meeting.

PAR Discussion

- The PAR for this effort is expiring at the end of the year. The feeling is the scope of this PAR no longer reflects what the industry is looking for with this standard. We had discussions with an SA representative and the Standards Coordinator which resulted in the feeling that we should let this PAR expire. Then we would ask the H subcommittee for permission to be to form a new Working Group with a new PAR and scope. We will continue these talks and formalize a plan by the September meeting.

We adjourned at 3:30p PST

Next face to face meeting will be in Portland, OR the week of May 12th.

H. H44: P2030.100.1 Guide for Monitoring and Diagnostics of IEC 61850 GOOSE and Sampled Values Based Systems

Chair: **Aaron Martin**
Vice Chair: **David Dolezilek**
Secretary: **Jose Ruiz**
Output: **Guide**
Established Date: **2018**
Expected Completion Date: 2024
Draft: **5.6**

Assignment: Write a IEEE guide titled "Monitoring and Diagnostics of IEC 61850 GOOSE and Sampled Values Based Systems".
Scope: This guide provides information about what factors to consider when applying IEC 61850 GOOSE and Sampled Values to monitor and diagnose communication of automation systems.
Purpose: To provide guidance to protection & automation engineers when applying monitoring features IEC 61850 GOOSE messages and Sampled Values to support the implementation of condition-based maintenance, cyber security monitoring and improved commissioning of communications of automation systems.

6 working group (WG) members in the room, 2 members online, 1 non-voting member and 21 guests were at this meeting. The minimum quorum requirement of 8 was met.

Aaron Martin, WG chair, conducted the meeting in the room.

Quorum was established and a motion to approve the September minutes of the meeting was made by Dave Dolezilek (first) followed by Benton Vandiver (second). Meeting minutes were approved.

Patent, IEEE guidelines and code of conduct, and copyright slides were shown to attendees.

The current document draft version is 5.6, which is available in iMeet.

A presentation titled: Case Study - Diagnosing and troubleshooting fault detected by monitoring in SV based digital protection system, was presented by Mr. Dolezilek.

This presentation showed a medium size monitoring implementation in a specific protection relay manufacturer. The monitoring size is in line with the work done in this WG guide. The implemented monitoring shows IEC 61850 optional, mandatories and other signals necessary for root cause (RCA) analysis.
A review of event records indicated a time issue. Time inaccuracy came from the transparent clock (TC).

The RCA shows a large precision time protocol (PTP) delivery latency prompted a relay re-syntonization.

The TC experienced a time-based upset, which was not able to precisely calculate time.

The TC elevated values of network time inaccuracy and correction field to indicate to downstream consumers (as per standard).

The PTP subscriber had no choice but to accommodate large inaccuracy and large correction field (as per standard).

The quality of the time was suboptimal, which became a local issue.

IEEE C37.238-2017 power profile provides inaccuracy information for RCA in TLV, whereas IEC 61850-9-3 power utility profile does not.

Typical test tools and topology are not appropriate for precise time analysis.

PTP messages are generated (and regenerated for mirrored ports) based on port specific PHY.

It was recommended to carefully capture PTP messages on specific ports.

This was not a relay problem.

Nirmal Nair asked about best practices of using Wireshark as a troubleshooting tool. Dave replied that his company uses this tool during development, which is useful for such RCA cases. He is willing to share what he typically shares with his customers upon request.

Aaron asked the presenter how this problem was replicated for the RCA. Dave answered that the procedure is commercial, which limits him to talk about it in this meeting.

Next H44 WG meeting will be in Portland, Oregon at the Hilton Portland Downtown hotel.

A motion to adjourn the meeting was made by Dave (first) and followed by Jay Anderson (second).

Future Meeting: For future meetings, WG H44 will need a room for 25 people with a supporting projector.

Conflicts: Avoid conflict with WG H41, H46, D48, H45, H47, H50, P16

Attendee List (**Names and affiliation only, no emails**)

Voting Members (15)		
NAME	**AFFILIATION**	**ATTENDANCE**
Aaron Martin	BPA	X
Alex Apostolov	Omicron	X
Benton Vandiver	Hitachi Energy	X
Bruce Muschlitz		
Craig Preuss	Black and Veatch	X
Dave Dolezilek	SEL Inc.	X
Dean Ouellette	Quanta Technology	X
Dustin Tessier	Tesco	
Eugenio Carvalheira	Omicron	
Herbert Falk	Outside the Box	
Jose Ruiz	Doble Engineering	X
Jun Verzosa	Doble Engineering	X
Karen Legget-Wyszczelski	SEL Inc.	
Nestor Casilla	Doble Engineering	
Scott Mix	PNNL	
Non-Voting Members (4)		
Arun Shrestha	SEL Inc.	
Emmoji Vundekari	GE	
Jay Anderson	SEL	X
Ryan Newell	TRC Companies	
Guests and Past Guests		
Abel Gonzalez		
Adi Mulawarman	Xcel Energy	X

Alexander Pratniczka	Hitachi Energy	
Amin Banaie	GE	
Andre Melo	SE	
Andre Uribe	Power Grid Engineering	
Angelo Tempone	Duke Energy	
ArundoDai Chanda	Burns & McDonnell	
Athula Rajapakie	University of Manitoba	
Bharat Nalla	SEL Inc.	
Byungtae Jang	Naver	
Charles Pestell	Powell	
Chris Huntley	SEL	X
Christoph Brunner	It4power	X
Christopher Ness	Megger	X
Christopher Paredes	Enercon	X
Craig Wester	GE Vernova	X
Dan Ransom	GE	
Daniel Lebeau	Hydro-Quebec	X
Daniel Nordell	Xcel Energy	X
Daqing Hou	SEL	
Darren DeRonde	Tesco Automation	
Dhruv Patel	Bechwith Electric-Hubbell	
Dinesh Gurusinghe	RTDS	X
Emmoji Vunderkari	GE	
Eric Thibodeau	Hydro-Quebec	
Erin Jessup	SEL	
Faris Elhaj	Burns & McDonnell	
Farzad Khalilpour	GE	
Fernando Calero	SEL Inc	
Galina Antanova	Hitachi Energy	
Gayle Nelms	SEL Inc.	
Geshan Wrosinghert	Meinberg USA	X
Greg Hataway	Burns & McDonnell	
Greg Zweigle	SEL Inc.	
Guilherme Pires	Siemens	X
Hani Al-Yousef	Eaton	
Hugo Monterrubio	Hubbell / Beckwith	X
Jack Wilson	Ameren	
James Formea	EATON	
Jarris Kenerson	Southern Company	X
Jay Shumar	Hitachi Energy	
Jeff Dagle	PNNL	
Jeff Pack	Power Engineers	
Jesse Sliva	SCE	
Jim Hackett		
Joe Xavier	ABB	
Joel Green	SISCO	
Jorg Blumshein	Siemens	
Jorge Cinton	USNRC	
Ken Fodeso	SEL	
Kevin Malpede	ComEd	X
Marcos Velazquez	Doble Engineering	X
Mario Capuozzo	Doble Engineering	
Matt Black	Sargent Lundy	

Matthew Leyba	GE Vernova	X
Michael Cummingham	Power Grid Engineering	
Mike Basler	Basler Electric	X
Mike Dood	SEL	X
Mital Kanibar	GE	
Mohit Sharma	SEL	
Nelson Perilla-Sanchez	NCS	
Nicholas Kraener	National Grid Power	
Nirmal Nair	UoA	X
Nuwan Perera	Earlphase	
Orville		
Pail Myrda	EPRI	
Priyanka Nadkar	SEL Inc.	
Rich Hunt	Quanta Technology	
Romulo Bainy	University of Idaho	
Safety Pepljak	YRC Companies	
Sam Talukder	Eaton Corp.	X
Scott Short	Doble Engineering	
Shane Haveron	Ametek	
Shivam Prabitakar	Siemens	
Thai Li	Hubbell	
Thomas Rudolph	SE	
Tuan Tran	TVA	
Wang Zitao		
Wayne Pawley	Sisco	
Werner ABT	Meinberg USA	X
Xiangyu Ding	S&C E	
Yanfeng Gong	SEL Inc.	
Yuchen Lu	EPRI	
Yujie Yin	GE	

I.H45: PC37.300 Guide for Centralized Protection and Control (CPC) Systems within a Substation

Chair: R. Das
Vice-Chair: P. Myrda
Secretary: M. Kanabar
Expected Output: Guide
Established: 5/18
Expected Completion Date: 12/2024
Draft: 6.46

ASSIGNMENT: Develop a guide for Centralized Protection and Control (CPC) Systems within a Substation

The working group didn't meet during the January 2025 PSRC meeting week held during IEEE PES JTCM 2025.

The proposed draft 6.51 of PC37.300 to IEEE SA RevCom was approved by RevCom and subsequently by IEEE SA Governing Board during the Dec 2024 meetings.

Chair was contacted by IEEE SA publication review team and informed that chair will hear about the review process for publication. Chair is waiting to hear from the review team. Chair will contact WG members and subcommittee members, as and when required, following the information from the IEEE SA publication review team.

J. H46: Recommended Practice for Human-Machine Interfaces (HMI) used in Substation Automation Systems (PC37.1.3)

Chair: Matt Black
Vice Chair: Craig Preuss
Secretary: Shane Haveron
Output: Recommended Practice for Human-Interfaces (HMI) used with Electric Utility Automation Systems (PC37.1.3)
Established: September 2018
Expected Completion Date: December 2025
Draft: 2.0

Assignment: Produce a Recommended Practice for Human-Machine Interfaces (HMI) used with Electric Utility Automation Systems

The chair called the hybrid meeting to order on Wednesday 1/15/25 at 9:20 PST. There were 8 attendees: 6 out of 14 voting members and 2 guests, not achieving a quorum.

After introductions, the agenda, patent, copyright, and participant slides were reviewed with no comments received. There were no presentations or Old business.

Status update was given by the chair that we were done resolving comments & were ready to proceed to IEEE-SA Recirculation #1 ballot. The ballot resolution group addressed all 42 of the first round comments with 17 accepted, 13 revised and 12 rejected. Our esteemed IEEE-SA PM Malia Zaman was in attendance and offered to give the comment resolutions a review prior to our initiation of the recirc #1. Chair intends to get this recirc initiated by week's end. If following the recirc no comments are received, then this revision will be sent for publication with the last opportunity for REVCOM/NESCOM being beginning of October 20th. Our PAR expires at the end of this year. If comments are received, we will resolve them and submit recirc #2, and so on.

The WG leadership acknowledges that we had to pull our scope back considerably from what was originally established via the PAR. Our long-range plan is to re-open the Recommended Practice for revision immediately after initial publication to continue our work and complete the originally proposed scope in its entirety. The Chair has indicated an interest in finding a replacement for himself with this next rendition of work for this Recommended Practice.
If applicable for the May meeting in Portland, OR we will request room for 25 with a projector. We kindly request conflict avoidance with J24, H27, H52, & S15.

K. H47: Impacts of IEC 61850 sampled values, GOOSE and PTP time synchronization on protection and control applications using process bus

Chair: Mital Kanabar
Vice Chair: Antonio Riccardo
Secretary: Dean Ouellette
Output: Report
Established Date: September 2019
Expected Completion Date: 12/31/2025
Current Revision: 1.7a

Assignment: In a digital substation Protection and Control (P&C) devices rely on Sampled Values (SV), GOOSE and time synchronization (using Precision Time Protocol, PTP) together over process bus communications. This Working Group will generate a report evaluating the discrepancies in the communication of SV, GOOSE or PTP messages and their impact on protection and control applications such as performance and behavior.

14 attended; 10 voting members, 4 guests; quorum was achieved.

Patent slides and Copyright policies were shown, and all participants asked to speak up about any patent claims at this time. No claims were offered. The IEEE Participant Behavior slides were also shown.

No presentations were scheduled during this meeting.

Minutes:

- GOOSE message abnormal conditions were reviewed
- Eric Udren propose to circulate document from IEC to H47 WG members
- Future meetings
    - May 12-15, 2025 in Portland, Or. Hilton Portland Downtown

For the next meeting, seating for 30 and a projector.

Avoid Conflicts: H50, H30, H31, H44, H46, S15.

Name	Affiliation	Membership
Mital Kanabar	GE Vernova	VM ©
Dean Ouellette	Quanta Technology	VM (VC)
Galina A.	Hitachi	VM
Chris Huntley	SEL	VM
Nicholas Kraemer	NuGrid Power	VM
Dinesh Gurusinghe	RTDS	VM
Jose Ruiz	Doble Engineering	VM
Arun Shrestha	SEL	VM
Daniel Lebeau	Hydro Quebec	VM
Priya R	Siemens	VM
Eric Udren	Quanta Tech	G

L. H49: Application Considerations on the Use of Packet-Switched Communication Channels for Pilot Protection and Teleprotection Schemes

Chair: Steve Klecker
Vice Chair/Secretary: Galina Antonova
Output: Report
Completion Date: TBD
Current Revision: N/A

Assignment: To develop a report on application considerations and experiences on the use of packet-switched networks from a teleprotection application point of view for the benefit of relay engineers. Produce tutorial/summary presentation based on report.

Scope: Document fundamentals of packet-switched networks as they apply to protective relaying. Document teleprotection application requirements when using packet-switched networks; including latency, bandwidth, redundancy, switch-over, asymmetry, use of external time synchronization for 87L wth dependence on GPS. Considerations for leased networks (Service Level Agreement). Document any industry experiences. Outage processes and procedures.

Working Group (WG) H49 met on January 13, 2025, in Garden Grove, CA during the 2025 IEEE PES Joint Technical Committee Meeting. This was a hybrid meeting. In total 27 attendees joined (9 voting members [including 1 new member: Tuan Tran of TVA], 1 non-voting member, and 17 guests).

IEEE policy slides were presented. Quorum was achieved. Minutes of the September 9, 2024, (moved by Ken Fodero, seconded by Tom Dahlin) meeting were approved unanimously.

Vice Chair, Galina Antonova, conducted the meeting face-to-face with the online support of the WG chair: Steve Klecker, and secretary Jose Ruiz.

Galina showed the draft report outline and provided an update on utility use cases that have been presented: SDG&E, TVA and Hawaiian Electric. The TVA use case is well written and will be included into the report as is. Galina thanked the TVA contributors, represented at the meeting by Tuan Tran.

A call for more utility use cases was made. Galina will continue reaching out to Altalink, PG&E and CFE (Mexico). Steve will contact MidAmerican Energy. Ethan Grindle volunteered to check on the ATC use of MPLS for line current differential application. Jay Anderson volunteered to check with ComEd (confirmed no transmission application over MPLS). BPA plans to present later this year.

The use case template was showed to the WG attendees for reference and a discussion on technical topics to include in the report followed.

Adrian Zvarych suggested adding handling transient conditions, e.g., to show how 87L continues to “ride through” during the communication path switching. Eric Udren mentioned that the protection relay could select a secondary communication path, when

the primary one fails. Adrian also suggested including real life examples of operations and misoperations. A call to utilities can be made to share their experiences.

Latency, asymmetry, failover, and availability are currently listed as the main requirements. Bandwidth and over subscription were mentioned and could be considered as additions.

Galina shared that Ken provided the use case write-up for Hawaiian Electric based on their presentation and thanked Ken. A suggestion to use the latest use case template with relay to communication equipment interface description was made. Ken agreed to update the write-up, which will be sent to the WG.

The SDG&E use case submitted by Eric Udren, in September 2024, did not include the latest experiences and lessons learned. These are captured in the new paper presented at the WPRC conference in October 2024. Eric started giving an update on the latest SDG&E findings. The WPRC paper and presentation will be shared with the H49 WG. Eric agreed to update the SDG&E use case write-up.

No motion to adjourn the meeting was required because the meeting ended a few minutes late.

Requirements for the next meeting remain the same.

Attendee's list is provided in a separate Excel file.

M. H50: Requirements for Time Sources in Protection and Control Systems

Chair: Dean Ouellette
Vice Chair: Jay Anderson
Secretary: None
Output: Report
Established Date: May 2019
Expected Completion Date: 12/31/2022
Draft: 1.7.6

Assignment: Presently there are IEEE and IEC standards around (accurate) time distribution systems (for example, IEEE 1588 and associated Profiles, IEEE/IEC 61850-9-3, etc.). The intent of this Report is to document requirements for Time Sources (Clocks) used in Protection and Control Systems.

Meeting 14 January 2025, 17:00 – 18:10 PST at the Hyatt Recency Garden Grove, Grand E, called to order 17:06. Chair Dean Ouellette presided; Vice Chair Jay Anderson was present and took notes.

16 attended; 7 voting members total were in this meeting out 11 voting members; quorum was achieved.

Patent slides and Copyright policies were shown, and all participants asked to speak up about any patent claims at this time. No claims were offered. The IEEE Participant Behavior slides were also shown.

No presentations were scheduled during this meeting.

Chris Huntley pointed out that during the 9/10/2024 the WG voted to disband but was subsequently voted against by H SC during the 9/11/2024 SC meeting.

Minutes:

- Minutes from the September 10, 2024, meeting was approved following a motion from Scott Mix Vandiver and a second from Chris Huntley

Old Business

- Reviewed the Scope.
- Proceeded to review the existing document and remove outstanding writing assignments that are delaying the report from moving toward HSC ballot for comment.

New Business

- Aaron Martin to review contribution in Section 3.6 (monitoring).
- Jay Anderson to review and either add text or prune the monitoring use case outline bullets.
- The section on security is to be removed or reduced to a statement that clocks should follow IED requirements from IEEE 1686.
- Chris Huntley pointed out that Craig Preuss said he could provide values for the section on application requirements.
- Nicholas Kraemer will check holdovers section for granularity requirements in error reporting.
- Dean Ouellette will review existing draft; prune, clean up or assign reviews as needed.
- WG will try to get the current draft ready for internal and subcommittee review before the May meeting. We will arrange an interim meeting if needed before then with the WG for additional review.
- Future meetings
    - May 12-15, 2025 in Portland, Or. Hilton Portland Downtown
- Adjournment
    - The meeting was adjourned early at 17:48.

Note: files for the H50 workgroup are stored in iMeet Central at:

https://ieee-sa.imeetcentral.com/psrcc-h50/folder/WzIwLDEyNTQ5NTk4XQ

For the next meeting, seating for 30 and a projector.

Avoid Conflicts: H47, H44, H46, S15.

Name	Affiliation	Membership
Dean Ouellette	Quanta Technology	VM
Jay Anderson	SEL	VM
Chris Huntley	SEL	VM
Nicholas Kraemer	NuGrid Power	VM
Aaron Martin	BPA	VM
Scott Mix	PNNL	VM
Marcos Velazquez	Doble Engineering	VM
Anthony Johnson	SCE	CM
Werner Abt	Meinberg USA	G
P Chavez	NuGrid Power	G
Ethan Grindle	ATC	G
Dinesh Gurusinghe	RTDS	G
Jarvis Kenerson	Southern Company	G
Sakis Meliopoulos	GA Tech	G

Prianka Nadkar	SEL	G
Dhruv Patel		G
Guilherme Pires	Siemens Brazil	G
Jose Ruiz	Doble Engineering	G
Arun Shrestha	SEL	G
Savit Vajpayee	Dominion	G
Geshan Wrosinghert	Meinberg USA	G

N. H51: Revision of C37.239-2010 Standard on a Common Format for Event Data Exchange (COMFEDE)

Chair: Mark Adamiak
Vice Chair: Pierre Martin
Secretary: Zach Makki
Output: Standard Revision
Completion Date:
Current Revision:

Assignment: Revise the current COMFEDE standard (C37.239-2010)

Jean Sebastian Gagnon has stepped in as editor of the document (required special editing tools) and the chairman can now report that the comments from the last SC ballot have been incorporated. Permission to ballot was received at a previous SC meeting. The chair is now in the process of forming a standards balloting body to ballot the standard.

H52: C37.232 Standard for Common Format for Naming Time Sequence Data Files (COMNAME)

Chair: Ellery Blood
Vice Chair: Shane Haveron
Output: Revision of an Existing Standard
Established Date: September, 2021
Expected Completion Date: December, 2025
Assignment: Revise the Standard. The revision to include clarification on methods of use such as use for naming folders and allowing for underscore delimiters.

a) Ellery Blood (Chair) presiding
b) Shane Haveron (Vice Chair) presiding remote
c) Call to order
d) Intellectual Property slides
e) Chair's remarks
f) Results of call for quorum
    a. 7 of 10 members present (floor(10/2) +1=6), quorum established.
g) Approval of Agenda (motion and second)

a. Theo made the motion
b. Shane seconded the motion
c. Approved by exception

h) Approval of Minutes of September 2024 meeting (motion and second)
   a. Theo motion
      Dan second
   b. Motion passed by exception

i) Discussion
   a. Ellery – Review COMNAME draft v0.03 available on ieee-sa.
      i. Front Matter: Introduction
         1. path+name length – discussion
            a. Shane to research and propose edits relating to path+name length on different operating systems and media formats (e.g., CD / DVD). Include pros and cons of limits of path length and provide recommendation.
            b. Mac OS/X – 255 for name and 1024 for path
            c. Linux EXT4 – 255 for name and 4096 for path
            d. Windows 11 – 260 characters for path+file
               i. With NTFS long paths enabled – 260 for file, 32767 for path+file
            e. Compact Disc
               i. ISO 9660:1999
                  1. 30 for file and folder names, 128 for path and depth limited to 8 nested folder.
               ii. ECMA-119 4th edition June 2019
                  1. Primary volume descriptor – 30 for file
                  2. Enhanced file descriptor– 207 for file and folder names, no limit on total path length
            f. ZIP (pkware APPNOTE-6.3.9)– 65535 for path+file
      ii. Add underscore as allowed delimiter **– accepted**
         1. General philosophy is that without a schema, the new standard uses the 2011 standard but explicitly allowing underscore for delimiter. – discussion
            a. Added paragraph to section 1.4
            b. Clarified Shall language for comma and underscore
            c. Clarified Should for comma unless necessary to deconflict with 61850
            d. Clarified Can for other delimiters if specified in schema.
      iii. Schema
         1. Section 4.3 Required Fields
            a. Schema may specify 2 or 4 digit years
               i. Shall – year shall be 2 or 4 digits. If no schema, look at 7th or 9th character for comma or underscore to identify which year format is being used. Use schema otherwise.
      iv. User Fields – Section 4.4

1. Use ISO 8601 to represent durations.
    a. Amir Motion, Theo Second. Unanimous Approved
    b. Potentially more verbose than 2011 standard for long duration events, but more concise for short events. Does use an existing standard.
    c. Discussion:
        i. Without schema, if optional duration field is included shall use 2011 format.
        ii. Sif schema included, should use 8601.
        iii. Also include option to specify end time (2011 format) rather than duration.
        iv. Do not include language prohibiting redundant information (e.g., duration and end time).
2. Add examples for Data Type
    a. Add table of examples - discussion
3. Use ISO 6709 for geographic position coordinates
    a. How does schema allow 2011 style location fields? – discussion
    b. Consider how PostGres / SQL database encodes geospacial coordinates.
4. Add annex describing user fields in schema - discussion

v. Section 3.3 Coding Schemes - discussion
    1. Do we need this section?

vi. Section 4.2 Limitations - discussion
    1. Do we need this section anymore?

vii. Section 4.7 Geographic Position (latitude and longitude) - discussion
    1. Do we need this section?

j) Action items
    a. Ellery - iMeet Central – members to request access to H52 workspace, email Ellery and/or Shane.
        i. https://ieee-sa.imeetcentral.com/h52/home
    b. Ellery – IEEE myProject (https://development.standards.ieee.org/)
        i. Go to manage profiles and interest
        ii. Search for C37.232, indicate interest in “PC37.232 WG H52 Standard for Common Format for Naming Time Sequence Data Files (COMNAME)”
    c. Ellery – Status of Discussion Points.
k) Next meeting date and location
    a. Virtual: February TBD
    b. Virtual: March TBD
    c. Virtual: April TBD
    d. In Person: May 12-15 2025 PSRC meeting, Portland Oregon.
l) Theo motion to adjourn the meeting.

VI.

VII. Attendance

Members in attendance (7 of 10):
Dan Sabin
Ellery Blood
Hani Al-Yousef (remote)
Shane Haveron (remote)
Theo Laughner
Jun Verzoza (remote)
Amir Makki (remote)
Members absent:
Ethan Grindle
Nallan Kumar
Hugo Monterrubio
Guests (4)
Eric Thibodeau
Malia Zaman
Mital Kanabar
Nicholas Kraemer

VIII.

IX.

X. Under Consideration:

1. Time Zone – support local time as offset (character X for time code)? Assume local time if time zone field is blank?
2. Standard to further specify field parameters (e.g., length of StationID and DeviceID)?
3. Standard versioning – if no schema, is existing standard (except for 4-digit year and allowing both comma and underscore). If schema exists, schema includes standard revision year?
4. Archive technology informative annex.
5. For optional fields (location) use ISO standard rather than what was defined in previous COMNAME release?
6. Nicholas proposal of indicating in the filename if schema is required. Maybe leading underscore or “s” character?

XI.

XII.

XIII. Resolved:

1. Delimiter – (Shall) First non-digit character (typically 7th or 9th) in file name.
    a. (May) Other delimiters allowed if specified in the schema.
2. Time Zone – (Should) use 0 for time zone offset (e.g., use UTC).
3. Schema for Folder Structure – (May) May use schema file to define folder structure.
4. (Shall) Required fields shall still be included even if fields are also in folder structure.
    a. (May) Order of fields (including required fields) may be modified via Schema file.

5. (May) New clause on how to deal with compressed / archive type files that may contain multiple records from multiple devices. That clause would include how to organize data within the archive and how to name the archive file itself.
6. (Shall) Separate "Type" field into "Data Type" and "Trigger Type". Create informative language.
    a. (Should) Use Data Type (optional field) to distinguish different types of reports from single device and trigger (e.g., PMU, Raw, and Filtered records).
7. (Shall) Include schema for file name if deviating from the default.
8. (Should) use 8601 for duration and (May) use 2011 as defined in schema. May specify end time.
9. Include discussion regarding max path/name lengths in different operating systems and media.
7. Date field – support 2 and 4 year format. Both are acceptable, if no schema look at 7th or 9th character for comma or underscore.
8. For optional fields (duration) use Should ISO standard rather than what was defined in previous COMNAME release. Existing optional field is still acceptable (May).
9. Zip archives –cover naming of zipped event record archives.
10. Zip archives –specify file structure for zipped event record archives.
11. Schema in XML (consistent with previous standard, but with some additions).
10.

Regarding Zip files as a container, here is the H54 working group recording their recent discussions with PKWARE (the PKWare Deflate algorithm was protected under U.S. Patent US5051745, granted 24 September 1991. Expired on 21 August 2010):
At the January 2024 meeting, a question was raised on whether a proposed contribution that would require the Zip specification from ISO/IEC 21320-1:2015, which in turn is based on the Zip specification from PKWARE, may require use of essential patents owned by PKWARE.
As an action item, the DLMT leadership contacted PKWARE, explained the proposed use of Zip files in the revision of COMTRADE-2013, and asked them to submit a Letter of Assurance to the IEEE SA Patent Committee Administrator. The response from PKWARE was that "there is insufficient overlap to necessitate the execution of a Letter of Assurance"

H53/P16: Revision of IEEE Guide P1854 Use Guide for Smart Distribution Applications

Chair: **X. Ding, C. Preuss**
Vice Chair:
Secretary:
Output: **Guide**
Established Date: **09/2021**
Expected Completion Date: 12/2024
Current Revision: 2024-D002

Assignment: Revision of IEEE Guide P1854 Use Guide for Smart Distribution Applications

Did not meet. Waiting for 1854 to be published and will vote to disband the liaison group in May meeting.

H54: Revision of IEEE C37.111-2013/IEC 60255-24:2013 Standard for Common Format for Transient Data Exchange (COMTRADE)

Chair: **Mark Adamiak**
Vice Chair: **Zach Makki**
Secretary: **Dan Sabin**
Output: **Standard**
PAR Approval Date: 2022 Sep 11
PAR Expiration Date: 2026 Dec 31
Current Revision: IEEE Standard C37.111-2013 (IEC 60255-24 Ed.2)

Assignment: To complete the revision of IEEE Standard C37.111-2013 (IEC 60255-24 Ed.2) as part of an IEEE/IEC Dual Logo Maintenance Team Project.

Call to Order: The 8th meeting of the H54 IEC/IEEE COMTRADE Revision Dual Logo Maintenance Team (DLMT) for COMTRADE Revision convened at 8:00 AM Pacific Time and was chaired by Mark Adamiak. Meeting minutes were recorded by Dan Sabin.

Quorum: A total of 25 people attended the meeting, including 6 online. Quorum was established.

Required IEEE SA Slides: The slides for essential patents, copyright policy, and participant behavior were shown by Dan Sabin. No new possible essential patents were declared.

Meeting Discussion
The agenda for the 2025 January 12 meeting was reviewed and approved.
The minutes from the 2024 September 9 meeting were reviewed and approved.
A development version of IEEE Std 1159.3-2019 Power Quality Data Interchange Format (PQDIF) was posted on the iMeet Central workspace. A draft of P1159.3 was submitted to IEEE SASB RevCom for its 2025 January 29 meeting for consideration as the revision of IEEE Std 1159.3-2019.
Ellery Blood presented a report on the task force that examined whether Base64 should be used as an optional third format in addition to ASCII and binary. The task force did not report that the positives of using Base64 as compact format (e.g., text-based making it equivalent to other human-readable readable text in a single file) outweighed the extra processing it would take to use Base64 (i.e., converting first from Base64 to byte arrays and then from a byte array to an array of singles, doubles, shorts, longs, etc.). There was a lengthy discussion regarding Base64 that ended with a motion that was approved to not specify Base64 as an additional file format at this time in the COMTRADE revision draft.
The subgroup led by Ellery Blood was assigned to continue research into example data formats that could combine XML files and binary data files.
Mark Adamiak presented a proposed contribution for a configuration file that would be XML-based and could handle a requirement that Sample Synchronization be stored. The working group discussed at length the pros and cons for storing multiple COMTRADE records in a single file or in multiple files that could be tied together with an XML-based manifest file. No consensus was reached.

Next Meeting: The H54 DLMT will meet in person at the IEEE PES Power Systems Relaying & Control Committee Meetings in Portland, Oregon, USA on 12 May 2025 from 8:00 to 10:30 AM Pacific Time.

Adjournment: The meeting adjourned at 10:30 AM Pacific Time.

Attendee List

The following 25 people attended the COMTRADE DLMT **meeting.**

First Name	Last Name	Company

Mark	Adamiak	Adamiak Consulting
Yazid	Alkraimeen	Siemens
Farrokh	Aminifar	Quanta Technology
Galina	Antonova	Hitachi Energy
Sandro	Aquiles-Perez	Siemens
Thierry	Bardou	Schneider Electric
Stephen	Blair	Synaptec
Ellery	Blood	Schweitzer Engineering Laboratories
Jörg	Blumschein	Siemens
Abdelhamid	Elarchi	Hydro-Québec
Dinesh	Gurusinghe	RTDS Technologies
Erin	Jessup	Schweitzer Engineering Laboratories
Nicholas	Kraemer	NuGrid Power
Christoph	Lackner	Grid Protection Alliance
Theo	Laughner	Lifescale Analytics
Zack	Makki	Softstuf
Deepak	Maragal	Eureka Power Solutions
André	Melo	Schneider Electric
Dean	Ouellette	Quanta Technology
Juan	Piñeros	XM Colombia ISO
Shashidhar	Reddy	Schweitzer Engineering Laboratories
Daniel	Sabin	Schneider Electric
Arun	Shrestha	Schweitzer Engineering Laboratories
Éric	Thibodeau	Hydro-Québec
Malia	Zaman	IEEE Standards Association

**********End of WG Reports**********

Task Force Reports:

HTF55	Investigate Distributed Cyber Physical Assessment for Grid Resilience	Jeff Pack
HTF56	H SC Ideation Meeting	Mital Kanabar
HTF57	Evaluate the need to revise 2030.101-2018 IEEE Guide for Designing a Time Synchronization System for Power Substations	Dean Ouellette

HTF55: Investigate Distributed Cyber Physical Assessment for Grid Resilience

a) Jeff Pack, Chair, presided and took the minutes.
b) Meeting participants

Name	Affiliation	Attendance Type (W – Web, P – Phone, L – Local)	Member - Guest
Jeff Pack (Chair)	Consultant	L	M
Reza Arani	Toronto Metropolitan University	L	G
James Bougie	Albireo Energy	L	G
Jorge A. Cintron	NRC	L	G
Mike Dood	SEL	L	G
Muhammad Hamid	Black & Veatch	L	G
Anthony Johnson	SCE	L	G
Brian Johnson	University of Idaho	W	M
Michael Legatt	ResilientGrid	W	G
Tapan Manna	Burns & McDonald	W	G
Anthony Montoya	DOE	L	G
Frederick O'Brien	NRC	L	G
Dean Ouellette	Quanta Technology	L	G
Craig Rieger	TRECS Consulting	W	M
Neil Saia	Entergy	W	G
Jonathan Tacke	Idaho National Laboratory	L	G
Sam Talukder	Eaton	W	G

c) Quorum was achieved.
d) Agenda was reviewed and approved – Rieger moved, and B. Johnson seconded. No disapprovals or abstentions were noted.
e) Previous meeting minutes were reviewed and approved – Rieger moved, and B. Johnson seconded. No disapprovals or abstentions were noted.
f) Task Force Status:
    a. The Task Force report has been submitted to the H Subcommittee.
    b. In preparation for transition to a Working Group, the Task Force arranged for Dr. Michael Legatt to present to the PSRC on his research and application of "Visualization, Situational Awareness, and Cyber-Physical Resilience in Real-Time Electric Power Operations." The presentation was held on Monday, January 13 at 2:30 p.m. PST at the JTCM Meetings in Garden Grove, CA. The presentation had 22 in-person and 9 virtual attendees and generated significant discussion by the group. The Task Force appreciates the contribution of Dr. Legatt to the field of study and thanks him for attending the JTCM and PSRC meetings of the Task Force.
    c. The Chair displayed the draft motion to present to the H Subcommittee to transition the Task Force to a Working Group. There was discussion from A. Johnson regarding the need to add additional details regarding the eventual deliverable of a report.
    d. The Chair called for a motion to approve the language in the modified draft motion for H Subcommittee. Rieger moved, and B. Johnson seconded. No disapprovals or abstentions were noted.
g) The meeting was adjourned at 1:45 P.M.

Motion HTF55

Motion made by: Amir
Second by: Deepak with amendment to title
Result of H SC vote: Not approved

1

MOTION

TF: HTF55 Distributed Cyber Physical Assessment for Grid Resilience

Motion: HTF55 motions to transition the TF to a Working Group.

Reason: The TF report and the presentation from Dr. Michael Legett on January 13, 2025, indicates that there is sufficient interest from the IEEE membership to continue this effort under a Working Group and develop a report regarding the available technology and science to influence future standards and guides.

HTF57: Evaluate the need to revise 2030.101-2018 IEEE Guide for Designing a Time Synchronization System for Power Substations

Chair: Dean Ouellette
Vice Chair: Jay Anderson
Secretary: None
Output: Recommendation
Established Date: January 2025
Expected Completion Date: TDB
Draft: Not applicable

Assignment: Assignment is to evaluate the need to revise 2030.101-2018 IEEE Guide for Designing a Time Synchronization System for Power Substations.

*****JANUARY 2025 MEETING MINUTES FOR HTF57 PENDING****

8. Old Business
    a. None

9. New Business

** Meeting Adjourned

"I" Subcommittee Report – Protection and Control Practices

Chair: Angelo Tempone
Vice Chair: Todd Martin

1. Welcome and guidelines for meeting
   a. Sign-in sheet is being passed around. Member names are listed. If your information has changed, please update it in the sign-in sheet.
2. Recognitions:
   a. Attendee introductions
   b. Thank guests for attending
3. Many thanks to former members of the I-SC:
   a. None
4. Welcome to new members of the I-SC:
   a. None
5. Determine a Quorum (**44 members** total in I-SC)
   a. Attendance: 28(min 23 for quorum; YES X or NO __)
   6. Approval of current meeting agenda
   a. Motion entered by: Daniel Ransom
   b. Motion seconded by: Michael Higginson
7. Approval of Minutes of the Sep 11, 2024, meeting
   a. Motion entered by: Amir Makki
   b. Motion seconded by: Ritwik Chowdhury
8. Coordination & Advisory Committee Meetings Items of Interest
   a. Attendee information (approximate): 233 ***in-person/virtual PSRC attendees (12 new)***
   b. *Future Meetings – See "Future Meetings" page on PSRC website:*
      - *May 12-15, 2025 – Portland, OR*
      - *September 8-11, 2025 – Richmond, VA*
      - *January 11-15, 2026 (JTCM) – Atlanta, GA*
      - *May 11-14, 2026 – Cleveland, OH (tentative)*
      - *September 14-17, 2026 – Reno, NV (tentative)*
   c. Policies and Procedures for: Power System Relaying and Control Committee Working Group—see PSRC Knowledge Base—review regularly for updates

- P&P and O&P approved version (July 16, 2024) now available in https://www.pes-psrc.org/knowledgebase!
  - Three officers: Chair, Vice-Chair, and Secretary
  - All WG Officers shall be members of IEEE SA

   d. *Working Group sign-in sheets – use confidential procedure!!!*
      - See instructions on PSRC website for how to create your Working Group roster and attendance list for handout at your meeting. Email addresses are no longer permitted to be placed on your sign-in sheet. Attendees must add their email address when they register for PSRC meetings.
      - Use a spreadsheet to maintain attendance records. Use BCC on email correspondence

to maintain confidentiality of user contact information. Attendance roster should contain name and affiliation, but not email addresses, phone numbers, or other contact information.

Begin using new Member Planet Association Management System when available. This allows you to be on the relevant mailing lists. This system will also be used for registration for future meetings.

e. For PAR-related work, present the new patent slides and *record in your minutes* whether essential patent claims exist. If there are none, please write this into the minutes. *Do this at every working group meeting*. New JUNE 2021 slides available and are at http://standards.ieee.org/about/sasb/patcom/materials.html. To expedite your meeting, send the slides with the meeting agenda so meeting attendees can review ahead of time.

f. Looking for Webinars to publicize our PSRC work products as part of Global Outreach
   - Availability of WebEx for presentations by IEEE. Every WG that has completed their work is encouraged to present it to the IEEE community through WebEx which will project our work. Please contact Cathy Dalton, Chair of Publicity group or Jim Niemira, Gene Henneberg, or Gary Kobet.

g. **Looking for presentations for future Main Committee meetings** – please contact Gary Kobet or Angelo Tempone.

h. The PSRC Committee is international and open to anyone who cares to attend.

i. New "Awards" page on PSRC website—with pictures of recent awards ceremonies

9. Administrative Items

a. From IEEE-SA: WG/TF Agendas and Minutes: "*The 14-calendar-day rule" – the Standards Association requirement in O&P*

b. Procedure for PARs:
   - All PAR related activities must be approved by the PSRC Main Committee members, although certain activities are now delegated to the Subcommittee
   - Request slides and receive guidance from our standards coordinator (standards@pes-psrc.org) on how to request at the Main Committee – a Working Group Chair makes a motion at the Subcommittee meeting for the SC Chair to create a slide and then send it to the Main Committee Officers for inclusion on the slide set at the Main Committee meeting. The SC Chair reads the motion(s)
   - Create new PAR for new standard – MC
   - Create new PAR for existing standard without major changes to scope – SC; with changes to scope – MC
   - Approval to proceed to IEEE-SA for creation of a balloting body or to proceed to sponsor ballot – SC
   - Minor changes to statements of PAR title, scope and/or purpose without change of scope – SC; Changes to PAR scope – MC
   - Working group submits to the Subcommittee the new or revised PAR, scope, purpose, minutes of their meeting, attendees, their affiliations, any disagreements are noted in the minutes.
   - Actions at SC level (i.e., motions approved or disapproved) are reported to MC; motions requiring action of the full MC are brought to the MC floor by the SC Chair.
   - The Subcommittee reviews it, and then the SC Chair submits the PAR/name/ID number and reason for approval to the Main Committee Secretary to put in the slide deck. The slide is displayed while the SC Chair reads the request to the Main Committee members. A vote is then taken.
   - Motion to approve the new or modified PAR is done at the Main Committee meeting (or if done at the SC, will be reported to the MC by the SC Chair).
   - **PAR Extension Practices (WG and SC approval required):**
     *** Try to finish the project in the 4 to 5 years associated with the initial approval**

*** If needed, submit PAR extension for 2 years**
*** In unexpected circumstances, if project is still not complete after the first 2-year PAR extension, submit another 2-year extension request. This the final 2-year period that NesCom might approve the project for, if evidence of progress is shown using key milestones (such as SA balloting, recirculation, regular meetings, etc.)**
*** Typical deadline is mid-October to be on the last NesCom meeting agenda of the year. Get all extension information to Standards Coordinator by the end of September of the year that the PAR expires.**

- PSRC Committee is the Sponsor
- myProject™ Volunteer User Guide – good stuff https://mentor.ieee.org/etools_documentation/dcn/11/etools_documentation-11- 0014-MYPR-myproject-user-guide.pdf

c. Review Draft 1 of the PSRC meeting agenda as soon as the meeting notice arrives in your inbox – to avoid meeting conflicts and multiple agenda revisions. Contact Angelo Tempone and Todd Martin for your requested changes – we will consolidate them and forward to Gary Kobet.
d. As Chair/Vice-Chair/Secretary of WG/TF, please contact Todd Martin and Angelo Tempone *if you cannot attend your session*. Delegate to another member of your WG to preside at the meeting and record minutes.
e. Non-PAR-related document drafts can be shared with anyone who is interested. Please add a note that this is a draft version subject to change. Once this document is complete and approved, it will be posted on PSRC Knowledge Base (https://www.pes-psrc.org/knowledgebase) which is open to all and/or published on the PES Resource Center (https://resourcecenter.ieee-pes.org/).
f. All PAR-related document (IEEE related) drafts may not be forwarded by the WG member to anyone else – there is a public review period for all IEEE documents where anyone can submit their comments.
g. When submitting "comments resolution" CSV file back to IEEE-SA in myProject, make sure that your draft is updated to reflect all the changes made – must match up to the CSV file!
h. *iMeet Central* (formerly Central Desktop) is to be used for IEEE Guide / Recommended Practice / Standard documents with a PAR
   i. PSRC has File Share facility for non-PAR documents. Contact Angelo Tempone (I-SC Chair) if your group has need or interest. Need list of participants with email addresses to allow write access - typically only a few people (WG Chair, VC, and/or Secretary); view access can be granted to others. See instructional videos on PSRC Website.
j. Standards WG Awards - The IEEE Standards Association Working Group Awards has a new Procedure to request certificates of appreciation for completed (Approved Standard) work.

   - WG Chair or WG VC must request certificates directly from the IEEE-SA in myProject. Awards can be shipped to our next PSRC meeting hotel for announcement and distribution or can be shipped to the requestor.

   - You will need a list of WG Officers and Members; and shipping address. If shipping to the hotel for the next meeting, send to attn of Awards Chair Andre Uribe, verify the address, and be sure they arrive prior to the Monday of the meeting.

   - Awards Ceremony will be at Monday night reception dinner for all PSRC Meetings in May and September (not January). Please consider this when making travel arrangements. Don't miss the opportunity to recognize your colleagues or to be recognized yourself!

k. Reports/Paper Final Output – To be considered for PES level award the output of all Working Groups with a Technical Output including Technical Reports, Transactions / Journal and conference papers must be completed in PES Format and submitted and posted in the PES Resource Center. Final Draft of PSRC Reports, without PES Resource publication number or cover, will also be posted to PSRC Website.

l. Links to PES:

- PES Technical Resource Center: http://resourcecenter.ieee-pes.org/
- PES Technical Activities Resources and templates: https://www.ieee-pes.org/technical-activities/committees/resources
- PES - Technical Report Template: https://www.ieee-pes.org/images/files/doc/tech-council/PES-Technical-Report-Template_Jan_2019.docx
- PES - Technical Paper Template: https://www.ieee-pes.org/templates-and-sample-of-pes-technical-papers
- PES Resource Center Submission Checklist with instructions on how to get your report or Paper submitted please use this link: http://ieee-pes.org/images/files/doc/tech- council/Submission_Checklist_PES_Resource_Center.docx

m. Email WG/TF Minutes to Angelo Tempone (angelo.tempone@duke-energy.com) & Todd Martin (toddmartin@BASLER.com)

PLEASE HAVE THIS IN WITHIN 1 WEEK – USE THE MINUTES TEMPLATE FORMAT PROVIDED ON p. 9 OF THIS AGENDA – confirm WG information is all correct and do not use special formatting or extra indents.

n. Email any changes to the Meeting Room Request (MRR) form for the upcoming meeting to Angelo Tempone (angelo.tempone@duke-energy.com) & Todd Martin (toddmartin@BASLER.com), such as scheduling conflicts to avoid, e.g. "do not conflict with I50, D87, …" etc. **PLEASE SEND ANY UPDATES BY THE END OF THE MONTH. For example,**

if you know you are not going to meet, then let us know as soon as you can.

o. **Please send your WG/TF Rosters with voting and non-voting members listed and marked. The PSRC membership roster (https://www.pes-psrc.org/src/directory.pdf) will be updated accordingly for the new year. Please mark up the word copy of the roster that will be sent out soon.**

10. Working Group Reports – 1 minute each, MAX for non-ongoing groups. What is your status? Are you on track? Do you need help?

WG/TF #	Name	Officers
I2 (Ongoing)	Terminology Review	Mal Swanson Claire Patti
I4 (Ongoing)	International Standards Development	Eric Udren Normann Fischer
I32	A Survey of Protective System Test Practices	Andre Uribe Will Knapek *(no meeting)*
I33	Review of Relay Testing Terms	Scott Cooper Hugo Monterrubio *(no meeting)*

I36	PC37.90.2 - Standard for Relays, Relay Systems, and Control Devices used for Protection and Control of Electric Power Apparatus – Radiated Electromagnetic Interference Withstand Capability Requirements and Tests – Revision of C37.90.2-2004	Chase Lockhart Mat Garver *(no meeting)*
I37	PC37.90 - Standard for Relays, Relay Systems, and Control Devices used for Protection and Control of Electric Power Apparatus – General Requirements and Tests – Revision of C37.90-2005	Marilyn Ramirez Bill Morse April Underwood
I40	PC37.90.1 - Standard for Relays, Relay Systems, and Control Devices used for Protection and Control of Electric Power Apparatus – Surge Withstand Capability (SWC) and Electrical Fast Transient (EFT) Requirements and Tests – Revision of IEEE C37.90.1-2012	Roger Whittaker Todd Martin *(no meeting)*
I43	Investigate response to USA executive order regarding EMP protection	Angelo Tempone Dolly Villasmil Johnny Moore
I44	Investigate and write a report on skill sets required by relay test technicians for setting, commissioning, and testing relay systems, given new technologies such as IEC 61850	Andre Uribe Will Knapek *(no meeting)*
I45	Investigation of Grounding and Bonding Issues Associated with Substation Wiring Practices and Instrumentation	Adrian Zvarych Jalal Gohari
I46	Review and revise: IEEE C57.13.3-2014 – IEEE Guide for Grounding of Instrument Transformer Secondary Circuits and Cases	Bruce Magruder Sudarshan Byreddy
I47/S18	Review and revise: IEEE C37.231-2006 – IEEE Recommended Practice for Microprocessor-Based Protection Equipment Firmware Control	Milton Quinteros Éric Thibodeau Nicholas Kraemer Charles Pestell
I48	Review and revise: C37.103-2015 – IEEE Guide for Differential and Polarizing Relay Circuit Testing	Mohit Sharma Gary Kobet
P21/I49	Roadmap for developing new or updating existing IEEE standards to address issues of Centralized Protection and Control (CPC) Systems	Craig Preuss Brian Mugalian
I50	Develop a summary paper for IEEE Std C37.92 Standard for Low-Energy Analog Interfaces between Protective Relays and Power System Signal Sources	Eric Udren Peiman Dadkhah
I51	Develop a summary paper for IEEE Std C37.110 Guide for the Application of Current Transformers for Protective Relaying Purposes	Juan Gers
I52	Corrigendum for IEEE Std C37.92-2023	Eric Udren Charles Pestell

XIV. I2: Terminology Review

Chair: Mal Swanson
Vice Chair/Secretary: Claire Patti
Output: Terminology recommendations to working groups
Established Date: circa 1995
Expected Completion Date: on-going
Draft: N/A
Assignment: Review drafts of PSRC publications for proper terminology, abbreviations, and symbols; and to recommend additions and changes to the PSRC Terminology database as appropriate
The meeting was called to order by Claire Patti, at 10:41 am (PST) on January 15, 2025, with 6 members and 4 guests in attendance. Quorum was achieved.
The minutes from the September 2024 meeting were reviewed with no corrections provided, Scott Hays motioned for approval and was seconded by Benton Vandiver with unanimous approval. Mal Swanson motioned for approval of the agenda, seconded by Benton Vandiver with unanimous approval.
Updates were given on each of the assignments.
The definition for Breaker Failure Protection was reviewed. I2 voted to reject the proposed change. Alla will provide feedback to the K31 WG.
The definitions for Line current differential protection function, Ping-pong method, Publication, and Subscription were reviewed and discussed by I2. Minor grammatical changes to Line current differential protection function and Ping-pong method were proposed. The terms Publication and Subscription were determined to be generally used words and in need of some sort of modifier to make them specific to the content of the document.
We discussed the proposed process for for terminology reviews of papers and reports. There is general concern about the number of active WGs requiring reviews. Mal is going to try to quantify the number of documents that would require review. The members recommend actively recruiting more I2 members.

All working groups are reminded the database is available to them for use during their document development. All IEEE members have access to The IEEE Standards Dictionary Online using their IEEE account credentials at https://ieeexplore.ieee.org/browse/standards/dictionary
Any standards work with a PAR must be submitted for terminology review and approval of terms prior to balloting.
The output from a working group to produce a report or paper will now need a mandatory review.
Words from approved Standards and Guides with a Section 3 (Definitions) have been incorporated into the IEEE database. An alphabetical listing of the words not in the database, but useful to the PSRC is posted on the web site under “TERMS” link under the “Knowledge Base” tab.
The meeting was adjourned at 11:50 am (PST)

W.G. I2: TERMINOLOGY USAGE
January 15, 2025
Garden Grove, CA

NAME	Affiliation	Member	Guest
Mal J. Swanson Chairman	Iniven	**X**	
Claire Patti Vice Chairman/Secretary	Portland General Electric	**X**	
Matt Black	Sargent & Lundy	**X**	
Oscar Bolado	Quanta Technology		
Alla Deronja	ATC	**X**	
Kevin Donahoe	GE Vernova		
Scott Hayes	PG & E	**X**	
Addis Kifle	GA Transmission		
Yuan Liao	Kentucky Univ		
Manish Patel	EPRI		
Benton Vandiver	Hitachi	**X**	
Fred Friend (non-voting)	Retired		
Roger Whittaker (non-voting)	Retired		
Abdelhamid Elarchi	H_Q		**X**
Shahrzad Mahdavi	HICO America		**X**
Alexis Mezcu	TRC		**X**
Dan Ransom	GE Vernova		**X**

I2AttList
Revised January 5, 2025

XV. I4: International Standards Development Working Group

Chair: Eric A. Udren

Vice Chair: Normann Fischer
Output: IEC TC 95 USNC standards votes and PSRC status reports
Established Date: 1990
Expected Completion Date: Meetings are continuing.
Assignment: Develop comments and votes for USNC of IEC on TC 95 (Measuring Relays and Protection Systems) standards projects and drafts. Report to PSRC on IEC Standards development.
Chair Eric Udren called the meeting to order at 2:20 PM EST on Tuesday, January 14, 2025 with two members and three guests in attendance.
The minutes of the September 2004 meeting were reviewed by attendees and no updates are reported.
Dr. Murty Yalla has retired as Chair of TC 95 internationally after the TC 95 Plenary Meeting in Largo, FL in February 22, 2024. The Chair is now Andrea Bonetti of Sweden. All documented results from the plenary meeting have been supplied by the Chair to WG members or are available on request to the Chair.
The next meeting of TC 95 MTs is scheduled for May in Seoul South Korea.
Standards project business:

- 95/549/CD – 60255-27 – there was brief discussion on the proposed amendment and possible changes to the creepage and clearance tables.
- 95/583/Q on 60255-1 Common requirements – Shall TC 95 MT3 create AMD1 based on issues:
    - Contact performance 10A is not required for EMC.
    - Communication protocol tests are not valid during EMC tests
    - Certification of performance criteria during EMC tests is not clear
    - Recovery procedure is unclear following damp heat
    - PSU tolerance is very narrow
    - Annex A not clear- more examples to be added, flow chart improved
    - Single event upset needs to be added
    - Debounce requirements from WG2

USNC proposes to vote in favor of work by 2/21/25.

- 95/580/Q; 95/581/RQ; 95/582/RR – 60255-26 EMC Requirements – TC 95 will have a project for AMD1 based on comments from Netherlands and South Korea:
    - The document currently does not include any conducted emission requirements for auxiliary power supply output ports.
    - Table 17, Footnote c): remove term “high-sensitivity” and add “sensitive earth fault” as example
    - Table 8, Footnote b): only shielded LPIT interfaces are considered for surge tests, unshielded interfaces are not mentioned.
    - Conducted power frequency immunity test, Error in Figure A.3
    - Clause 7.3.2 to 7.3.12: the voltage waveform (AC or DC) for the auxiliary power supply input port is not currently specified for each test case. As a result, both waveforms must be tested or selected following a risk assessment.

- 95/575/DC – Nations submitted a massive compilation of comments on and problems with 95/546/CD on Part 167-1 *Directional relays*, exposing an incomplete state of development and inadequate MT review before issuing the CD. This improperly consumes time of reviewers. This will be discussed at the next MT meeting. US MT 4 participants commented that editors are not responding to hundreds of comments, and that document is not presently reflecting European or US practices. US TA has opened discussions with MT 4 Convenor Murty Yalla on status and actions.
- 95/578/AC – The Convenor for development of 60255-216-3 on *Digital Interface - Test specification for protection data communication of Line Current Differential Protection* had retired and the project needs a new chair – we seek a name to propose this week. Crisp technical content proposals have been recently presented from CA and US to move the work forward. Completion of this work will support completion of 60255-187-3 functional standard for line differential protection – see below.

- 95/579/RVDTS - Part 216-1, *Digital interface – General requirements and Tests for Protection Functions using digital communication as input and output* (e.g., using MU data) – CD issued in May. US requested another CD draft and review cycle, but DTS will advance to CDV anyway, due out for review in March 2025. The Chair encouraged PSRC WG H47 to submit further comments to the IEC AHWG in coming months via liaison Georg Blumschein.
- 60255-187-3 - *Functional requirements for line current differential protection – –* project is restarting since November under MT 4 Convenor Andrea Bonetti. Work on this is delayed and will continue at next MT meeting. Progress is delayed by process issues with lack of minutes and repeated reopening of decided issues. US attendees led by Normann Fischer (who also leads PSRC D34 supporting this same standard development) intend to push TC 95 leadership for process changes to achieve schedule and quality targets.

Meeting Participants:

First Name	Last Name	Affiliation	M/NVM/G*
Eric	Udren	Quanta Technology	C
Bill	Morse	SEL	M
Angelo	Tempone	Duke Energy	G
Jim	Niemira	S&C Electric	G
Christoph	Brunner	IT4Power	G

*M = Voting Member, NVM = Non-voting Member, G = Non-member/Guest, C = Chair, VC = Vice Chair, S = Secretary

XVI. I37: C37.90, Standard for Relays, Relay System Associated with Electric Power Apparatus

Chair: Marilyn Ramirez
Vice-Chair: Bill Morse
Output: Standard
Established Date: 2018

Expected Completion Date: 2026
Draft: 2.0
Assignment: Revision of C37.90 Standard. PAR Expiration 31-Dec-2026

Meeting Participants:

Name	Affiliation	Voting Status
Bill Morse	SEL	Voting Member
Marilyn Ramirez	POWER Engineers	Voting Member
Todd Martin	Basler Electric	Voting Member
Fredick O'Brien	NRC	Guest
Jim Niemira	S&C Electric Company	Guest
April Underwood	SCS	Voting Member
Malia Zaman	IEEE SA	Guest
Charles Pestell	Powell	Guest
Christopher Ness	Megger	Guest
Abdelhamid El Archi	HQ	Guest
Hani Al-Yousef	Eaton	Voting Member (Virtual)
Brian Mugalian	S&C Electric	Guest (Virtual)
Tony Bell	Ametek	Voting Member (Virtual)

- Officer presiding: Marilyn Ramirez
- Officer recording minutes: April Underwood
- Call to order, approximately 3:40 pm PST
- General welcome
- The meeting had 5 voting members. Quorum was met.
- Patent slides were shown, no claims were made. Copyright and Participant behavior slides were shown, no claims were made.
- Agenda and September 2024 meeting minutes were approved.
    - Motion by Bill Morse Todd Martin second.
- Discussions:
    - Ballot Comments Review
- Action Items:
    - Assign ballot comments to different WG Members for review.
    - Schedule Monthly meetings prior to the next PSRC Meeting
- Final adjournment, approximately 4:50 pm PST.
    - Motion by Todd Martin Bill Morse second.

XVII.I43: Investigate Response to USA Executive Order Regarding EMP Protection

Chair: Angelo Tempone (Presiding)
Vice Chair: Dolly Villasmil
Secretary: Johnny Moore
Output: Report
Established Date: May 11, 2020
Expected Completion Date: 2024
Draft: None yet
Assignment: Write a report to, (1) Investigate and describe EMPs and their likely effects on protection and control apparatus, and (2) Determine and describe strategies generation, transmission, and distribution utilities can utilize to mitigate the effects of EMPs on their equipment.
The meeting was called to order at 17:00 PT on Monday January 13th, 2025 in a Hybrid format.

a) Introductions

b) The meeting opened with 8 members and 25 in-person/virtual guests. (24 in-person & 9 virtual)

c) Quorum verification: A quorum was obtained at the meeting. Minutes were approved by: V. Villasmil & Bill Morse.

d) Several discussions took place.

- Still looking for additional support to enhance content for publishing from individuals who have experience in EMP mitigation.

- An idea was discussed to use some of the content that was presented in a previous meeting, Jacksonville. While some information can be used, we would need a qualified resource to select the appropriate content to incorporate into the report.

- Given the scarcity of experts in the EMP area that are active members of the PSRC, the WG leadership asked for attendees to spread the word on any known individual who is an EMP expert and participate in our working group.
    - Adrian suggested Data centers might already be doing some work in protecting buildings against EMP, is our group able to get support outside from PSRC for knowledge transfer?

- Even though EMP mitigation has not been a pressing issue for the last few years, the upcoming administration may revive these efforts since the origin of our working group came after an executive order was issued by the upcoming administration.
- Several voting members and guests agreed to reach out to EMP experts with hopes of gaining more support for completing the report.
- We will try to create a smaller group with experts for a literature review.
- We will meet again in person in May during the next PSRC meeting. We will need a room for 30 people with hybrid capability.

The meeting was adjourned at 17:32 PT.

Role	First Name	Last Name	Company
Voting Member	Angelo	Tempone	Duke Energy
Voting Member	Ethan	Grindle	American Transmission Company
Voting Member	Johnny	Moore	SEL
Voting Member	Dolmary	Villasmil	NEI Power Eng
Voting Member	Ritwik	Chowdhury	SEL
Voting Member	Hani	Al-Yousef	Eaton Corporation

Voting Member	Michael	Basler	Basler Electric Company
Voting Member	Tapan	Manna	Burns & McDonnell
Voting Member	Bill	Morse	SEL
Voting Member	Donald	Ware	Qualus Power Services
Voting Member	Jeysson	Gonzalez	S&C Electric Company
Guest	Donald	Campbell	Southern Company Services
Guest	Jorge	Cintron Rivera	US NRC
Guest	Paul	Harris	Pacificorp
Guest	Daniel	Nordell	Xcel Energy
Guest	Iza	Pomales	BIC Electric
Guest	James	Niemira	S&C Electric Company
Guest	Christopher	Ness	Megger
Guest	Gary	Kobet	Tennessee Valley Authority
Guest	Qun	Qiu	AEP
Guest	Adrian	Zvarych	Qualus Power Services
Guest	Jared	Klein	P&E Engineering
Guest	Zhong	Zheng	NY Power Authority
Guest	Abdelhamid	El Archi	Hydro Quebec
Guest	Scott	Hayes	PG&E
Guest	Gene	Henneberg	NV Energy
Guest	Daniel	Ransom	GE Vernova
Guest	Isaac	Wang	NRC
Guest	Brandon	Aalbery	Bonneville Power Administration
Guest	Fredrick	O'Brien	NRC
Guest	Andreas	Bartels	Powell Industries
Guest	Michael	Cunningham	Tampa Bay RR
Guest	Peiman	Dadkhah	NuGrid Power

XVIII. I45: Report on Grounding of Instrumentation and Control Circuits

Chair: Adrian Zvarych (Presiding)
Vice Chair/Secretary: Jalal Gohari
Output: Report
Established Date: May 2020
Expected Completion Date: 2025
Draft: Completed (and approved???) for PSRC Balloting 2025-01-15
Assignment: The purpose of the WG is to develop a Technical Report reviewing grounding and bonding of circuits associated with instrumentation, protective relaying, communications, power supplies, and other electric facilities in substations. The report will review existing practices and standards, identify where conflicts or omissions exist, and address means of reconciling conflicts.

Call to order at 09: AM PT, Wednesday 15 January 2025 in person @ Garden Grove CA & Online

Quorum Not Achieved!!! Issues with WebEx online meeting start…

e) Introductions, Greetings, & review of Copyright, Patent, and "Be Nice" presentations agreed to
   a. IEEE Patent Policy: Call for Patents: https://development.standards.ieee.org/myproject/Public/mytools/mob/slideset.pdf
   b. IEEE Copyright Policy: https://standards.ieee.org/content/dam/ieee-standards/standards/web/documents/other/copyright-policy-WG-meetings.potx
   c. Show Respect For Others - **PDF**
f) Quorum verification: Achieved with Members & Guests
g) Review & Approve Last Meeting Minutes 1st 2nd Approved
h) Review & Approve Today's Meeting Agenda 1st 2nd Approved
i) Topics Discussed (**Action Items in this color**):
   a. Review document @ high level for the benefit of guests
   b. Report still contained a few typos, to be corrected, re-sent to WG. Chair to
      i. Revise the Report & resend to WG
      ii. schedule a follow-up Teams meeting to review the Report and hear a motion to send the Report to PSRC for Balloting
   c. Next Meeting: Date To Be Scheduled

Meeting adjournment at 10: AM PT

ATTENDEES
Voting Members (6):
Mike Cunningham, Jim Michaelis, Don Ware, Bill Morse, Jalal Gohari, Adrian Zvarych

Guests (7):
Ayodele Ishola-Salainu, Chris Johnson, Dan Nordell, Mark McChesney, Patrick Malander, Tom Key, Wendy Al-Mukdad

Full Name	Status
Adrian Zvarych	Chair
Jalal Gohari	Secretary
Bill Morse	Voting Member
Bracy Nesbit	Voting Member
Don Ware	Voting Member
James G. Michaelis	Voting Member
Jackie Wilson	Voting Member
Jim O'Brien	Voting Member
Joshua Warner	Voting Member
Marilyn Ramirez	Voting Member
Mike Cunningham	Voting Member
Stephen Conrad	Voting Member
Robert Frye	Voting Member
Robin Byun	Voting Member
Yading He	Voting Member

ATTENDANCE LIST

XIX. I46: Guide for Grounding of Instrument Transformer Secondary Circuits and Cases

Chair: Bruce Magruder (Chair)
Vice Chair: Sudarshan Byreddy
Virtual Meeting/Teams: January 14, 2025, 9:20 – 10:30 AM EDT
Output: Revise IEEE C57.13.3-2014
Established Date: September 2021
Expected Completion Date: December 2026
Draft: 2.2

t) Call to order – Bruce, 9:20 AM CST
u) Chair's greeting & remarks, a total of 9 participants joined in person and 4 participants by Webex, 2 were members and 11 were guests.
v) Agenda was presented and reviewed.
w) Patent slides were reviewed. The attendees did not present any patents requiring further action.
x) Copyright slides were presented. No comments from the attendees.
y) As quorum was not achieved.
z) The Draft 2.1 went out for ballot and it failed for not enough participants.
aa) 57 comments were received and the group worked on reviewing the comments and resolving them in Draft 2.2.
bb) Bruce will setup a online meeting to work on resolving the remaining comments. Revised draft will be sent back out.

Name	**Affiliation**	**Voting Status (voting members)**
Bruce Magruder	ECI Consultants	Chair – Voting Member
Brian Mugalian	S&C Electric	Voting Member
Jeysson Gonzalez	S&C Electric	Guest
Malia Zaman	IEEESA	Guest
Rafael Riston	Powertech Labs	Guest
Sara Tahermaram	Powertech Labs	Guest
Abdelhamid El arapPi	Hydro Quebec	Guest
Lou Garauaglia	G&W Electric	Guest
Erin Jessup	SEL	Guest
Tod Martin	Basler Electric	Guest
Jorge A Cintror	US NRC	Guest
Dan Nordell		Guest
Peiman Dadkhah		Guest

XX. I47: Revise IEEE C37.231-2006 - IEEE Recommended Practice for Microprocessor-Based Protection Equipment Firmware Control.

Chairs: Milton Quinteros & Eric Thibodeau
Vice Chair: Nicholas Kraemer
Output: Standard
Established Date: January 2024
Expected Completion Date: December 2027
Draft: NA
Assignment: Prepare a revision of C37.231
Meeting Date: 14-January-2025 at 1040 PST

This was the fourth meeting for joint WG I47/S18. The chair called the meeting to order. The meeting was presided over by Milton and minutes were recorded by Charles Pestell. The attendees introduced themselves to the meeting.

Quorum was established. A total of 8 members were present with 7 needed to establish Quorum. There was a total of 17 people in attendance

The IEEE SA patent claim and copyright slides were presented with no comments from the meeting.

The IEEE participant behavior slides were presented with no comments from the meeting.

The proposed agenda was presented, Charles Pestell moved for it's approval, Nicholas Kraemer seconded, no objections were presented and the agenda was passed by unanimous consent.

The minutes from the 10th September 2024 meeting were presented and reviewed. Nicholas Kraemer moved for their approval, Eric Thibodeau seconded, no objections were presented and the minutes were approved by unanimous consent.

Notes taken during the informal online November 2024 meeting were presented and reviewed.

The present draft of the Table of contents was reviewed, no changes were requested.

A discussion of mechanisms to disseminate information to users took place. It was voiced that too many options are currently presented and that these should be reduced to permit conformity between vendors. It was asked that early information regarding the scope of firmware changes be released in a "coming soon" style. This would enable end users to plan for review and implementation of the to be released firmware updates. Confirmation was given that the scope and nature of changes are presently included in the proposed document.

It was clarified that section 5 of the proposed document relates to the communication mechanism for dissemination of the firmware release information.

A discussion relating to the segregation of information released by the manufacturer for controlling circulation related to product vulnerabilities and security took place. It was suggested that such information should be classified by the manufacturer in categories such as impact, functional area and importance and this information used to determine the level of release – ie public, limited, NDA signatories only.
The Chair asked the floor if section 5 of the proposed document stands with the present 2 sub-sections. There was general agreement and no dissent from the meeting.

Section 6 of the proposed document was discussed. Various options were discussed, it was agreed that the minimum recommended information to be included on a report should be included. The meeting agreed to keep section 6 as it is presently constructed.

A discussion of section 7, schema definition for release notes, took place. Discussions from previous meetings has suggested that YAML may be a good solution. It was noted that YAML is white space sensitive and that JSON may be a better option. Nicholas Kraemer agreed to research the use of YAML in this application further.

The plan to hold interim online meetings was raised by the Chair, invitations for this will be sent out by email.

The meeting was adjourned at 1150PST as the allotted time had elapsed.

Next meeting will be on May 12-15, 2025 to be held at Hilton Portland Downtown, Portland, OR.

Meeting Participants:

First Name	Last Name	Affiliation	Role*
Milton	Quintenos	Entergy	Chair (I47)
Eric	Thibodeau	Hydro Quebec	Chair (S18)
Nicholas	Kraemer	NuGrid Power	Vice Chair
Charles	Pestell	Powell	Sec
Hani	Al-Yousef	Eaton	M
Steven	Blair	Synaptec	M
Abdelhamid	Elarchi	Hydro Quebec	M
Tuan	Tran	TVA	M
Jeysson	Gonzalez	S&C Electric	NVM
James	Bougie	Albirco energy	G
Mike	Dood	SEL	G
Steven	Kunsman	Hitachi Energy	G
Jason	Lombardo		G
Scott	Mix	PNNL	G
Frederick	O'Brien	NRL	G
Craig	Wester	GE Vernova	G
Jinlei	Xing	Schneider Electric	G

***M = Voting Member, NVM = Non-voting Member, G = Non-member/Guest.**

XXI. I48: Revision to IEEE C37.103: Guide for Differential and Polarizing Relay Circuit Testing and Polarizing Relay Circuit Testing

Chair: Mohit Sharma
Vice Chair: Gary Kobet
Secretary: Open
Output: IEEE Standard
Established Date: January 2023
Expected Completion Date: December 2025
Assignment: Revise IEEE Std C37.103 - Guide for Differential and Polarizing Relay Circuit Testing

I-48 met hybrid on January 14th, 2025, with in-person at Hyatt Regency, Garden Grove, California at 1 PM local time with 4 members and 6 guests all being in-person. Mohit chaired the meeting. Patent and copyright policies were reviewed and there was no potential claim.

- Mohit added Visio files (.Tiff files from previous C37.103 WG) on iMeet Central
- Zachary Zaitz emailed and informed he reviewed Section 9, 10 and 11 and there are no comments/edits/additions
- Mohit presented his review work on Section 12. We had a healthy discussion and were able to resolve all the comments

Action Items:

- Gary K offered to seek help from a previous member of C37.103 to work on the updated images. Joshua H will assist as well. Mohit S to share the exact Figure numbers and workload.
- Swagata D to provide recommended changes (track enabled doc) on her Section 14 writeup
- Regarding the use of "shall", "should", and "may", Gary K notes that a Guide can only use the term "may". Of the three IEEE PAR products (Guide, Recommended Practice, Standard), the term "should" can be used in a Recommended Practice, and the term "shall" can be used in a Standard. But "should" and "shall" are not permitted in Guides such as C37.103 – WG decided to do this at the end of all review work. Keeping this here so we implement it at the end.
- Mohit S to put the latest draft on iMeet Central
- **Pending review work** -

Review Section 4 & 5 and suggest improvements – Joshua Hughes, Jeysson Gonzalez
Review Section 13 and suggest improvements – Ryan McDaniel

Attendance List:
Mohit Sharma – Chair, SEL, Voting Member
Gary Kobet – Member, TVA, Voting Member
Joshua Hughes – Member, Qualus, Voting Member
Ryan McDaniel – Member, SEL, Voting Member
Christopher Ness – Guest, Megger
Todd Martin – Guest, Basler Electric
Paul Harris – Guest, PacifiCorp
Abdelhamid Elarchi – Guest, Hydro Quebec
Andreas Bartels – Guest, Powell Industries
Ian Tualla – Guest, Duke Energy

Old Business: None
The meeting was adjourned at 2:10 PM local time.

XXII.I49: Roadmap for Developing New or Updating Existing IEEE Standards to Address Issues of Centralized Protection and Control (CPC) Systems

Chair: Craig Preuss
Co-chair: Brian Mugalian
Secretary: Melvin Moncey Joseph

PSCCC P21 – PSRC I49 Joint Task Force Meeting Minutes

Designation:	Name:
P21	Roadmap for Developing New or Updating Existing IEEE Standards to Address Issues of Centralized Protection and Control (CPC) Systems

Meeting Location:	Meeting Time:	Meeting Date:	Minutes Revised:	Minutes Approved:
Garden Grove, CA	3:40 PM PST	2025/01/13		

Presiding Officer:	Recorded by:	Draft Number:
Craig Preuss, Brian Mugalian and Mike Dood, Co-Chairs	Melvin Moncey Joseph	0.20

Attendance:

Name	Affiliation	Attending via Phone (P) / Web (W) or Local (L)	M/CM/G
Craig Preuss	Black & Veatch	L	M
Brian Mugalian	S&C Electric Co	W	M
Charles Pestell	Powell Industries	L	M
Jack Jester	Exelon Corporation	L	M
Muhammad Hamid	Black & Veatch	L	G
Scott Mix	Pacific Northwest National Laboratory	L	G
Chris Huntley	SEL	L	G
Mike Dood	SEL	L	M
Hani Al-Yousef	Eaton Corporation	W	M
Priya Raghuraman	Siemens Industry Inc	W	G
Jay Anderson	SEL	W	M
Marcos Velazquez Lechuga	Doble Engineering	W	M
Don Ware	Qualus Power Services	W	M
Eric Udren	Quanta Technology, LLC	L	G
Juan Pineros	XM S.A. Colombia Power System Operator	W	G
Anthony Johnson	SCE	L	M
Eric Thibodeau	Hydro Québec	L	M
Deepak Maragal	LND TS	L	M
David Dolezilek	SEL	L	M
Joerg Blumschein	Siemens	L	M
Jim Michaelis	Commonwealth Associates, Inc.	W	M
Neil Saia	Entergy Services, LLC	L	M
Mark McChesney	Oncor Electric Delivery	W	M
Galina Antonova	Hitachi Energy	L	G
Jun Verzosa	Doble Engineering	W	G
Melvin Moncey Joseph	Burns & McDonnell	L	M
Andre Melo	Schneider Electric	L	M
Jose Ruiz	Doble	W	G
Joemoan I. Xavier	ABB	W	M

James Bougie	Alberio Energy	L	G
Arun Shrestha	SEL	W	G
Alex Apostolov	OMICRON	L	G
Steven Blair	Synaptec	L	G
Adrian Zvarych	Qualus Power Services	L	G
Matt Black	Sargent & Lundy	L	G
Nicholas Kraemer	NuGrid Power	L	G
Michael Basler	Basler Electric	L	G
Addis Kifle	Georgia Transmission Corp.	L	G
Dinesh Gurusinghe	RTDS	L	G
Daniel Lebeau	Hydro Québec	L	G
Craig Wester	GE Vernova	L	G
Guilherme Cristofani De Sanz Pires	Siemens	W	M
Theo Laughner	Lifescale Analytics	L	G
Ellery Blood	SEL	L	G
Peiman Dadkhah	NuGrid Power	W	G
Walid Ali	GE Vernova	L	G
Jarvis Kenersan	Southern Company	L	G
Dolly Villasmil	NEI Engineering	L	G
Jinlei Xing	Schneider Electric	L	G
Wendy Al-Mukdad	CPUC	L	G
Jagannath Wijekoon	RTDS	L	G
Fredy Bravo	Duke Energy	L	G
Jared Kline	P&E Engineering	L	G
Sakis Meliopoulos	Georgia Tech	L	G
Jonathan Sykes	Quanta Technology	L	G
Nikhil Jagirdar	S&C Electric	L	G
Abdelhamid Elarchi	Hydro Québec	L	G
Kevin Ridley	TRC	L	G
Daniel Nordell	Xcel Energy	W	G
Jason Lombardo	S&C Electric	W	G
Jim van de Ligt	Spark Power Corp.	W	G
Michael Cunningham	Qualus Engineering	W	G
Toro Caleb	University of North Dakota	W	G

M:Member
CM: Corresponding Member
G: Guest

Item no.	Notes	Action by
CALL TO ORDER	The chair brought the meeting to order at approximately 3:40 PM.	
INTRODUCTIONS AND QUORUM	Quorum was met.	
AGENDA APPROVAL	Deepak Maragal motioned to approve, and it was seconded by Anthony Johnson. No objections or abstentions.	
APPROVAL OF PREVIOUS MINUTES	Meeting minutes from the September 9th meeting were shown. Eric Thibodeau motioned to approve the minutes, and it was seconded by Deepak Maragal. No objections or abstentions.	
P21 / I49 ASSIGNMENT	Roadmap for developing new or updating existing IEEE standards to address issues of Centralized Protection and Control (CPC) Systems	

Item no.	Notes	Action by
REVIEW OF COPYRIGHT SLIDES	The task force will follow IEEE-SA copyright policies as best practice since the task force is preparing a report.	
REVIEW OF PARTICIPANT BEHAVIOR SLIDES	The task force will follow IEEE-SA participant behavior as best practice since the task force is preparing a report.	
OLD BUSINESS	None.	
NEW BUSINESS		
	PC37.300. Craig gave updates on the SA Ballots. The standard will be published soon.	Chair to request published version of standard for members
	CIGRE updates. Andre Melo gave updates to the group about B5.84.	Chair to talk to PES about sharing the draft report with CIGRE B5.84.
	Future work session schedule. A concern was raised about meeting being too often. Deepak Maragal motioned to approve the new meeting schedule which will be biweekly from the 29th of January till the May PSRC/PSCC meeting, and it was seconded by Anthony Johnson. No objections or abstentions.	Secretary to send out new meeting invites till the next PSRC/PSCC meetings in May.
	Report Draft and Assignments. The draft report was shown. Volunteers were called to write sections of the report which weren't assigned earlier and there was a general discussion on standards.	
ITEMS REPORTED OUT OF EXECUTIVE SESSION	There was no executive session.	
TIME OF FINAL ADJOURNMENT	Approximately 4:50 PM.	
NEXT FACE TO FACE MEETINGS	May 12 - 15 2025 Portland, OR	

XXIII. I50: Develop a summary paper for IEEE Std C37.92 Standard for Low-Energy Analog Interfaces between Protective Relays and Power System Signal Sources

Chair: Eric Udren
Vice Chair: Peiman Dadkah
Output: Summary Paper
Established Date: January 2024
Expected Completion Date: December 2025
Draft: NA
Assignment: Prepare summary paper for IEEE Std C37.92-2023 Standard for Low-Energy Analog Interfaces between Protective Relays and Power System Signal Sources.
The chair called the meeting for WG I50 to order on Wednesday January 15 at 9:20 AM, with meeting minutes recorded by the VC. The attendees introduced themselves. There was discussion on the low-energy analog (LEA) sensors and interfaces and the importance of this standard and its adoption, by going over sections of the former PSRC presentation on this topic.
Next the chair presented the outline and work that needs to be done.

Charles Pestell will be working on Section 2 drivers and use cases. Charles shared one use of Rogowski coils for partial discharge. Section 2 first draft date is 4/15/2025.
The Chair rearranged outline in Section 2 for better flow with new subsections on Section 'f'.
Nicholas Kraemer will help with writing Section 2.a benefits and applications by 2/15/2025.
Hani Al-Yousef & Ritwik Chowdhury are to work on Section 3 signal and burden specifications by 4/15/2025.
Hani and Eric had a discussion on Section 4 content and will work on first draft by 3/15/2025.
For Section 5 Chair is to check with Ritwik for date of first draft.
Charles Pestell shared an example of a legacy connector issue of which users must be aware.
Section 6 on practical field and lab application examples and guidance is to be developed by Paul Harris, Steven Blair, and Dhanabal Mani with first draft by 4/15/2025 and status update by 3/15/2025.
Meeting Participants:

First Name	Last Name	Affiliation	Role*
Eric	Udren	Quanta Technology	C
Peiman	Dadkhah	NuGrid	VC
Charles	Pestell	Powell	M
Hani	Al Yousef	Eaton	M
Nicholas	Kraemer	NuGrid	M
Paul	Harris	Pacificorp	M
Jacob	Lloyd	Megger	G
Abelhamid	El archi	Hydro-Quebec	G
Dhanabal	Mani	Megger	G
Ali	Alvi	Quanta Technology	G
Todd	Martin	Basler Electric	G
Seth	Nelson	Basler Electric	G

***M = Voting Member, NVM = Non-voting Member, G = Non-member/Guest, C = Chair, VC = Vice Chair, S = Secretary**

XXIV. I51: Develop a summary paper for IEEE Std C37.110 Guide for the Application of Current Transformers for Protective Relaying Purposes.

Chair: Juan Gers
Vice chair: Steve Turner

Assignment:

Develop a summary paper for IEEE Std C37.110 – 2023 Guide for the Application of Current Transformers for Protective Relaying Purposes

WG Report

The working group met in one session on Wednesday 15th of January with 8 participants, out of them, six members and two guests. A quorum was achieved.

Juan Gers reviewed the objectives of the working group to develop the summary paper for IEEE Std C37.110 – 2023 Guide for the Application of Current Transformers for Protective Relaying Purposes. It was made clear that the paper should have original material from the contributors and not just copy and paste from the standard. It was mentioned again that a total number of pages of a maximum of 10, is considered appropriate for this type of summary.

The chairman presented the current progress of the first draft with the contributions from several members on the following sections: General applications of CTs, CTs to EM relays and CTs to static relays.

Contributions on sections CT characteristics and classification, CTs to microprocessor relays and the annex Comparison with IEC standards should be received in mid-February. A new member, Tapan Manna, will contribute with section Emerging technology e.g.: optical Current sensors systems.

If the contributions are received by next month, the chairman will compile them and produce the first draft that should be reviewed for the meeting in May.

The requirements for the next meeting are a single session, a meeting room for 30 people, and a computer projector.

XXV. I52: Corrigendum for IEEE Std C37.92-2023.

Chair: Eric Udren
Vice Chair: Charles Pestell
Output: Publish corrigendum for IEEE Std C37.92-2023
Established Date: December 2024
Expected Completion Date: December 2025
Draft: N/A
Assignment: Develop and publish a corrigendum for C37.92-2023
The Chair called the meeting to order at 0800 (PST) on 14th January 2025.

The PAR for this working group was approved in December 2024. It was noted that the task force has now become a working group and will be referred to as I52 going forward. At this initial working group meeting the Chair provided background on the need for a footnote corrigendum addition to IEEE Std C37.92-2023.

C37.92-2023 uses the terms LV and HV to describe two classes of low energy analog interfaces; we wish to keep these for consistency with IEC instrument transformer standards. However, some users may confuse these class names with the abbreviations LV for low voltage and HV for high voltage in power system primary value domains. The corrigendum is proposed to briefly explain this distinction.

The previously drafted corrigendum text was discussed by the meeting attendees, and minor changes were made. It was agreed that the new text should be included as footnote number 12 in the footer of page 15. Instances of "LV and "HV" would be amended to reference footnote 12 on both pages 15 and 16 of the current standard.

There was discussion of the process steps to create this amended document. The Chair agreed to take the following steps to move the work forward:

- Obtain an electronic copy of the macro enabled C37.92-2023 document for editing.
- Request that an iMeet workspace be setup for I52, or use I38 if available, with Charles and Eric as administrators.
- Circulate the proposed changes among the members of the working group requesting approval/disapproval and comments via email or feedback within 2 weeks.
- Work with the group to resolve any comments and obtain approval.

The intent following this is to use the next I52 physical meeting in May 2025 to commence the process of forming a ballot group, starting with a subcommittee vote.

Todd Martin, Genariel Hernandez and Lou Garavaglia requested membership.

Meeting Participants:

First Name	Last Name	Affiliation	M/NVM/G
Eric	Udren	Quanta Technology	C
Charles	Pestell	Powell	VC
Ritwik	Chowdhury	SEL	M
Todd	Martin	Basler	G to M
Genariel	Hernandez	Quanta Technology	G to M
Abdelhamid	Elarchi	Hydro Quebec	G
Lou	Garavaglia	G&W Electric	G to M

*M = Voting Member, NVM = Non-voting Member, G = Non-member/Guest, C = Chair, VC = Vice Chair, S = Secretary

11. Old Business

a. If you would like to be a liaison, please email Angelo Tempone at angelo.tempone@duke-energy.com. Still looking for liaison for the following committees:
   i. IEEE Standard P3476 Standard for Unique IDs and Smart Tags for Supply Chain and Asset Traceability for the Electric Grid.
   ii. Transformers Committee, including Instrument Transformers Subcommittee.

b. Congratulations to I-33 for getting approval from the PSRC Officers!

12. New Business

a. Discussion on PAR for new IEEE Standard (Entity Work). The proposed scope:

The scope of the proposed standard: This standard specifies the terms and definitions, basic requirements, test methods, and precautions for AC circuit inspection of substations based on load simulation. This standard is applicable to the AC circuit inspection and testing of relay protection equipment for newly built substations and converter stations before formal operation.

Per Erin Jessup this may fall under the purview of our Subcommittee (C37.233 "IEEE Guide for Power System Protection Testing"). Latest version was published in 2023 chaired by Don Ware.

The EPM process would like for us to have an answer to the following questions:

- Is this proposal within the scope of your committee?
  YES
- Are there similar/overlapping standards? If so, which one?
  YES, C37.103 & C37.233
- Is your committee willing to take oversight of the proposal?
  NO, the committee has voted to not participate on this initiative. It passed a unanimous vote as follows:
  Motion presented by: Jim Niemira.
  Second: Charles Pestell.

b. Discussion on two upcoming guides will expire in 2027:

- C37.241 "Guide for Application of Optical Instrument Transformers for Protective Relaying"
- C57.13.1 "Guide for Field Testing of Relaying Current Transformers"

Leadership asked for volunteers to lead these tasks forces that will take on the responsibility of reviewing the documents above.

We would like to create PAR Study Groups (TFs) to determine if we want to revise these guides. We need a chair for each one. Please let Angelo (Angelo.Tempone@duke-energy.com) know if you are interested.

13. Liaison Reports

a. Power System Instrumentation and Measurements (PSIM) Committee, including the Sensors Subcommittee – Johnny Moore

Sensors Subcommittee Task Force for Sensors Application Guide This technical report is intended to be a guideline for the field installation and accuracy recommendations of MV current and voltage sensors, to assist in the proper selection of sensors and sensor systems for power system applications. This technical report covers relevant sensor types, installation best practices, and accuracy recommendations. Certain applications may have different accuracy and bandwidth requirements and particular sensor types may be better suited. This technical report applies to both standalone sensors and sensors integrated into a system.	○ Polling utilities to get an understanding of how sensors are being used. There is a desire to expand this polling to include manufacturers. ○ Working to analyze data and decide how to present information in guide.
Sensors Subcommittee Task Force for Sensors Device Standard PAR This standard is intended for use as a basis for performance evaluation of MV current and voltage sensors and to assist in the proper selection of such equipment. This standard covers relevant electrical and mechanical characteristics of voltage, current, and combination (voltage and current) sensors of various active and passive technologies used in the measurement of electricity and the control of equipment associated with MV alternating current feeders. This standard applies to standalone sensors and sensor systems (a sensor integrated with another device).	○ Co-sponsor of this task force with the Instrument Transformer Subcommittee (ITSC) for a medium voltage sensor standard. ○ ITSC has an open discussion on a high voltage sensor standard that may also be co-sponsored between ITSC and the Sensors Subcommittee. ○ Officially kicking off work in January 2025.
WG P2681 - Guide for Testing Medium Voltage Smart Grid Sensor and Intelligent Electronic Device Systems This guide defines the test methods and conditions for measurement of systems of integrated voltage and current sensors and intelligent electronic devices (IED). The guide will allow the industry to test a complete sensor system for MV power distribution (1kV to 72kV).	○ Balloting in December 2025, with submittal in June 2026. ○ Still planning to poll manufacturers for sensor information, specifically related to accuracy classes (have already polled utilities). ○ Much of the discussion revolved around accuracy classes and how to test to obtain a certain accuracy class.

b. Entity IEEE Standard P3416 Guide for Test Sets and Tools for Testing Protective Relays – Jun Verzosa

Vice Chair: Andrea Bonetti
Secretary: Jinlei Xing

Output: Guide
Established Date: September 2023
Expected Completion Date: December 2027
Draft: v5
Assignment: Write a guide for the following purpose and scope:
Purpose: This guide is to provide technical guidance to maintenance staff in utilities, relay manufacturers and test set manufacturers in the design and application of protective relay test sets to meet efficient and accurate power system protection testing requirements. The guide also provides guidance on the methods for the calibration of relay test sets to support test agencies and test set manufacturers in the efficient calibration. The intention of this guide is to bridge the relay protection community and the relay test set community in order to minimize misunderstandings, improve the efficiency of the test activities and help the users in selecting the correct test set for the given application.
Scope: This guide focuses on relay test set for the applications of relay type test, functional acceptance test, commissioning test and maintenance test. The guide covers the functionality performances of relay test sets. Details are given on the test methodologies, reporting of the test results, test tools/libraries and automatic test interface with protective relays to facilitate the tests. Finally, the guide covers the calibration procedures, configurations and settings.

Meetings: Since the last PSRCC meeting in September 2024, there were two hybrid working group meetings:

Meeting Minutes of 22 November 2024
Venue: Shanghai Pudong Hotel, Shanghai
Online meeting, WebEx
Meeting Minutes Recorded by: Jinlei Xing
Chair: Hong Wang
Secretary: Jinlei Xing

1. Call to Order
The meeting was called to order at 20:00 pm by the Working Group Chair, Hong Wang.

2. Roll call and Disclosure of Affiliation
Attendees present stated their name and affiliation. 4 of 9 entity members were present, quorum reached. The list of attendees is attached.

3. Approval of the Agenda

Motion #1
Approve the agenda of the 7th meeting.
Moved: Xiaozhou Song, Beijing Sifang Automation Company Ltd
Seconded: Jinlei XING, Schneider Electric
Motion passed by voice vote without opposition.

4. Approval of last meeting minutes

Motion #2
Approve the meeting minutes of the latest meeting on 31st Aug 2024
Moved: Xiaozhou Song, Beijing Sifang Automation Company Ltd
Seconded: Jinlei XING, Schneider Electric
Motion passed by voice vote without opposition.

5. IEEE Policy

A. IEEE Patent Policy: Call for Patents
The call for patents was issued; **none raised**.

B. IEEE Copyright Policy

The copyright policy was presented. There were no questions or concerns.

C. IEEE SA Participation Behavior

The Participation Behavior policy was presented. There were no questions or concerns.

6. Standard content draft discussion

a. Review the scope of this standard (this IEEE guide) together, to do some necessary adjustments of each chapter.

- The scope highlights that this guide covers the functionality and performance of relay test set. So, chapter 4 should include the functional requirements; chapter 5 and 6 should include the performance requirements; chapter 7 should include the verification test of the performance of relay test set.

b. Chapter 4 (Application of relay test sets for testing power system protection):

- The scope highlights “reporting of the test results”. So, chapter 4 should include the relation contents about test reports.
- The scope highlights “automatic test interface”. So, chapter 4 should add the related contents about automatic test and its interface.

➢ The discussions about the structure of chapter 5 and chapter 6 are the main achievements of the 7th meeting.

c. Chapter 5 (Characteristics of analog relay test sets):

- Discuss and adjust the structure of chapter 5 with Mind Map.
- The sub-chapter “general characteristics of relay test sets” are applicable for all kinds of the relay test sets as common features for both analog interface and digital interface.
- Voltage generators, current generators and LPIT generators are all under the same sub-chapter.
- Keep “characteristics of binary inputs and binary outputs” as a sub-chapter
- Delete several unnecessary sub-chapters from the previous version.

d. Chapter 6 (Characteristics of test sets with digital interface):

- Refer to the revised structure of chapter 5, significantly adjust the structure of chapter 6 with Mind Map.
- Reuse the sub-chapter “general characteristics of relay test sets” of chapter 5.
- Most of the contents of chapter 6 in the previous version should be deleted.
- The characteristic of IEC61850 SV is a sub-chapter.
- The characteristic of GOOSE is a sub-chapter.

e. Chapter 7 (Test for protective relay test sets):

- Be careful with the test methods in Chapter 7. These test methods should not be exclusive, but they should be the common practices or just examples.

- No agreements about chapter 7.
- After chapters 5 and 6 are completed, then it's time to discuss chapter 7.

f. • Review the future plan.

- Plan the in-person meeting in next May in China
- Try to finish the draft version in the middle of 2025

7. Future Working Group Meetings

Next meeting (8th meeting) is planned on 7 January with online WebEx + offline.

8. Adjourn

Chair Hong Wang adjourned the meeting.

9. Annex: Participants List and Affiliation

Affiliation	Rep Name	Rep Designation	
State Grid Corporation of China	Hong Wang	DR/Chair	V
Beijing Sifang Automation Company Ltd	Xiaozhou Song	DR	V
Schneider Electric	Jinlei Xing	DR/ Secretary	V
Megger Group Limited	Andrea Bonetti	DR/ Vice Chair	V
Doble Engineering Company	Verzosa Jun	SCR	O
State Grid Corporation of China	Xicai Zhao		P
State Grid Corporation of China	Lei Xu		P
OMICRON Electronics Corp.USA	Naibo, JI		P
OMICRON Electronics Corp.USA	Cord.mempel		P
Guangdong Onlly Electrical Automation Co., Ltd	Yan Zhao		O
Wuhan Haomai Power Automation Technology Co., Ltd	Rui Han		O
Xuchang KETOP Testing Research Institute Co.,Ltd	Jia Li		O
Nanjing University of Posts and Telecommunication	Xiaoqing Shen		O
China Electric Power Research Institute	Yifan Zhang		O
PONOVO POWER CO., LTD	Jiajun Pan		O

Meeting Minutes of 7 January 2025
Venue: Hong Kong
Online meeting via WebEx
The meeting was presided by Hong Wang.

1. Call to Order

The meeting was called to order at 8 am by the Working Group Chair, Hong Wang.

2. Roll call and Disclosure of Affiliation

Attendees present stated their name and affiliation. 5 of 9 entity members were present, quorum reached. The list of attendees is in the Annex at the end of this meeting report.

3. Approval of the Agenda

Motion #1
Approve the agenda of the meeting

4. Approval of last meeting minutes

Motion #2
Approve the meeting minutes of the last meeting in November 2024

5. IEEE Policy

IEEE policies on Patent Policy: Call for Patents
The call for patents was issued; none raised.
IEEE Copyright Policy was presented. There were no questions or concerns.
IEEE SA Participation Behavior policy was presented. There were no questions or concerns.

6. Standard draft discussion

The meeting focused on the organization of chapter 6 – Characteristics of test sets with digital interface. Structure revised based on Chapter 5 format
6 Characteristics of test set with digital interface
CHARACTERISTICS OF RELAY TEST SETS WITH DIGITAL INTERFACE
6.1 Introduction
6.2 General characteristics of relay test sets (Duplicated from Chapter 5)
Consider this as an additional requirement for the digital interface to avoid duplicated information. Clarified with various vendors that the hardware requirements for EMC and other aspects are generally the same between analog and digital versions.
6.3 Characteristics of digital interface for IEC 61850 SV Streams
The time synchronization mechanism was discussed and explained. Manufacturers can define their capabilities. The history of 9-2 in China and 9-2LE was explained. It is agreed to mention how to deal with legacy systems (such as 1501-2016 for China, or 9-2LE). Currently, IEC 61869-9 is being promoted worldwide (covering 9-2LE). A disclaimer is included to clarify that this is not to reinforce the point-to-point method. The definition of the maximum SV interval according to DL/T 1501-2016 is not necessary.
6.3.1 SV Effective Value Verification Method
It is recommended to use third-party analysis software or hardware to verify the accuracy of SV output, GOOSE, and time synchronization.
6.4 Characteristics of digital interface for GOOSE
GOOSE state change with fast output within 100 microseconds.
6.5 Characteristics of digital interface for Time synchronization
6.5.1 Introduction
6.5.2 Methods of time synchronization
When needed, some extra parts of these items will be considered in other clauses.
6.5.2.1 SNTP / NTP
Time sync management, but not for protection or IEC 61850. Only PPS, IRIG-B, PTPv2 Power Profile, or IEC 61850-9-3.
6.5.2.2 PPS
6.5.2.3 IRIG B
6.5.2.4 PTP
(Partially from Clause 6)
6.5.2.5 GNSS
6.6 Additional characteristics on digital interface
6.6.1 Cybersecurity
General mention about risk, focusing on station bus.
6.6.2 Safety and Isolation
6.6.3 Capability of IEC61850 Configurations for Testing Purpose
6.6.4 Handling of Simulation Flag and Test Bit
Tags: Priority 1
Check on Quality Bit. Put Sim Flag and Test Bit.
It is recommended that the test set has the capability to handle quality bits, including SV (OVF) and GOOSE.
6.7 Digital Interface Application of relay test set
Discuss where it shall be located.
6.7.1 Intention of this sub-section
6.7.2 Relay Test Set Simulating as Merging Unit, receiving GOOSE
Start with Full Digital Option.

6.7.3 Relay Test Set Simulating as Merging Unit, receiving Binary Contact responses
6.7.4 Relay Test Set Simulating as Traditional CT/PT, receiving GOOSE
6.7.5 Relay Test Set Simulating as IED, testing interoperability with other IED (publishing GOOSE)
6.7.6 Binary + GOOSE, interlocking etc.
6.7.7 SV + analog
SV + Analog out-diff less than 10 microseconds.
Interval merging unit.
6.8 Additional Testing Related Sections
Shall leave together with 6.4.
6.8.1 Network Engineering Related Test (Jitter, network delay test, redundancy, time sync issue)
Tags: Priority 1
6.8.2 Simulation of abnormal packets software
Intensive discussion on this additional recommended test, such as type test. Reference Jitter or error code standards. Maximum Jitter? (check with Lei, Fred Steinhauser). The error between adjacent packets is 2 microseconds, and the difference between groups is no more than 10 microseconds. IEC61869-9 PPS. IEC 60255-216-1:
Time sync check with IEC 61850-9-3 was discussed .

Time sync via binary input: Mitsubishi paper to be shared.
Sample time synchronization
6.9 Subtopic 8
The following sections were deleted from the original one.
Relay Test Set Simulating as Traditional CT/PT, receiving Binary Contact response
8 Annex
8.1 Relay Test Set Simulating as IED, testing Client Server services with RTU (MOVE to ANNEX)
8.2 Suggested Documentation & Automated Reporting
8.3 Suggested Performance Analysis and Verification
8.4 Relay Test Set Simulating as RTU, checking IED configuration via Client Server Communications
8.5 Suggested Standard Operating Procedures (SOP)
This is more of a management issue. We shall explain the importance of this concept and leave how to use it to the user.

7. Future Working Group Meetings

Next meeting (8th meeting) is planned on 18th February with online WebEx + offline. Monthly meetings in March and April are planned. A face-to-face meeting is planned for May 2025 in China.

8. Adjourn

Chair Hong Wang adjourned the meeting.

9. Annex: Participants List and Affiliation *(to verified)*

Affiliation	**Rep Name**	**Rep Designation**	
State Grid Corporation of China	Hong Wang	DR/Chair	V
Beijing Sifang Automation Company Ltd	Xiaozhou Song	DR	V
Schneider Electric	Jinlei Xing	DR/ Secretary	V
Doble Engineering Company	Verzosa Jun	SCR	O
State Grid Corporation of China	Xicai Zhao		P

State Grid Corporation of China	Lei Xu		P
OMICRON Electronics Corp.USA	Naibo, JI		P

c. Entity IEEE Standard P3476 Standard for Unique IDs and Smart Tags for Supply Chain and Asset Traceability for the Electric Grid – Angelo Tempone

- Meetings will be spread out to allow smaller working groups to complete assignments. The leadership of the working group is doing presentations among several IEEE meetings to bring awareness of the work being done by this working group and gain more support, particularly from manufacturers.

14. Other announcements?

a. ?

15. Motion to Adjourn, by Michael Higginson, second by Marilyn Ramirez
Adjourn time: 2:34 PM

Next meeting is in-person only in Portland, OR May 2025.

Stay well, and we look forward to seeing you again soon!Attendance List for the I Subcommittee Meeting

Role	First Name	Last Name
Guest	Mike	Basler
Guest	Souvik	Chandra
Guest	Peiman	Dadkhah
Guest	Abel	Gonzalez Gomez
Guest	Muhammad	Hamid
Guest	Paul	Harris
Guest	Jack	Jester
Guest	Nicholas	Kraemer
Guest	Bernard	Matta
Guest	Mark	Mcchesney
Guest	Bill	Morse
Guest	James	O'Brien
Guest	Dhruv	Patel
Guest	Zachary	Zaitz
Guest	Richard	Tuck
Guest	Joseph	Coy
Guest	Jada	Hawaz
Guest	Heather	Roberts
Guest	Andre	Souza
Guest	Jordan	Bell
Guest	Oscar	Bolado

Guest	Tuan	Tran
Guest	Ian	Tualla
Voting Member	Ritwik	Chowdhury
Voting Member	John	Cooper
Voting Member	Catherine	Dalton
Voting Member	Louis	Garavaglia
Voting Member	Juan	Gers
Voting Member	Michael	Higginson
Voting Member	Chase	Lockhart
Voting Member	Bruce	Mackie
Voting Member	Bruce A.	Magruder
Voting Member	Todd	Martin
Voting Member	Brian	Mugalian
Voting Member	James	Niemira
Voting Member	Charles	Pestell
Voting Member	Craig	Preuss
Voting Member	Marilyn	Ramirez
Voting Member	Daniel	Ransom
Voting Member	Mohit	Sharma
Voting Member	Malcolm	Swanson
Voting Member	Angelo	Tempone
Voting Member	Steven	Turner
Voting Member	Eric	Udren
Voting Member	April	Underwood
Voting Member	Andre	Uribe
Voting Member	Donald	Ware
Voting Member	Adrian	Zvarych

"J" Subcommittee Report – Rotating Machinery
Chair: Will English
Vice Chair: Jason Eruneo

J Subcommittee (SC) met Wednesday January 15, 2025 at 2:45 PM PST with 19 out of 34 members and 10 guests, reaching quorum.

A motion to approve the January 2025 J SC agenda was made by Steve Turner and seconded by Steve Conrad. The agenda was approved unanimously.

A motion to approve the September 2024 J SC meeting minutes was made by Gene H. and seconded by Russ Patterson. The September 2024 meeting minutes were approved unanimously.

Advisory Committee Items of Interest:

The I subcommittee is looking for subject matter experts for an EMP task force.

Working Group Reports:

J15: Investigation of the Criteria for the Transfer of Motor Buses
Chair: Wayne Hartmann
Secretary / Vice Chair: Doug Weisz
Established 2015 (1/15)
Output: Report (Draft 14XC)
Status:

Assignment:
1. Review, compare and contrast NEMA MG-1, IEEE 666, ANSI C50.41 and C37.96 regarding transfer criteria.
2. Examine published reports and papers on motor bus transfer criteria to compare the conclusions with NEMA MG-1, IEEE 666, ANSI C50.41 and C37.96 regarding fast transfer criteria.
3. Investigate existing open-transition motor bus transfer (MBT) field data from multiple events at the medium voltage level. Examine for current versus Volts/Hz at transfer periods to see if there is a correlation. Examine resultant torque ratio.
4. Examine published reports, papers, NEMA MG-1, IEEE 666, ANSI C50.41 and C37.96 on motor bus fast transfer criteria to reconcile the conclusions with the field-measured results.
5. Study modeling of given motors, with varying loading, undergoing fast, in-phase and residual transfers, with reconnection of the motor to a new source at varying phase angles.
6. Produce a Report for the Subcommittee with the above findings.

WG Report:

This working group did not meet during the January 2025 IEEE JTCM.

Next Meeting:

- Single session, projector, room for 30 people for in-person meeting.
  Note: Future J-15 Meetings will be In-Person only unless otherwise notified

J16: Revision of C37.101, Guide for Generator Ground Protection

Chair: Ryan Carlson
Vice Chair: Doug Weisz
Established: 2016
Output: Guide
Status:
PAR Expiration: Dec 2024

Assignment: Revise C37.101 Guide for Generator Ground Protection

WG Report

This working group did not meet during the January 2025 IEEE JTCM. Per the plan formulated by the J subcommittee and IEEE-SA, the PAR for C37.101 expired in December 2024. A new PAR will be submitted to Rev Com for approval during their March 2025 meeting.

J22: Revision of C37.96, Guide for AC Motor Protection
Chair: Zeeky Bukhala
Vice Chair: Jason Buneo
Secretary: --
Output: Guide
Draft: -
Established Date: May 2021
Status: WG Meeting 17
Expected Completion Date: December, 2025
PAR Expiration Date: December, 2025

Assignment: To revise and update C37.96, Guide for AC Motor Protection

WG Report

The Working Group held its seventeenth meeting on Wednesday, January 15th, 2025, with 9 voting members, 5 non-voting members and 14 guests in attendance. 10 of the attendees participated virtually

1. Welcome/Introduction. The Chair kicked off the first session at 8:02am PST and welcomed members and guests, this was followed by introductions. Second session kicked off at 10:25am PST.

2. Quorum Check

a. Chair reviewed membership list and reclassified 18 voting members as non-voting members. Working group now has 12 voting members.

b. 9 members were in attendance. Quorum was met.

3. Approval of Meeting Minutes.

a. 2023 minutes were approved by mail after the September 2024 meeting.

b. January 2024 minutes. Jason Buneo moved a motion to approve the minutes. Motion was seconded by Andy Kunze. The motion passed unanimously.

c. September 2024 minutes. Jason Buneo moved a motion to approve the minutes. Motion was seconded by Bracy Nesbit. The motion passed unanimously.

d. May 2024 minutes. Will English moved a motion to approve the revised minutes. Motion was seconded by Jason Buneo. The motion passed unanimously.

4. Patent Slides.

a. Patent Slides were shared.

b. Chair provided an opportunity for attendees to identify patent claims or applications which they may be aware of that may be essential for the use of that standard and none was identified.

5. Assignments

a. 8.3 Surge Capacitors. Tom Farr had an assignment to review and address gaps relating to risks associated to improperly applied surge capacitors. Tom presented his proposed write up and discussion ensued. There was a suggestion for Tom to add a discussion on electrical location of surge capacitors when applied. Tom to upload write up to iMeetCentral.

b. 6.4 Motor Bus Transfer. Tom Beckwith presented his assignment to the working group. Highlights of changes made included:

1. Shared changes and provided justification for retaining the performance testing material he had proposed and e in the standard based on the Scope of the standard and existing material.

c. First session adjourned at 9:10am

d. Second session began at 9:23am.

e. 6.4 Motor Bus Transfer. Tom Beckwith resumed the presentation of his assignment.

1. Shared changes he had made to the section on simulation, condensing the material significantly and moving supporting figures to the Annex.

2. Bracy Nesbit to review the revised section.

6. Next Steps.

a. Chair will update Assignment List in iMeetCentral.

b. Chair will complete controlled copy Draft 0, incorporating all assignments.

c. Next meeting. Portland, OR – May 12th – 15th, 2025.

7. Adjourn. Bracy Nesbit moved a motion adjourn the meeting and Jason Buneo seconded it. Meeting adjourned at 10:00am PST.

Meeting Participants:

First Name	Last Name	Affiliation	Role*
Zeeky	Bukhala	GE Vernova	C
Jason	Buneo	GE Vernova	VC
Tom	Beckwith	Beckwith Consulting	M
William	English	Consumers Energy	M
Jason	Eruneo	Duke Energy	M
Tom	Farr	Eaton	M
Gary	Kobet	TVA	M
Andrew	Kunze	Enbridge	M
Bracy	Nesbit	LCRA	M
Hasnain	Ashrafi	Sargent & Lundy	NVM
Sunil	Kabra	Westinghouse Electric Company	NVM
Eli	Pajuelo	Pajuelo Electric Inc.	NVM
JC	Theron	GE Grid Automation	NVM
Douglas	Weisz	Beckwith Electric/Hubbell	NVM
Jorge	Cintron Rivera	US NRC	G
Laurel	Brandt	TVA	G
Ritwik	Chowdhury	SEL	G
Ashley	Hannigan	Bureau of Reclamation	G
Sajal	Harmukh	SEL	G
Ayodele	Ishola-Salawu	NextEra	G
Xing	Jinlei	Schneider Electric	G
Scott	Mannings	PEC	G
Tania	Martinez Navedo	US Nuclear Regulatory Committee	G
Alex	Moreno	Westinghouse Electric Company	G
Frederick	O'Brien	US Nuclear Regulatory Committee	G
David	Reese	Burns & McDonnell	G
Isaac	Wang	US Nuclear Regulatory Committee	G
	Shashidhar		G

*M = Voting Member, NVM = Non-voting Member, G = Non-member/Guest, C = Chair, VC = Vice Chair, S = Secretary

Next meeting:
Request a double session for January meeting for 30 with projector. Avoid conflicts with (ranked by criticality):

J15, J25, J30

J27 & K31

J23: Report on Generator Condition Monitoring
Chair: Steve Turner
Vice Chair: Rob Messel
Secretary: Open
Output: Report
Established Date: May 2021
Status:
Expected Completion Date:
Draft:

Assignment:
Develop a report that covers the following aspects of condition-based monitoring for synchronous machines:

- Use generator condition-based monitoring to detect potential problems before an actual fault develops and schedule maintenance.
- Describe and develop guidelines for online condition monitoring of large synchronous generators, including salient-pole rotors as well as cylindrical rotors.
- Provides information on online condition monitoring techniques as well as recommending thresholds to trigger alarms and initiate remedial or compensating action.
- Demonstrate how to use specific protection functions to monitor generators.
- Describe mechanisms of degradation and applicable monitoring devices. Work with other technical committees as necessary.

WG report
The working group met in one session on Wednesday 15th of January with 11 participants, out of them, 6 members and 5 guests. A quorum was achieved.

I am enclosing the first draft of the report as mentioned during the meeting. Currently it has a one-column format to ease the preparation of the paper. Once we have all the materials, we can go to the two-column format requested by the IEEE. It is better if we keep initially the numbering of the paper. Section titles, figures and tables will be properly numbered once the paper is developed.

I will be adding contributors' sections for review. I am awaiting sections from Mike Basler and Bracy Nesbit.

I will contact contributors individually to review their sections.

Meeting Participants:

First Name	Last Name	Affiliation	Role*
Hasnain	Ashrafi	Sargent & Lundy	M

Laurel	Brandt	TVA	M
Jorge	Cintron	US NRC	M
Jacob	Loyd		M
J.C.	Theron	GE Vernova	M
Steve	Turner	Sargent & Lundy	C
Zeeky	Bukhala	GE Vernova	G
Will	English	Consumers Energy	G
Jason	Eruneo	Duke Energy	G
Ayodele	Ishola-Salawu	NextEra Energy	G
Doug	Weisz	Beckwith Electric/Hubbell	G

*M = Voting Member, NVM = Non-voting Member, G = Non-member/Guest, C = Chair, VC = Vice Chair, S = Secretary

Next meeting:
A single session with accommodation for 20 people is requested.

J24: <u>Report on Synchronous Generator Disturbance Recording</u>
Chair: Shane Haveron
Vice Chair: JC Theron
Secretary: open
Output: Report
Established Date: January, 2022
Expected Completion Date: January, 2026
Draft: -NA

Assignment: Establish a working group to publish a document on the use of disturbance recording for synchronous generators and critical associated auxiliary systems which will include: Digital Fault and Dynamic Disturbance Recorder basics, NERC disturbance monitoring and reporting requirements (PRC-002), detection of events and oscillations, and creation/handling of data files.

WG Report

Next meeting:

J25: Report on Synchronous Condenser Protection
Chair: Jason Eruneo
Vice Chair: Dale Finney
Secretary:
Output: Report
Established Date: January, 2022
Status: 10th WG Meeting, Garden Grove, CA January 14, 2025
Expected Completion Date: January, 2026
Draft: 5.3

Assignment: Develop a report for Synchronous Condenser Protection. This report will discuss all aspects related to the protection of synchronous condensers. This includes design, settings, and protection schemes for synchronous condensers. Specifically, identify functions that apply to a synchronous condenser and refer to IEEE C37.102 for functions that align with the synchronous generator guidance.

WG Report

WG met with 11 attendees in-person and 9 virtual attendees. Six (7) WG members and thirteen (13) guests were present. There was a check for quorum and a quorum was established.

A motion to approve September 2024 meeting minutes was made by Zeeky Bukhala and seconded by Ryan Carlson. May 2024 Meeting Minutes were approved unanimously by the WG

The chair provided the WG with an update on the status of the report. The WG is waiting for the figures in the report to be cleaned up before releasing a revised draft.

The chair met with Normann Fischer through a virtual meeting to ensure that language that has been added in the report aligns with his simulations results and conclusion. Modifications were made to the report to verify that the text aligns with Normann's analysis.

The WG discussed whether we should add any language in the report for the positive offset mho loss of field scheme. The WG added some generic language for loss of field schemes available within digital relays to the report. The WG decided we did not need to add any dedicated language for the positive offset mho scheme.

The WG discussed the historical reasons that industry has implemented static reactive resources instead of synchronous condensers. It was expressed that the industry has preferably chosen static reactive resources due to economic considerations during operations (losses, etc.). The WG modified the language in the report to accurately reflect this.

The WG decided not to provide specific designations for the types of excitation control system models that are used for synchronous condensers.

The WG discussed the typical impedance ranges for synchronous condensers language within the report. There was a question whether this range was for synchronous generators and if the range was valid for synchronous condenser impedances. A working group attendee verified

through a synchronous condenser specification sheet that the impedance was within the range we provided in the report. Hence, the WG decided to keep the ranges within the report.

The WG discussed the auxiliary systems associated with converting a synchronous generator to a synchronous condenser. There was a question posed if all of the existing auxiliary load would need to remain intact for the conversion. The WG agreed the not all of the load would be needed; especially the load associated with the turbine of the synchronous generator. However, the WG agreed that the turning gear would still be valuable to prevent bowing of the rotor when the unit is taken off-line.

The WG discussed language in the report related to a synchronous condenser connected to the tertiary winding of a transformer. The WG decided to remove this section from the report.

The WG decided to remove the reference to “PSSE” to maintain impartiality.

The WG discussed a report comment about zero voltage faults and whether we should add any language. The WG decided that this comment would be more appropriate for a future revision of C37.102.

The WG discussed whether we should add any additional information explaining the moment of inertia variable. The WG decided that we did not need to add any additional details for this variable.

The WG discussed language in the report that referenced a synchronous generator operating at zero MW. The WG made modifications to the language to specify that this language was only in reference to simulation purposes.

Meeting Participants:

First Name	Last Name	Affiliation	Role*
Jason	Eruneo	Duke Energy	C
Gary	Kobet	TVA	M
Michael	Thompson	SEL	NVM
Jason	Buneo	GE Vernova	G
JC	Theron	GE Vernova	M
Ryan	Carlson	Burns and McDonnell	M
Manish	Das	GE Vernova	G
Zeeky	Bukhala	GE Vernova	M
Will	English	Consumers Energy	G
Laurel	Brandt	TVA	M
Doug	Weisz	Beckwith Electric/Hubbel	G
Ashley	Hannigan	Bureau of Reclamation	G
Hasnain	Ashrafi	Sargent & Lundy	G
David	Reese	Burns & McDonnell	G
Bracy	Nesbit	LCRA	G
Sajal	Harmukh	SEL	G
Ding	Lin	Manitoba Hydro	G
Alan	Moreno	Westinghouse	G

John	Noonan	Westinghouse	G
Mathew	King	HDR Engr	G

*M = Voting Member, NVM = Non-voting Member, G = Non-member/Guest, C = Chair, VC = Vice Chair, S = Secretary

Next meeting:

Request to avoid conflicts with D29 and K31

J26: Summary Paper - Modeling of Generator Controls for Coordinating Generator Relays

Chair: Juan Gers
Vice Chair: Phil Tatro
Output: Summary Paper
Established Date: January 12, 2022
Status: 9th WG Meeting January 14, 2025
Expected Completion Date:
Draft: -

Assignment: Write a summary paper of the J13 report, Modeling of Generator Controls for Coordinating Generator Relays.

WG Report:

The working group met in one session on Tuesday 14th of January with 16 participants, out of them, 4 members and 12 guests. A quorum was not achieved.

The chair presented the ballot comments sent after the meeting in Scottsdale AZ, presented by the J Subcommittee Members and officials of the PSRC. He presented also the way that these comments were addressed in the final version of the paper. During the meeting Manish Das presented a comment on Figure 14 that will be addressed immediately and submitted again to the J Subcommittee.

Considering that the final version of the paper, has been approved by the J Subcommittee and other PSRC officials, a motion to disband the group was presented, seconded by Michael Basler. Since there was no quorum, the chairman will circulate the meeting minutes among members to request approval to disband the group. Other activities of the group are not required at the moment. However, the chairman invited the attendants to consider the possibility of a task force aiming to consider working more case examples and expand the work to other type of generators, illustrating the importance of considering generator controls in the setting of the protective relays. Juan Gers offered to share among the members a version in Power Point of

the whole paper, if they are willing to use the material in professional activities or academic events.

Considering that the group will be disbanded no requirements for other meetings was presented.

Meeting Participants:

First Name	Last Name	Affiliation	Role*
Juan	Gers	Gers USA	C
Mike	Basler	Basler Electric Company	M
Bracy	Nesbit	LCRA	M
David	Reese	Burns & McDonnell	M
Gene	Asbury	Basler Electric	G
Laurel	Brandt	TVA	G
Zeeky	Bukhala	GE Vernova	G
Jorge	Cintron Rivera	US NRC	G
Manish	Das	GE Vernova	G
Will	English	Consumers Energy	G
Jason	Eruneo	Duke Energy	G
Ayodele	Ishola-Salawu	NextEra Energy	G
Alan	Moreno	Westinghouse	G
JC	Theron	GE Vernova	G
Savit	Vajpayee	Dominion Energy	G
Doug	Weisz	Beckwith Electric - Hubbell	G

*M = Voting Member, NVM = Non-voting Member, G = Non-member/Guest, C = Chair, VC = Vice Chair, S = Secretary

The J26 chair expressed interest in creating a future task force to investigate more cases where generator controls & protection should be modeled.

A motion to disband the J26 working group was made by Juan Gers and seconded by Steve Conrad. The motion passed unanimously.

J27: Summary Paper - Revision of C37.106, Guide for Abnormal Frequency Protection for Generating Units
Chair: Bracy Nesbit
Vice Chair: Laurel Brandt
Output: Summary Paper
Established Date: May 11, 2022
Status: 8th Meeting January 14, 2025, 8:00am
Expected Completion Date:

Assignment: Write a summary paper of IEEE Standard PC37.106 Guide for Abnormal Frequency Protection for Power Generating Units.

WG Report

a. Check for Quorum – 10/11 members present. Quorum met.

b. Approval of agenda: reviewed – no comments/changes.

c. IEEE SA Patent Policy was presented, and that the call for patents occurred and any responses to such Call. Reviewed no comments.

d. IEEE SA Copyright Policy presentation was presented or made available prior to the meeting. Reviewed no comments.

e. Approval of minutes of previous meeting: Reviewed Sept 14th Scottsdale meeting minutes. Approved: Motion to approve-David Reese, Seconded-Sunil Sabra. Reviewed Dec 5th Virtual meeting. Approved: Motion to approve-Sunil Sabra, Seconded-Ritwik Chowdhury.

f. Technical topics

   i) Continued reviewing comments starting at comment 33. For comments 33,37,39,40,43,44,45,46,&47 these sections are being rewritten and will be reviewed with commenter and WG.

   ii) Reviewed comment 73 intent and WG suggested alternatives; narratives will be updated and resubmitted.

   iii) Other comments were resolved.

   iv) Discussed the definition of 1PU in relation to V/Hz.

   v) Discussed we will need a virtual meeting to review paper updates. Target dates will be mid- February to mid-March depending on WG feedback.

   vi) Next steps: Resolve ballot comments. Submit updated version for the J subcommittee to comment and have comment resolution before the paper is due for a conference. Paper must be approved by J subcommittee. Aiming for WPRC fall 2025 conference with a March/April abstract due date.

g. Action items

   i) Bracy – Review open items on comment resolutions.

   ii) Laurel – Provide direction on updated sections and remaining items to be resolved.

   iii) Bracy - Assemble Summary Paper updates and send to WG for further review.

iv) Mike Basler – write a short narrative on definition of 1PU in relation to V/Hz used when setting excitation controls.

h. Any items reported out of Executive Session – nothing to report.

i. Recesses and time of final adjournment: 9:10am Zeeky Bukhala – motion to adjourn, Steve Conrad-second the motion to adjourn

Meeting Participants:

First Name	Last Name	Affiliation	Role*
Bracy	Nesbit	LCRA	C
Laurel	Brandt	TVA	VC
Steve	Conrad	Retired	M
Ritwik	Chowdhury	SEL	M
Jason	Eruneo	Duke Energy	M
JC	Theron	GE Vernova	M
Sunil	Kabra	Westinghouse	M
Will	English	Consumers Energy	G
Jorge	Clinton	Westinghouse	G
Zeeky	Bukhala	GE Vernova	M
Adrian	Zvarych	Qualus	G
Doug	Weis	Hubbell Beckwith	M
Mike	Basler	Basler	G
Steve	Turner	S&L	G
David	Reese	B&Mc	M
Hasnain	Ashrafi	S&L	G
Scott	Sweet	Westinghouse	G

*M = Voting Member, NVM = Non-voting Member, G = Non-member/Guest, C = Chair, VC = Vice Chair, S = Secretary

Next meeting:
Single Session Meeting for 15 People
Need Projector
Please avoid conflict with other J Meetings

JTF28: Prepare J6, J14 Papers for Publication
Chair: Zeeky Bukhala
Vice Chair: Dale Finney
Established Date: May 11, 2022
Status: 7th Meeting January 14, 2025
Expected Completion Date:

Assignment: Address potential copyright issues arising from the use of significant word-for-word sections of IEEE transactions papers on which the reports were developed. Appropriate citation and formatting of the word-for-word sections and figures will be added. Format both papers in PES format.

Task Force Report

The Task Force held its seventh meeting on Tuesday, Tuesday, January 14th, 2025, with 2 members and 2 guests attending in person and no virtual participants.

1. Welcome / Introductions. The Chair kicked off the meeting at 5:05pm, PST and welcomed attendees to the meeting. This was followed by introductions.
2. Approval of Meeting Minutes.
    1. Quorum was not met. Chair will circulate September 2024 minutes for approval by email.
    2. 2023 (January, May and September) and 2024 (January and May) were approved by email circulation after the September 2024 meeting.
3. Update: J6 - Protection issues Related to Pumped Storage Hydro (PSH) Units
    1. J subcommittee ballot results were shared with PSRC officers.
    2. All officer ballot comments have been resolved. Remaining officer comments were resolved and incorporate with their approval following the September meeting.
    3. Next steps
        1. Chair will transfer report into the new template and incorporate resolved comments. [1/31/2025]
        2. Chair will share final report with J subcommittee officers. [1/31/2025]
        3. Chair will share ballot resolutions and final report with PSRC officers. [1/31/2025]
        4. Obtain PES approval and TR number for report.
4. Update: J14 - Plant Protection Issues Associated with Black Starting of Generators.
    1. Next steps. Task Force will follow method used for J6 paper applying lessons learned.
        1. Complete editorial revision to address concerns described in the assignment.
        2. Task Force ballot and comment resolution.
        3. J subcommittee and comment resolution.
        4. PSRC officer ballot and comment resolution.

5. Adjourn. Meeting adjourned at 5:15pm PST.

Meeting Participants:

First Name	Last Name	Affiliation	Role*
Zeeky	Bukhala	GE Vernova	Chair
Steve	Conrad	Retired	M
Jason	Eruneo	Duke Energy	G
Bracy	Nesbit	LCRA	G

*M = Voting Member, NVM = Non-voting Member, G = Non-member/Guest, C = Chair, VC = Vice Chair, S = Secretary

Next meeting:
Single session. With room for 10 and a projector. Avoid conflicts with (ranked by criticality):

J15, J22, J25
J27 & K31

J30: Summary Paper - Revision of C37.102, Guide for AC Generator Protection
Chair: Will English
Vice Chair: Jason Eruneo
Secretary: open
Output: Summary Paper
Established Date: May, 2024
Status: 5th WG Meeting, Garden Grove, CA January 14, 2025
Expected Completion Date: January, 2026
Draft: Draft 0.1 WG Ballot Draft

Assignment: Write a conference paper summarizing the major improvements in the newly revised, C37.102, IEEE Guide for AC Generator Protection and prepare a presentation for use in presenting the paper.

WG Report:

IEEE Copyright slides were provided prior to the meeting.

The WG met with 6 of the 9 voting members present; we met quorum

Motion to approve the agenda was made by Bracy, seconded by Ritwik Chowdhury. There were no objections; motion was approved

Motion to approve the September meeting minutes was made by Laurel, seconded by Bracy. There were no objections; motion was approved

The WG updated the titles of the authors for the summary paper.

The WG discussed each reference and the potential need to reference documents that were already referenced within the original guide. The WG agreed to keep all of the references within the summary paper.

Meeting Participants:

First Name	Last Name	Affiliation	Role*
Will	English	Consumers Energy	C
Jason	Eruneo	Duke Energy	VC
JC	Theron	GE Vernova	G
Kevin	Damron	Avista	G
David	Reese	Burns & McDonnell	G
Gene	Henneberg	NV Energy	G
Karl	Zimmerman	Ameren	G
Gary	Kobet	TVA	G
Mike	Basler	Basler Electric	G
Alan	Moreno	Westinghouse	G
Juan	Gers	GERS USA	G
Neal	Simmons	Zachry Nuclear	G
Bracy	Nesbit	LCRA	M
Jorge	Cintron	US NRC	G
Sunil	Kabra	Westinghouse	G
Joshua	Hughes	Qualus	G
Raju	Alla	Amazon	G
Laurel	Brandt	TVA	M
Ritwik	Chowdhury	SEL	M
Jason	Buneo	GE Vernova	M
Manish	Das	GE Vernova	G

*M = Voting Member, NVM = Non-voting Member, G = Non-member/Guest, C = Chair, VC = Vice Chair, S = Secretary

Next meeting:

For our next meeting we request a single session with room for 30 people and a projector

Liaison Reports:

Electric Machinery Committee – M. Yalla, R. Messel – No report

Industry Applications Society (IAS) / Industrial & Commercial Power Systems (I&CPS) – Vacant – No report. We are in need of a new liaison for this committee

Nuclear 1E WG – P Kumar – No report

Old Business:

IEEE Tutorial on the Protection of Synchronous Generators Future Revision – The subcommittee will consider revising this in the future to align with the C37.102-2023 revisions.

New Business:

Adjournment:

Motion to adjourn was made by Steve Conrad and seconded by Steve Turner. The meeting was adjourned early.

Meeting Participants:

First Name	Last Name	Affiliation	Role*
Will	English	Consumers Energy	C
Jason	Eruneo	Duke Energy	VC
Hasnain	Ashrafi	Sargent & Lundy	M
Laurel	Brandt	TVA	M
Zeeky	Bukhala	GE Vernova	M
Jason	Buneo	GE Vernova	M
Ryan	Carlson	Burns & McDonnell	M
Ritwik	Chowdhury	SEL	M
Stephen	Conrad	Retired	M
Manish	Das	GE Vernova	M
Juan	Gers	GERS USA	M
Gene	Henneberg	NV Energy	M
Gary	Kobet	TVA	M
Bracy	Nesbit	LCRA	M
Russ	Patterson	Qualus	M
Michael	Thompson	SEL	M
Steven	Turner	Sargent & Lundy	M

Doug	Weisz	Beckwith Electric/Hubbell	M
Michael	Basler	Basler Electric Company	M
Jorge	Cintron Rivera	US NRC	G
Joshua	Hughes	Qualus	G
Todd	Martin	Basler Electric Company	G
Fredrick	O'Brien	US NRC	G
Gene	Asbury	Basler Electric	G
Jack	Jester	Exelon Corp.	G
Tom	Farr	Eaton	G
Jordan	Bell	SEL	G
Ashley	Hannigan	US Bureau of Reclamation	G
Ayodele	Ishola-salawu	FPL	G

*M = Voting Member, NVM = Non-voting Member, G = Non-member/Guest, C = Chair, VC = Vice Chair, S = Secretary

“K” Subcommittee Report – Substation Protection

Chair: Brandon Davies
Vice Chair: Kamal Garg

- Introductions
- 20 members and 45 guests were in attendance
- Check for quorum 16 out of 27 members, need 14 for quorum), quorum was made – Members present – 20
- Approval of agenda (Paul Elkin motioned, Gene Henneberg seconded, approved unanimously)
- Approval of previous meeting minutes (Paul Elkin and seconded by Charlie Sufana, approved unanimously)
- Advisory Committee items of interest
    - Future meetings:
        - PSRC May 2025 – Portland, OR
        - PSRC Sep 2025 – Richmond, VA
        - JTCM January 2026 – Atlanta, GA
        - PSRC May 2026 – Cleveland, OH

        - PSRC Sep 2026 – Reno, NV
    - Please provide meeting minutes to Brandon and Kamal by Jan 30, 2025. Please use template to allow for easier incorporation into the subcommittee minutes.
- Membership update

  Ratan Das opted to be removed from the K Subcommittee membership.

Working Group Reports:

K12: PC37.431.20 IEEE Guide for Protecting Transmission Dynamic Reactive Power Compensators
Chair: Satish Samineni
Vice Chair: Tapan Manna
Secretary:
Output: Guide
Established Date: 2013
Expected Completion Date: 2025
Draft: 0
Assignment: To work jointly with Substations WG I9 to write a guide for protecting transmission dynamic reactive power compensators. PSRC WG K12 will provide guidance and review on topics that are already covered in other IEEE guides to prevent overlap and identify areas where interpretation of existing guides is necessary to meet the specific application challenges unique to transmissions dynamic reactive power compensators.
K12 Attendees:

Name	Status	Affiliation
Kamal Garg	G	SEL
Laurel Brandt	G	TVA
Paras Patel	G	TRC Companies
Jun Verzosa	G	Doble
Satish Samineni	M	SEL
Tapan Manna	M	B&MC
Sajal Hamukh	G	SEL
Lin Ding	G	Manitoba Hydro
Shashidhar Reddy	G	SEL
Guiheme Pires	G	SIEMENS

PSRC WG K12 had joint meeting with Substations WG I9 on Monday, January 13th, 2025. K12 had 2 member, and 9 guests present. Quorum was not met. September meeting minutes will be approved through email.
Discussed the Comment Resolution group next steps and formed the following team members:

- CRG is formed as follows: Mikael, Joe, Marty, Satish, Tapan, Julie, David, Sep
    - Need meetings to be set up for discussion
- Transaction paper is planned with intention to replace the original reference
    - Need meetings to be set up for discussion

The next in-person meeting we request a single session with room for 20. Please avoid timing conflict with KTF32, K25, K31.

Minutes by Satish Samineni.

K25: PC37.99 IEEE Guide for the Protection of Shunt Capacitor Banks
Chair: Rick Gamble
Vice Chair: Mat Garver
Secretary: Brandon Lewey
Output: Guide
Established Date: January 2019
Expected Completion Date: 2025
Draft: 1.1
Assignment: Revise and Update C37.99, IEEE Guide for the Protection of Shunt Capacitors

Formalities:

- The WG met on 01/14/2025.
- Officer presiding – Rick Gamble
- The meeting was called to order by the Chair.
- Introductions were made.
- The meeting was attended by 17 voting and 12 non-voting members.
- Quorum was met.
- Chair reviewed the Patent, Copyright, and Participation Behavior Code of Ethics slides.
- January 2025 Agenda, May 2024 Meeting Minutes, and September 2024 Meeting Minutes.
- Discussed schedule and possible PAR extension
- Discussed outstanding writing assignments.
- WG Adjourn

Next Meeting Dates: May 2025
Next Meeting Location: Portland, OR
Next Meeting Requirements: Room big enough for 30 with projector
Avoid Conflicts with: D38, D50, KTF32, K12, D42, H45, DTF55, C52, DTF52, & D53

Action Items:

- Writing assignments were made
- Adding fault location section to guide

K25 Attendees:

Name	Membership	Affiliation
Seth Barnes	Guest	TVA
Tim Condra	Guest	TVA
Stephen Conrad	Voting Member	Public Service Co of NM - Retired
Paul Elkin	Voting Member	TRC
Richard Gamble	Chair	TVA
Mat Garver	Vice-Chair	Beckwith Electric/Hubbell
Andrew Kunze	Voting Member	Minnesota Power
Brandon Lewey	Secretary	Ameren
Matthew Leyba	Guest	GE
Tapan Manna	Voting Member	Burns & McDonnell
Pratap Mysore	Voting Member	Pratap Consulting Services LLC
Andrew Nguyen	Voting Member	Tennessee Valley Authority
Claire Patti	Voting Member	Portland General Electric
Juan Pineros	Voting Member	XM S.A. Colombia Power System Operator
Taylor Raffield	Voting Member	Duke Energy
Christopher Walker	Voting Member	Mesa Associates, Inc
Ted Warren	Non-Voting Member	Southern Co.
Matthew Black	Guest	Sargent & Lundy LLC
Kamal Garg	Voting Member	Schweitzer Engineering Laboratories, Inc.
Nathanael Kamm	Guest	TRC Companies Inc.
Steve Klecker	Voting Member	MidAmerican Energy
Hillmon Ladner Garcia	Voting Member	Southern Company
Alexis Mezco	Guest	TRC
Paras Patel	Guest	TRC
Daniel Ransom	Guest	GE Renewable Energy
Satish Samineni	Voting Member	Schweitzer Engineering Labs
Alla Deronja	Guest	ATC
Jared Kline	Guest	P&E Engineering
Erin Jessup	Guest	SEL

K27: C37.95 IEEE Guide for Protective Relaying of Utility-Consumer Interconnections
Chair: Paul Elkin
Vice Chair: Hillmon Ladner
Secretary: NA
Output: Guide
Established Date: January 2020
Expected Completion Date: December 2026
Draft: 3
Assignment: Review and update C37.95 IEEE Guide for Protective Relaying of Utility-Consumer Interconnections

Notes:

1. Welcome
2. Patent and Participant Behavior Slides –
    - https://mentor.ieee.org/myproject/Public/mytools/mob/slideset.pdf
    - Ieee sa copyright policy (pes-psrc.org)
3. Quorum: 10/13
4. Minute Approvals
    - September 2024 PSRC Meeting Minutes
        - Motion to Approve: Ted Warren, Second: Brandon Davies
        - Approved
    - Web Meetings October 2024 – January 2025
        - Motion to Approve: Ted Warren, Second: Neil Saia
        - Approved
5. PAR Extension December 2026.
6. SA Ballot Comments Resolution
    - Document received 98% approval (1 disapprove vote)
    - The working group has reviewed 75/84. Dispositions are being documented. The draft will be updated once all comments are reviewed.
    - Continue ballot comment reviews.
7. Next steps.
    - Set up additional virtual ballot resolution meetings with the WG members.
8. Adjourn

Notes:

- Working group met Tuesday January 14th 2025 with 19 attendees.
- Patent Slides, IEEE Copyright Policy Slides and Participant Behavior Slides were discussed. There were no comments or concerns from WG members or meeting participants.
- The chair provided a quick update on the PAR status and ballot comment review progress.
- The WG proceeded to review two additional ballot comments.
- May 2025: Room for 30 with projector.

Voting Members as of 8/29/2024

First Name	Last Name	Present
Jeffrey	Barsch	Present
Sebastien	Billaut	-
Stephen	Conrad	Present
Brandon	Davies	Present
Paul	Elkin	Present
Robert	James	-
Steve	Klecker	-
Hillmon	Ladner Garcia	Present
Dean	Miller	Present
Juan	Pineros	Present
Neil	Saia	Present
Lubomir	Sevov	Present
James	Warren	Present

K27 Attendees:

Name	Membership	Affiliation
Paul Elkin	M	EPRO Eng.
Hillmon Ladner	M	Southern Company
Neil Saia	M	Entergy
Anthony Montoya	G	DOE
Charles Sufana	G	Retired
Matthew Leiba	G	GEV
Steve Conrad	M	PNM Retired
Alexis Mezco	G	TRC
Lubomir Sevov	M	TRC
Nathanael Kamm	G	SGC Engineering
Steven Minh Vannuyen	G	Kiewit Power Delivery
Chip Christmann	G	Basler
Ted Warren	M	Southern Company
Joshua Hughes	G	Qualus
Greg Hataway	G	Burns and McDonnell
Tom Key	G	EPRI
Jeff Barsch	M	AEP
Juan Pineros	M	Colombia XM
Dean Miller	M	Retired

K29 Revise: K3 report (2009), "Reducing outage durations through improved protection and autorestoration in distribution substations".
Chair: Sebastien Billaut
Vice Chair: Mohamed Zedeh
Secretary: Colleen Konsavage
Output: Revised technical report to the K Subcommittee
Established Date: 01/11/2021
Expected Completion Date: 12/2025
Assignment: Create a PES technical report based on the K3 report entitled 'Reducing outage durations through improved protection and auto restoration in distribution substations'.
Meeting Notes
K29 met on Tuesday, January 14th, 2024, with 12 attendees in person and 8 voting members.
Sebastien Billaut (Chair) is leading the meeting with introductions.

1. introduction
2. The new write-up for section 3.4 regarding retrip was reviewed. At this point, there was no comment.
3. A new contribution for section 7.3 regarding bus reclose was submitted and reviewed. Several comments were raised and discussed. Nirmal volunteered to add a figure for clarity.
4. Nirmal and Brittany volunteered to review both sections.
5. Brain Boysen volunteered to review any section that needed to be determined by the chair.

For the next meeting, we will need a projector and a room for 20. Avoid conflict with D35, D38, D30, D42, D44, D47, K33, K35, C45

K29 Attendance:

Name	Membership	Affiliation
Sebastien Billaut	Chair	Arcadis US
Mohammed Zadeh	Vice Chair	ETAP
Bernard Matta	M	SEL
Brian Boyson	M	We Energies
Nirmal Nair	M	
Steve Miller	M	Energy Emissions Intelligence
Matt Louderback	M	Power Engineer
Jado Hawaj	M	SEL
Seth Nelson	G	BASLER
Matt Black	G	Sargent Lurdy
Brittany Wagner	G	Delaware Elec Corp
Nikhil Jagirdar	G	Sac Electric

K31: Revision to C37.119 IEEE Guide for Breaker Failure Protection of Power Circuit Breakers.

Chair: Vahid Madani
Vice Chair: Brandon Davies
Established: 2022
Output: Guide
Expected Completion Date: 2026
Assignment: *Guide for Power System Circuit Breaker Failure Protection*
Meeting Participants: (see Attendees section)
Assignment: Revise C37.119-2016, IEEE Guide for Breaker Failure Protection of Power Circuit Breakers

Summary:

- Met with 25 attendees (13 in person and 12 virtual)
- 10 of 19 Voting Members were in attendance - Quorum was achieved
- Patent Slides were presented, no patents were identified
- Copyright and Attendee Ethics slides were presented and reviewed
- Chair provided an overview of the status of the SA Ballot and working groups progress in resolution of the comments.
- Status of one previous action item was briefly mentioned. It is related to the BF definition and whether it covers protection-initiated scenarios where breaker does not "interrupt". WG K31 has received a comment from a SA reviewer to consider whether the definition needs to be updated. Our BF WG has asked the BF WG member liaison to help coordinate with the I2 WG.
- Several technical and editorial comments were discussed from the initial SA ballot excel comment tracking list:
- Line 96 – Comment did not provide a page or line number. The group discussed possible sections that this comment could possibly apply. Overall consensus was that the comment is outside of the scope of the Guide. The WG Officers will coordinate and provide a response and include notes summarized in the spreadsheet.
- Line 63, Clause 8.2 – Comment was reviewed and additional background on consideration pertaining to relay internal CT's response to subsidence current was discussed. Comment and proposed reference paper were accepted.
- Current detector dropout may be delayed by dc current decay present in the CT circuit. The discussion focused on considering a relay's internal CT, which can sometimes be the more significant contributor to subsidence current. These CTs can act as bandpass filters and, for this discussion, attenuate the decaying dc component in the current.
- Schedule for the next Webex meeting was discussed and is tentatively planned for 1/29/25.
- A motion to adjourn was made by Hillmon Ladner-Garcia, Alexis Mezco seconded.

  Action Items: None

K31 Attendance:

Name	Membership	Affiliation
Abu Bapary	NVM	AEP
Adi Mulawarman	VM	Xcel Energy
Alexis Mezco	VM	TRC
Andrew Nguyen	NM	TVA
Brandon Davies (Vice Chair)	VM	TRC
Chris Walker	VM	Mesa Associates
Claire Patti	NVM	Portland General Electric
Dean Miller	NM	
Don Ware	VM	Qualus Corp
Hillmon Ladner-Garcia	VM	Southern Co.
Ian Tualla	NM	Duke Energy
Jack Jester	NM	Exelon Corp
Jeffrey Barsch	NVM	AEP
Johnny Moore	NM	SEL
Kamal Garg	VM	SEL
Lubomir Sevov	NM	TRC
Matthew Leyba	NM	GE
Nathanael Kamm	NM	TRC
Neil Saia	NM	Entergy
Ritwik Chowdhury	NM	SEL
Satish Samineni	VM	SEL
Steve Klecker	VM	Retired
Taylor Raffield	NVM	Duke Energy
Vahid Madani (Chair)	VM	GridTology
Wendy Al-Mukdad	NM	CPUC

.

KTF32: Investigate need for separate guide for protection of filter banks
Chair: Satish Samineni
Vice Chair: Paras Patel
Secretary: Matt Louderback
Output: Guide
Established Date: 2023
Expected Completion Date:
Draft:
Assignment: To explore the need for a separate guide for protecting harmonic filter banks

1. PSRC KTF32 had a meeting on Tuesday, January 14th, 2025. KTF32 had 7 members and 3 guests. Quorum was met. September meeting minutes were reviewed and approved.
2. Reviewed the following title, scope, and purpose of the guide and made a motion to approve. The motion was approved unanimously. We discussed next steps to form a joint group by coordinating with T&D Capacitor SC after which we get approval from K SC and Main.

   Title: *IEEE Guide for the Protection of Harmonic Filter Banks*
   Scope: *This guide applies to the protection of passive shunt harmonic filter banks used in substations. Included are guidelines for reliable applications of protection methods intended for use in single-tuned, high-pass, and C-type filter bank applications and designs. This guide references standards where they exist and gives typical criteria where appropriate standards do not exist. This guide also includes protection examples to aid the protection engineer.*
   Purpose: *This guide provides assistance to protection engineers on protection methods for passive shunt harmonic filter banks used in substations.*
   For the next in-person meeting we request a single session with room for 20. Please avoid timing conflict with K12, K25, K35, K31.

KTF32 Motion to K Subcommittee for New Guide: "IEEE Guide for Protection of Harmonic Filter Banks"

Output: IEEE Guide
Project Number: PC37.### (TBD, not assigned yet)

WG Assignment: Develop IEEE Guide C37.###, IEEE Guide for the Protection of Harmonic Filter Banks

Proposed Scope: This guide applies to the protection of passive shunt harmonic filter banks used in substations and generating stations. Included are guidelines for applications of protection methods. This guide also includes protection examples to aid the protection engineer.

Proposed Purpose: This guide provides assistance to protection engineers on protection methods for passive shunt harmonic filter banks used in substations and generating stations

Motion by Satish Samineni, second by Gene Henneberg. After some discussion and modification above motion carried unanimously

.

KTF32 Attendance:

Name	Role	Affiliation
Ted Warren	M	Southern Companies
Paul Elkin	M	EPRO Engineering
Lubomir Sevov	M	TRC
Hillman Ladner	M	Southern Companies
Nallan Kumar	G	SEL
Brandon Davis	M	TRC
Paras Patel	VC	TRC
Tapan Manna	M	Burns & McDonnell
Kamal Garg	M	SEL
Ilia Voloh	M	GE
Jada Hawaz	M	SEL
Shashidhar R. Sathu	M	SEL
Doug Taylor	G	SEL
Satish Samineni	Chair	SEL
Matthew Leyba	M	GE Vernova
Jason Buneo	G	GE Vernova
Faris Elhaj	G	Burns & McDonnell
Adi Mulawarman	M	Xcel Energy
Matt Louderback	Sec	Power Engineers
Daniel Lebeau	G	Hydro-Quebec
Nathanael Kamm	G	SGC Engineering
Jorge A. Cintron Rivers	G	US NRC

K33: PC37.234a IEEE Guide for Protective Relay Applications to Power System Buses: Amendment for Protecting Ungrounded Buses with Large Shunt Capacitance Unbalance

Chair: Sebastien Billaut
Vice Chair: Koustubh Banerjee
Secretary: None
Output: Technical report to the K Subcommittee
Established Date: 01/14/2024
Expected Completion Date: 05/2026
Assignment: Prepare amendment to IEEE C37.234-2021 Guide for Protective Relay Applications to Power System Buses, to add a statement to limit the applicability of clause 8.3 to ungrounded systems with largely balanced shunt capacitance to ground and to add guidance on systems with large unbalance shunt capacitance

K33 – Amendment to C37.234 Meeting minutes
The K33 meeting was held on January 14, 2025 in Garden Grove, CA. The working group met with 7 members and 14 guests including online participants.
The Chair participated in the meeting virtually and brought the meeting to order. The meeting started with introductions and Quorum was achieved for the meeting to proceed. The following are the outline of the topics discussed in the meeting:

- The September 2024 meeting minutes were approved with Koustubh passing the motion to approve and Matthew Leyba seconding it.
- Michael Thompson had a comment on the scope of the amendment that it may potentially encroach into grounding standards since his impression is that the amendment will call on installing grounding transformer or changing the distribution transformer size which will eventually change the coefficient of grounding of the system. Sebastien responded by clarifying that only the resistor sizing during largely unbalanced conditions will be addressed.
- Presentation on the slingshot paper which includes development of formula was provided by the Sebastien
- Sebastien will follow up with IEEE to get an iMeet Space where the relevant documents can be shared with working group members.
- Volunteers were solicited to start writing the amendment. The volunteers were Sebastien, Koustubh and Adi.

For the next PSRC May meeting 2025, a room for 25 and a projector will be needed.
Avoid conflict with D44, D42, C45, C38, K27, K29, K35

K33 Attendance:

Name	Membership	Company
Sebastien Billaut	Member - Chair	Arcadis
Koustubh Banerjee	Member – Vice Chair	Eversource Energy
Adi Mulawarman	Member	Xcel Energy
Matthew Leyba	Member	G.E. Vernova
Nathanael Kamm	Member	SGC Engineering
Hillmon Ladner	Member	Southern Company
Amin Zamani	Member	Quanta Tech
Brandon Davies	Guest	TRC
Michael Thompson	Guest	SEL Engineering Services
Andrew Kunzc	Guest	NIN Power
Steve Conrad	Guest	PNM-Retired
Kamal Garg	Guest	SEL
Jared Kline	Guest	P&E Engineering
Malia Zaman	Guest	IEEE SA
Robert James	Guest	PG&E
Paul Elkin	Guest	EPRD
Lubomit Sevov	Guest	TRC
Paras Patel	Guest	TRC
Dan Nordell	Guest	
Mark Mcchesney	Guest	
Sajal Harmukh	Guest	

K35: Applying ground detection banks to ungrounded systems or systems that can become unintentionally ungrounded
Chair: Sebastien Billaut
Vice Chair: Ted Warren
Secretary: Koustubh Banerjee
Output: Technical report to the K Subcommittee
Established Date: 01/14/2024
Expected Completion Date: 05/2026

Assignment: Develop a report on applying ground detection banks to ungrounded systems or system that can become unintentionally ungrounded.

The K35 meeting was held on January 14, 2025 in Garden Grove, CA. The working group met with 4 members and 7 guests. The Chair brought the meeting in order with round table introductions. Quorum for the meeting was confirmed and the meeting proceeded as follows:

- The September 2024 meeting minutes were approved with the Secretary, Koustubh Banerjee, passing the motion to approve and Adi Mulawarman seconding it.
- Follow up on open assignments from the September 2024 meeting –
    - The Chair will follow up with Ajmal Saeed and Mike Jensen to inquire on what can be shared about ”13. PG&E also did a study on TOV and GFOV where DER was backfeeding on breakers and they got voltage slingshot effect.”
    - Adi Mulawarman has found the presentation which deals with an Xcel Energy study on voltage slingshot effect and its effect on arrestors. Adi will share it with the working group officers and will present it in the May meeting.
    - The Chair will follow up with Mike Jensen on reviewing IEEE 1547.2 on section about detection unintentional islanding – whether to include the work “temporary” in the title. Any member or guest with access to IEEE 1547.2 is also welcomed to review the relevant section for the above purpose.
- Discussion on the title of the report continued with comments from both the Vice Chair and Chair on whether to include the keyword “continually ungrounded”. It was agreed that the “unintentional ungrounded” keyword is sufficient.
- Outline of the report was presented and volunteers were selected to take lead on writing the different sections of the report
    - Mohit Sharma put forward questions on purpose of the report – will it include surge arrestor sizing or will it address zig zag transformer sizing. The chair responded that the sizing calculations for these equipment would fall outside the scope of the report.
    - Mohit Sharma had additional questions on including methods to calculate pickup to differentiate 3V0 levels and how to calculate the voltage levels for 3V0.
    - The following table provides the sections in the report assigned to different volunteers –

Section No.	Section	Volunteer
1	Introduction	Sebastien Billaut, Koustubh Banerjee
2	Substation Configurations that can lead to unintentional ungrounding	Ted Warren, Hillmon Ladner

3	Technical Issues Related with Unintentional Ungrounding	Adi Mulawarman, Koustubh Banerjee
4	Protection Methods	Sebastien Billaut
5	Protection Coordination	Ted Warren
6	Study Cases	Ted Warren, Mohit Sharma, Koustubh Banerjee

For the next PSRC May meeting 2025, **a room for 30** and a **projector** will be needed.

K35 Attendance:

Name	Membership	Company
Sebastien Billaut	Member - Chair	Arcadis
Ted Warren	Member – Vice Chair	Southern Company
Koustubh Banerjee	Member – Secretary	Eversource Energy
Adi Mulawarman	Member	Xcel Energy
Mohit Sharma	Member	SEL
Fedrick O'Brien	Guest	NRC
Jack Jester	Guest	Exelon Corp
Steve Conrad	Guest	PNM – Retired
Todd Martin	Guest	Basler Electric
Hillmon Ladner	Guest	Southern Company
Steve Miller	Guest	Energy Emissions Intelligence

KTF36: Explore the need to revised C37.112.2018, Standard Inverse-Time Characteristic Equations for Overcurrent Relays

Chair: Chris Walker
Vice Chair: Brian Boysen
Output: Recommendation to K-Subcommittee on whether to revise C37.112.2018 and/form a Working Group
Established Date: September 2024
Expected Completion Date: January 2024
Draft: NA
Assignment: Determine whether C37.112.2018 should be revised and renewed and if so, create a working group to revise C37.112.1018.

Presiding Officer: Chris Walker
Minutes Recorded by: Brian Boysen

Agenda:

26. Introductions/Signup sheet
27. Review the existing Guide
28. Discussion on need for working group
29. Discuss status and progress of report
30. Potential Scope and Purpose
31. Adjourn

Minutes:

- Introductions were made and the signup sheet was passed around.
- There were approximately 18 people in attendance. Attendance roster is provided below.
- The current guide was discussed and the TF recommended that the guide should be revised and therefore a working group should be formed to revise the guide.
- The TF reviewed and approved a tentative Scope and Purpose which mostly matched what is in the existing guide.
- The TF agreed that most likely the revision will be limited to editorial and other changes that do not add curves or change equations.
- The TF suggested that the guide could modified to add a discussion on how the reset timing usage could be explained.
- K36 (assuming the WG is approved at the K subcommittee) plans to meet at the next PSRC meeting in May and requests a room for 25 with a projector. Please avoid conflicts with K29, D38, D42, D43 & D51.

KTF36 Motion to K Subcommittee: "Revision to C37.112.2018, Standard Inverse-Time Characteristic Equations for Overcurrent Relays"

Motion: Task Force KTF36 motions to Revise IEEE Standard C37.112-2018, IEEE Standard for Inverse-Time Characteristics Equations for Overcurrent Relays, with the following Assignment, Scope, and Purpose.

Proposed Title: Revision to IEEE Standard C37.112 for Inverse Time Characteristics Equations for Overcurrent Relays

Output: IEEE Standard**, Project Number:** PC37.112

WG Assignment: Revise IEEE Std C37.112-2018, IEEE Standard for Inverse Time Characteristics Equations for Overcurrent Relays

Proposed Scope: The scope of this standard includes the review of various existing analytic techniques used to represent relay operating characteristic curve shapes and proposes analytical (formula) representation of typical operating characteristic curve shapes to foster some standardization of available inverse-time relay characteristics provided in microprocessor or computer relay applications..

Proposed Purpose: The purpose of this standard is to provide an analytic (formula) representation of typical relay operating characteristic curve shapes of various inverse-time relays to facilitate representation by microprocessor-type relays and promote a degree of standardization in the inverse shape of a selected curve.

Chair: Chris Walker **Vice Chair**: Brian Boysen **Secretary**: Abu Bapary

Motion by Chris Walker, second by Charlie Sufana, there was no discussion. Motion carried unanimously.

KTF36 Attendees:

Name	Affiliation	Role
Chris Walker	Mesa Associates	Chair/Member
Brian Boysen	We Energies	Vice Chair/ Member
Seth Barnes	TVA	Member
Tim Condra	TVA	Member
Hillman Ladner	Southern Co	Member
Wesley O'Quinn	Southern Co	Member
Timothy M Lensmire	Enercon	Member
Juan Gers	GERS USA	Guest
Jared Kline	P&E Engineering	Guest
Aaron Martin	BPA	Member
Mathew King	HOR	Member
Addis Kifle	GTC	Guest
Kamal Garg	SEL	Guest

Abu Baparay	AEP	Member
Mike Meisinger	S&C	Guest
Priya Raghuraman	Siemens	Guest
Taylor Raffield	Duke Energy	Guest
Satish Samineni	SEL	Guest

KTF37: Explore the need to revise or reaffirm C37.116-2018 Guide for Protective Relay Application to Transmission-Line Series Capacitor Banks

Chair: Nuwan Perera

Vice Chair: N/A

Output: Recommendation to K-Subcommittee on whether to revise C37.116-2018 and/form a Working Group

Established Date: September 2024

Expected Completion Date: May 2025

Draft: NA

Assignment: Determine the need to revise or reaffirm C37.116-2018 Guide for Protective Relay Application to Transmission-Line Series Capacitor Banks

The KTF37 held their first meeting on January 14th at 10:40 PT, with 14 participants present. The Chair welcomed the attendees and introduced the assignment. The Working Group reviewed the scope, purpose, and overview of the C37.116-2018 guide, including the 2018 red-line version.

The following potential improvements were discussed:

- Updating the guide to include the latest references to related documents.
- Considering the review and modification of the scope and purpose as necessary.
- Exploring possible collaborations with the following standards and guides:
    - IEEE 824 standard
    - IEEE 1726 guide

The Working Group will meet in May 2025 to discuss the next steps, including deciding whether to propose a motion to the K sub-committee to revise the guide.

For the next meeting, we request a room for 20 people, single session, with a computer projector. Please avoid conflicts with (D37, C41, DTF55, C52).

KTF37 Attendees:

Name	Mebership/Role	Affiliation
Nuwan Perera	Chair	Power Engineers
Abu Bapary	Member	AEP
Jagannath Wijekoon	Member	RTDS
Brandon Davies	Member	TRC
Kanchanrao Dase	Member	SEL
Faris Elhaj	Member	Burns & McDonnell
Kevin Ridley	Member	TRC
Sajal Harmukh	Member	SEL
Fenghai Sui	Member	Hydro One
Jason Jack	Member	Ge Vernova
Tim Lanbery	Member	BPA
Josh Lamb	Member	Ameren
Jorden Bell	Member	SEL
Steven Turner	Member	Sargent & Lundy

KTF38 – Explore the need to revise C37.245-2018 Guide for the Application of Protective Relaying for Phase Shifting Transformers

Chair: Ethan Grindle
Vice Chair: N/A
Secretary: N/A
Output: Recommendation to K Subcommittee
Established: 2025
Assignment:
Task for to explore the need to revise C37.245-2018 Guide for the Application of Protective Relaying for Phase Shifting Transformers
Meeting Notes:
PSRC WG KTF38 met on Tuesday January 14th, 2025 with 16 participants (12 in person, 4 remote). 6 participants expressed interest in joining the task force as members.

- Reviewed existing guide which was published in 2018. The 2018 publication was the initial publication of the guide. The guide has been downloaded approximately 700 times from the IEEE site since it was published.
- There were no outstanding items needing to be addressed from the original working group. Per discussions the guide is very complete, and there likely to be only minor updates required.
- The IEEE transformers committee is working to start revisions on their guides and standards related to Phase Shifting Transformers. A separate K subcommittee group will likely be required to interface between K subcommittee and the Transformers Committee.
- Obtained the ballot comments and resolutions from ballot of the 2018 publication. These will be used when identifying items that might need to be updated during a revision.
- During the January 2025 K subcommittee meeting, will solicit feedback from members/guests who have used the guide and/or installed Phase Shifting Transformers.
- Working on developing draft language for a PAR to revise C37.245. Will discuss the proposed PAR to the task force during the May 2025 meeting for approval. Targeting approval from the task force during that meeting and making a PAR submittal motion at the May 2025 K subcommittee meeting.
- During May meeting Brandon Davies will present the summary paper developed after the 2018 publication.

For the next in-person meeting we request a single session with a room for 25. Please avoid timing conflict with C3TF, I51, H52.

KTF38 Attendees:

Name	Member	Affiliation
Ethan Grindle	Chair	ATC
Jordan Bell	Member	Schweitzer Engineering Laboratories
Steve Conrad	Guest	PNM-Retired
Brandon Davies	Member	TRC
Alla Deronja	Guest	ATC
Kamal Garg	Guest	Schweitzer Engineering Laboratories
Sajal Harmukh	Guest	Schweitzer Engineering Laboratories
Erin Jessup	Member	Schweitzer Engineering Laboratories
Nathanael Kamm	Member	SGC Engineering
Tapan Manna	Guest	Burns and McDonald
Alexis Mezco	Member	TRC
Dean Miller	Guest	
Adi Mulawarman	Guest	Xcel Energy
Candice Patten	Guest	Agbara/IEEE SF PES
Shashidhar Reddy	Guest	Schweitzer Engineering Laboratories
Michael Thompson	Member	Schweitzer Engineering Laboratories

Liaison Reports:

T&D Committee, Capacitor Subcommittee, **Pratap Mysore,**
http://grouper.ieee.org/groups/td/cap/

Transformers Committee – PC57.135 Working Group, **Michael Thompson**,
https://www.transformerscommittee.org/subcommittees/powertransf/

- Liaison report – Transformer committee by Michael Thomson (attached)

Old Business

None

New Business

- Discussed need to coordinate with Transformer Committee on ongoing work related to Phase Shifting Transformers
  - C57-135 - Guide for the application, specification, and testing of phase-shifting transformers
  - IEEE/IEC 60076-57-1202 - International Standard Power transformers -- Part 57-1202: Liquid immersed phase-shifting transformers
- Need for Liaison/Coordination with Transformer committee PARs related to Phase Shifting Transformers
- Two new task forces KTF37 and KFT38 started. Please join, if interested.
- Two existing task forces KTF32 and KTF36 have now moved on to working groups. Please join, if interested
- We are always on the lookout for new members. Talk to any officers about responsibility. Make recommendations from your WG membership.

Items of General Interest

None

Adjourn

Transformers Committee Liaison report to the K subcommittee, Michael Thompson
The transformers committee of the IEEE PES met in St Louis during the week of October 28, 2024. This is a report of activities that are of interest to the PSCR K Subcommittee.
Activities relating to Phase Shifting Transformers.
The working group revising C57.135, IEEE Guide for the Application, Specification, and Testing of Phase-Shifting Transformers met. This WG has obtained agreement with the IEC to become a new dual logo IEC/IEEE guide with the number 60076-57-135. They plan to revise the PAR for this purpose.
They also have an approved PAR to revise the existing dual logo IEC/IEEE 60076-57-1202, IEC/IEEE International Standard Power transformers --Part 57-1202: Liquid immersed phase-shifting transformers. This was their first meeting as an SA WG.
Their plan is to work on both projects simultaneously. They will have two separate SA Working groups but both will be chaired by Ewald Schweiger, Siemens. IEC TC 14 has formed a single WG called 60076-57-PST that will work on both projects. The IEC WG is led by Convener, Kevin Juchem. There are no USA representatives on this WG.
Kevin presented his review of both C57.135 and 60076-57-1202 at both working group meetings and presented proposals to move material between the two documents as appropriate for a guide versus a standard.
The existing C57.135 includes a clause on protection. For this reason, I have requested that, when they revise the PAR to make it a dual logo standard, that they add PSRC Committee as a joint sponsor in a non-lead role.
Here are some of the proposals:

- Harmonize the definitions between the guide and the standard.
- Remove the section on controls or at least reduce the content. I proposed that discussion of paralleling controls be expanded because of recent issues I have had with manufacturers requirements.
- Remove information on testing from the guide.
- Remove information on tolerances from the guide.
- The information on bidding a PST is covered more thoroughly in the standard.
- Move info about ARS from standard to guide. One member wants to remove discussion of ARS completely.
- Add discussion of performance under reverse power flow to the guide.
- Add discussion of GIC to the guide.
- Add discussion of load flow modeling to the guide.
- They have a suggestion from the Polish National Committee to require the series and exciter unit to be tested separately in the factory to make modeling easier. They plan to request more justification for what could be a significant added expense before considering this request. They would like PSRC expertise on this subject as well.

I informed the two working groups that PSRC has formed a PAR study group to look at seeking a PAR for revision of C37.245. This represents an opportunity to harmonize all three documents relating to phase shifting transformers at the same time. Both committees can benefit from sharing expertise.
I would like to request that the PSRC K Subcommittee form a WG or TF with the assignment to review C37.135 and 60076-57-1202 and provide input to the transformers committee on items we would like to see modified and improved in these projects.
Other activities
They have an approved PAR for C57.133. This is a new document on operating transformers with reverse power flow. Ed teNyenhuis of ABB/Hitachi made a presentation on the effect of

reverse power flow on a transformer. The thinking is that, with the prevalence of distributed generation, that transformers should now be designed for both step-up and step-down operation except, perhaps, a dedicated generator step-up transformer (GSU).
They have an approved PAR for C57.153, IEEE Guide for Paralleling Regulating Transformers.
This WG talked extensively about reverse power flow as well and plan to add a clause on this subject.

K Subcommittee Meeting Attendance
Wednesday January 15th, 2025, 1:10pm – 2:25pm PST

Name	Membership	Affiliation
Abu Bapary	Member	AEP
Ben Kazimier	Member	Bender
Brandon Davies (Chair)	Member	TRC
Charles Sufana	Member	Retired
Dean Miller	Member	POI Engineering
Gene Henneberg	Member	NV Energy
Hillmon Ladner Garcia	Member	Southern Company
Kamal Garg (Vice Chair)	Member	SEL
Lubomir Sevov	Member	TRC
Michael Thompson	Member	SEL Engineering Services
Mukesh Nagpal	Member	Burns & McDonnell
Paul Elkin	Member	Epro Engineering
Pratap G Mysore	Member	Pratap Consulting Services
Qun Qiu	Member	AEP
Randy Hamilton	Member	Basler Electric
Ratan Das	Member	GE Consulting Services
Rick Gamble	Member	TVA
Satish Samineni	Member	SEL
Stephen Conrad	Member	Retired
William English	Member	Consumers Energy
Aaron Martin	GUEST	BPA
Abu Zahid	GUEST	HydroOne
Addis Kifle	GUEST	GTC
Alexis Mezco	GUEST	TRC
Alla Deronja	GUEST	ATC
Andy Kunze	GUEST	MN Power
Bernard Matta	GUEST	SEL
Bill Cook	GUEST	
Brian Boysen	GUEST	WE Energies
Chris Walker	GUEST	Mesa Associates
Daniel Lebeau	GUEST	Hydro Quebec
David Caverly	GUEST	Trench
Ding Lin	GUEST	Manitoba Hydro
Ethan Grindle	GUEST	ATC
Fenghai Sui	GUEST	Hydro One
Ian Tualla	GUEST	Duke Energy
Jack Jester	GUEST	Exelon Corp
Jason Eruneo	GUEST	Duke Energy
Jeffrey Barsch	GUEST	AEP
Joshua Hughes	GUEST	Qualus Corp
Juan Piñeros	GUEST	Colombia Power System Operator
Kevin Ridley	GUEST	TRC
Koustubh Banerjee	GUEST	Eversource Energy
Manish Das	GUEST	GE Vernova

Name	Membership	Affiliation
Matthew Leyba	GUEST	GE
Nathanael Kamm	GUEST	SGC Engineering
Nuwan Perra	GUEST	Power Engineers
Paras Patel	GUEST	TRC COMPANIES INC
Priya Raghuraman	GUEST	Siemens
Scott Hayes	GUEST	PG&E
Seth Barnes	GUEST	TVA
Tapan Mana	GUEST	Burns & McDonnell
Tayler Raffield	GUEST	Duke Energy
Ted Warren	GUEST	Southern Company
Tim Condra	GUEST	TVA
Kate Cummins	GUEST	NIPSCO
Robert James	GUEST	PG&E
Greg Hataway	GUEST	Burns & McDonnell
Craig Wester	GUEST	GE Verona
Savit Vajpayee	GUEST	Dominion Energy
Mohammed Zadeh	GUEST	ETAP
Andrew Volk	GUEST	HDR
Joe Xavier	GUEST	ABB
Faris Elhaj	GUEST	B&M
Toro Caleb	GUEST	IEEE

Presentations to the Main Committee:

PRESENTATION – IEEE C37.109 “IEEE Guide for the Protection of Shunt Reactors” – 2023 Revision Updates – Presented by Kamal Garg

Old Business:

No Old Business

New Business:

No New Business

Announcements:

Next meeting will be in-person format at the Hilton Portland Downtown in Portland, Oregon.

Adjourn:

Meeting was adjourned by the Chair ??:?? AM PST.

Respectfully Submitted,
Gary L. Kobet
Secretary, IEEE/PES PSRC

Addendum A: PSRC September 2024 Meeting Agenda, Draft 7 (Final)

January 13-16, 2025 Hybrid Meeting with IEEE/PES JTCM
Hyatt Regency, Garden Grove, CA, USA

IEEE PSRC / PSCCC Committee Meeting Agenda - DRAFT 7

WG / URL		Output	IEEE SA reference	MONDAY - January 13, 2024 (All times are Pacific Standard Time, PST)	CHAIR	EST	Room
				MONDAY - 8:00 AM - 9:10 AM			
A3		on-going		Newcomer Orientation - PSCCC	Marc Benou	20	Salon 2
P5	*	Recd Practice		IEEE Std P1615 – Recommended Practice for Network Communication for Electric Power Substation Monitoring and Control	James Bougie	20	Royal F
H54	*	Standard	C37.111	Revision of IEEE C37.111-2013/IEC 60255-24:2013 Standard for Common Format for Transient Data Exchange (COMTRADE) (DOUBLE SESSION 1 OF 2)	Mark Adamiak	30	Garden 1
				MONDAY - 9:20 AM - 10:30 AM			
P18	*	Guide		WG: Joint Working Group with SCC21 for revision of IEEE Std 2030. Guide for Smart Grid Interoperability of Energy Technology and Information Technology Operation with the Electric Power System (EPS), End-Use Applications, and Loads - DOUBLE SESSSION (1 of 2)	Anthony Johnson	20	Royal F
S8	*	Guide		WG: IEEE Std 2658 Guide for Cybersecurity Testing in Electric Power Systems	Deepak Maragal	20	Salon 2
SCC21				Standards Coordinating Committee 21 -- JOINT WITH P18 - DOUBLE SESSSION (1 of 2)	Anthony Johnson	20	Royal F
H54	*	Standard	C37.111	Revision of IEEE C37.111-2013/IEC 60255-24:2013 Standard for Common Format for Transient Data Exchange (COMTRADE) (DOUBLE SESSION 2 OF 2)	Mark Adamiak	30	Garden 1
				MONDAY - 10:40 AM - 11:50 AM			
P18	*	Guide		WG: Joint Working Group with SCC21 for revision of IEEE Std 2030. Guide for Smart Grid Interoperability of Energy Technology and Information Technology Operation with the Electric Power System (EPS), End-Use Applications, and Loads - DOUBLE SESSSION (2 of 2)	Anthony Johnson	20	Royal F
S7	*	Standard		WG: IEEE Std 2808 Standard for Function Designations used in Electrical Power Systems for Cyber Services and Cybersecurity	Nathan Wallace	20	Salon 2
SCC21				Standards Coordinating Committee 21 -- JOINT WITH P18 - DOUBLE SESSSION (2 of 2)	Anthony Johnson	20	Royal F
K12	*	Guide	C37.431.20	IEEE Guide for Protecting Transmission Dynamic Reactive Power Compensators JOINT w/ Substations I9 -- MEETS 11:00 AM TO 12:00 NOON	Satish Samineni	20	Grand E
				MONDAY - 11:50 AM - 1:00 PM LUNCH BREAK - on your own			
				MONDAY - 1:00 PM - 2:10 PM			
S14		Report		Task Force on HTTPS and TLS Exploration	Scott Lee	20	Salon 2
B4	#	On going		By Invitation - PSRC Long Range Planning	Michael Thompson		Royal F
H49		Report		Application considerations for the Use of Packet-Switched Communication Channels for pilot protection and teleprotection schemes	Steve Klecker	30	Garden 1
SCASC				IEEE Synchrophasor Conformity Assessment Steering Committee (SCASC)	Ken Martin	30	Imperial
				MONDAY - 2:20 PM - 3:30 PM			
A2TF	#	on-going		By Invitation - Fellows nominations JOINT WITH PSRC B2		10	Garden 1
P14	*	Guide		WG: IEEE Std C37.236 – Guide for Power System Protective Relay Applications Over Digital Communication Channels	Tom Dahlin	20	Royal F
P15	*	Standard		WG: P1815.2 – Standard Profile for Communications with Distributed Energy Resources (DERs) using IEEE Std 1815 [Distributed Network Protocol (DNP3)]	Eric Thibodeau	20	Salon 2
B2	#	On going		By Invitation - Fellows Award - meets with PSCCC A2TF	Jon Sykes		Garden 1
HTF55				Technical Presentation on Cyber Physical Assessment for Grid Resilience - Michael E. Legatt, PhD	Jeff Pack	30	Imperial
				MONDAY - 3:40 PM - 4:50 PM			
P21		Report		SG: System architectures supporting the virtualization of substation protection and control applications -- JOINT WITH I49	Craig Preuss	20	Garden 1
B.SC	#	On going		By invitation - PSRC SC Chairs meeting	Gene Henneberg	15	Salon 2
C23		On going		Coordination of Synchrophasor Related Activities	Yi Hu	20	Imperial
I49		Report		Roadmap for developing new or updating existing IEEE standards to address issues of Centralized Protection and Control (CPC) Systems -- JOINT WITH P21	Craig Preuss / Brian Mugalian	30	Garden 1
				MONDAY - 5:00 PM - 6:10 PM			
P22TF				TF: Report on Quality Assessment, Design for Reliability, and Risk-Informed Decision Making and Their Impact on Communication Protocols and Architectures for Electric Power Systems	David Dolezilek	30	Royal F
S2	*	Standard		IEEE Std 1711.1 Standard for a Cryptographic Protocol for Cyber Security of Substation Serial Links: Substation Serial Protection Protocol (SSPP)	Mike Dood	20	Salon 2
I43		Report		EMP Resiliency	Angelo Tempone	30	Imperial
				MONDAY - 6:00 PM - 10:00 PM - RECEPTION and AWARDS DINNER			
				Reception	JTCM	200	BALL ROOM

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IEEE PSRC / PSCCC Committee Meeting Agenda - DRAFT 7

WG / URL		Output	IEEE SA reference	TUESDAY - January 14, 2024 (All times are Pacific Standard Time, PST)	CHAIR	EST	Room
				TUESDAY - 8:00 AM - 9:10 AM			
C2	*	Standard		IEEE-C93.4 Standard for Power Line Carrier Line Tuning Equipment Associated with Power Transmission Lines	Dave McGuire	20	Salon 2
P19	*	Standard	P2030.103	P2030.103 IEEE Standard for Universal Utility Data Exchange (UUDEX)	Scott Mix	20	Salon 4
B3		On going		Membership - New Comers Orientation - PSRC	Mal Swanson		Garden 1
C38	*	Guide	2030.12	Design of Microgrid Protection Systems	S. S. (Mani) Venkata	60	Royal F
C41		Report		Investigate performance requirements for Distribution PMUs	Ken Martin	15	Salon 8
D29		Tutorial		Tutorial for Setting Impedance-Based Power Swing Relaying on Transmission Lines	Kevin Jones	30	Grand F
D53				Report on distribution line protection practices survey	Muhammad Hamid	30	Royal D
ITF52		NA		Determine need for a corrigendum for IEEE Std C37.92-2023 and draft a PAR if there is a need	Eric Udren	20	Grand C
J27		Summary Paper		Summary Paper - Revision of PC37.106, Guide for Abnormal Frequency Protection for Generating Units	Bracy Nesbit	15	Salon 6
KTF36		Task Force		Explore the need to revise C37.112-2018 Standard Inverse-Time Characteristic Equations for Overcurrent Relays	Chris Walker	25	Grand E
KTF38		Task Force		Explore the need to revise C37.245-2018 Guide for the Application of Protective Relaying for Phase Shifting Transformers	Ethan Grindle	25	Pacific
				TUESDAY - 9:20 AM - 10:30 AM			
P20	*	Standard		WG: Joint Work Revision of IEEE/IEC 61850-9-3-2016 – IEC/IEEE International Standard – Communication networks and systems for power utility automation – Part 9-3: Precision time protocol profile for power utility automation	Benton Vandiver	20	Royal F
S1	*	Standard		WG: IEEE Std 1686 Standard for Intelligent Electronic Devices Cyber Security Capabilities	James Formea	20	Salon 2
B5		On going		Publicity	Cathy Dalton	15	Garden 1
C45		Report		Protection and short-circuit modeling of systems with high penetration of inverter-based resources	Ali Hooshyar	60	Salon 6
D47	*	Guide	C37.243	IEEE Guide for Application of Digital Line Current Differential Relays Using Digital Communications	Alla Deronja	40	Grand F
DTF56				IEC 61850 effect on transmission line protection based on Internet communications	Alex Apostolov	30	Grand E
H31		Report		Common Protection & Control parameters for COMSET	Depak Maragal	20	Grand C
H40	*	Recd Practice	C37.1.2	Databases Used in Utility Automation Systems	Theo Laughner	15	Salon 4
I46	*	Guide	PC57.13.3	Review and determine need of revision of IEEE C57.13.3-2014 - IEEE Guide for Grounding of Instrument Transformer Secondary Circuits and Cases	Bruce Magruder	20	Salon 8
J25		Report		Report on Synchronous Condenser Protection	Jason Eruneo	30	Royal D
K27	*	Guide	C37.95	Guide for the Protective Relaying of Utility-Consumer Interconnections	Paul Elkin	25	Pacific
				TUESDAY - 10:40 AM - 11:50 AM			
C1	*	Guide		IEEE-643 Guide for Power-Line Carrier Applications	Tony Bell	20	Salon 2
S18	*	Standard		IEEE Standard Common Format for Documenting IED Firmware or Software Changes and confirming their transmittal (COMFIRM) [JOINT with PSRC I47]	Éric Thibodeau	20	Royal F
C29		Report		Power System Testing Methods for Power Swing Blocking and Out of Step Tripping	Kevin Jones	30	Garden 1
C53		Report		Develop a Technical Report summarizing the collection, management, and analysis of protection & control data sets for artificial intelligence and machine learning applications	Dan Sabin	30	Grand E
CTF56				IEEE 1547.7 Guide for Conducting Impact Studies for Distributed Energy Resource Interconnection	Sean Carr	20	Salon 8
D51		Report		Protection Consideration for Single Phase Tripping and Reclosing of Distribution Lines	Brian Boysen	35	Grand F
H27	*	Standard	C37.251	File format for IED configuration Data (COMSET)	Mario Capuozzo	30	Grand C
HTF57				Evaluate the need to revise 2030.101-2018 IEEE Guide for Designing a Time Synchronization System for Power Substations	Dean Ouellette	20	Salon 6
I47	*	Rec. Practice	PC37.231	Review and determine need of revision of IEEE C37.231-2006 - IEEE Recommended Practice for Microprocessor-Based Protection Equipment Firmware Control. JOINT WITH PSCCC S18	Milton Quinteros	20	Royal F
J26		Summary Paper		Summary Paper - Modeling of Generator Controls for Coordinating Generator Relays	Juan Gers	30	Royal D
K25	*	Guide	C37.99	Guide for the Protection of Shunt Capacitors	Rick Gamble	30	Pacific
KTF37		Task Force		Explore the need to revise C37.116-2018 Guide for Protective Relay Application to Transmission-Line Series Capacitor Banks	Nuwan Perera	25	Salon 4
				TUESDAY - 11:50 AM - 1:00 PM LUNCH BREAK - on your own			
L&L				MemberPlanet Workshop @ JTCM 2025 -- 2 HOURS NOON-2:00PM - Lunch will be provided	Abira Altvater		Grand A

IEEE PSRC / PSCCC Committee Meeting Agenda - DRAFT 7

WG / URL		Output	IEEE SA reference	TUESDAY - January 14, 2024 (All times are Pacific Standard Time, PST)	CHAIR	EST	Room
				TUESDAY - 1:00 PM - 2:10 PM			
C48		Summary Paper		Conference/IEEE transactions paper development for C37.120 IEEE Guide for Protection System Redundancy for Power System Reliability	Alla Deronja	20	Salon 4
CTF47				Relay Modeling in Electromechanical Dynamic Simulations for Power System Dynamic Performance (PSDP) committee	Evangelos Farantatos	20	Garden 1
D35		Report		Evaluation of Transmission Line Pilot Protection Schemes	Rick Gamble	50	Grand F
H30		Report		IEC 61850 User Feedback	Depak Maragal	35	Grand E
H47		Report		Investigate Impact of Digital Comms on Prot & Control Applications	Mital Kanabar	30	Royal D
HTF55		Report		Investigate Distributed Cyber Physical Assesment for Grid Resilience	Jeff Pack	20	Grand C
I48	*	Guide	PC37.103	Revision of IEEE C37.103 Guide for Differential and Polarizing Relay Circuit Testing	Mohit Sharma	15	Salon 6
J24		Report		Report on Synchronous Generator Disturbance Recording	Shane Haveron	10	Salon 8
K33	*	Guide	C37.234 amendment	Ammendment to C37.234 Bus Guide regarding stabilization of ungrounded bus with large or unbalanced shunt capacitance	Sebastien Billaut	25	Pacific
				TUESDAY - 2:20 PM - 3:30 PM			
C3TF		Report		Task Force on Recent Experiences with Power Line Carrier for Protective Relaying	Craig Palmer	20	Salon 2
S17		Report		Task Force on Use of SBOM in the Energy Sector	Éric Thibodeau	20	Royal F
C54				Data Center Protection, Automation, and Control (PAC) Systems	Andre Melo	15	Salon 6
D37		Report		Report on Impact of Series Compensation on Transmission Line Protection	Mike Kockott	15	Salon 4
D45		Report		Protection methods used to reduce wildfire risks due to transmission and distribution lines.	Jon Sykes	40	Grand F
DTF55				Protection of HVDC systems and dc distribution systems	Brandon Lewey	40	Grand E
H41	*	Standard	1646	Communication Delivery Time Performance Requirements	Dave Dolezilek	15	Salon 8
I4		On Going		International Standards Development (IEC Advisory)	Eric Udren	15	Garden 1
J15		Report		Investigation of the criteria for the transfer of motor buses	Wayne Hartmann	30	Royal D
K35		Report		Applying ground detection banks to ungrounded systems or systems that can become unintentionally ungrounded	Sebastien Billaut	30	Pacific
KTF32		Task Force		Explore the need for a separate guide for protecting Harmonic Filter Banks	Satish Samineni	20	Grand C
				TUESDAY - 3:40 PM - 4:50 PM			
S15	*	Guide		IEEE Guide for Securing Generic Object Oriented System Events (GOOSE) and Sampled Values (SV) Protocols of IEC 61850 using IEC 62351-6 and IEC 62351-9	Jay Anderson	30	Royal F
D52		Report		Line Protection based on Transient Quantities	Kevin Malpede	30	Grand E
D54				Protection methods for non-effectively grounded distribution systems	Russ Patterson	30	Grand F
H6		Summary Paper		Application Testing of IEC 61850 based Systems	Charlie Sufana	30	Royal D
HTF56		Ongoing		H SC Ideation Meeting	Mital Kanabar	30	Grand C
I37	*	Standard	PC37.90	Review of Standard for Relays and Relay Systems Associated with Electric Power Apparatus	Marilyn Ramirez	20	Salon 6
J30		Summary Paper		Summary Paper - Revision of PC37.102, Guide for AC Generator Protection	Steven Mueller	25	Garden 1
K29		Report		Reducing outage durations through improved protection and autorestoration in distribution substations	Sebastien Billaut	20	Salon 8
K31	*	Guide	C37.119	Guide for Breaker Failure Protection of Power Circuit Breakers	Vahid Madani	35	Pacific
				TUESDAY - 5:00 PM - 6:10 PM			
S16		Report		Application of IDS and IPS to Electric Power Systems	Eugenio Carvalheira	20	Salon 2
B.Adcom	#	On going		By invitation - PSRC Advisory Committee -- UNTIL 6:30 PM	Gene Henneberg		Royal D
C51		Report		Report on Underfrequency Mitigation Strategies for Low Inertia Systems	Kevin Jones	30	Pacific
D38		Report		Impact of High SIR on Line Relaying	Chris Walker	40	Grand F
H50		Report		Requirements for Time Sources in Protection & Control Systems	Dean Ouellette	30	Grand E
JTF28				Prepare J6, J14 papers for publication	Zeeky Bukhala	10	Salon 8

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IEEE PSRC / PSCCC Committee Meeting Agenda - DRAFT 7

WG / URL		Output	IEEE SA reference	WEDNESDAY - January 15, 2024 (All times are Pacific Standard Time, PST)	CHAIR	EST	Room
				WEDNESDAY - 8:00 AM - 9:10 AM			
F0.				Optical Fiber Subcommittee - ALL DAY WED 9:00 AM - 5:00 PM	Del Khomarlou	50	Salon 3
P13		Report		TF: Beginners guide to IEC 61850	Eugenio Carvalheira	30	Royal F
S11		Report	2024	Task Force on Roadmap Development for S0 Subcommittee	Dan Goodlett	20	Salon 2
B11		On going		SC21 Distributed Resources Standard Coordination - OPEN TO ALL	Ben Kazimier	20	Salon 8
C52	*	Guide		Revise standard C37.246 IEEE Guide for Protection System of Transmission-to-Generation Interconnections.	Melvin Moncey Joseph	40	Grand A
CTF55				Investigate the industry need for a relevant standard or report for Synchro-Waveform/ Continuous Point-On-Wave/Synchronized Measurement	Shane Haveron	20	Salon 6
D43		Report		Effect of Distribution Automation on Protective Relaying	Greg Ryan	30	Grand E
D44		Guide	C37.114	IEEE Guide for Determining Fault Location on AC Transmission and Distribution Lines	Sebastien Billaut	30	Grand F
J22	*	Guide	C37.96	Revision of PC37.96, Guide for AC Motor Protection (DOUBLE SESSION 1 of 2)	Zeeky Bukhala	30	Pacific
				WEDNESDAY - 9:20 AM - 10:30 AM			
F0.				Optical Fiber Subcommittee - ALL DAY WED 9:00 AM - 5:00 PM	Del Khomarlou	50	Salon 3
P10		Report		TF: Report on P2664 – Standard for Streaming Telemetry Transport Protocol	Ken Martin	20	Salon 2
C50		Report		Revise and expand PES-TR87 Protection of Wind Electric Plants to explicitly address other IBR plants (e.g., solar and battery energy storage)	Brandon Davies	30	Royal F
D42		Guide	C37.113	IEEE Guide for Protective Relay Applications to Transmission Lines	Jeff Barsch	50	Grand F
H44	*	Guide	C2030.101.1	Monitoring & Diag IEC 61850 GOOSE and Sampled Values Based Systems	Aaron Martin	40	Grand C
H46	*	Recd Practice	C37.1.3	HMI used in Substation Automation Systems	Matt Black	30	Grand E
I45		Report		Grounding and Bonding Issues Associated With Substation Wiring Practices and Instrumentation	Adrian Zvarych	20	Salon 8
I50		Paper		Develop a summary paper for IEEE Std C37.92 Standard for Low-Energy Analog Interfaces between Protective Relays and Power System Signal Sources	Eric Udren	20	Salon 6
I51		Paper		Develop a summary paper for IEEE Std C37.110 Guide for the Application of Current Transformers for Protective Relaying Purposes	Juan Gers	30	Garden 1
J22	*	Guide	C37.96	Revision of PC37.96, Guide for AC Motor Protection (DOUBLE SESSION 2 of 2)	Zeeky Bukhala	30	Pacific
				WEDNESDAY - 10:40 AM - 11:50 AM			
C0.				Power Line Carrier Subcommittee	Tony Bell	50	Garden 1
F0.				Optical Fiber Subcommittee - ALL DAY WED 9:00 AM - 5:00 PM	Del Khomarlou	50	Salon 3
P16	*	Standard	P1854	WG: Joint Work and Review of IEEE Std 1854 Guide for Smart Distribution Applications JOINT WITH PSRC H53	Xiangyu Ding / Craig Preuss	20	Royal F
S20		Report		Task Force on Zero Trust & Zero Trust Architecture	Larry Collier	20	Salon 2
B10		On going		By Invitation - Inverter Based Resources Steering Working Group	Gene Henneberg	15	Salon 6
C43		Report		Artificial Intelligence and Machine Learning technologies for power system protection and control applications	Yi Hu	50	Grand A
D30		Tutorial		Tutorial on Application and Setting of Ground Distance Elements on Transmission Lines	Karl Zimmerman	30	Grand C
D48		Report		Report on Single phase Trip and Reclose on Transmission Lines	Kamal Garg	30	Grand E
H52	*	Standard	C37.232	Common Format for Naming Time Sequence Data Files, C37.232, COMNAME	Ellery Blood	20	Salon 8
H53	*	Guide	P1854	Revision of IEEE Guide P1854 Use Guide for Smart Distribution Applications JOINT WITH PSCCC P16	Xiangyu Ding	30	Royal F
J2		On Going		Terminology Usage Review	Mal Swanson	20	Grand F
J23		Report		Report on Generator Condition Monitoring	Steve Turner	20	Pacific
				WEDNESDAY - 11:50 AM - 1:10 PM LUNCH BREAK - on your own			
				WEDNESDAY - 1:10 PM - 2:35 PM			
F0.				Optical Fiber Subcommittee - ALL DAY WED 9:00 AM - 5:00 PM	Del Khomarlou	50	Salon 3
S0.				Cybersecurity Subcommittee	Scott Mix	50	Garden 1
I.				Protection and Control Practices Subcommittee	Ritwik Chowdhury	60	Grand A
K.				Substation Protection Subcommittee	Adi Mulawarman	50	Grand C
				WEDNESDAY - 2:45 PM - 4:10 PM			
F0.				Optical Fiber Subcommittee - ALL DAY WED 9:00 AM - 5:00 PM	Del Khomarlou	50	Salon 3
P0.				Protocols and Architecture Subcommittee	Tom Dahlin	50	Garden 1
C.				Systems Protection Subcommittee	Michael Higginson	60	Grand A
J.				Rotating Machinery Subcommittee	Will English	40	Grand C
				WEDNESDAY - 4:20 PM - 5:45 PM			
F0.				Optical Fiber Subcommittee - ALL DAY WED 9:00 AM - 5:00 PM	Del Khomarlou	50	Salon 3
D.				Line Protection Subcommittee	Meyer Kao	60	Grand A
H.				Relaying Communications and Control Subcommittee	Hugo Monterrubio	75	Grand E
WG / URL		Output	IEEE SA reference	THURSDAY - January 16, 2024 (All times are Pacific Standard Time, PST)	CHAIR	EST	Room
				THURSDAY - 7:30 AM - 10:45 AM			
PSRC MC				PSRC Main Committee	Gene Henneberg	240	Royal A-D
				THURSDAY - 11:00 AM - 1:00 PM			
PSCCC MC				PSCCC Main Committee	James Formea	80	Royal A-D

January 13-16, 2025 Hybrid Meeting with IEEE/PES JTCM
Hyatt Regency, Garden Grove, CA, USA

IEEE PSRC / PSCCC Committee Meeting Agenda - DRAFT 7

				Groups not meeting September 2024			
A0.				Administrative Subcommittee	Marc Benou	50	no mtg 1-25
A0.1				PSCC Working Group P&P / Standards Committee P&P Overview & Training	James Formea	30	no mtg 1-25
A0.2				Memberplanet Training Session	James Formea	30	no mtg 1-25
A1		on-going		Awards and Recognitions		10	no mtg 1-25
E0.				Wire Line Subcommittee	John Fuller	50	no mtg 1-25
P1	*	Standard		WG: IEEE PC37.238a – IEEE Draft Standard Profile for Use of IEEE 1588 Precision Time Protocol in Power System Applications Amendment 1: Adding a Type-Length-Value (TLV) to indicate the latest International Earth Rotation Service (IERS)-specified Universal Time Coordinated (UTC) Leap Second Event	Chris Huntley		no mtg 1-25
P11		Report		TF: Cloud Computing, uses and Requirements of Electric Power Utilities	T.W. Cease		no mtg 1-25
P12		Report		TF: Analog Leased Line End of Life and Migration	Marc Benou		no mtg 1-25
P17				Investigate need for a guide for the architecture and tech specification of Cyber Physical Power Systems			no mtg 1-25
P2	*	Standard		WG: IEEE Std 1815 – Standard for Electric Power Systems Communications-Distributed Network Protocol (DNP3)	Ronald Farquharson	20	no mtg 1-25
P3	*	Standard		WG: IEEE 1815.1 – IEEE Standard for Exchanging Information Between Networks Implementing IEC 61850 and IEEE Std 1815(TM) [Distributed Network Protocol (DNP3)]	Ronald Farquharson	20	no mtg 1-25
P4				Update C37.115 Standard for Testing Communications in a Substation			no mtg 1-25
P6		Report		Application of Ethernet Networking Devices Used for Protection and Control Applications in Electric Power Substations	Eric A. Udren		no mtg 1-25
P7				Revision of Standard for N Times 64 Kilobit Per Second Optical Fiber			no mtg 1-25
P8		Report		TF: Recommended Mapping Approach between IEEE C37.118.2 and IEC 61850	Yi Hu		no mtg 1-25
P9	*	Standard		WG: IEEE Std C37.118.2 – Standard for Synchrophasor Data Transfer for Power Systems	Vasudev Gharpure	30	no mtg 1-25
S10		Report		TF: Utility & Municipality Challenges on Analyzing and Implementing Cybersecurity Standards and Best Practices	Jeff Pack	40	no mtg 1-25
S13	*	Guide		WG: Joint Work on IEEE Std 1547.3 Guide for Cybersecurity of DERs Interface with Electric Power Systems	Tony Johnson	30	no mtg 1-25
S19		Report		Review of DNP3 SAv6 and AMP	Andrew West		no mtg 1-25
S3	*	Standard		WG: IEEE Std 2030.102.1-2020 – IEEE Standard for Interoperability of Internet Protocol Security (IPsec) Utilized within Utility Control Systems			no mtg 1-25
S4	*	Standard		IEEE Std 1711.2-2019 – IEEE Standard for Secure SCADA Communications Protocol (SSCP)			no mtg 1-25
S5	*	Standard		WG: IEEE Std C37.240 – Standard Cybersecurity Requirements for Power System Automation, Protection and Control Systems	Steven Kunsman		no mtg 1-25
S9		Report		TF: Task Force on Utility IT-OT Cybersecurity Challenges in Roles and Terminology	Theo Laughner		no mtg 1-25
B.				PSRC Administative Subcommittee	Michael Thomson		no mtg 1-25
B1	#	On going		By Invitation - Awards and Technical Paper Recognition	Andre Uribe		no mtg 1-25
B8		On going		PSRC O&P Manuals Revision and WG Chair Training	Don Lukach		no mtg 1-25
B9		On going		PSRC Website	Rick Gamble		no mtg 1-25
C33	*	Rec'd Prac	2004	HIL Simulation Testing Power Apparatus & Ctrl	Dean Ouellette	40	no mtg 1-25
C40		Tutorial		Prepare a tutorial from the work of C37.247 Standard for Phasor Data Concentrators	Vasudev Gharpure	10	no mtg 1-25
D34				Coord w/ IEC 60255-187-3 Functional Spec for Line Current Diff Req	Normann Fischer	15	no mtg 1-25
H17		Report		Establishing Links between COMTRADE, IEC 61850, and CIM	Christoph Brunner	20	no mtg 1-25
H22	*	Guide	C37.249	Guide for Cyber Security for Protection Related Data Files	Amir Makki	20	no mtg 1-25
H45	*	Guide	C37.300	Guide for Centralized Protection & Control (CPC) Systems within a Substation	Ratan Das	40	no mtg 1-25
H51	*	Standard	C37.239	COMFEDE Revision	Mark Admiak	15	no mtg 1-25
I31	*	Standard	P1613	Standard for Environmental and Testing Requirements for Devices with Communications Functions Used With Electric Power Apparatus	Brian Mugalian	10	no mtg 1-25
I32		Survey		A Survey of Protective System Test Practices	Andre Uribe	20	no mtg 1-25
I33		Report		Review of Relaying Testing Terms	Scott Cooper	10	no mtg 1-25
I36	*	Standard	PC37.90.2	Revision of - Standard for Relays, Relay Systems, and Control Devices used for Protection and Control of Electric Power Apparatus – Radiated Electromagnetic Interference Withstand Capability Requirements and Tests	Chase Lockhart	20	no mtg 1-25
I40	*	Standard	PC37.90.1	Standard for Relays, Relay Systems, and Control Devices used for Protection and Control of Electric Power Apparatus- Surge Withstand Capability (SWC) and Electrical Fast Transient (EFT) Requirements and Tests	Roger Whittaker	20	no mtg 1-25
I44		Report		Skills Required to Program, Commission, Test, and Maintain Ethernet Based PAC Systems	Andre Uribe	20	no mtg 1-25
J16	*	Guide	C37.101	Revision of PC37.101, Guide for Generator Ground Protection	Ryan Carlson		no mtg 1-25
J21		Tutorial		Motor Protection Tutorial			no mtg 1-25

REFER TO PRINTED AGENDA NEAR REGISTRATION DESK FOR ANY LAST-MINUTE CHANGES
* - Standards related # - Closed session (by invitation) EST - estimated attendance r. 6-Jan-2025

Power System Relaying and Control Committee

PSRC Main Committee Meeting Agenda

Thursday, January 16, 2025 7:30 AM - 10:45 AM (PST)

I.	Call to Order / Introductions / Quorum check	Gene Henneberg
II.	Approval of May 2024 Minutes / Approval of September 2024 Minutes / Financial Report	Gary Kobet
III.	Reports of Interest	
A.	Technical Paper Coordination/Future Meetings	Jim Niemira
B.	CIGRE Report	Jonathan Sykes
C.	IEEE PES Report	Gene Henneberg
D.	IEC Report	Eric Udren
E.	SC21 and 1547 Liaison Report	Ben Kazimier
F.	Standard Coordinator's Report	Erin Jessup
G.	PSCC Committee Report	Craig Palmer
H.	NERC Report	Rich Bauer
I.	Renewable Systems Integration Coordinating Committee (RSICC)	Kamal Garg
J.	Other Reports of Interest	Gene Henneberg
IV.	Advisory Committee Report	Gene Henneberg
	B1. Awards/Recognition	Andre Uribe
V.	Subcommittee Reports	
	K - Substation Protection	Adi Mulawarman
	J - Rotating Machinery	Will English
	D - Line Protection	Meyer Kao
	C - System Protection	Michael Higginson
	I - Protection and Control Practices	Ritwik Chowdhury
	H - Relay Communications	Hugo Monterrubio
VI.	Presentations	Gary Kobet
	IEEE C37.109 "IEEE Guide for the Protection of Shunt Reactor" - 2023 Revision Updates	Ilia Voloh, Kamal Garg
VII.	Old Business	Gene Henneberg
VIII.	New Business	Gene Henneberg
IX.	Announcements	Gene Henneberg
X.	Adjourn	Gene Henneberg