Coordination of Synchrophasor Related Activities

IEEE PES PSRC C23

PSRC, Sept 13, 2022

Presented by:
Allen Goldstein
Chair
## MEMBERS

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Phasor Measurement Systems

PMUs in Distribution Systems: WG C41: Report

GPS

Timing standards
IEEE 1588 or C37.238 or IEC 61850-9-3

Communication standards
IEEE C37.118.2
IEC 61850-90-5
IEEE P2664 (STTP)*

Phasor Data Concentrator

Timing standards
IEEE 1588 or C37.238 or IEC 61850-9-3

Measurement Performance Standard
IEC/IEEE 60255-118-1

Phasor Data Concentrator

PDC Guide – IEEE C37.244
PDC Standard IEEE PC37.247

Installation, calibration, test guide
C37.242-2020

Data Storage

Data storage standards
IEEE C37.111 COMTRADE
C37.1.2* Databases Used in Utility Automation Systems
How can you Cast a Ballot?

  - The above page gives instructions for IEEE SA members to indicate interest in standards development areas and individual projects.
  - When a “balloting pool” is being formed, people who indicated an interest will be notified how to join the ballot pool.

  - Non IEEE members may also review the draft and submit comments but the public does not get to vote.
IEEE PES PSRC Activities

- C23: Coordination of Synchrophasor Related Activities
- C46: Prepare a summary transactions paper on C37.242 – is a working group. Meets monthly-weekly. Draft 1.0 is being reviewed by full WG.
- C41: Investigate Measurement Performance Requirements for PMUs in Distribution System Applications – Draft a report. - meets monthly, still about 1 yr. to completion.
- C40: Tutorial on C37.247 Standard for Phasor Data Concentrators (approval to present 4 hour tutorial at PES General Meeting)
- C43: Report on Use of AI and ML for protection and control
  - Report submitted to C subcommittee for review, expected to be published by January
  - Work is ongoing, likely a new TF will form for the next step – Tutorial, revision, etc
    - This is an ongoing effort, report hoped to provide guidance/justification for research. We know it is a fast developing subject area so ongoing IEEE effort is justified.
- H40: Guide for Databases used in Utility Automation Systems C37.1.2 (Draft 3.x?)
  - Has an annex on Synchrophasor Data Recording
  - Forming a ballot pool late August or sooner, please show your interest at IEEE SA website.
- H50: Requirements for Time Sources in Protection & Control Systems in progress.
IEEE PES PSCC activities

• P1: Std. Profile for ... 1588... in Power Systems...Amendment adding a TLV for Leap Second, holdover and UTC declaration. Resolving ballot comments, expected recirculation before September

• P9: Revision of C37.118.2 Synchrophasor Data Transfer for Power Systems
  – Sponsor Ballot group will be forming after this meeting!

  – More WG review is needed with hope of forming a ballot group between October and February

• P20: Joint revision of IEC 61850-9-3 (IEEE 1588) Power Utility Profile
• S5: Revision of IEEE C37.240 Cyber Security Requirements for Power System Automation, Protection and Control Systems
• S8: P2658 Guide for Cybersecurity Testing in Electric Power Systems
• S15: 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
  – Particular interest to NASPI is R-GOOSE and R-SV security.
NASPI past work

• CRSTT:
  – Using Synchrophasor Data to Determine Disturbance Location.
  – Using Synchrophasor Data for Oscillation Detection.
  – PMU versus SCADA Video Events Library.
  – Time synced measurements training for operators.

• DNMTT:
  – NASPiNet 2.0 Architecture Guidance (led by PNNL’s Dr. Taft)
  – Utility survey of those collecting PMUs for architecture structure and analytics interface.

• PSRVTT:
  – Phasors or Waveforms: Considerations for Choosing Measurements to Match Your Application (PNNL)
  – Categorizing Phasor Measurement Units by Application Data Requirements.

• DisTT:
  – Distribution Synchronized Measurements Roadmap Final Report
  – Synchronized Measurements and their Applications in Distribution Systems: an update
  – DG-Load Disaggregation Use Case
  – Equipment Health Diagnostics Use Case
  – Fault Location Use Case
  – Phase Identification Use Case
  – Wildfire mitigation webinar

• EATT:
  – Data Mining Techniques and Tools for Synchrophasor Data.
  – Integrating Synchrophasor Technology into Power System Protection Applications.
  – Phase Angle Calculations: Considerations and Use Cases.
NASPI current work

• CRSTT:
  – ERCOT update (Apr 27)
  – System Inertia Monitoring use case white paper.
  – Time synchronized measurements simulation training virtual course. Hope to get the course face to face again as the country opens.
  – Coordination with DisTT.
  – NASPI WG Spring 2022 panel session with operations personnel presenting.
  – Looking for presenters, ideas, new members.

• DNMTT:
  – Data Sharing (naming, formats, RT/archived, meta data)
  – Clocks and clock failure (lessons learned)
  – Synchrophasor Archive and Network Strategy Task Force (SANSTF) co-led by Laurel Dunn and Manjari Asawa are working on a Synchrophasor Application-Based Guide for Archive and Network Strategies (SABGANS).
  – Investigation of network architecture for synchrophasor edge computing solutions
  – Archive strategies
  – PMU Registry
  – Looking for a co-chair
NASPI current work

• DisTT:
  – Use Case documents development with CRSTT.
  – Proposals for simulations of PMU in distribution systems.
  – Calls the 4th Wednesdays @ 4 pm.

• EATT:
  – Edge Computing Database
    • Education and real-world applications

• PSRVTT:
  – Survey of PMU connected instrument transformers.
  – Development of three white papers nearing completion:
    o Survey of Existing PMU applications Around the World and Classification.
    o Analyzing Synchrophasor Performance Requirements for Synchrophasor based Control Applications.
    o Data Quality Impacts on Synchrophasor based Control Applications.
Thank you

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Incoming C23 Chairman
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