

Distribution Task Team (DisTT) Updates & Action Items

Fall '24 NASPI Work Group Meeting

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DisTT Mission

(proposed edits Oct. '24 – post LT)

- The mission of the NASPI Distribution Task Team is to advance the uses and value of synchronized measurements on or connected at distribution systems of all voltage levels.
- This group shares information in support of effective research, development and deployment of distribution phasor (PMUs), waveform (WMUs) and related measurement devices/units.
- We aim to grow a community to solve technical and other challenges specific to synchronized measurement technology and its applications in distribution system operation, planning and analysis.



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Agenda Items

- **Still** searching a Co-Lead for the Distribution Task Team
- “Train the Trainer/Champion” project for Utilities in production
- Investigating the gap for a Distribution Phasor Measurement Unit (PMU) Standard update

DisTT Co-Lead Search

- The DisTT has had a balanced co-leadership of an academic/lab and an industry experts
- Panos (& NASPI) aspire to assign the industry co-lead role to a (preferably) Utility Engineer/Manager, vendors, OEMs, developers in the distribution grid monitoring/sensing space.
- Please, come forward Or I/NASPI will “volunteer” you for the role...

“Train the Trainer/Champion”

- NASPI has previously trained senior engineers (trainers) in TSOs/RTOs with the aim to diffuse that training within the organizations
- After surveying cases of PMU adoption by utilities we concluded that engineers have not been the driver of said adoption
- PMU adoption in distribution stakeholders came from management or decision maker roles (“champions”)
- In Fall ‘23 NASPI WG meeting SRP, V&R and ComEd presented their experiences of PMU adoption
- ***Today we present & discuss the outline of this material***
 - Thank you Mariana & Farrokh (Aminifar)!

Distribution PMU standard

- “First came the black-outs, then came the PMUs, then came the standards, then came the revisions & then came more revisions...” –PM
- Several utilities deploy PMUs with no standardization
- Ken Martin has been leading a 3yr IEEE WG (C41) on whether a new standard or a new class within the existing PMU standard IEEE/IEC 60255-118-1-2018 is needed
- ***Today we present a summary of the main points of C41’s upcoming report***

“Train the Champion”

Getting more PMU deployment at Distribution Grids

Marianna Vaiman
CEO, V&R Energy

Farrokh Aminifar
Senior Advisor, Quanta Technology

Matthew Rhodes
Principal EE, Salt River Project

Panos Moutis
Assistant Professor, CCNY



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Presentation Outline

- Rationale & aims of the project
- Project implementation
- Project outline
- Q&A and Open round-table with WG attendees
- Next Steps

Why design “Train the Champions” material for distribution system stakeholders?

- NASPI’s role in the space
- NASPI has done it with transmission; should do it for distribution, too
- Some utilities deploy PMUs sporadically & without standards in effect
- Invite more distribution stakeholders within NASPI & strengthen the initiative’s role in a very fragmented space
- Strengthen the overall community and suite of applications/tech

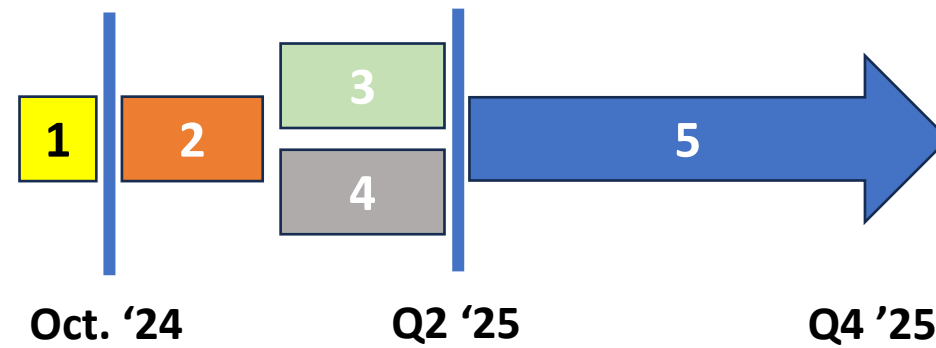
Aims for this project

- Engage at least 20 utilities and/or other distribution stakeholders
- Combine with vendors' materials and...
- ...engage with vendors, OEMs, advisors (at least 3)
- Attract at least 5 distribution stakeholders to NASPI activities
- Trigger at least 3 projects with sync'd measurements in distribution

Timeline: 1-2 years from publishing of material

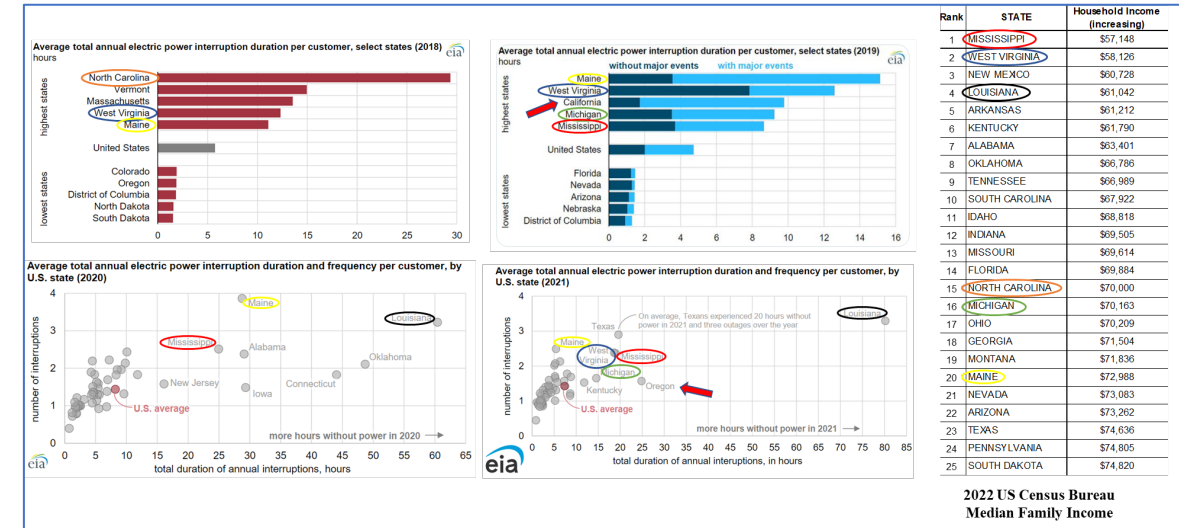
Implementation steps

1. Presenting outline of “Train the Champion” material – now plus 1-2 weeks of feedback review
2. Decide on slide-deck, video or both – 1 month
3. Produce actual material – 3-5 months
4. Design promotion strategy – parallel to 3
5. Disseminate material and review – 5-8 months



Project/Material Outline – Opening

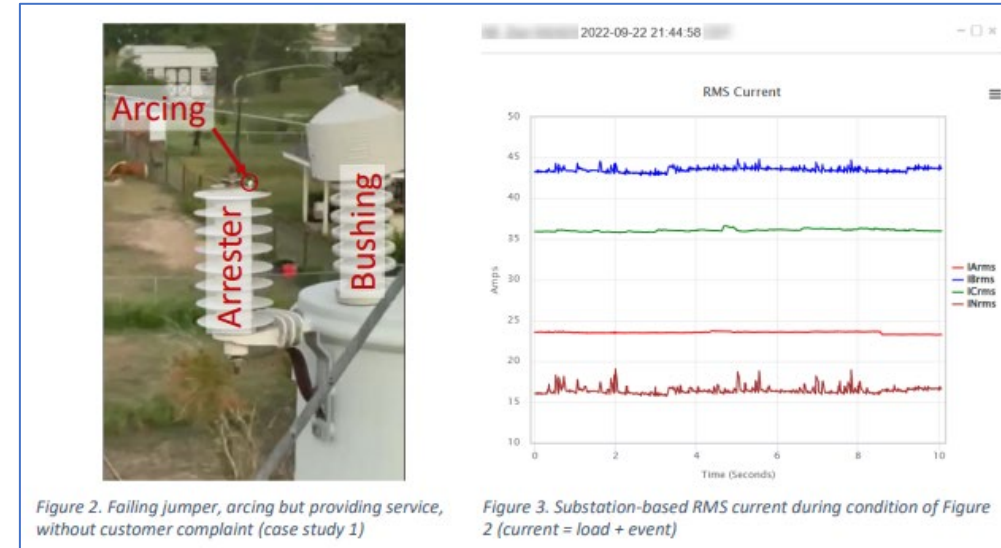
- No such thing as distribution system without (costly) interruptions
- Black-outs infrequent, yet still interruptions as high as 15h/household
- Clear indication that investments in reducing interruptions are scarce in poorer States
- “Problem States” face climate effects and more States are added to the list (think how many weather-related events we heard about in the news)
- **Bottomline:** More and longer disruptions are imminent.



Project/Material Outline – Low-hanging fruits

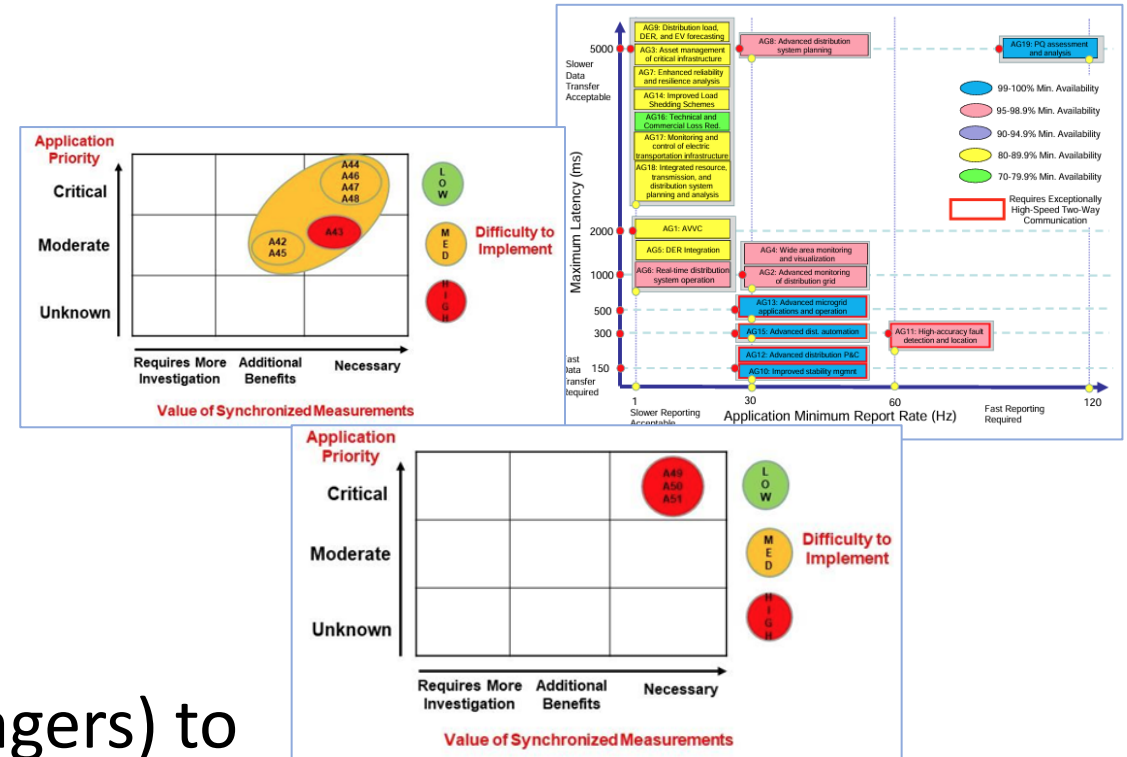
Matt Rhodes has called this the “management buy-in”

- Disruption eventuality in many cases with early (& many) signs (e.g. Don Russell works)
- Monitor signs & avert disruptions =
= save from repairs (at least)
- Sensing & monitoring can defer grid reinforcements (detect, avert & treat disruptions) or assist in selecting the most impactful upgrades
- **Bottomline:** First sync'd measurement applications can be imminently profitable.



Project/Material Outline – Roadmap & Champions

- No two utilities have same priorities
- Distribution PMU review showed a messy landscape of value propositions
- Two alternatives for drafting roadmaps:
 - Objective internal survey
 - Work with a consultant
- Build a diverse team (engineers & managers) to draft and implement the roadmap, and join NASPI
- **Bottomline:** *A plan & a team* are necessary, and NASPI can help.



Project/Material Outline – Role of NASPI

- List NASPI members & contributors (maybe video/written testimonies)
 - Preferably in 2 categories (tech/project providers & users)
 - Incl. project examples/demos
- Existing materials, documents and webinars
- Organize knowledge/experience exchange events regularly
- Portion of DisTT yearly break-outs solely focused on industry updates



NASPI
THE NORTH AMERICAN SYNCHROPHASOR INITIATIVE
WEBINAR SERIES
Abu Alam and Umma Agrawal (California ISO)
Impacts of Forced Oscillations

Abu Alam and Umma Agrawal from Operations Planning at California ISO provide engineering support for operations planning, design analysis and coordination. Support for day-ahead and real-time market and grid operations for the California ISO and Reliability Coordinator functions for WSC West entities. They are also involved in the development of operating procedures and implementation of various real-time assessment applications, together to provide additional awareness to operators.

Understanding power systems oscillations is important for maintaining reliable power systems operation. This webinar focuses on forced oscillation and their impact on power systems. Forced oscillations are the response of power systems to a periodic disturbance. Depending on their frequency, these forced oscillations may be detrimental or benign. In this webinar, the solutions and "best-practices" forced oscillations, how will they be prevented?

<https://www.naspi.org/>
Use on our small list. For more information about our future PQA (PQA) training, please visit.

Wednesday, March 30, 2022
10:30 a.m. Pacific / 1:00 p.m. Eastern (1 hr.)
Please share with colleagues.

NASPI Working Group Meeting
October 30, 2019
Richmond, VA

NASPI Net 2.0
Guidance Document

Jeffrey D. Taft, PhD
Pacific Northwest National Laboratory
jeffrey.taft@pnnl.gov

Pacific Northwest
NATIONAL LABORATORY

Q&A and Open-Ended roundtable

- Video, slide-deck or both?
- Promote within membership first or outside?
- What did we miss in the Material content?
- Would you be convinced to explore sync'd measurements in your distribution grid with such a presentation?
- Other concerns?

Next Steps

- Discuss with the NASPI leadership about project “format” (digital, audio, video) & if budget is necessary
- Reach out to membership for testimonies & sync’d measurement project photos, evidence, etc
- Compile the material
- Demo it in 2025 Spring WG meeting

Investigation of Performance Requirements for Distribution PMUs

The work at IEEE WG C41

Panos Moutis

Assistant Professor, CCNY

On behalf of Ken Martin

Chief Synchrophasor Officer, Electric Power Group



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Presentation Outline

- Brief timeline of PMU standardization concerns for distribution
- Current Status of C41 WG report
- Q&A and Open round-table with WG attendees
- Next Steps

Current PMU standards

- C37.118.1 & 2 superseded by IEEE/IEC 60255-118-1-2018
- Standardizing and compliance testing for PMU at transmission
- Unclear if the existing standards apply and cover expectations for PMU performance at the distribution
- Distribution systems are suffering & will suffer more
- Utilities have deployed PMUs already, but have not reviewed their performance

Enter WG C41...

- Ken Martin has led this 4yr effort of 20+ international contributors and data driven analyses
- Topics explored:
 - Effects of harmonics
 - Effects of noise
 - Current levels (accuracy at higher values)
 - (Sub)Transients
 - ROCOF
- **Key question:** Is a separate PMU standard necessary for distribution systems?

Major WG C41 Conclusions

- “Goodness of fit” phasor calculation flag
- Harmonics properly estimated – some concerns about interharmonics
- Rate of change of frequency needs adjustment in performance
- Noise effects limited
- Accuracy adjustment for higher currents but not pass/fail PMU test
- Certain applications might require separate PMU certification/class
- **Key answer:** IEEE/IEC 60255-118-1-2018 edited with at least one additional PMU class; maybe more depending on applications.

Q&A and Open-Ended roundtable

- Who has an interest in PMU standardization?
- Who has deployed PMU applications in distribution?
- Who has complaints/issues with their PMU deployment at the distribution?

Next Steps

- WG C41 report forthcoming (matter of weeks to couple of months)
- Proposes an IEEE Standard WG to update IEEE/IEC 60255-118-1-2018
- **Application-specific PMU requirements are crucial...**
- **..., which necessitates a large WG membership**
- **Contact NASPI, myself or Ken Martin to join the Standard WG**

Call for Technical Program Committee Members



May/June 2026
Santiago, Chile

Technical Program Committee Chairs
Panagiotis Moutis, CCNY, USA
Sara Sulis, University of Cagliari, Italy

Thanks for your attention!

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