NASPI Novel Applications for Synchronized Power Instrumentation

A DOE-EPRI Joint Initiative

NASPI Winter Quarter Distribution Task Team (DisTT) Virtual Meeting

Co-Leads

Bryce Johanneck (Grid Company), Panos Moutis (City College of New York)

Jan. 22nd, 2026

U.S. DEPARTMENT OF ENERGY | Pacific Northwest NATIONAL LABORATORY | EPRI ELECTRIC POWER RESEARCH INSTITUTE

NASPI

Novel Applications for Synchronized Power Instrumentation

A DOE-EPRI Joint Initiative

U.S. DEPARTMENT OF ENERGY

Pacific Northwest NATIONAL LABORATORY

EPRI ELECTRIC POWER RESEARCH INSTITUTE

DisTT Program for the Day

- Welcome by the Co-Leads Bryce & Panos
- NASPI Update, Jim Follum (PNNL)
- Time Synchronous Smart Meter Measurements – David Rieken (Hubbell)
- *Falling Conductor Protection During T&D Switching Events – ComEd || Update on Synchronized Measurements at the Distribution promo*
- Round-Table Discussion on Power Quality on the Distribution Grid – Panos Moutis (City College of New York)
- Round-Table Discussion on C37.118 for Closed Loop Generator Control – Bryce Johanneck (Grid Company)

DisTT Program for the Day

- Welcome by the Co-Leads Bryce & Panos
- NASPI Update, Jim Follum (PNNL)
- Time Synchronous Smart Meter Measurements – David Rieken (Hubbell)
- *Falling Conductor Protection During T&D Switching Events – ComEd || Update on Synchronized Measurements at the Distribution promo*
- Round-Table Discussion on Power Quality on the Distribution Grid – Panos Moutis (City College of New York)
- Round-Table Discussion on C37.118 for Closed Loop Generator Control – Bryce Johanneck (Grid Company)

Welcome by the DisTT Co-Leads, Charter (Updated Q4/2024)

- 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.

Welcome by the DisTT Co-Leads, Priorities (1-4) & projects (a-c)

1. Attract distribution system stakeholders (DSSs)
2. Organize knowledge exchange among DSSs
3. Establish practices for distribution PMUs/WMUs for/with DSSs
4. Develop DSSs' value cases, propositions, deployments

a. Train the Champion promo materials (nearing end)
b. Distribution PMU standards stewardship (on-going w/ Ken Martin)
c. Revisit distribution PMU/WMU value cases (kick-off soon)
d. Data & Communication challenges with measurements at distribution

NASPI Novel Applications for Synchronized Power Instrumentation

A DOE-EPRI Joint Initiative

Up Next:

NASPI Update, Jim Follum (PNNL)

U.S. DEPARTMENT OF ENERGY | Pacific Northwest NATIONAL LABORATORY | EPRI ELECTRIC POWER RESEARCH INSTITUTE

NASPI Novel Applications for Synchronized Power Instrumentation

A DOE-EPRI Joint Initiative

Up Next:

Time Synchronous Smart Meter Measurements – David Rieken (Hubbell)

NASPI Novel Applications for Synchronized Power Instrumentation

A DOE-EPRI Joint Initiative

Up Next:

Falling Conductor Protection During T&D Switching Events – ComEd

U.S. DEPARTMENT OF ENERGY
Pacific Northwest NATIONAL LABORATORY
EPRI ELECTRIC POWER RESEARCH INSTITUTE

NASPI Novel Applications for Synchronized Power Instrumentation

A DOE-EPRI Joint Initiative

Up Next:

Update on Synchronized Measurements at the Distribution promo – Panos Moutis (City College of New York)

NASPI Novel Applications for Synchronized Power Instrumentation

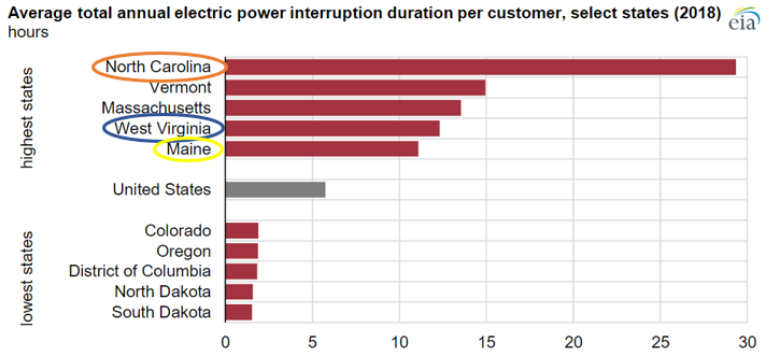
A DOE-EPRI Joint Initiative

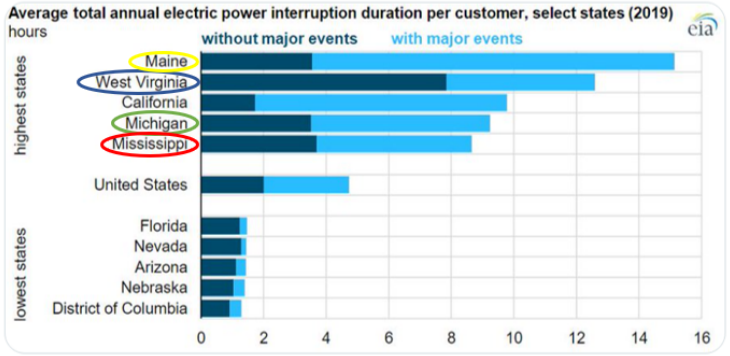
Up Next:

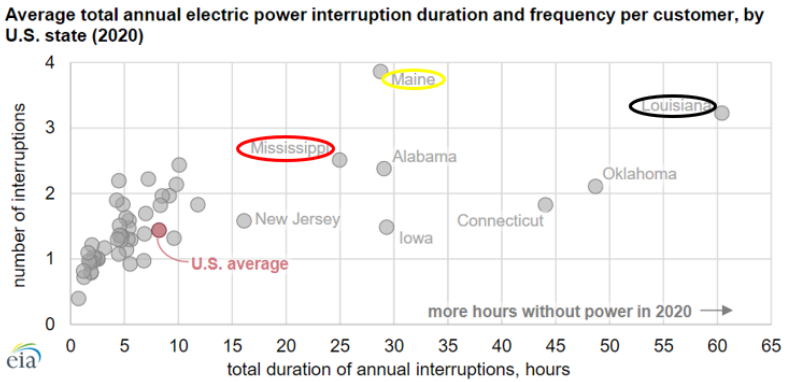
Round-Table Discussion on Power Quality on the Distribution Grid – Panos Moutis (City College of New York)

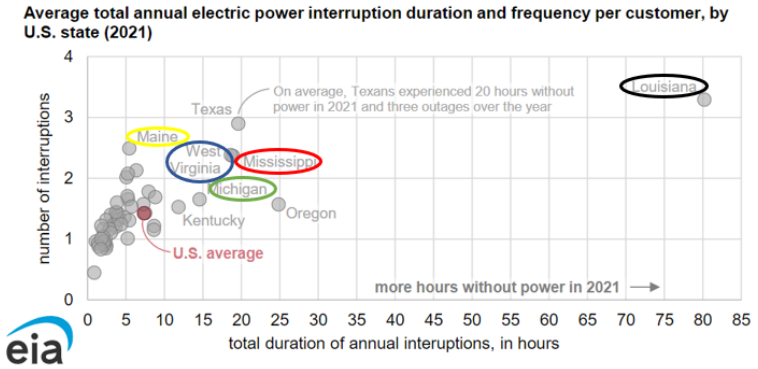
U.S. DEPARTMENT OF ENERGY | Pacific Northwest NATIONAL LABORATORY | EPRI ELECTRIC POWER RESEARCH INSTITUTE

Setting Up the Stage – Continuity of Service









Rank	STATE	Household Income (increasing)
1	MISSISSIPPI	$57,148
2	WEST VIRGINIA	$58,126
3	NEW MEXICO	$60,728
4	LOUISIANA	$61,042
5	ARKANSAS	$61,212
6	KENTUCKY	$61,790
7	ALABAMA	$63,401
8	OKLAHOMA	$66,786
9	TENNESSEE	$66,989
10	SOUTH CAROLINA	$67,922
11	IDAHO	$68,818
12	INDIANA	$69,505
13	MISSOURI	$69,614
14	FLORIDA	$69,884
15	NORTH CAROLINA	$70,000
16	MICHIGAN	$70,163
17	OHIO	$70,209
18	GEORGIA	$71,504
19	MONTANA	$71,836
20	MAINE	$72,988
21	NEVADA	$73,083
22	ARIZONA	$73,262
23	TEXAS	$74,636
24	PENNSYLVANIA	$74,805
25	SOUTH DAKOTA	$74,820

2022 US Census Bureau Median Family Income

Setting Up the Stage – Voltage Variance

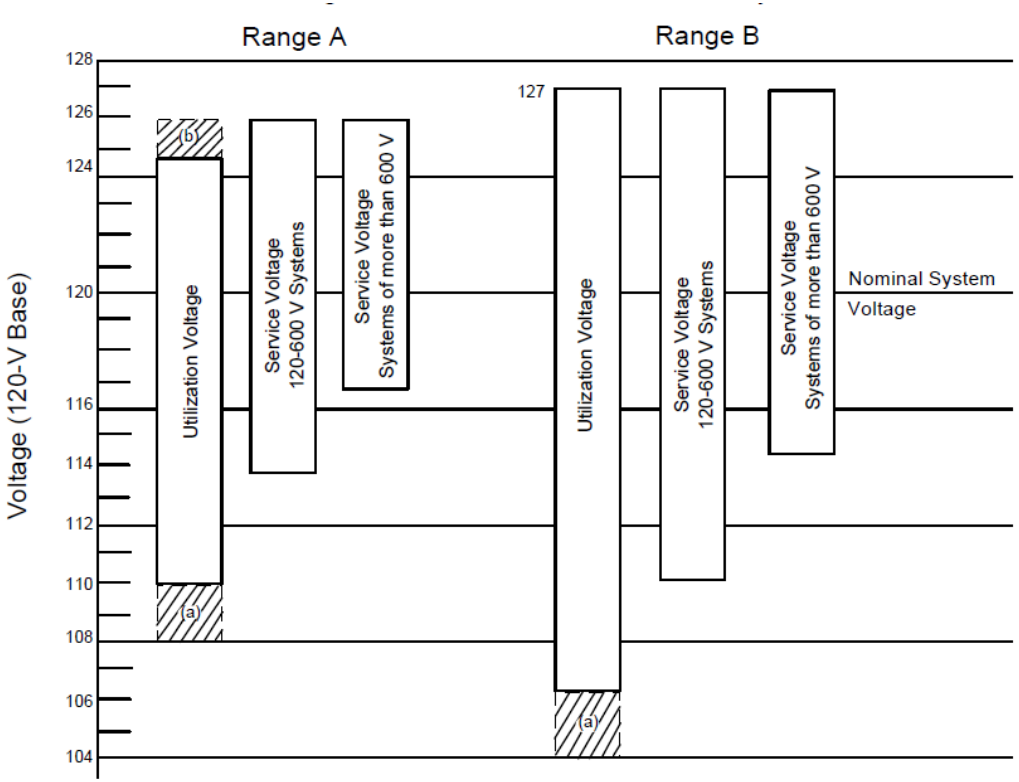
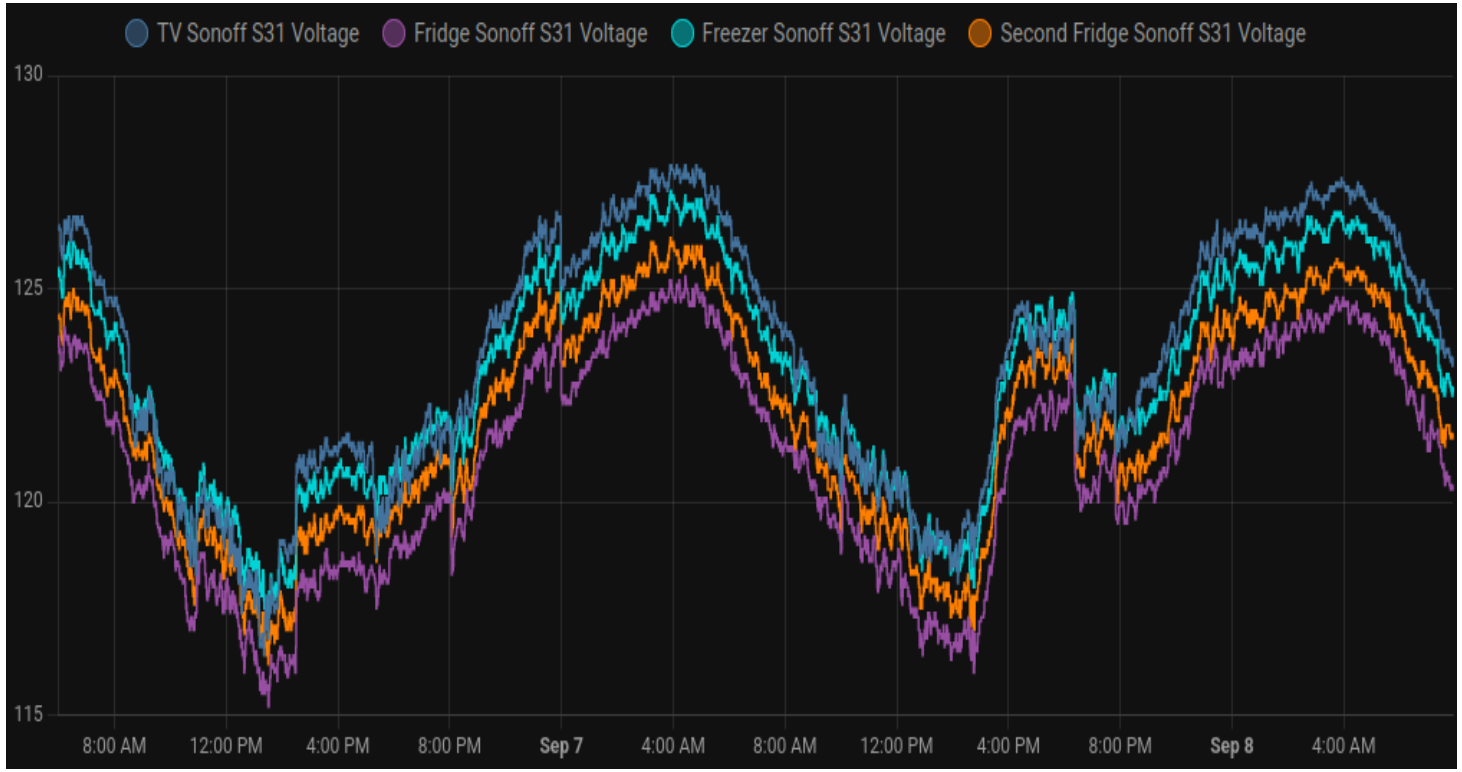


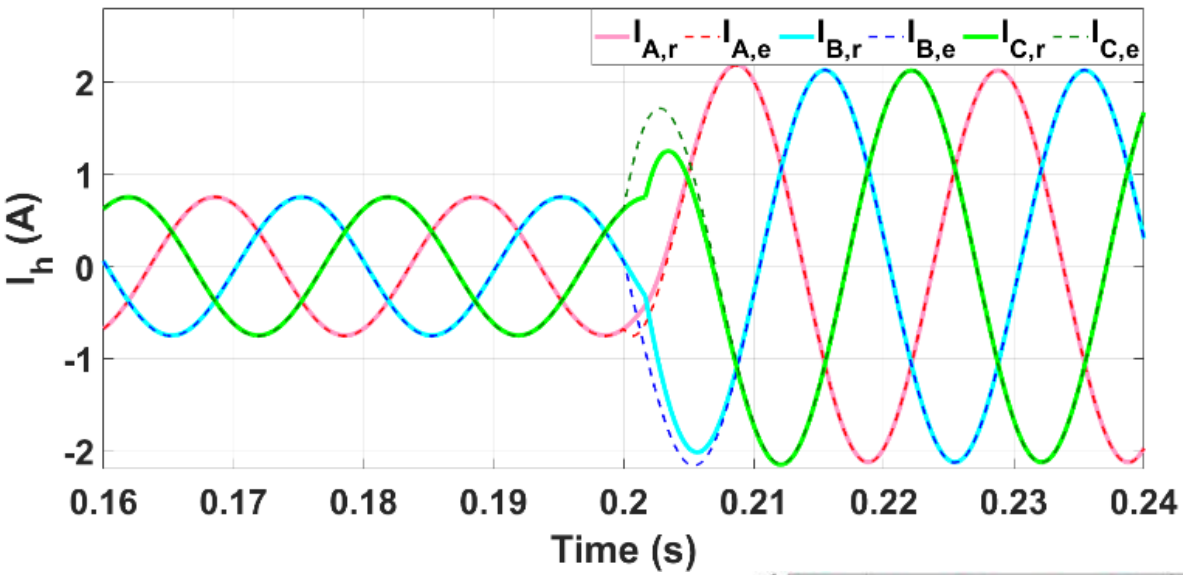
Figure 1. Voltage Ranges, ANSI C84.1

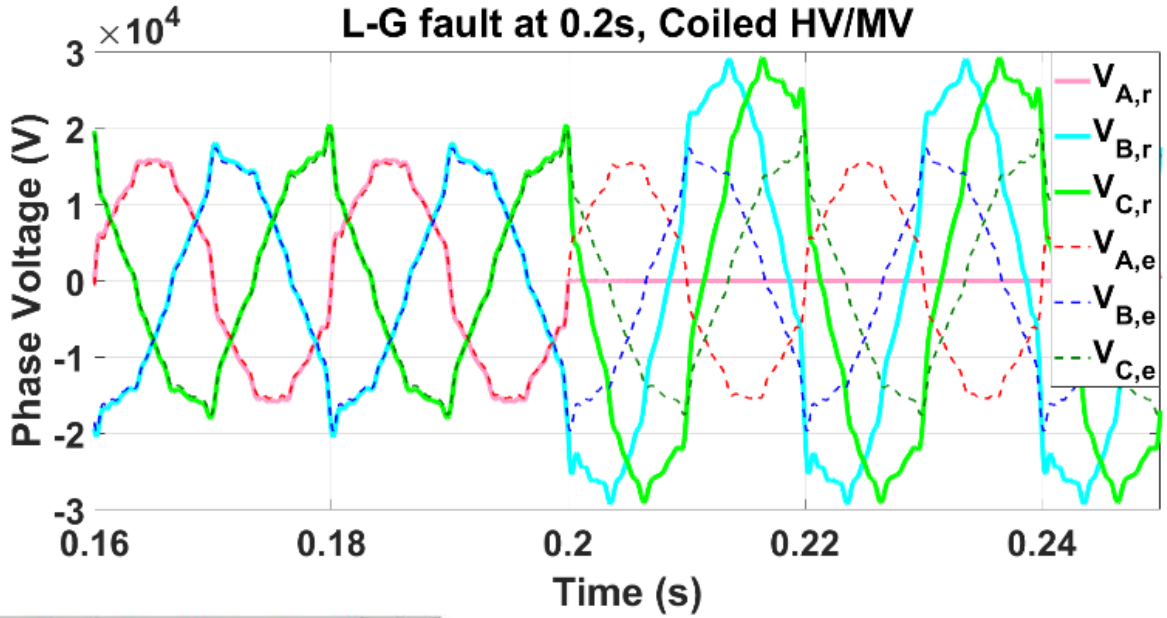
NOTES:
(a) These shaded portions of the ranges do not apply to circuits supplying lighting loads
(b) This shaded portion of the range does not apply to 120-600-volt systems.
(c) The difference between minimum service and minimum utilization voltages is intended to allow for voltage drop in the customer's wiring system. This difference is greater for service at more than 600 volts to allow for additional voltage drop in transformations between service voltage and utilization equipment.

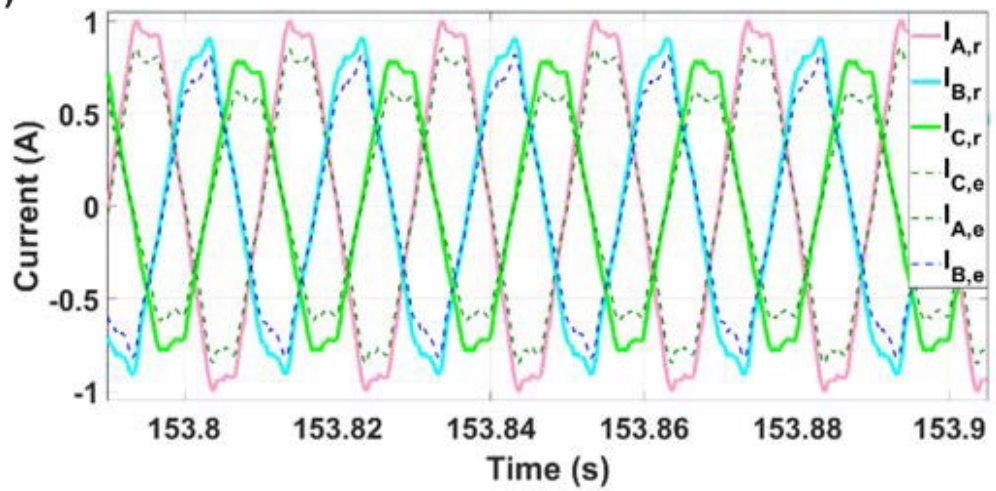


From Reddit:
https://www.reddit.com/r/homeassistant/comments/16d8nxd/why_does_wall_outlet_voltage_fluctuate_over_the/

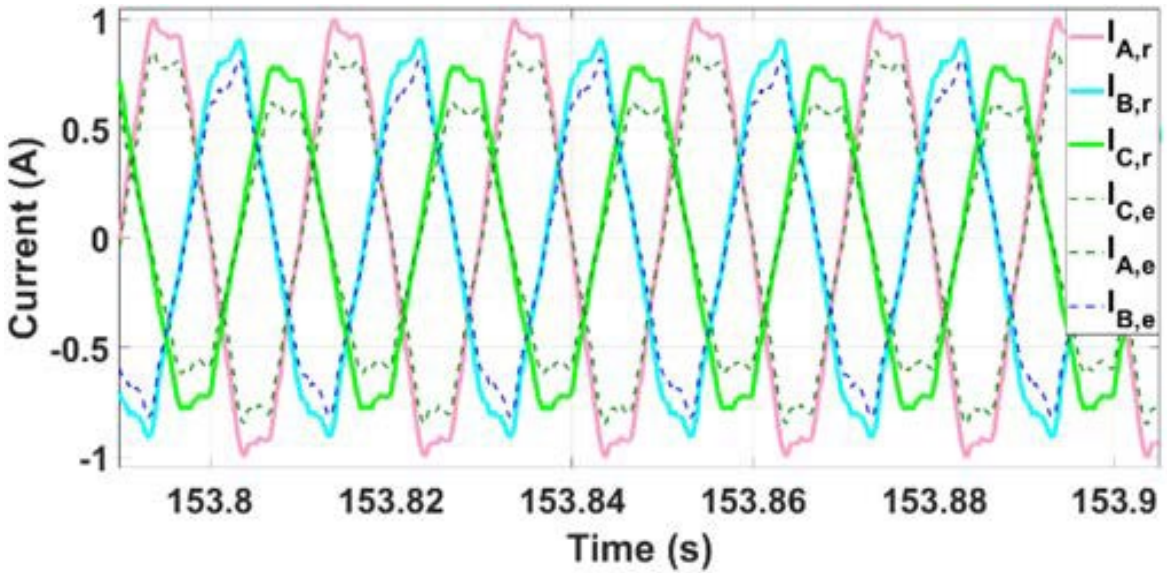
Setting Up the Stage – Transients

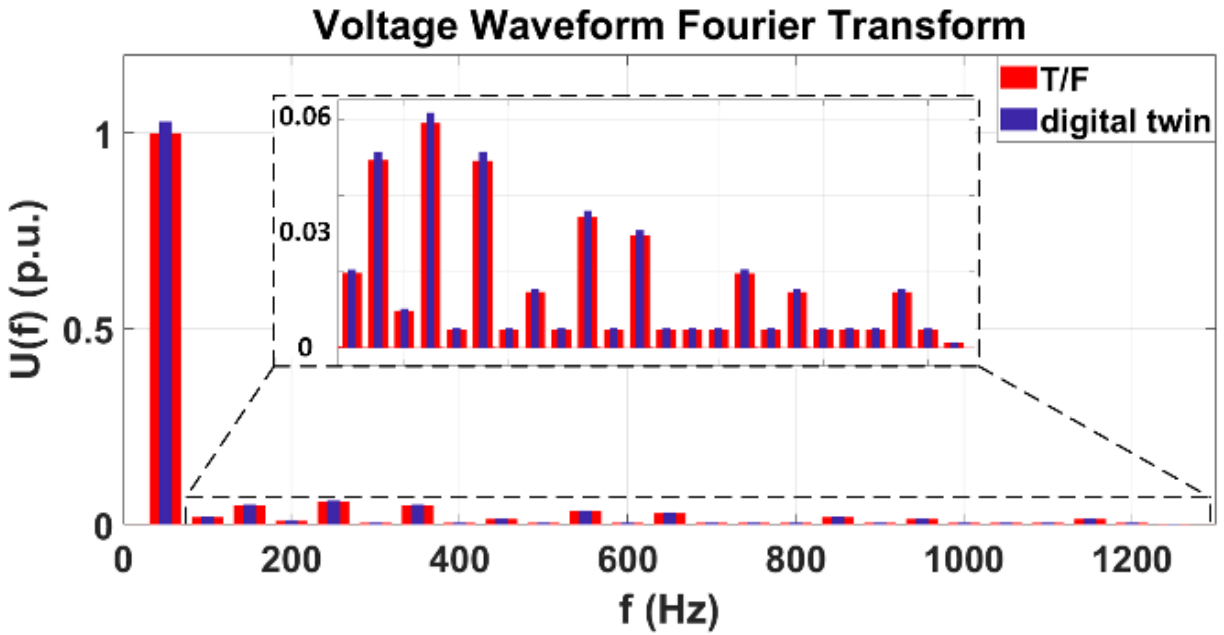






Setting Up the Stage – Harmonics





Setting Up the Stage – What/Why/How does matter to measure?

1. Detect sources of interruptions, harmonics, variance?
2. Detect extent/magnitude of – ?
3. Detect synchronous effects to devices, equipment?
4. Power Quality Analyzers/Monitors Vs. PMUs/WMUs or integrated?
5. Power quality standards/limits & equipment standards?
6. Is this even valuable to pursue within NASPI DisTT?

NASPI Novel Applications for Synchronized Power Instrumentation

A DOE-EPRI Joint Initiative

Up Next:

Round-Table Discussion on C37.118 for Closed Loop Generator Control – Bryce Johanneck (Grid Company)

NASPI Novel Applications for Synchronized Power Instrumentation

A DOE-EPRI Joint Initiative

Thank you for attending the NASPI Quarterly Task Team Meetings

Send us an email at:

naspi@pnnl.gov

Visit our website for news and information:

https://www.naspi.org

U.S. DEPARTMENT OF ENERGY

Pacific Northwest NATIONAL LABORATORY

EPRI ELECTRIC POWER RESEARCH INSTITUTE