

The background features a dark blue gradient with a series of curved, glowing lines that create a sense of depth and movement. A grid of light blue lines is visible in the lower right quadrant, suggesting a digital or technical theme.

# NASPI Panel Discussion: Distribution Systems and Edge Computing – Synchrophasor Value and Applications

NASPI WORK GROUP MEETING OCTOBER 2022

## What are Grid Edge Solutions?

- Many monitoring and mitigation schemes have been deployed at the grid edge. Remedial Action Schemes in the Bulk Electric System and local coordinated reclosing in Distribution Systems as examples.
- Typically, these systems are limited in the monitoring and control data transfer to local areas to minimize latency and make quick, decisive actions.

## Can Synchrophasors be used for BES and Distribution Solutions along the Grid Edge?

- A beginning definition of Synchrophasor Grid Edge Solutions is **Data collected, algorithms calculated, and decisions made at grid edge devices WITHOUT the translation of large amounts of system synchrophasor data to a central location. Local synchrophasor data transfer (say between substations) is considered an edge computing application.**

# PANELIST: Eric Udren, Quanta-Technologies

Eric A. Udren has a distinguished 53-year career in design and application of protective relaying systems, substation control, IEC 61850, wide-area monitoring and control systems, PMU applications, and communications systems. He works with major utilities to develop new substation protection, control, communications, and remedial action scheme designs based on Ethernet, IEC 61850 integration, and synchrophasor techniques. Since 2008 he has served as Executive Advisor with Quanta Technology, LLC of Raleigh, North Carolina; with his office in Pittsburgh, Pennsylvania.

Eric is Life Fellow of IEEE, and twice served as Chair of the Relaying Communications Subcommittee of the IEEE Power System Relaying and Control Committee (PSRC). He is Technical Advisor to the US National Committee of IEC for TC 95 relay standards; and is SME member of NERC System Protection and Control Working Group (SPCWG). He has written and presented over 100 technical papers and book chapters and holds 12 patents. Eric appeared as PACworld Magazine Industry Guru in September 2016. In 2019 Eric was elected to the US National Academy of Engineering 'for leadership in advancing protection technologies for electric power grids.'



# PANELIST: Panos Moutis, Scott Institute for Energy Innovation at Carnegie Mellon University

Panayiotis (Panos) Moutis, PhD, has been Special Faculty with the Scott Institute for Energy Innovation at Carnegie Mellon University (CMU) since August 2018 (postdoc at Electrical & Computer Engineering – ECE, CMU, 2016-18). Panos researches data-driven optimization and control of electrical grids with high shares of renewables. He has recently been working with the grid operator of Portugal, REN, the moonshot factory of Google, X, and the grid operator of NY, NYISO. Between 2018-20 he served as a Marie Curie Research Fellow with DEPsys, Switzerland, on distribution grid awareness. In 2014 he was awarded a fellowship by Arup, UK (through the University of Greenwich), to study microgrids for residential communities.

He has over 10 years of industry experience on Renewable Energy and Energy Efficiency and serves as advisor and executive in energy start-ups. He is a senior member of the IEEE, member of the IEEE-USA Energy Policy Committee, co-lead of the Distribution Task Team at NASPI and of the Power & Energy Community of the Climate Change AI initiative, senior editor of IEEE & IET scientific journals, member of IEEE standards working groups, and chair of the IEEE Smart Grid Publications Committee. Personal Website for more information: <https://panaylot1s.com/>



## PANELIST: Dr. Shikhar Bandey, ComEd

Shikhar Pandey is a Principal Quantitative Engineer at ComEd, IL. He completed his MS degree in 2017 and his Ph.D. 2020 in Electrical Engineering from Washington State University Pullman. His research interest includes Microgrid, Sensors and Measurements, Grid Resiliency, and Synchrophasor technology and its applications. He graduated with undergraduate degree in Electrical Engineering from National Institute of Technology Patna in 2013 and worked as Sr. Electrical Engineer (2013-2015) at Larsen and Toubro ECC, Kullu, H.P. India.

