

## **New Standard Communication Model Enables Grid Operators to Enhance Performance, Value of Distributed Energy Resources**

**PALO ALTO, Calif. (January 14, 2019)** – A collaborative team published a new Application Note, [DNP3 Application Note AN2018-001 – DNP3 Profile for Communications with Distributed Energy Resources](#), to help grid operators communicate with distributed energy resources (DER) and enhance use and value of energy storage and solar generation connected to smart inverters. Led by the Electric Power Research Institute (EPRI), the group includes the DNP Users Group, the MESA Standards Alliance (MESA), SunSpec Alliance, EnerNex, and Xanthus Consulting, and is funded in part by the California Energy Commission (CEC).

“DER are developing rapidly to provide new capabilities in serving customers and the grid. Yet without a standard way for utilities to communicate with new technologies, they cannot reach their full interactive potential,” said Ben Ealey, EPRI senior project manager and the project’s primary investigator. “We closed gaps in older communication models, which didn’t have the ‘words’ to command new capabilities of smart inverters and battery storage. We’ve added ‘new words’ for utility grid operators to use that can unlock emerging capabilities of DER, most specifically within the storage domain.”

This DNP3 application note integrates information from the latest field tests as well as smart inverter functionality and provides a standard information model for communicating with DER using Institute of Electrical and Electronics Engineers Standard (IEEE Std.) 1815™ – 2012 (DNP3) that complies with functional requirements in California Rule 21 and IEEE Std. 1547™-2018. Generally, “application notes” provide examples of and suggestions for implementing standards in a specific domain of the industry. This Application Note contains a standardized list of DNP3 inputs and outputs and the specific mapping of information communicated within each point. It also includes functional definitions and mapping with the internationally recognized information model IEC-61850-7-420.

Given that relatively few newer DER have been installed, there has been limited adoption of standard DER information models for DNP3 systems. However, as the grid integrates more DER such communications models become essential for ensuring that utilities and the public are able to maximize the operational functionality and financial value of distributed and traditional grid assets.

### *Related Developments*

Prior to this project’s completion, MESA plans to update the MESA-ESS specification – a standard framework for utility-scale energy storage system data exchanges. The update will address configuration management, operational state, and functions applicable under the DNP3 profile for advanced DER functions. To support the application note’s implementation, SunSpec Alliance is developing a conformance testing framework to validate proper implementation in storage and solar systems.

This project continues through March 2019 and is funded in part by the CEC through the Electric Program Investment Charge (EPC-15-089), which funds clean energy research, demonstration, and deployment projects that support California’s energy policy goals and promote enhanced reliability and safety, at lower costs.

## **About EPRI**

The Electric Power Research Institute, Inc. (EPRI, [www.epri.com](http://www.epri.com)) conducts research and development relating to the generation, delivery and use of electricity for the benefit of the public. An independent, nonprofit organization, EPRI brings together its scientists and engineers as well as experts from academia and industry to help address challenges in electricity, including reliability, efficiency, affordability, health, safety and the environment. EPRI's members represent approximately 90 percent of the electricity generated and delivered in the United States, and international participation extends to more than 30 countries. EPRI's principal offices and laboratories are located in Palo Alto, Calif.; Charlotte, NC; Knoxville, Tenn.; and Lenox, Mass.

## **About the DNP Users Group**

The DNP Users Group supports our user community and the industry by enhancing and promoting the Distributed Network Protocol (DNP3), also known as IEEE Std 1815™. Our members include utilities, suppliers, consultants, and individuals. Many of our initiatives support greater interoperability between supplier's products and systems and/or enhance cyber security. On-going refinements also add new features and time saving capabilities which are then included in the next update of IEEE Std 1815™. Our growing library of Application Notes, Security Notices, and Technical Bulletins provide essential information for our members. The leadership team and Technical Committee provide periodic educational opportunities including tutorials, white papers, and conference presentations. The Test Management Committee supports our large vendor community with conformance testing review services. The DNP Users Group is a California nonprofit mutual benefit Corporation, operating pursuant to United States IRS code 501(c)(6). More information: [www.DNP.org](http://www.DNP.org).

### *Links*

User Group Membership page (join to gain access to the full Application Note and Spread sheet): [DNP Users Group Membership](#)

Direct link to Profile documents for members: [Member Access to DNP3 Profile for DER Communications](#)

## **About the MESA Standards Alliance**

The Modular Energy Storage Architecture (MESA) Standards Alliance is an industry association comprised of electric utilities and technology suppliers whose mission is to accelerate the growth of energy storage through the development of open and non-proprietary communication specifications for energy storage systems. Members include a growing list of leading utilities and energy storage solution providers who work together to build interoperability into their respective products and ensure they are architected for grid system integration. More information: [www.MESAStandards.org](http://www.MESAStandards.org).

## **About the SunSpec Alliance**

SunSpec Alliance is the information standards and certification organization for the Distributed Energy Resources industry. SunSpec communication standards address operational requirements of solar and energy storage on the smart grid to reduce cost, promote technology innovation, and accelerate industry growth. More information: [www.SunSpec.org](http://www.SunSpec.org).

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