Opportunities for Co-ops to Engage with IEEE P2030.14 Working Group on: "Guide for Virtual Power Plant Functional Specification for Alternate and Multi-Source Generation"

NRECA has been an active member of the Institute of Electrical and Electronics Engineers (IEEE) Standards Committees for many years, representing cooperatives' interests and contributing to the standards development process for the benefit of all NRECA members. This involvement has provided members access to industry specific insights, leading-edge technology research, and a framework for consistent and reliable practices, promoting interoperability, efficiency, and safety within cooperative operations.

On June 29, 2023, IEEE approved the Project Authorization Request (PAR) for the IEEE P2030.14 working group that will develop a guide for virtual power plant functional specifications for alternate and multi-source generation. NRECA hosted the inaugural meeting of the P2030.14 working group in Arlington in November of last year. The working group consists of various stakeholders from utilities, vendors, National Labs, Academia, research and development (R&D) organizations, Independent System Operators (ISOs), the U.S. Department of Energy (DOE), the Federal Energy Regulatory Commission (FERC), and the North American Electric Reliability Corporation (NERC).

What is P2030.14?

IEEE P2030.14 is a new working group (WG) focusing on developing a guide that relates to virtual power plants (VPPs) and defines the VPP as an electric power plant capable of supplying electrical power to the electric grid and local loads. The guide discusses the implementation of VPPs and VPP control systems, addresses their basic functional requirements, and proposes a set of core functions for the control systems. These functions include generation production estimation and scheduling from all sources: local load estimation and management, the provision of grid services (energy, capacity), and ancillary services (voltage and frequency control/support) to the electric power system (EPS). Generic requirements for grid interconnection and integration, and for interoperability with other EPS systems, are addressed.

Invitation to Become Involved

Cooperatives are encouraged to join IEEE P2030.14 WG to learn more about VPP technologies, applications, and benefits, including optimized distributed energy generation, enhanced grid reliability, increased resilience, DER integration, and management for sustainable energy future.

The P2030.14 is a continuation of P2030.xx series sponsored by various IEEE committees as shown in the table below:

IEEE Standard/Guide	Title	Sponsoring Committee
P2030 (base)	Guide for Smart Grid Interoperability of Energy Technology and Information Technology Operation with the Electric Power System and End-Use Applications and Loads	SC21 - Distributed Generation, Energy Storage, and Interoperability Standards Committee
P2030.1	Guide for Electric-Sourced Transportation Infrastructure	SC40 (Disbanded)
P2030.2	Guide for Energy Storage Systems Interoperability with Electric Power Infrastructure	SC21 - Distributed Generation, Energy Storage, and Interoperability Standards Committee
P2030.3	**Standard** for Test Procedures for Electric Energy Storage Equipment and Systems for Electric Power Systems Applications	SC21 - Distributed Generation, Energy Storage, and Interoperability Standards Committee
P2030.4	Guide for Control and Automation Installations Applied to the Electric Power Infrastructure	SC21 - Distributed Generation, Energy Storage, and Interoperability Standards Committee
P2030.5	IEEE Standard for Smart Energy Profile Application Protocol	Power Line Communications Standards Committee
P2030.6	Guide for the Benefit Evaluation of Electric Power Grid Customer Demand Response	IEEE Standards Corporate Advisory Working Group
P2030.7	**Standard** for the Specification of Microgrid Controllers	IEEE PES Transmission & Distribution Committee
P2030.8	Standard for the Testing of Microgrid Controllers	IEEE PES Transmission & Distribution Committee
P2030.9	Recommended Practice for the Planning and Design of the Microgrid	SC21 - Distributed Generation, Energy Storage, and Interoperability Standards Committee
P2030.10	**Standard** for DC Microgrids for Rural and Remote Electricity Access Applications	IEEE PES Transmission & Distribution Committee

P2030. 11	Guide for Distributed Energy Resources Management Systems (DERMS) Functional Specification	IEEE PES Transmission & Distribution Committee
P2030. 12	Guide for the Design of Microgrid Protection Systems	IEEE PES Power System Relaying and Control Committee
P2030. 13	Guide for Electric Transportation Fast Charging Station Management System Functional Specification	IEEE PES Transmission & Distribution Committee
P2030. 14	Guide for Virtual Power Plant Functional Specification for Alternate and Multi-Source Generation	IEEE PES Transmission & Distribution Committee

What is the impact on cooperatives?

The IEEE P2030.14 focuses on developing the functional specification of a VPP producing, managing, and dispatching the electrical and thermal energy supplied from renewable and emerging alternate power sources. The emphasis is on configuring the functions and services to transmission and distribution system operators enabled by a VPP incorporating new and planned generation, including reliability and resilience services. Cooperatives will find guidance and a structure for planning the integration of DERs into their operations, benefiting both the utility (grid services) and its customers (value for demand response (DR) and behind-the-meter (BTM) resources) in a way that addresses reliability.

It will put forth a VPP structure and control system that is required for the aggregation and optimization of the operation of the mix of power generation and storage assets, and for the provision of grid and ancillary services. Thus, the IEEE P2030.14 guide will provide a framework to cooperatives to consider for the aggregation of DERs, and opportunities for the management of DER as systems, rather than disparate, unmanaged interconnections.

What do cooperatives need to know or do about it?

The IEEE P2030.14 WG is addressing and exploring VPP and aggregation of DERs. VPPs, as articulated in IEEE P2030.14, are a new way for DERs to be aggregated and operated on distribution systems, which can benefit cooperative utilities, their customers, G&Ts, and regulators by providing greater visibility and management over DERs connected to distribution systems and enabling the participation of a variety of resources in grid services.

IEEE P2030.14 extends the scope of VPPs to power generation systems, rather than simply load management and BTM DER. It goes beyond aggregation within a boundary, with generation serving specific loads, to a broad group of DERs within a balancing authority. It provides additional power and energy to the growing electrical load on the grid by integrating conventional and alternate power generation systems, combined with renewable energy resources and storage. This enables, where appropriate, the transition to DERs from large central power plants. It offers a mix of resources for interconnection, beyond single solar farms or storage units. It brings flexibility from a mix of resources not limited geographically.

Responsibilities of the Participants in IEEE P2030.14 WG

The following are the expectations of co-op participants:

- *Participants Requirement*

  NRECA is committed to represent the interest of cooperatives in the P2030.14. However, P2030.14 is a rigorous, peer-reviewed process based on individuals' participation, which requires participants in the IEEE-SA "individual process" to act independently (based on their qualifications and experience) of others, including employers.

- *Active Involvement*

  Participants are expected to actively participate in WG meetings in order to maintain a voting member status. If a participant misses two consecutive meetings, the membership status changes from voting member to non-voting member. The participant can reinstate voting member status by attending the next two consecutive meetings.

- *Sharing Among Cooperatives*

  Participants are also encouraged to share their experiences and gained knowledge with their NRECA member colleagues at their own cooperative and at others, to help extend the benefits from the WG to co-ops who are not directly involved.

- *Travel and Other Expenses*

  Participants will be responsible for any travel or other expenses incurred during involvement in this opportunity.

How to Join?

While NRECA will continue its traditional involvement with the various IEEE working groups, sharing the information with our co-op network as appropriate and useful, and representing members' interests in the research and forums, any individual from a co-op can join the IEEE P2030.14 WG by writing to the WG Chair, Secretary, or NRECA's Primary Representative listed below.

At any time, any cooperative – whether or not participating in this WG – may also contact the NRECA Primary Representative for the IEEE P2030.14 working group with questions about P2030.14 meetings, presentations, and guide.

Contact for Questions

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NRECA
America's Electric Cooperatives