



# **Annual Meeting 2019**

## **Evolving Transmission, Distribution, and Customer System Coordination**

**Wednesday, September 11 –  
Thursday, September 12**  
Austin, Texas



# State Examples of Communication Network Coordination

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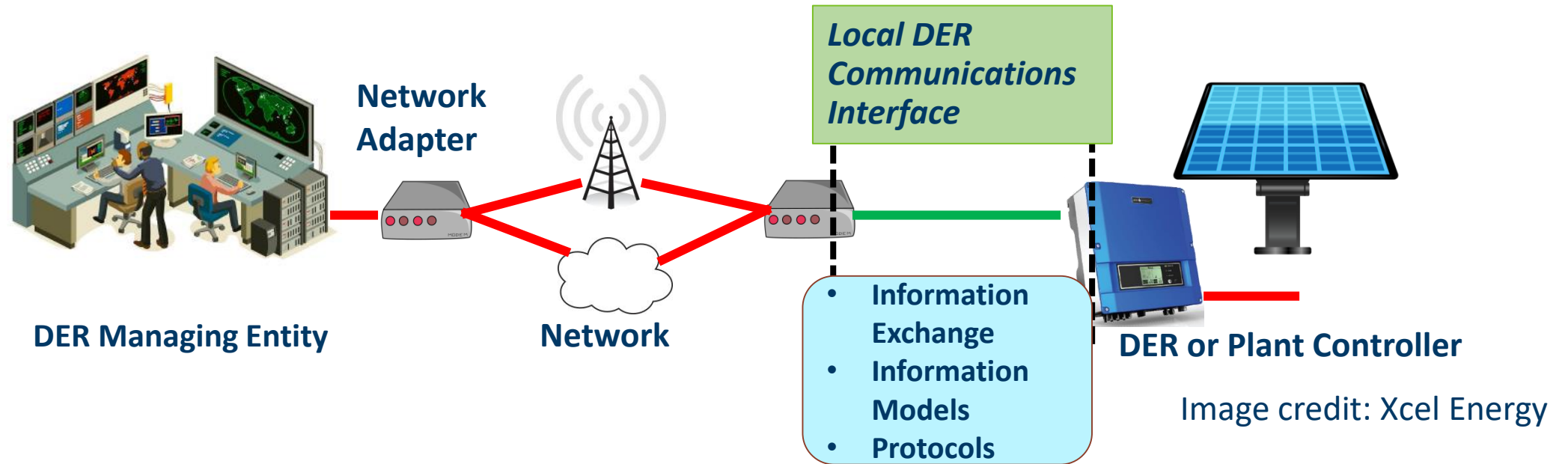


# Minnesota Statewide Interconnection Standards Update Interoperability Considerations with IEEE 1547-2018

# Minnesota Distributed Generation Workgroup Topics & Timeline

2017	PHASE I In-Person Topics	2018	PHASE II Web Meeting Topics
<b>June 2</b>	Pre-app report; Application requirements; Queue type & process; Material Modification Definition; Fast Track; Site Control	<b>March 23</b>	Scope/Overview; Inventory of Definitions to Discuss
<b>July 28</b>	Definitions; Transmission Provider's role; Engineering screens; Study process; process timelines/extensions; dispute resolution	<b>April 13</b>	Performance Categories; Response in Normal and Abnormal Conditions; MISO Bulk Power System
<b>Sept 15</b>	Insurance; Disconnect Switch; metering; Commissioning/inspection, testing, authorization; Design, procure, install, construct facilities/upgrades; advanced inverters	<b>May 18</b>	Reactive Power and Voltage/Power Control Performance; Protection Requirements
<b>Nov 3</b>	Interconnection Agreement; process for updating; Transition issues; any outstanding issues	<b>June 8</b>	Energy Storage; Non-export; Inadvertent export; Limited export
<b>Dec 1</b>	Webinar for feedback on some of the draft staff recommendations and descriptions of outstanding issues	<b>Aug 24</b>	Interoperability (Monitor and Control Criteria); Metering; Cyber security
		<b>Sept 14</b>	Test and Verification; Witness Test Protocol
		<b>Sept 21</b>	Full Day In Person to Revisit and Reconcile Edits
		<b>Oct 3</b>	References; Definitions; 1-line diagram requirements; Agreements

# Scope of Interoperability in IEEE 1547-2018



Interoperability Consideration	IEEE 1547-2018
Clear price signals for participation or contributions.	Not in scope.
Interface between the DER and the Utility can exchange and use information securely and effectively.	In scope.
DER's "grid services" and utility operations are in sync throughout the entire system.	Not in scope.

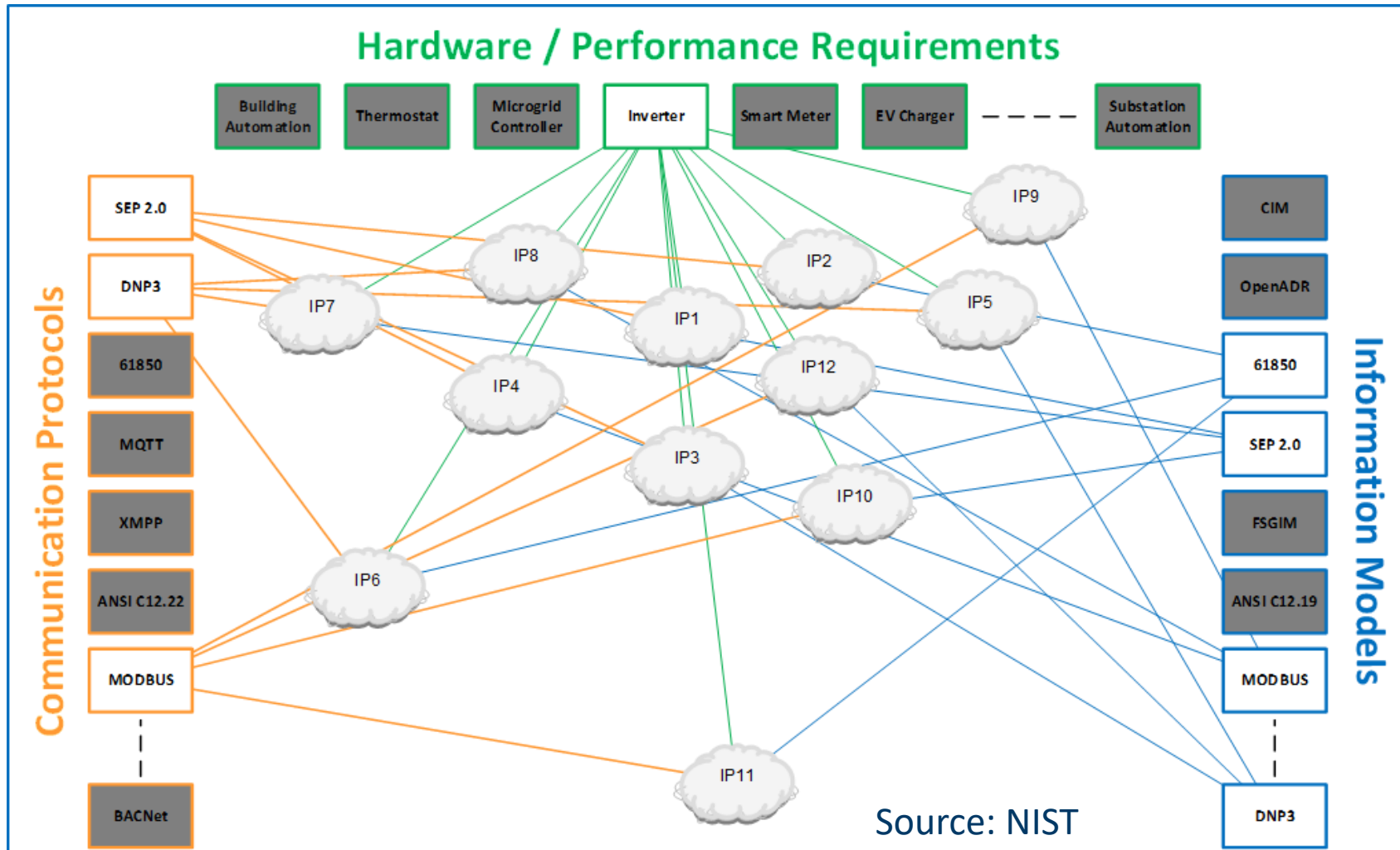
# IEEE 1547-2018 Definitions

**interoperability:** The capability of two or more networks, systems, devices, applications, or components to externally exchange and readily use information securely and effectively. (IEEE Std 2030<sup>®</sup>) (source: IEEE 1547-2018 p. 23)

**local DER communication interface:** A local interface capable of communicating to support the information exchange requirements specified in this standard for all applicable functions that are supported in the DER. (source: IEEE 1547-2018 p. 24)

**Remote Monitoring  $\neq$  Interoperability**

# NIST on IEEE 1547-2018 Optionality



# MN Utility Summary of Pros/Cons

- Upside: The ***simplicity*** leads to better chances of success with implementing true interoperability and effective information exchange between all applicable DER and Utilities in the state.
  - Potential to streamline integration for Developers, Installers, and Utilities
- Downside: The ***timing*** of the MN update means that market forces have not begun to converge on one of the protocols
  - The IEEE 1547 working group had anticipated some consolidation over time.
  - Expectation is that many manufacturers will offer just one of the three protocols. This aligns with standard requirements

Working hypothesis: Standardizing under a single protocol may be practical in the longer term, and assists in effective interoperability, but we need to better understand vendors offerings and back-end system integrations for all affected parties before making this a statewide requirement.



# Staff Lessons Learned re: Interoperability

## Interoperability standards help, but don't solve the issue.

- Select from options in standards during implementation – likely by project type and utility today.
- To use the capabilities enabled by standards may mean new costs (e.g. upgrades to utility or DER system outside the interface, operational considerations, etc.)
- Standards are emerging, and not all have testing and certification.
- Certification of individual equipment does not necessarily mean when put together they will perform as certified (IEEE 1547 has testing guidance for the interface of composite DER systems.)
- Who ensures the standards are being met at the time of initial interconnection and ongoing operations?

- IEEE 1547 discount for Commissions and educational resources: <http://sites.ieee.org/sagroups-scc21/standards/1547rev/>
- Minnesota Statewide DER Interconnection Process and Agreement (MN DIP/DIA): <https://mn.gov/puc/energy/distributed-energy/interconnection/>
  - Technical Subgroup's **Draft** Technical Interconnection and Interoperability Requirements: <https://bit.ly/30veiwG>
  - Phase II (IEEE 1547) Meeting Materials: <https://mn.gov/puc/utilities/interconnection/>

# Thank You!



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