

2026 IEEE Power & Energy Society:
Joint Technical Committee Meeting

A LANDSCAPE ASSESSMENT OF IEEE STANDARDS:

**Active standards, gap analysis, and future
requirements for electric distribution grids**

GridCo Partners & GridLab

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Presented by:

Shikhar Pandey

Masoud Davoudi



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Modernizing the Grid

GridLab provides expertise to advocate for better use of our existing transmission system and new transmission development to enable grid decarbonization.

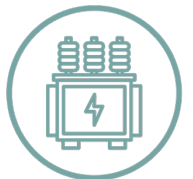


Develop a consensus roadmap with national level relevance for readying the grid for electrification.



Develop strong metrics and approaches for evaluating grid modernization investments.

MODERNIZING THE GRID





GridCo Introduction

GridCo Partners is an advisory firm committed to advancing reliable, resilient, and future-ready energy systems.

Our team of seasoned professionals brings breadth and depth of expertise across utilities, regulatory agencies, technology development, and research organizations.

We help clients successfully navigate and execute complex power system projects by delivering rigorous, actionable technical advisory services – grounded in the operational, regulatory, and economic realities of today and tomorrow's electric grid.



GridCo Group
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Executive Summary



Purpose of Report: To catalog existing IEEE standards, identify gaps, and propose a roadmap for future standards aligned with modernization needs.

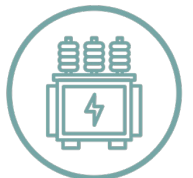


Focus - Transformation of Electric Distribution Grid: Driven by increasing penetration of DERs, transportation electrification, and urgent decarbonization goals, the grid is rapidly evolving.



Prepared by GridLab and GridCo Partners: This presentation summarizes key findings from January 2026 report assessing IEEE standards relevant to Electric Distribution Grids.

[IEEE Standards landscape
assessment - GridLab](#)

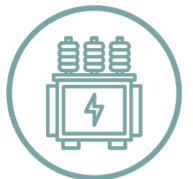
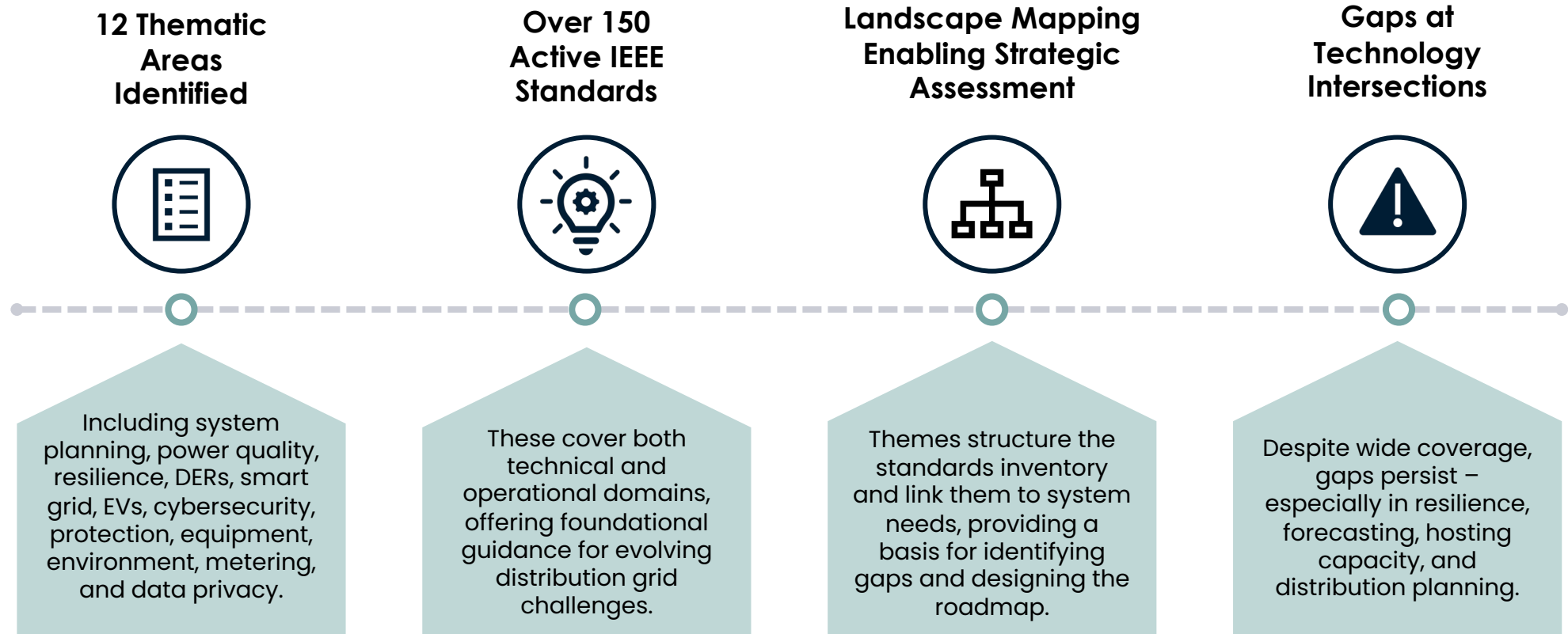


A Sneak Peek ...



Authors	
Dr. Mohini Bariya	GridCo Partners
Dr. Akansha Jain	GridCo Partners
Dr. Shikhar Pandey	GridCo Partners
Dr. Priya Sreedharan	GridLab
Dr. Masoud Davoudi	Pacific Gas & Electric Company
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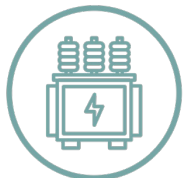
IEEE Standards Landscape Overview



Chapter 2

- ➔ **12 Areas of Standards:** Chapter 2 organizes active standards into 12 themes – ranging from planning and power quality to DERs, reliability, resiliency, EV integration, metering, and data privacy.
- ➔ **Structured Framework:** Each theme includes (1) Selected representative standards, (2) Brief summary of their scope, (3) Key active PAR enhancements, and (4) Gaps in coverage needing attention.
- ➔ **Lays Foundation for Gap Analysis:** The theme-wise mapping enables Chapter 4's identification of critical standardization gaps like forecasting, resilience, and DER protection.

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Chapter 2

3. RELIABILITY AND RESILIENCE

SELECTED REPRESENTATIVE STANDARDS

NUMBER	TITLE	EXPIRATION
IEEE 3006.2-2016	IEEE Recommended Practice for Evaluating the Reliability of Existing Industrial and Commercial Power Systems ^[33]	2026
IEEE 1806-2021	IEEE Guide for Reliability-Based Placement of Overhead and Underground Switching and Overcurrent Protection Equipment up to and Including 38 kV ^[34]	2031
IEEE 1366-2022	IEEE Guide for Electric Power Distribution Reliability Indices ^[35]	2032
IEEE 1782-2022	IEEE Guide for Collecting, Categorizing, and Utilizing Information Related to Electric Power Distribution Interruption Events ^[36]	2032

The **IEEE 3006** standards series focuses on power systems reliability, including individual standards for data collection (**IEEE 3006.9-2013**), reliability assessments (**IEEE 3006.2-2016**) and impact evaluation of preventative maintenance (**IEEE 3006.3-2017**)^[33].

IEEE 1806-2021 defines analytical techniques for reliability-focused system design, specifically focusing on the placement of switching and overcurrent protection^[34].

The **IEEE 1366-2022** guide defines distribution reliability indices and their calculations for substations, circuits, and regional distribution systems^[35].

→ Resilience is a relatively new topic for IEEE standardization and is the topic of a few active PARs; standardized metrics that capture nuanced aspects of resilience, such as identifying differential impacts based on community vulnerability or how impacts vary for outages of different durations, are still lacking.

Key Active Enhancements

PAR IEEE P3006.1 – IEEE Draft Recommended Practice for Reliability Planning and Design of Industrial and Commercial Power Systems, intends to extend 3006 coverage to the planning stage, providing guidance on planning systems for reliability targets^[37].

PAR P2856 defines resiliency for distribution systems and provides guidance on measuring and reporting resiliency metrics^{[38][39]}. It is led by the Distribution Resiliency Working Group under IEEE PES^[38].

Standards or guides on enhancing system resilience through physical or operational upgrades are currently limited; one example is **PAR P3443** which provides guidance on assessing and enhancing the physical resilience of substations across planning, design, construction, operations, and maintenance in the face of extreme environmental and man-made hazards^[40].

Chapter 3 and 4

- ➔ **Gaps Span Multiple Themes and Intersections:** The report identifies 13 strategic gap areas that transcend individual domains, requiring cross-sector alignment in planning, operations, cybersecurity, DERs, metering, etc.
- ➔ **Link to Future System Needs (Chapter 3):** Gaps respond directly to future grid requirements outlined in Chapter 3 ensuring gaps are aligned with system transformation goals.
- ➔ **Guiding Standards Development:** The purpose is not just to highlight gaps, but to guide IEEE and stakeholders on where targeted action can unlock transformative value for future grid evolution.

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Chapter 5: A RoadMap for Filling Standards Gaps



Gaps Ranked by Effort, Regret, and Criticality: Each standardization gap is scored across three dimensions to prioritize based on ease of action, possible downside, and system-wide importance.



Timeline Linked to DER Growth: The roadmap orders gap-filling efforts by urgency, showing when each becomes critical based on DER penetration and future grid maturity.



Standards are prioritized by period (near, medium, long-term) based on when they are likely to become more relevant and needed.

Item	Level of effort [1-5]				Regret [1-5]	Criticality [1-5]	Overall Ranking	Standardization Gap (top priority items marked in green)	Increasing DER penetration		
	1 is always best – lowest effort, least regret, most critical, top priority								Near-term	Medium-term	Long-term
Distribution Resilience Metrics											
11	2	1	1	1	1	1	Resilience valuation				
12	2	1	1	1	1	1	Social impact focused resilience metric				
13	3	2	3	3	15	15	Standardized resilience evaluation methods for cross comparability				
Electric Vehicle Integration											
14	2	2	2	2	6	6	Standardized backend communication protocol and cybersecurity framework				
15	2	2	3	3	11	11	Guides on integrating vehicle-to-everything (V2X) ecosystem under high electrification				
DER Hosting Capacity and Interconnection Studies											
16	2	1	1	1	1	1	Standardized metrics for hosting capacity evaluation w/o flexibility				
17	4	3	3	3	25	25	Standardized data formats and types for interconnection studies				
18	3	2	2	2	11	11	Standardized metrics for hosting capacity evaluation w. flexibility				
19	4	2	2	2	15	15	Guides on dynamic hosting capacity analysis				
Advanced Protection for High DER Penetration											
20	5	2	2	2	19	19	Standards on protection studies under high DER				
21	4	3	4	4	28	28	Guides on advanced protection methods				

Thank you!

GridLAB

hello@gridlab.org
gridlab.org



GridCo Partners

gridcopartners.com
+1. 509. 964. 5494

