

18th Annual

Renewable Energy Law Institute

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Emerging Topics in DER Regulation for Energy Law Practitioners

Panel: Distributed Energy and Virtual Power Plants: Regulatory Challenges and Opportunities to Leverage Consumer-Driven Electrification

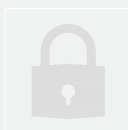
Arushi Sharma Frank, Esq. | www.linkedin.com/in/arushisharmafrank

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Emerging Legal and Regulatory Topics for DER Technology



Inverter Standards
Implementation – IEEE
1547-2018



Cybersecurity



Distribution Utility
Interconnection Service
Rules for Customer-Sited
Technologies



ISO/RTO Compliance and
Operations

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IEEE 1547-2018

Standard specifying requirements for distribution interconnection, and now interoperability, in the USA

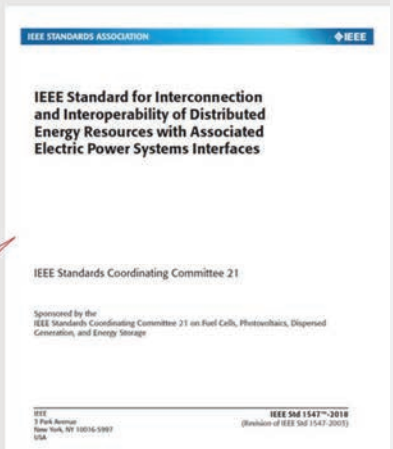
IEEE 1547-2003

- Default Trips
- Reconnection
- Anti-islanding



IEEE 1547-2018

- Customizable Trips
- Ride Throughs
- Reconnection
- Anti-islanding
- Smart Functions
- Communications
- Accuracies



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IEEE 1547-2018

Summary of Main Changes from IEEE 1547-2003 and UL 1741 SA

- Communication via one of Modbus, DNP3, 2030.5 is required.
- All ratings, statuses and settings must be able to be read and written

Interoperability

- For sites > 500kVA, responses are expected at the site level, rather than at the inverter.

Plant-Level Responses

- New functions
- Tweaks to existing functions
- Minimum measurement accuracy
- Open phase detection

New Functionality

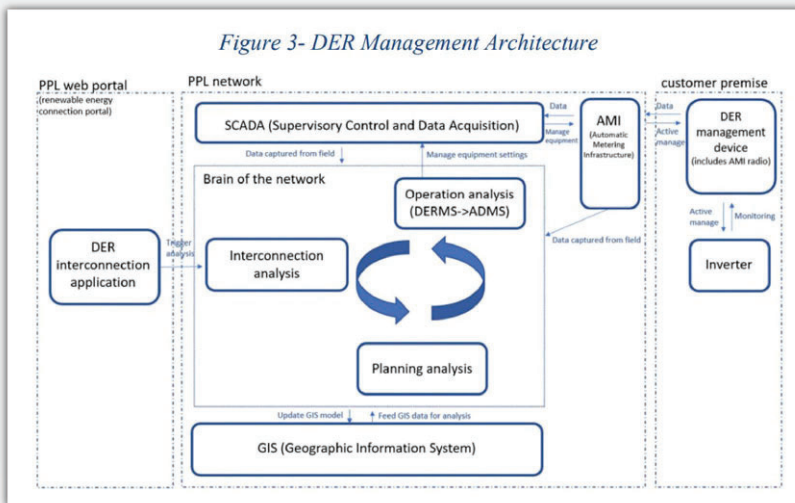
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IEEE 1547-2018 Implementation

Interoperability Challenges for DERs

A PA Utility DER Pilot “Management Plan” exercises jurisdiction behind the utility revenue meter to control and monitor customer-sited inverter and gathers customer information under a DER “pilot”

Figure 3- DER Management Architecture



PPL Utility DER Management Device: “Featuring an AMI radio, this device connects to the DER’s local communication interface, enabling monitoring and management of the DER through the existing AMI Mesh Network. This device allows PPL Electric to remotely monitor the attributes and performance of the DER and manage its grid support settings as needed. “

Source: PPL Electric Utilities Corporation, DER Management Pilot Implementation Plan (March 1, 2021, Docket No. P-2019-3010128 <https://www.puc.pa.gov/pdocs/1694930.pdf>

See also: <https://www.pplelectric.com/utility/about-us/electric-rates-and-rules/remsi/approved-metering-and-equipment-tables-index/solar-inverters>

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IEEE 1547-2018 Implementation

Technical Standards Policy Considerations for DERS in Australia

Evaluation Framework includes Consumer Equity and Acceptability Metrics

- Technical standards implementation impacts end consumers – “a policy decision on DER interoperability that is not broadly acceptable to consumers risks causing significant resistance (or backlash) and, in turn, policy makers risk losing the ‘social license’ for change.”
- “This could cause a significant delay to any reforms and less uptake of DER in the longer term.”
- “A technical standard that prevents specific OEM devices from participating in certain markets (and hence from earning revenues from those assets) may not be perceived as fair by consumers who had invested in good faith in those devices in expectation of a particular revenue stream.”

[Source: FTI Consulting, DER interoperability assessment framework: *An assessment framework to develop interoperability policy for distributed energy resources in Australia* (December 2021)(Framework for Australia Energy Security Board Consultation)

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