

EXPERTISE TO
ENABLE GRID
TRANSFORMATION

GridLAB



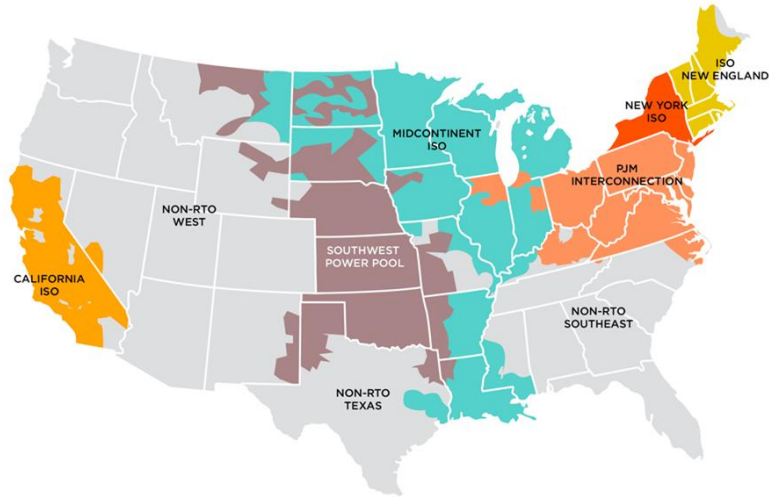
DER Update from “The States”

What's up
with DER in
the USA



- Federal Order on DER (2222)
- IEEE 1547-2018
- Integrated Distribution Planning

US Energy Primer



State and Federal regulation

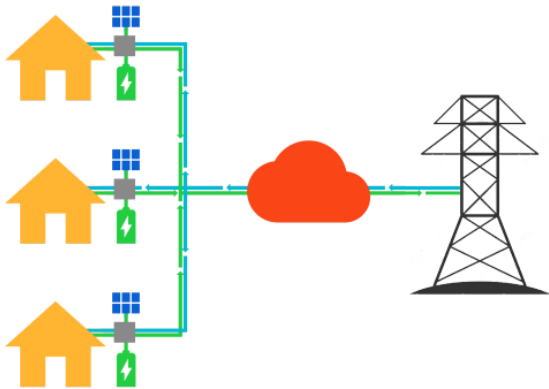
- 1) Fully restructured markets (PJM, New England, Texas)
- 2) Partially restructured markets (MISO, SPP, CA)
- 3) Vertical markets (SE, West)

Where are we now?



- ✓ *FERC (Federal regulator) just issued DER rule (Order 2222)*
- ✓ *California and Hawaii – high penetrations of DER, early adopters of smart inverters.*
- ✓ *IEEE-1547 2018 smart inverters will be available in 2021.*
- ✓ *Some states implementing integrated distribution planning*

Wholesale Markets



• Can DER provide value to Wholesale markets?

- DER primarily provide value to retail customers
- DER installed behind the meter (customer sited) provide retail value (Net Energy Metering, Demand charge reduction)
- New federal rule mandates that wholesale markets allow aggregated DER to participate in wholesale markets
 - Some markets already experimenting
 - Examples – Virtual Power plants, batteries providing demand response

Bulk System Impacts

- **IEEE 1547-2018**
 - No grid code in the US
 - IEEE 1547 is an equipment standard
 - States and utilities adopting new interconnection requirements
 - Includes frequency ride-through, voltage ride through, frequency response for bulk system support
- **NERC SPIDERWG**
 - Reviewing bulk system reliability standards for impacts from DER
 - Education and outreach

Net Metering “Successor”

- **Locational Value**
 - Most DER compensated via net energy metering, through retail rates
 - Many states exploring moving to a locational value construct
 - No clear consensus on direction, approach

Distribution Markets

- Can DER provide value to Distribution Grids?
 - DER typically seen as a cost to distribution grids. Distribution owner/operators are regulated utilities with cost of service regulation (no DSO model)
 - Integrated distribution planning (IDP) being deployed to plan for DER, integrate DER for distribution services
 - Non-Wires Solutions: DER being deployed to provide distribution services – slow progress