EXPERTISE TO ENABLE GRID TRANSFORMATION

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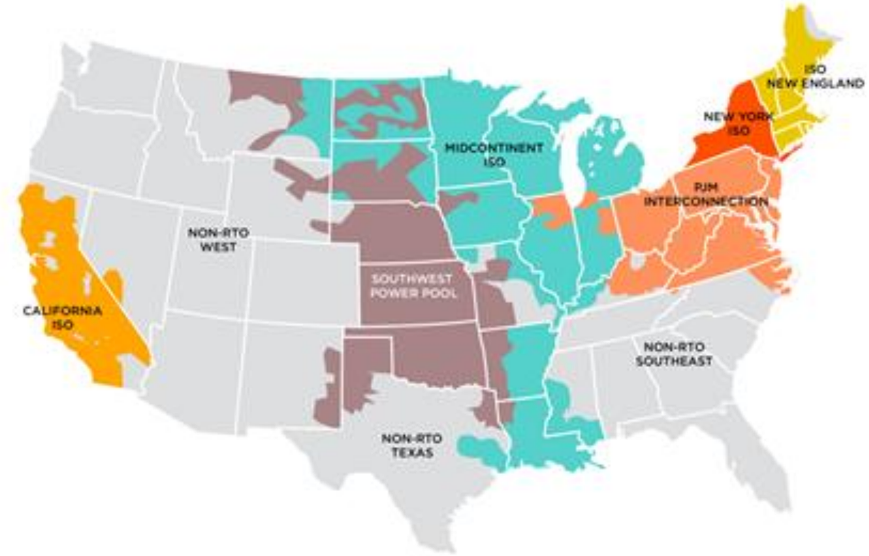
Distributed Energy Resources: Not just rooftop solar anymore. The emergence of batteries mean DER has real value to wholesale markets.



How do DER Participate in Wholesale markets now?

- ✓ *Not often!*
- ✓ *Through demand response*
- ✓ *Nobody uses the CAISO DER Product*

SOME EXAMPLES

Hybrid DER in wholesale markets

- SunRun in ISO-NE
  - 20 MW of residential hybrid (solar+storage) participating through a passive DR program
  - Retail TOU arbitrage
  - To be installed 2020-2021
- SunRun Oakland – EBCE
  - 0.5 MW of residential solar+storage
  - Using CAISO Proxy Demand Response
  - Retail TOU arbitrage
- STEM
  - Battery only – not hybrid
  - Commercial demand charge arbitrage
  - CAISO Proxy Demand Response
  - Active now in multiple markets

BARRIERS TO HYBRID PARTICIPATION

DEMAND RESPONSE NOT THE RIGHT MARKET CONSTRUCT!

- When can we get a FERC ruling on DER aggregation?
  - Fight over 841 is not a good sign
- What are realistic telemetry requirements for DER?
  - In CA, a WDAT is a huge barrier
- What are the real barriers at the T&D interface?

THANK YOU

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