DR and DER co-sited with W-DER

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Distributed Energy Resources Subcommittee
Andrew Levitt
Sr Market Strategist, Emerging Markets
Working Definitions for this Subcommittee:

- **“W-DER”**: a DER unit participating in PJM markets under the (newly renamed) “W-DER” (Wholesale DER) ruleset.
- **“DR-DER”**: a DER unit that reduces load at a site participating in PJM markets under the Demand Response ruleset.
- **“R-DER”**: a DER unit that either simply reduces instantaneous load or injects and is accounted for under a retail tariff (like Net Energy Metering or a PURPA avoided cost rate).

Proposal: A DER unit must remain either W-DER or DR-DER for the duration of a delivery year.
• Sites that combine W-DER and other DER must be approved by EDC with an interconnection agreement for all parallel-operating (i.e., not exclusively off-grid) DER at the site.
• In general, the Maximum Facility Output MW will be based on the sum of all DER, regardless of W-DER designation.
  – Exceptions may be possible if there is a power-limiting relay

*Existing rule: sites may not inject beyond their MFO.*
Sites with mixed wholesale and retail jurisdictional things pose legal and regulatory challenges.

Examples of notable jurisdictional topics:

- Wholesale demand response
- Station Power
- Wholesale sales on retail distribution lines

In the case of W-DER + other DER combining at a single site, the jurisdiction over the “attachment facilities” and operating conditions, among other items, is important to clarify.

- Interconnection Agreement terms and conditions
- Rules for operating limits on voltage, harmonics, ramp, etc.
- Emergency provisions
- Transfer trip
- Obligation to serve
Use Cases

- W-DER + load = established jurisdiction, “dual use facility”.
  - FERC is careful to take jurisdiction over only the wholesale aspects of facilities that are also used to serve retail load.
- R-DER + DR: stay tuned...
- W-DER + R-DER + load = stay tuned...
Use Cases

Retail load + W-DER = established jurisdiction
“Dual Use Facilities”

↑ Wholesale Energy
↓ Retail Energy

Retail load + retail DER + wholesale controllable load = stay tuned…

Retail load + retail DER + A/S-only W-DER = stay tuned…
5 Co-siting Cases Behind The Customer Meter (BTCM)

1. W-DER + DR (excluding DR-DER) + Load
   - E.g., BTCM wholesale gas generator + controllable chiller load in DR
2. W-DER + W-DER + Load
   - E.g., BTCM wholesale gas generator + wholesale solar
3. W-DER + R-DER + Load
   - E.g., BTCM wholesale battery + net-metered solar
4. W-DER + DR-DER + Load
   - E.g., BTCM wholesale battery + diesel generator in DR
5. R-DER + DR + Load
   - E.g., net metered solar + controllable water heater in DR
5 Co-siting Cases Behind The Customer Meter (BTCM)

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**ESTABLISHED JURISDICTION OF INTERCONNECTION FACILITIES:**

**GENERATION = FERC**

**LOAD = LOCAL**

➔ “DUAL USE FACILITY”
Co-sited W-DER and DR: Grossed-up Load

- In General for co-sited W-DER and DR: site load will be “grossed up” by adding back submetered W-DER output to POI measurement.

Case 1: W-DER + DR

POI: -3MW (INJECTION)

Load: 7MW

W-DER: 10MW

POI Meter (-3) + W-DER Meter (10) = Grossed-up Load (7)
1. For Regulation: a single site could host multiple Regulation-submetered W-DER units and Regulation-submetered DR resources as separate market resources, as per status quo for DR with multiple Regulation-submetered resources.

2. A single site could have a POI meter that incorporates activity from both W-DER and DR as a single market resource.
   - No Regulation-submetered DR or W-DER resources allowed at such a site.

Case 1: W-DER + DR
Ancillary Services: Synch Reserves

1. A single site could host Synch-submetered W-DER units and POI-metered DR
   - The output of the Synch-submetered W-DER units will be added back to the POI meter readings for DR Synch measurement
2. A single site could have a POI meter that incorporates activity from both W-DER(s) and DR
   1. For any submetered W-DER(s) at such a site: the output of the submetered W-DER(s) will be added back to the POI meter readings for DR Synch measurement.

Case 1: W-DER + DR
For W-DER unit(s) co-sited with DR: the W-DER unit(s) must have a submeter.

- Recall proposed rule that all W-DER >25 kW require a submeter.
- Possible option for discussion: **DR at such sites may also opt to forgo DR energy payments in lieu of installing a W-DER submeter.**

DR Energy measurement will be based on gross site load (without W-DER output).

W-DER Energy measurement will continue to be based on actual injections at the POI (for wholesale energy settled W-DER) or will be zero (for retail energy settled W-DER).

**Case 1: W-DER + DR**
Multiple W-DER at a single site

• **PATH ONE**: Under certain conditions, PJM can accommodate virtual separation sharing a single point of common coupling.

• **PATH TWO**: Multiple different types of DER at a single site can combine into a single “W-DER unit”.
  – Can set price.
  – Rules for cost-based offers will need to be developed.

Case 2: **W-DER + W-DER**