

CREDITING PJM DER FOR FULL CAPACITY CAPABILITY

ENEL X NORTH AMERICA

CENTRICA BUSINESS SOLUTIONS

ADVANCED ENERGY MANAGEMENT ALLIANCE*

** AEMA as an organization, not for any individual member company*

PJM DER & Inverter-Based Resources Subcommittee (DIRS)

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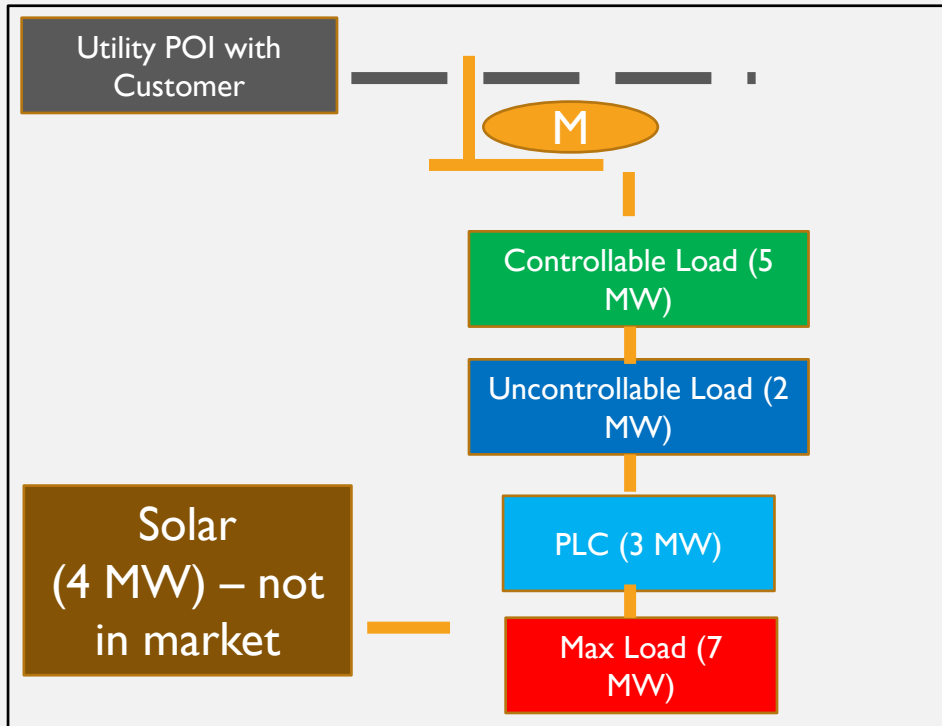
SUMMARY

- We anticipate common use cases of controllable demand paired with behind the meter solar, where the demand participates in the PJM market but the solar does not. When the customer curtails its demand during a PJM event, this could lead to injection to the grid
- The controllable demand should receive full capacity credit – this will include on-site load reduction up to the PLC and for any injection
- In cases where the on-site solar is typically exporting to the grid, PJM should offer a different baseline option to measure curtailment for capacity purposes, as the existing method is insufficient (Example 2)
- PJM's DR model can be applied to sites with BTM solar and controllable demand (and potentially, storage) that result in injection

BACKGROUND

- PJM current DR model does not value injections
- PJM has begun to explore a “Continuous DER” model but leaves significant uncertainty for curtailment customers with injection capability
- This presentation illustrates how limited adjustments to PJM DR Model can be applied for frequent use cases and comply with FERC Order 2222
- Leveraging the PJM DR Model in these use cases avoids unnecessary treatment of curtailment into a generation framework (Cost-based offers, telemetry, etc)

EXAMPLE #1: CONTROLLABLE RETAIL LOAD + SOLAR*

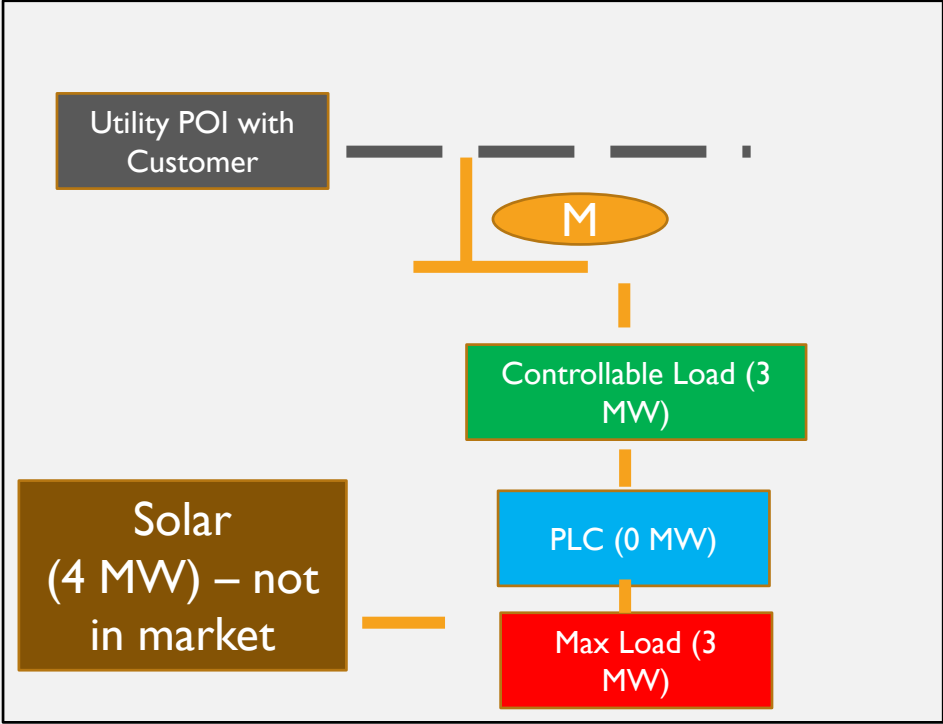


PLC	3 MW
Injection Max	2 MW
Max Capacity Capability/Enrolled Capacity	5 MW (Lesser of controllable load or PLC+ Injection)
What does meter have to read during PAI to receive full performance if not providing reserves?	-2 MW (Math: PLC – Enrolled Capacity)

Key Takeaway: DER should be eligible to receive capacity credit for PLC + injection up to controllable load – using DR model, if desired

*Customer receives no NEM capacity credit for injection enabled by controllable load

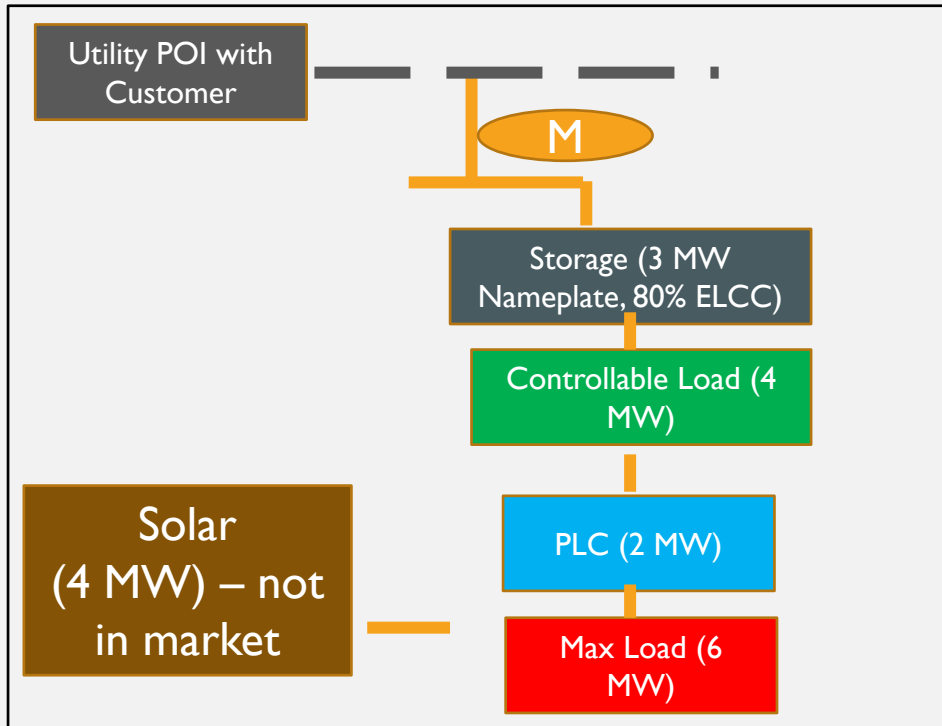
EXAMPLE #2: CONTROLLABLE RETAIL LOAD + SOLAR, WHERE SOLAR IS > RETAIL LOAD



PLC	0 MW
Injection Max	4 MW
Max Capacity Capability/Enrolled Capacity	3 MW (Lesser of controllable load or PLC+ Injection)
CBL	-1 MW (Assumes facility at max load and max solar, so max load minus max solar)
What does meter have to read during PAI to receive full performance if not providing reserves?	-4 MW (Math: <u>CBL</u> – Enrolled Capacity)

Key Takeaway: DER should be eligible to receive capacity credit for injection enabled by controllable load, but when there is no PLC, a CBL should be used to determine capacity performance

EXAMPLE #3: CONTROLLABLE RETAIL LOAD + STORAGE + SOLAR



PLC	2 MW
Injection Max	5 MW
Storage Capacity Eligibility	2.4 MW (Nameplate * ELCC)
Max Capacity Capability/Enrolled Capacity	6.4 MW (Lesser of controllable load + storage capacity or PLC+ Injection)
What does meter have to read during PAI to receive full performance if not providing reserves?	-4.4 MW (Math: PLC - Enrolled Capacity)

Key Takeaway: DER should be eligible to receive capacity credit for injection enabled by controllable load + storage, accounting for storage ELCC. DER can use existing DR model if it wishes for the entire facility

*Customer receives no NEM capacity credit for injection enabled by controllable load

FAQ

- How can PJM ensure that the performance credited to the DER is due to actual curtailment/storage discharge and is not simply a result of increased solar production?
 - PJM can require the DER Aggregator to provide meter data for the event from the solar, any on-site storage and the customer meter. This data will allow PJM to verify performance

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