Improving Load Management Performance Incentives

Voltus

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Problem Statement: PJM observed an overall weighted average performance of 67% in the summer 2025 dispatches of DR. Voltus observes that...

- This number masks wide variability in site, aggregation, and CSP performance.
- Average performance is 87% of UCAP value of the resources, which is a more appropriate benchmark.
- With no PAI events, non-performance was insulated from financial penalties.

Suggestions for Two High-Impact Changes to the Performance Incentive Structure:

1. Add non-performance penalties for DR during Non-PAI events.
2. Apply derates at the Site Level to ensure non-performers are identified and cannot escape derates by changing CSPs.

Non-PAI Underperformance Penalties

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Solution 1. Add non-performance penalties for DR during Non-PAI events.

For non-PAI events, DR performance is assessed based on best performance across all events, which PJM believes creates misaligned incentives between DR Sites and PJM's needs. To fix this, Voltus proposes:

- The PAI framework in place provides strong incentives for performance during emergency conditions and should be maintained.
- Additionally, a Non-PAI performance penalty should be added based on the current framework used in the Ontario Market (IESO):
  - Non-PAI performance is assessed a penalty = underperformance in UCAP x daily capacity rate x a Non-Performance Factor.
  - Factor would be set to event duration in hours to establish severity.
  - A portion of the underperformance penalties could be paid to overperforming CSPs to further incentivize performance, with the rest returned to ratepayers.

Solution 1. Add non-performance penalties for DR during Non-PAI events.

Key advantages of this solutions:

1. Maintains parity between capacity resources.
2. Dramatically increases the incentive for CSP aggregations to perform during Non-PAI events.
3. Easy for PJM to implement and prevents the need for large resettlements that would have to take place if an average performance framework was put into place.

Solution 1. Add non-performance penalties for DR during Non-PAI events.

Example:

- 3 events occur in a year
- Capacity price is $300/MW-Day
- Non-PAI penalties would be assessed

Event	Event Type	CSP Performance	MW Dispatch	Event Duration	Penalty
1	Non-PAI	80%	10 MW	5 hours	$3,000
2	Test	100%	10 MW	2 hours	$0
3	Non-PAI	80%	10 MW	3 hours	$1,800

Derates applied at the site level

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Solution 2. Apply derates at the Site Level.

- Voltus disagrees with taking action based on a single cutoff aggregate threshold performance level (85% per PJM's interim steps) and applied to CSP's zonal performance.
- However, if PJM is intent on derating DR based on aggregate performance, the adjustment should be applied to allow action that prevents sites' ability to avoid penalties by switching CSPs:
  - **Derates should be site specific, not zonal or CSP-level.**
  - If an aggregate derate is required, it should be applied based on measured capacity performance (best dispatch or PAI performance)dispatch.
- Without this structure, there is a risk that underperforming sites abandon CSPs that they negatively impacted for other CSPs without being held accountable for their non-performance.

Solution 2. Apply derates at the Site Level.

How site level derates should work:

- Based on average performance in a capacity year, a site would be assigned a capacity factor for the following year based on their current nomination.
- Capacity Factor is an additional multiplier that is applied alongside ELCC.
- If that site's nomination was adjusted to its performance in the previous year, it could maintain a Capacity Factor of 100%. Otherwise, a derate would be assigned.
- NYISO applies this methodology.

Solution 2. Apply derates at the Site Level.

Example 1:

- Site's 2 and 3 underperform, and no adjustment is made to their nomination in the following capacity year.
- As a result, underperforming sites are assigned a capacity factor derate to their ICAP values.

Site	Nomination 26/27	Performance 26/27	Nomination 27/28	Cap. Factor 27/28	ICAP 27/28
1	10 MW	10 MW	10 MW	100%	10 MW
2	5 MW	2.5 MW	5 MW	50%	2.5 MW
3	3 MW	1 MW	3 MW	33%	1 MW
4	2 MW	2 MW	2 MW	100%	2 MW

Solution 2. Apply derates at the Site Level.

Example 2:

- Site's 2 and 3 underperform, but nominations are adjusted in subsequent capacity year.
- As a result underperforming sites maintain a 100% capacity factor

Site	Nomination 26/27	Performance 26/27	Nomination 27/28	Cap. Factor 27/28	ICAP 27/28
1	10 MW	10 MW	10 MW	100%	10 MW
2	5 MW	2.5 MW	2.5 MW	100%	2.5 MW
3	3 MW	1 MW	1 MW	100%	1 MW
4	2 MW	2 MW	2 MW	100%	2 MW