

Calculation of Winter Peak Load When Curtailed

October MIC

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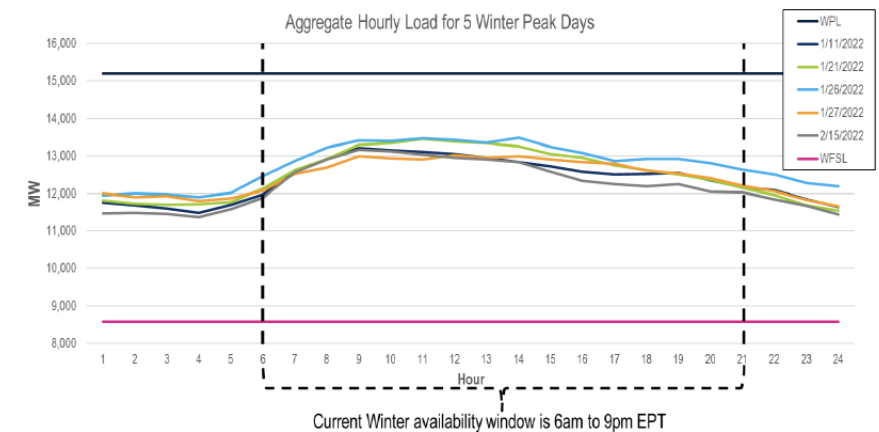
Summary

- **PJM and stakeholders collaboratively made changes to Annual Demand Response in 2025 to increase amount of DR PJM can call upon:**
 - Expanded demand response availability hours to 24-hours
 - Changed the definition of winter peak load (WPL) to load in HE9 of WPL days
- **Conforming changes were missed during the process:**
 - High probability sites participating in demand response will already be dispatched during the hour WPL is measured
 - Data from past few winters shows option to remove 2 lowest days is inadequate
 - While the summer peak load contribution (PLC) requires “adding-back” the amount of load reduction, WPL does not
- **Impact to PJM and members:**
 - PJM will not be able to access available annual demand response capacity, because Winter volumes will be misstated
 - WPL “add-back” appears in future load forecasts, but not in site baseline (WPL)
- **Changes made in 2025 are scheduled to be implemented in DT 2027/2028, however changes to WPL methodology are required prior to the 2027/2028 registration season as WPL calculation is based on a 2 year “look back”**
 - Data from DY 2025/2026 already shows DR sites are curtailed in HE9 during 5 winter CP days used to determine WPL
- **Recommend a CBIR Lite approach to solving the issue.**

Changes Made to Annual Demand Response and Winter Peak Load in 2025

- **Changes made to Annual DR in 2025, summarized in ER25-1525:**
 - Expanded availability hours to 24-hours starting in 2027/2028
 - Previously, the availability window for winter was 6 AM – 9 PM
 - Changed the definition of Winter Peak Load (WPL) to be a specified hour of the day (currently HE9)
 - Previously, WPL was the average of each customer's specific peak hourly load between hours ending 7AM – 9PM on the 5 WPL days
- **ER25-1525 implementation starts with Delivery Year 2027 / 2028**
- ***Parties did not consider that sites might be curtailed during the WPL measurement hour for Load Management or Economic DR***

**Figure 2: Aggregate Hourly Load for Five Winter Peak Days
Illustrating Overstated Winter Peak Load**



Source: PJM filing ER25-1525

Current WPL Methodology

Methodology

Definition: The average of a customer's peak hourly demand during hours ending 7:00 EPT – 21:00 EPT on PJM's five Winter Coincident Peak (5CP) days (Dec–Feb), from the Delivery Year minus two.

Exception:

If a day's HE7–21 average load is below 35% of the 5-day average, up to two such days may be excluded.

$$\text{Winter Nominated Capacity} = (\text{WPL} \times \text{ZWWAF} - \text{Winter FSL}) \times \text{Loss Factor}$$

ZWWAF = Zonal Winter Weather Adjustment Factor (weather-normalized zonal peak ÷ zonal 5CP average)

FSL = Firm Service Level nominated for the winter period

Illustrative Example

Customer peak demand (MW), HE7–21, on the five Winter 5CP days:

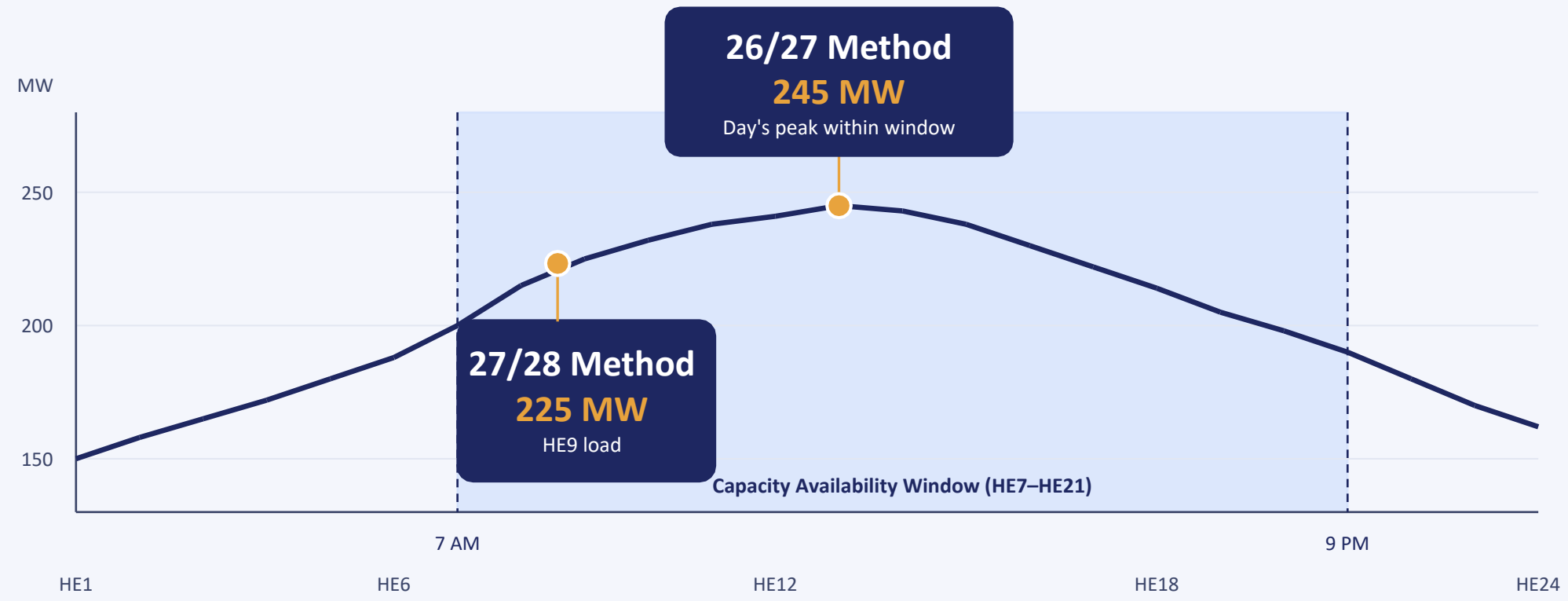
5CP Day	Peak Demand (MW)
Dec 14	220
Jan 6	245
Jan 18	232
Jan 25	250
Feb 3	218

$\text{WPL} = (220+245+232+250+218) \div 5 = \mathbf{233 \text{ MW}}$

Numbers are illustrative only. Source: PJM Manual 18 (Capacity Market) §4.3; PJM DRS – Winter Peak Load Calculation and Process.

Change in WPL Methodologies

Each Winter 5CP day currently contributes its single highest hourly load inside the capacity availability window, but will shift to 9am Load starting DY 27/28

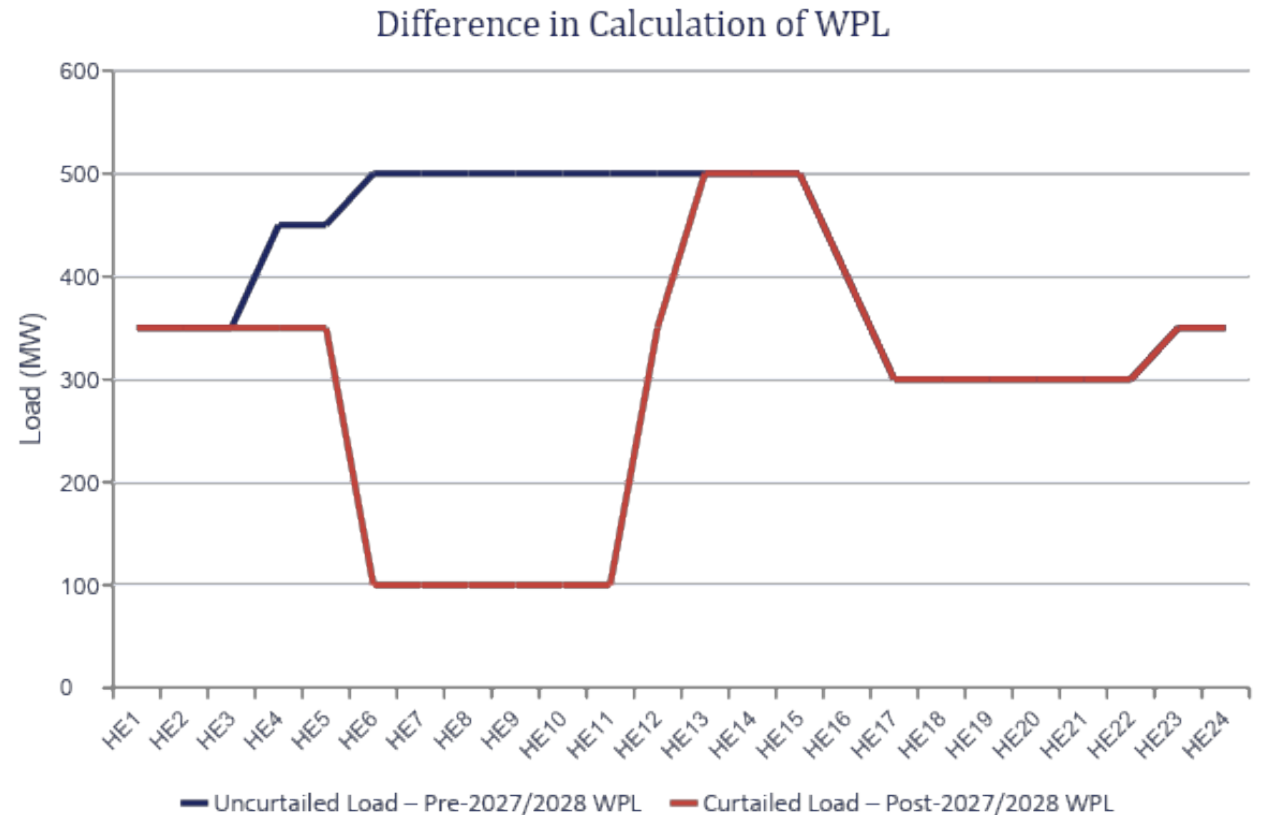


Example day: Jan 6 (one of the five Winter 5CP days).

The customer's load is tracked hour by hour, but only the single highest hourly value that falls inside the capacity availability window (currently HE7–HE21) is used for the WPL. This process repeats independently for each of the five Winter 5CP days; the five resulting day-peaks (see previous slide's table) are then averaged to produce WPL. This will change starting next year (27/28) to be the site's load in HE9

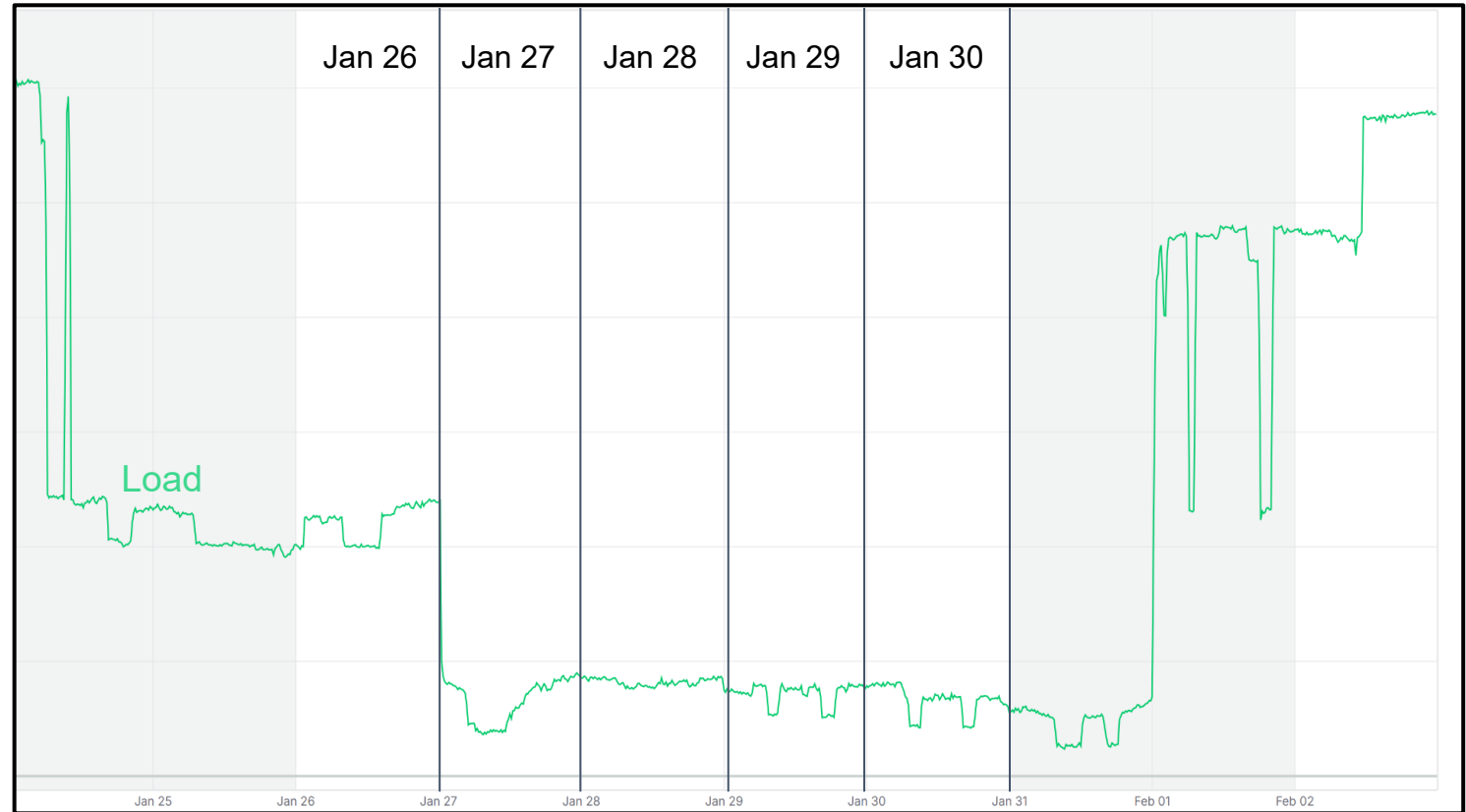
PJM initiated curtailment can now easily cannibalize WPL baselines

- If a site is curtailed during a PJM winter critical peak measurement day, the new methodology of measuring WPL at 9 AM creates the potential for WPL to include curtailment
 - In this example, PJM curtails the load for four hours on a WPL day.
 - The existing WPL for the Winter CP day is 500 MW, but under the new method, the WPL would be 100 MW.
- Parties did not consider the potential need to “add back” the curtailed load during the 2025 stakeholder process, or develop a new approach to determine WPL in these circumstances.



Sample Customer Data from 2025/2026

- Data from winter 2025/2026 shows many DR sites were curtailed during 4 out of 5 critical winter peak days:
 - This past winter, many Economic DR customers were curtailed by PJM from January 26 to February 1
 - PJM winter peak days were January 27, 28, 29, 30 and February 9.
 - Load management was also dispatched on January 25 and was nearly dispatched multiple days during the week.
 - **These sites will be unable to provide Winter Capacity under the new WPL methodology in 27/28 because they followed PJM's dispatch instructions.**



PJM 25/26 WPL Days and representative load samples

Manuals Require the Calculation of Load Drop in Summer to Determine Peak Load Contribution (PLC)

- Manuals anticipate demand response sites may be curtailed during the summer and require calculating the unrestricted load, or the load drop, and adding that back to determine the total peak load contribution (PLC) for each customer
 - PLC is used as the basis to determine the amount of capacity procurement in auctions
 - PLC is also used to determine upper limit for summer demand response
- **Winter Peak Load is added back for the purpose of PJM Load Forecasting, but not for each customer when determining WPL (M19).**

Potential Impact

Individual site WPLs are artificially low because of PJM directives, and PJM cannot access the full load available to curtail in winter months.

Requested path forward

- Potential solutions are still being explored and we request a CBIR Light process be assigned to the DISRS to:
 - Evaluate and propose changes to Manual 18 as well as RAA, therefore FERC approval will be required
 - Establish necessary timeline for FERC approval in order to implement prior to DT 2027/2028 Registrations.

Tariff and Manual References

Relevant Tariff Sections (pre DY 2026/2027)

RAA definitions:

“Annual demand response shall mean...will be capable of maintaining each such interruption between the hours of 10:00 AM to 10:00 PM Eastern Prevailing Time for the months of June through October and the following May, and 6:00 AM through 9:00 PM for the months of November through April...”

“Winter Peak Load shall mean the average of the Demand Resource customer’s specific peak hour load between hours ending 7:00 through 21:00 on the PJM defined 5 coincident peak days from December through February...”

Tariff Changes Made Because of ER25-1525 (post DY 2026/2027)

RAA definitions:

“Annual demand response shall mean...will be capable of maintaining each such interruption for all hours of the Delivery Year beginning with the 2027/2028 Delivery Year...”

“Winter Peak Load shall mean the average of the Demand Resource customer’s specific hourly load during a single hour specified in the PJM manuals, which shall be based on when the aggregate peak load levels of Demand Resource customers occurs and the PJM Region loss-of-load risk patterns, on the PJM defined 5 coincident peak days from December through February...”

Manual 18: Definition of Winter Peak Load

Section 4.3.7:

“The Winter Peak Load for Delivery Years through the 2026/2027 Delivery Year is based on the average of the Demand Resource customer’s specific peak hourly load between hours ending 7:00 EPT through 21:00 EPT on the PJM defined 5 coincident peak days from December through February two Delivery Years prior to the Delivery Year for which the registration is submitted. For the 2027/2028 Delivery Year and subsequent Delivery Years is based on the average of the Demand Resource customer’s specific hourly load during hour ending 9:00 EPT on the PJM defined 5 coincident peak days from December through February two Delivery Years prior to the Delivery Year for which the registration is submitted. For Delivery Years through the 2026/2027 Delivery Year, if the average use between hours ending 7:00 EPT through 21:00 EPT on a winter 5 coincident peak day is below 35% of the average hours ending 7:00 EPT through 21:00 EPT over all five of such peak days, then up to two such days and corresponding peak demand values may be excluded from the calculation. For the 2027/2028 Delivery Year and subsequent Delivery Years, if the usage in hour ending 9:00 EPT on a winter 5 coincident peak day is below 35% of the average hour ending 9:00 EPT over all five such peak days, then up to two such days may be excluded from the calculation. If no hourly load data exists for December through February two Delivery Years prior to the Delivery Year, or if more than two days meet the exclusion criteria, then the CSP may use the most recent December through February hourly load data to calculate the Winter Peak Load, upon PJM verification. If no hourly load data for the customer exists for the last two December through February periods prior to the Deliver Year, or if more than two days meet the exclusion criteria for the last two December through February periods prior to the Delivery Year, the CSP may provide alternative data to support a Winter Peak Load subject to PJM’s review and approval of the use of alternative data.”

Manual 19, Attachment A

*“Load drop estimates...are used to construct unrestricted loads used in the PJM Load Forecast Model, weather normalization of PJM seasonal peaks, **and to calculate the unrestricted Peak Load Contributions** used in formulating capacity obligations”*

*“Actual load reductions...**will be added back for the purpose of calculating peak load for capacity** for the following Delivery Year and consistent with the load response recognized for capacity compliance as set forth in the Manual.”*

“The estimated load drop which shall be used to determine capacity compliance and may be used as an addback to determine the unrestricted peak load for Firm Service Level...is calculated as follows... For FSL, summer = $PLC - (\text{metered load} \times \text{loss factor})$ and winter = $(WPL \times ZWWAF \times LF) - (\text{Load} \times LF)$ ”

Questions or Comments

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