

# PJM MIC: Demand Response Education

Presented by Voltus, Inc.  
7/10/24



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# DR Availability and ELCC Accreditation

## Response to “Demand Response ELCC Education” session at June 5 MIC

- Load data support expanding program hours as a short-term fix for Load Management accreditation. Voltus supports the Demand Response Coalition’s Issue Charge to extend winter availability hours.
- After the short term fix, longer term considerations include:
  - PJM is de-rating DR based on energy availability, but Load Management has always been a capacity product. Load Management is already capped based on capacity availability; also derating based on energy availability is double-capping. A longer-term program design fix would eliminate double-capping.
  - PJM’s method of modeling demand response (DR) in the ELCC assumes that DR availability is proportional to system load. It would be more accurate to use DR-specific data as reported in DR Hub.

# Phase 1: Winter energy availability in Hours 21 - 23



# Winter Energy Availability

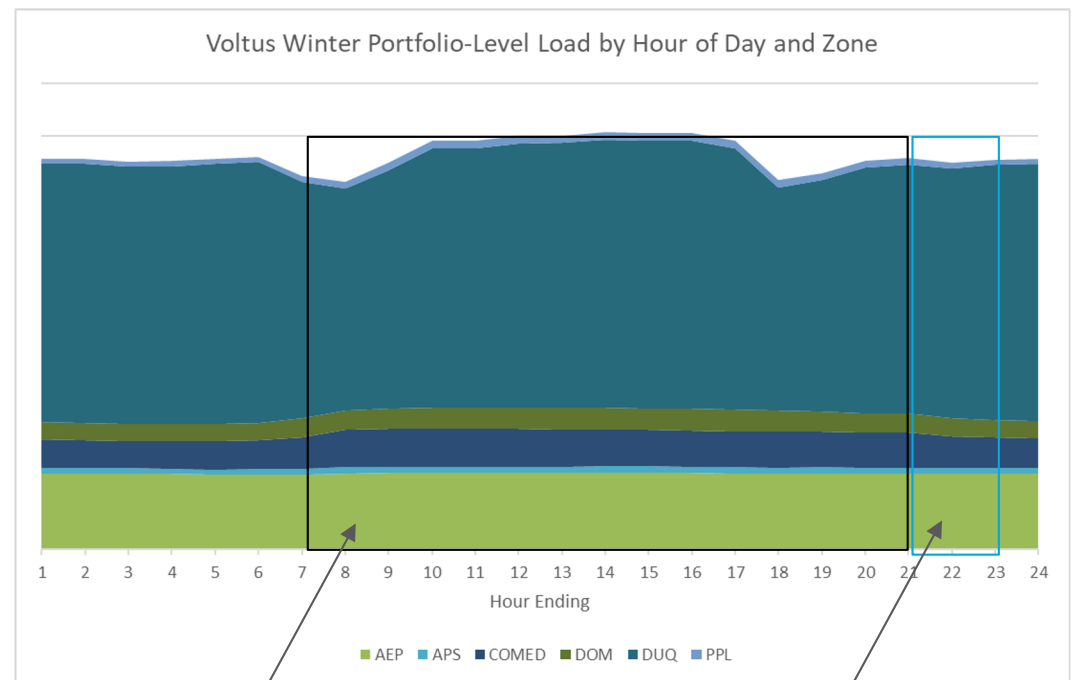
## The data support expanding program hours as a short-term fix for Load Management accreditation

- PJM has focused on load availability during Winter Storm Elliott—but Winter Storm Elliott was on December 23-24, meaning many loads were shut down for Christmas. Modeling may show that Winter continues to be of concern because of generation risk, but that does not mean that the 2 days before Christmas are representative of DR availability in Winter risk periods more broadly.
- DR providers recruit customers that meet the eligibility criteria and financial incentives provided by markets. Load Management has historically created an incentive to sign customers with availability in summer peak (PLC) and winter peak (WPL) hours—not the late Winter evening hours that are now of most concern.
- If program design is changed to create an incentive for loads with energy availability on Winter nights—or whatever hours of concern future modeling reveals—we will sign those loads.
- In the interim, aggregated load availability data support the proposed short term fix to expand program hours by 2 hours in Winter.

# Voltus ELRP Winter Load Availability by Hour 1/2

Winter load is as available in the proposed extension hours as in existing program hours

- Voltus' portfolio includes many 24/7 loads including three-shift industrial facilities and data centers.
- Though they were recruited to meet a Peak Capacity reduction construct, even existing Load Management customers have load and the ability to curtail in late-night Winter risk hours.
- Sometimes load is *above* WPL or PLC, yet this load cannot be accredited.



Current Winter ELRP hours (6 am-9 pm)

Proposed extension of ELRP hours (9-11 pm)

# Voltus ELRP Winter Load Availability by Hour

## 2/2

- In Voltus’s current portfolio, aggregate Winter load peaks in HE 14 and is at its lowest within current program hours. *Relative to existing program hours, load is higher, not lower, during the proposed extension hours.*

Hour Ending	Category	Avg. Winter Load / HE 14	Avg. Winter Load
	1 Not a program hour		94%
	2 Not a program hour		94%
	3 Not a program hour		93%
	4 Not a program hour		93%
	5 Not a program hour		94%
	6 Not a program hour		94%
	7 Current program		90%
	8 Current program		88%
	9 Current program		93%
	10 Current program		98%
	11 Current program		98%
	12 Current program		99%
	13 Current program		99%
	14 Current program		100%
	15 Current program		100%
	16 Current program		100%
	17 Current program		98%
	18 Current program		89%
	19 Current program		90%
	20 Current program		93%
	21 Current program		94%
	22 Proposed Extension		93%
	23 Proposed Extension		93%
	24 Not a program hour		94%

# Phase 2: Understanding the Broader Challenges with DR



# ELRP Program Design and Double Capping

## DR is now derated by both capacity and energy availability

- Load Management is based on load curtailment *relative to* PLC in Summer and WPL in Winter. **Site enrollments are capped at PLC or WPL, even in cases where average curtailable load or load during PJM's highest risk hours is above PLC/WPL.**
  - In June 2024, Voltus's energy availability—as reported in DR Hub— was ~25-30% higher than our accredited MW.
- A DR Resource is enrolled at its summer capability in the Summer, and the *lower of* its summer capability or its Winter capability in the Winter. DR providers are unable to **accredit their full Winter capability.**
- PJM is capping Load Management by derating based on (modeled, assumed) energy availability, by limiting program hours, *and* capping enrollments at PLC/WPL.



# Concerns with Double-Capping

**The proposed Load Management program design does not create an incentive for participation in the Winter hours when PJM most needs MW due to generation risk**

- Voltus has a winter leaning portfolio in many PJM Zones. However, we cannot use this additional winter capacity to help PJM.
- Instead, we are capped at the Summer Nomination AND now will be further derated by ELCC and based on limited program hours.
- Reducing the value of Load Management creates an incentive for customers to instead pursue PLC reduction through out-of-market programs. PJM has no control over these programs and they will not drive curtailment in Winter hours of concern.
- Customer examples on the next slides:

# By double-counting enrollment caps, PJM is unfairly penalizing eligible loads and misaligning customer incentives with what the grid now needs

**Most** *Prost* **Site #1: Load will not participate in Load Management despite having 30 MW of curtailment ability. This load will instead ONLY curtail to avoid PLC hours, which will not help other key hours of concern for PJM.**

## Site #1

### Energy Availability

**Summer Energy Baseline** 30 MW  
(Avg. load 10 am-10 pm)

(This 24/365 load has similar energy availability Winter)

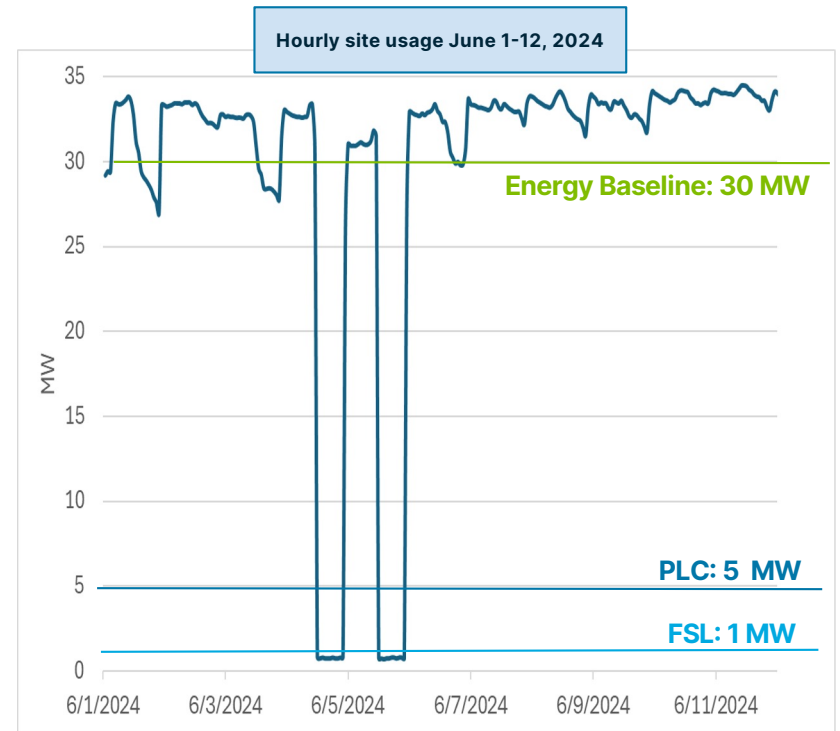
**Summer Energy Capability** 29 MW  
(Summer Energy Baseline-FSL)

### Summer Accreditation

**Peak Load Contribution (PLC)** 5 MW

**Summer Accreditation** 4 MW  
(PLC - Firm Service Level -FSL)  
(Cap#1: cap at PLC)

**New ELCC Accreditation** 3 MW  
(Cap#2: 0.76 ELCC factor)



# By flooring enrollments at the lesser of their seasonal availability, PJM is especially penalizing eligible loads during winter hours of concern

*Example2: Load is available for 61 MW against an energy baseline (CBL), but will only be accredited for 19 MW (< 50%)*

## Site #2

### Energy Availability

**Winter Energy Baseline**  
(Avg. load 6 am - 11 pm)

91 MW



61 MW

**Winter Energy Capability**  
(Winter Energy Baseline-FSL)

### Winter Accreditation

**Winter Peak Load (WPL)**

117 MW



87 MW



25 MW

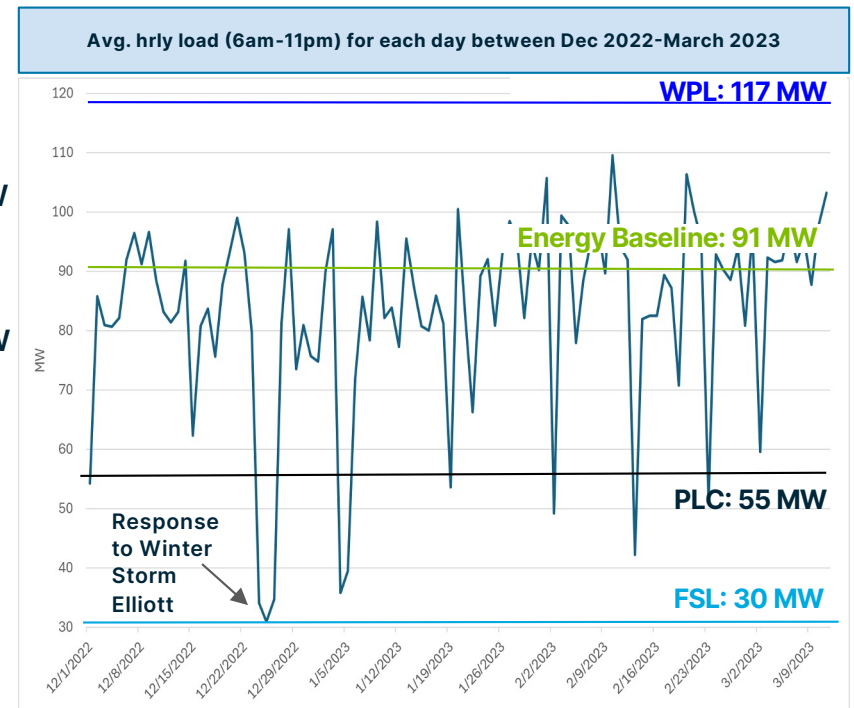


19 MW

**Winter Capacity**  
(WPL - FSL)  
(Cap#1: cap at WPL)

**Enrolled Capacity**  
(PLC - FSL)  
(Cap#2: enroll lesser of Summer or Winter capacity)

**New ELCC Accreditation**  
(Cap#3: 0.76 ELCC factor)




# PJM's ELCC Modeling Approach

- DR availability during performance window is modeled to be scaled proportional to system load.

$$\frac{\textit{Simulated HourlyLoad}_i}{\textit{50/50 Simulated Peak Load Forecast}} \times \textit{ICAP of DR}$$

- Demand response availability is assumed to be proportional to PJM system load, but DR providers can recruit loads with whatever availability PJM incents, and report that availability in DR Hub.
- The ELCC accreditation method derates DR based on assumptions of energy availability, but leaves the industry no way to respond to the new incentive to recruit 24/365 loads and in turn improve our accreditation.
- DR Hub is the most accurate source of data on the availability of demand response loads to curtail energy.

 Demand Resource Dispatch in ELCC/RRS Model - Example

- If,
  - The simulated hourly load is within the DR performance window and it is a 90/10 load for 2025/26 equal to 167,798 MW,
  - the 50/50 load for 2025/26 is 153,493 MW,
  - and the projected ICAP of DR for 2025/26 is 7,814 MW.
- Then, the amount of DR simulated to be available in the hour is

$$\frac{167,798 \text{ MW}}{153,493 \text{ MW}} \times 7,814 \text{ MW} = 8,542 \text{ MW}$$

# Conclusion

## Short term hour extension, long-term additional fixes

- **Short term:** The MIC should continue with the proposed short-term fix to extend ELRP program hours later into the evening in Winter.
- **Longer term:**
  - Address double-capping of DR enrollments.
  - Run the ELCC model using real availability data for DR as reported in DR Hub, rather than assuming availability is proportional to system load.