Large Load Additions
PJM Conceptual Proposal and Request for Member Feedback

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Overview

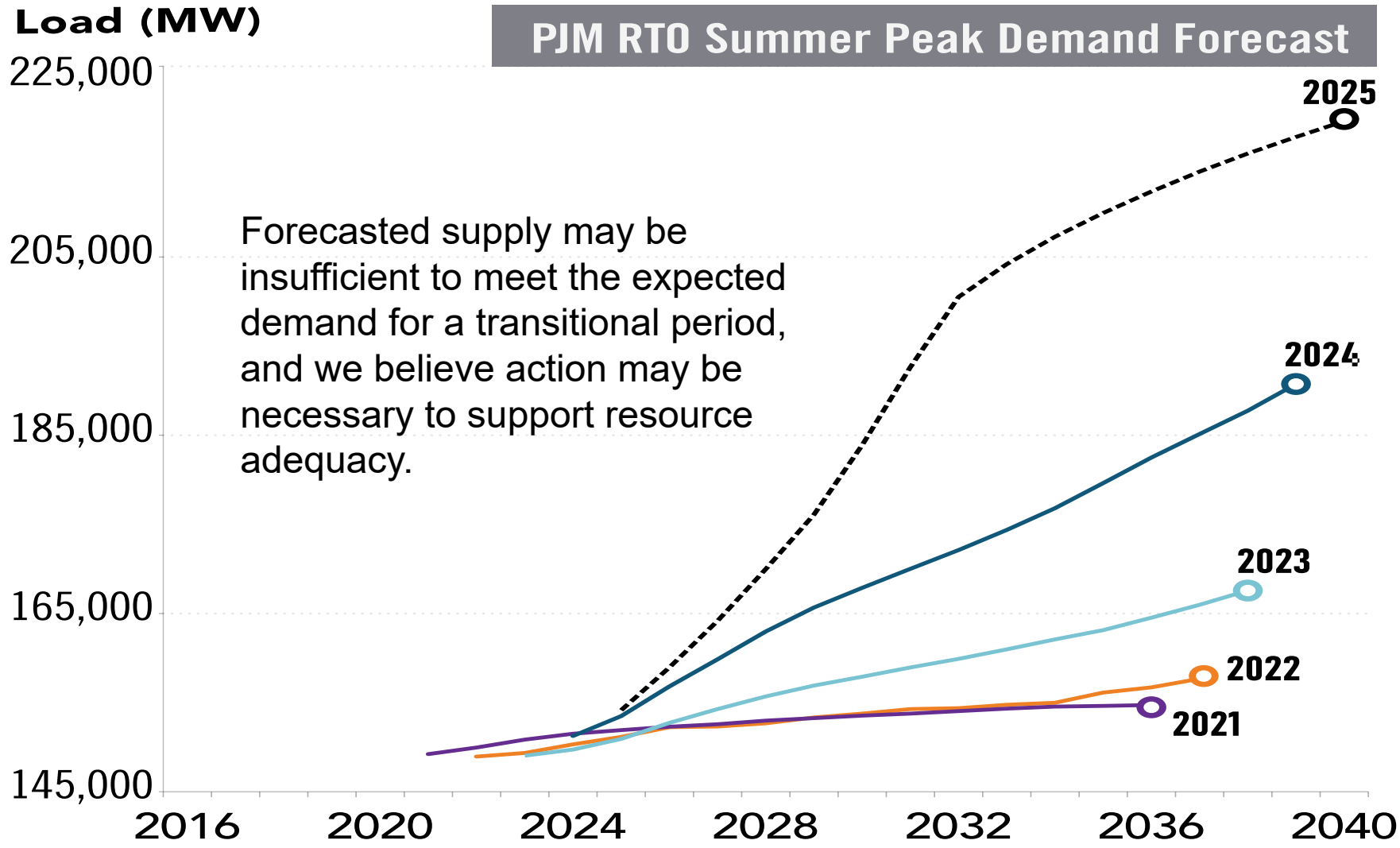
PJM acknowledges the significance of all electricity demand, including data centers, and the need to integrate these large loads efficiently, rapidly and reliably.

The unprecedented growth in electric demand over the next decade associated with large loads provides PJM with a unique opportunity to support economic development and be part of the solution.

The PJM region is an attractive area for large loads to integrate because of its location, size, market opportunities and reliable system.

The rapid rate of projected large load additions over the next several years raises resource adequacy risk for a transitional period in our view and we believe this requires additional actions.

The Case for Action – Rapidly Growing Demand Forecasted



Case for Action – Continued

- PJM's 2022 interconnection queue reform has resulted in the processing of over 140,000 MW of queued generation projects. A total of 46,000 MW of new generation have signed interconnection agreements and are ready to construct. The remaining interconnection transition queue is expected to be completely cleared over the next six to eighteen months.
- PJM's Reliability Resource Initiative (RRI) will process 11,000 MW of additional generation.
- Projects often encounter siting and permitting challenges and supply chain backlogs.
- PJM committed nearly 100% of the supply that was offered to meet the projected needs of customers in the Reliability Pricing Model (RPM) auction for Delivery Year 2026/2027.
- The updated load forecast reflects even tighter conditions, mainly because of the projected integration of large loads.
- PJM Members identified resource adequacy risks as one of PJM's highest priorities.

Objectives of this CIFP Process

Create ways for new large loads to connect as rapidly as possible and at the same time, determine a plan for how reliability is maintained in case there is a resource adequacy shortfall.

Create incentives and operational pathways for incremental loads planning to connect to the system to more directly support rapid build out of new supply to serve their needs.

Enable more efficient utilization of the grid by increasing demand flexibility.

PJM seeks members feedback on these objectives.

PJM Conceptual Proposal Initial Thoughts

PJM proposal discussed today is conceptual

- PJM proposal being developed with consideration of reliability and market impacts in addition to the opportunity to achieve stakeholder consensus for FERC filing in December 2025.

- PJM encourages feedback, both verbally and written, on the proposal and additional options to be considered.

Official proposal and options considered to be provided during initial CIFP meeting. Today's purpose is to share initial thoughts and intake feedback.

Load in PJM already has several options to Procure Capacity

Existing options for load to manage price risk and procure supply

- RPM auction participation
  - Procure supply
  - Participate in Demand Response
- Bilaterally contract with existing generation
- Bilaterally contract with physical and financial intermediaries
- Bilaterally contract with new/incremental generation

Each of these are valuable options that we believe should be preserved

PJM's Proposal would seek to address three additional "pillars"

- Creation of an additional "Non-Capacity-Backed Load (NCBL)" service for new large loads. This could offer significant savings to participants, reduce the quantity of demand in the capacity auctions, and create a clear service priority in case the grid is resource inadequate. Participation would ideally be voluntary, but PJM could assign NCBL obligations to LSEs/EDCs on a mandatory basis if needed. In assigning such obligations, PJM would credit incremental supply & demand response contracted by large loads (BYOG).
- Consideration of priority interconnection pathways for generation resources with offtake agreements with large loads. This could apply to already queued resources or brand new projects.
- Consideration of new demand response products to better match the operating capabilities and business models of the large loads that are now connecting to the grid.

PJM seeks feedback on these and potentially other changes that should be considered.

Proposed Non-Capacity-Backed Load (NCBL) Reliability Backstop

Interim solution until adequate supply is projected to be available

- Solicit voluntary participation in NCBL service in exchange for capacity cost savings.
- Allocate a NCBL requirement to areas to reduce their load requirement for a BRA to achieve a projected supply-demand balance.
- NCBL will not be subject to BRA charges and is intended to provide EDC/LSE's the ability to incentivize load flexibility as required to ensure reliability.
- PJM would direct the NCBL to areas as required to maintain reliability. This includes clarification of priority order, triggering emergency action, and projected hours/year.

Proposed Non-Capacity-Backed Load (NCBL) Reliability Backstop

In the event of expected supply shortages given forecasted large loads that do not elect one of these options, PJM would require sufficient load to be Non-Capacity-Backed Load (NCBL) to maintain the RTO Reliability Requirement.

- Voluntary participation solicited first
- Required participation, if necessary

Non-Capacity-Backed Load (NCBL):

- ***Will not*** be included in RPM auction and will not pay for capacity
- No impact to RTEP (all load included)
- May be curtailed during pre-emergency conditions before capacity backed DR

Operational procedures must be submitted for all nominated Non-Capacity-Backed Load, which may include switching to backup resources.

BYOG and DR are credited in Non-Capacity-Backed Load calculation. Requires Notice of Intent (NOI) and offer in RPM.

Trigger for NCBL

When will Non-Capacity-Backed Load (NCBL) be needed?

NCBL will only be necessary if there is expected supply shortages as a result of Large Load Additions

PJM expects that there will be a transitional period where NCBL will be necessary as a result of the significant integration of large loads. NCBL will not be utilized for organic load growth. Load cannot elect NCBL if there is no reliability requirement shortage.

Triggers

PJM Forecasted Supply < RTO Reliability Requirement

Must be associated with Large Load Additions.

If removal of Large Loads from forecast results in shortage then NCBL will not be triggered for non-Large Loads.

Expected supply includes Large Loads participating in DR and BYOG.

Large Load Additions Criteria for NCBL

What Load Is Eligible for Voluntary or Mandatory Non-Capacity-Backed Load (NCBL)?

Large Load Additions (LLA) submitted via the Load Analysis Subcommittee

Requests of 50 MW or more. LLA are meant to capture trends that are not captured in the model and will ultimately be used to justify decisions to build. Large loads below 50 MW will be considered by PJM upon request from the EDC/LSE on a case-by-case basis.

Exclusions

Large Load Additions identified as critical load are excluded from Non-Capacity-Backed Load eligibility. Critical loads are defined by the State and local utility, and typically include the following.

Essential health and public safety facilities, such as hospitals, police, fire facilities, 911 facilities, wastewater treatment facilities

Facilities providing electric service to facilities associated with the Bulk Electric System, including off-site power to generating stations, substation light and power

Critical gas infrastructure used to supply gas pipeline pumping plants, processing and production facilities, and telecommunication facilities

LLA participating in BYOG and DR are excluded from Non-Capacity-Backed Load obligation (Exclusion up to the accredited quantity of participating BYOG or DR)

Identification of NCBL

Step 1
Load Analysis Subcommittee (LAS)

- Large Load Additions (LLA) Submitted
- EDC/LSE Identifies Voluntary NCBL
- BYOG Identified
- DR (new) Identified

July – December: LLA submissions, review and final determination for inclusion in Load Forecast Report. Includes all planned LLA not in service.

Step 2
RPM Auction

- Shortage Identified
- Voluntary Allocation
- Mandatory Allocation

- Voluntary NCBL allocated by Area (pro-rata) up to shortage
- Mandatory NCBL allocated by area (pro-rata) up to remaining shortage
  - LLA from LAS not in service
  - LLA from LAS in service

Post RPM

EDC/LSE identifies specific NCBL assigned for mandatory, if necessary

NCBL requirements

- Metering
- Operating Procedures

Non-Capacity-Backed Load (NCBL) Process – RPM

Pre-Auction

Incremental Bring Your Own Generation (BYOG), DR and Voluntary NCBL nominations identified

PJM coordination with EDC/LSEs for nominations

RPM planning parameters (status quo)

Notice of Intent (NOI) required for BYOG and DR (Large Loads only)

RPM Auction Conducted

Final RPM supply is compared to RTO Reliability Requirement (RR).

If RPM supply < RTO RR, then PJM allocates voluntary and, if necessary, mandatory NCBL up to level of shortage (RPM RR – RPM supply).

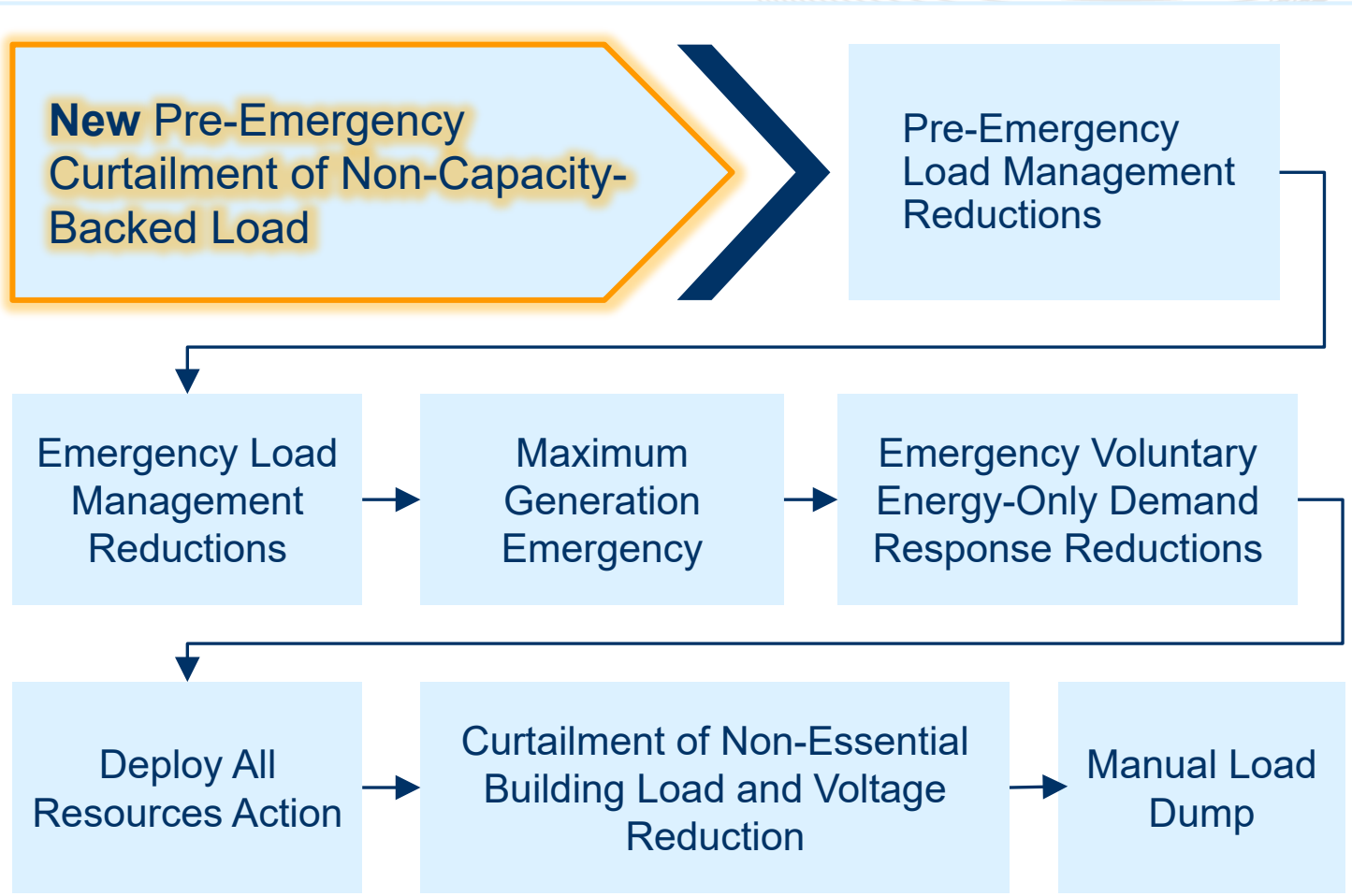
Voluntary and mandatory priority: New Large Load Additions (LLA) (voluntary then mandatory) from load forecast used in existing RPM DY. In-service LLA used only if necessary.

RPM Clears

RTO and impacted LDAs RR reduced and VRR Curve shifted by allocated Non-Capacity-Backed Load

Operational procedures must be approved in advance of delivery year for all NCBL.

Non-Capacity-Backed Load – Operations Changes



Emergency Actions

Operational requirements, including automation, coordination, process, etc., to be determined before start of delivery year

Proposed New Emergency Action Step

- The **Curtailment of Non-Capacity-Backed Large Load** Action is issued by PJM **to the member transmission dispatcher** when the PJM RTO cannot provide adequate capacity to meet the PJM RTO's load and tie schedules or when critically overloaded transmission lines or equipment cannot be relieved in any other way.
- This is a **PJM Operational Instruction** to the member transmission dispatcher to open the load breaker to effectuate the curtailment. (NERC IRO-001-4 R2).
- Operational procedures must be approved in advance of delivery year for all Non-Capacity-Backed Load.

Non-Capacity-Backed Load (NCBL) will be considered PJM Network Load for all transmission-related and settlement purposes.

- NCBL receives the benefit of being served from the transmission system without having to schedule transmission service.
- NCBL is in planning studies and network upgrades are identified to reliably serve the load long term.

NCBL that is curtailed during peak days used in the determination of Network Service Peak Loads (NSPL) will be added back for the NSPL determinations.

Non-Capacity-Backed Load (NCBL) will not be included in the RPM auction and will not pay for capacity for the transition period. To ensure it does not pay for capacity:

- PJM will remove this load from the respective zone's forecasted peak load when determining zonal cost responsibility for the capacity procured in the RPM auctions.
  - Status quo: Each zone with RPM load is responsible for paying for a share of the RTO-procured UCAP based on its share of forecasted peak load.
- EDCs will be responsible for excluding this load from the associated LSE's daily Obligation Peak Load, which is used by PJM to calculate the LSE's UCAP obligation.

Non-Capacity-Backed Load (NCBL) – Responsibilities

Action	Responsibility	Timing
Solicitation of BYOG and Voluntary NCBL	EDC/LSE/LL	Pre-RPM
Reliability check (RR vs. Supply)	PJM	RPM
Identification of quantity and area assigned NCBL	PJM	RPM clearing
VRR and RR shift	PJM	RPM clearing
Contracts between Large Load and EDC/LSE	EDC/LSE/LL	Pre-DY
Operational procedures	TO/PJM/LL	Pre-DY
Adjustment to Obligation Peak Load for Capacity Settlements	EDC/LSE/PJM	Pre-DY
Real-Time Curtailment if necessary	TO/LL/PJM	Real-time

Non-Capacity-Backed Load Proposal – Advantages

Risk of manual load shed significantly reduced

Significant costs savings to participating customers

Coordinated curtailment procedures with Non-Capacity-Backed Load ensures reliable operations

Back-up resources, if available, can ensure zero downtime

No change to RTEP Planning

Provides incentives for participation in BYOG and DR to support Reliability

PJM implementation can be made as early as the 2028/29 RPM auction

(Operation portion effective June 1, 2028)

Load Product Comparisons

	Status Quo:		
	Capacity-Backed-Load	**Demand Response**	**Proposed Non-Capacity-Backed Load**
Participant	EDC/LSE	Load via CSP	LSE/Large Load via EDC/LSE
Load Forecast	Included	Included	Included (with the exception of allocating capacity costs)
RTEP Planning	Included	Included	Included
RPM	Included	Included (supply side)	Not Included
Operations Curtailment Priority	Manual Load Dump	Pre-Emergency	Pre-Emergency before DR
PJM Dispatch Notification of Curtailment	Emergency Procedures website and curtailment directive given to TO for area.	Via the DR Hub System and Emergency Procedures website.	Emergency Procedures website and directive given to TO for curtailment of large load that is NCBL.
Verification	• Part of Operating procedure (Open Breaker) • Telemetry before and after	Measurements	• Part of Operating procedure (Open Breaker) • Telemetry before and after
Type	Permanent	Permanent	Transitional; only available if forecasted resource inadequacy
Quantity	No limit	No limit	Capped at megawatts of shortage
Cost Allocation	Load	DR Participant	EDC/LSE allocates savings (RPM savings) to NCBL

Additional Options Considered

PJM considered impacts to multiple areas and potential options. These areas included the following and are not part of initial PJM proposal.

- Reliability backstop impacts
- NCBL duration: transitional or permanent
- New manual load shed process with no RPM impact
- RPM VRR curve and price impact from NCBL
- Demand Response changes
- Interconnection queue enhancements (large load interconnection queue)

Are there other in scope options to be considered?

Several interconnection pathways already Exist for New Supply

- **PJM's reformed interconnection process** more efficiently and timely process New Service Requests by using a "first-ready, first-served" cycle approach.

- **Provisional service** allows for generating facilities to generate prior to the project base case study year and/or prior to the completion of all required system Network Upgrades under certain study conditions.

- **Reliability Resource Initiative** was a one-time opportunity for shovel-ready resources that can come online quickly and most effectively contribute to reliability.

Several interconnection pathways already Exist for New Supply (cont.)

- **Upgrade Request** process allows developers to fully fund upgrades and begin construction in parallel to the interconnection process. This affords large loads and generation developers the ability to begin construction on critical transmission enhancements needed to accommodate their facilities.

- **Surplus Interconnection Service** is independent of the interconnection queue that provides opportunity to improve the utilization of existing generator interconnection to support system load additions. For example, a storage project could be developed at the same point of interconnection of a solar project to improve utilization of the generator interconnection.

Interconnection Process Concept

PJM is exploring the concept of additional accelerated interconnection pathways for projects contracted with large loads

- Enhanced readiness requirements.
- Enhance transparency and partnership opportunities of tentatively planned resources that have not provided a Notice of Intent (NOI). These are incremental or new resources not yet considered in the Reliability Requirement determination but further along in the queue process.
- Provide step-by-step guidelines to facilitate most efficient path for interconnection.

PJM is seeking feedback on this concept.

Demand Response (Status Quo)

*PJM has a robust **Demand Response program** that new and existing large loads can participate in*.

- When electricity customers participate in demand response programs, they commit to reduce electricity usage in exchange for compensation derived from PJM markets.
- During times of peak stress on the grid, electricity reduction offers can help support grid reliability.
- PJM's Demand Response availability window was broadened from a limited set of hours during summer and winter to around the clock throughout the year. This resulted in an increase of the Demand Response Effective Load Carry Capability (ELLC) from 69% to ~92%.

Demand Response is offered in RPM and the Energy and Ancillary Services Markets (Economic DR)

Demand Response Concept

PJM is exploring the concept of additional Demand Response enhancements to match the capabilities of new large loads.

- Additional Demand Response ELCC class for data centers that reflects the limited duration and reliability of operating backup generation.

- Enhance and educate on existing opportunities to aggregated Demand Response across multiple data centers not geographically at the same location.

PJM is seeking feedback on this concept.

Contact

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Appendix
Examples and References

Example of Allocation Process for Non-Capacity-Backed Load by Area

	A1	A2	A3	A4	A5	Total
Large Load Addition (MW)	2,000	500	1,000	2,000	2,000	7,500
BYOG or DR	500	0	0	0	0	500
Voluntary NCBL	0	0	1,000	1,000	500	2,500
Potential Required	1,500	500	0	1,000	1,500	4,500

	RTO
Reliability Requirement (MW)	135,000
Supply (MW)	130,000
Excess (MW)	-5,000

STEP:

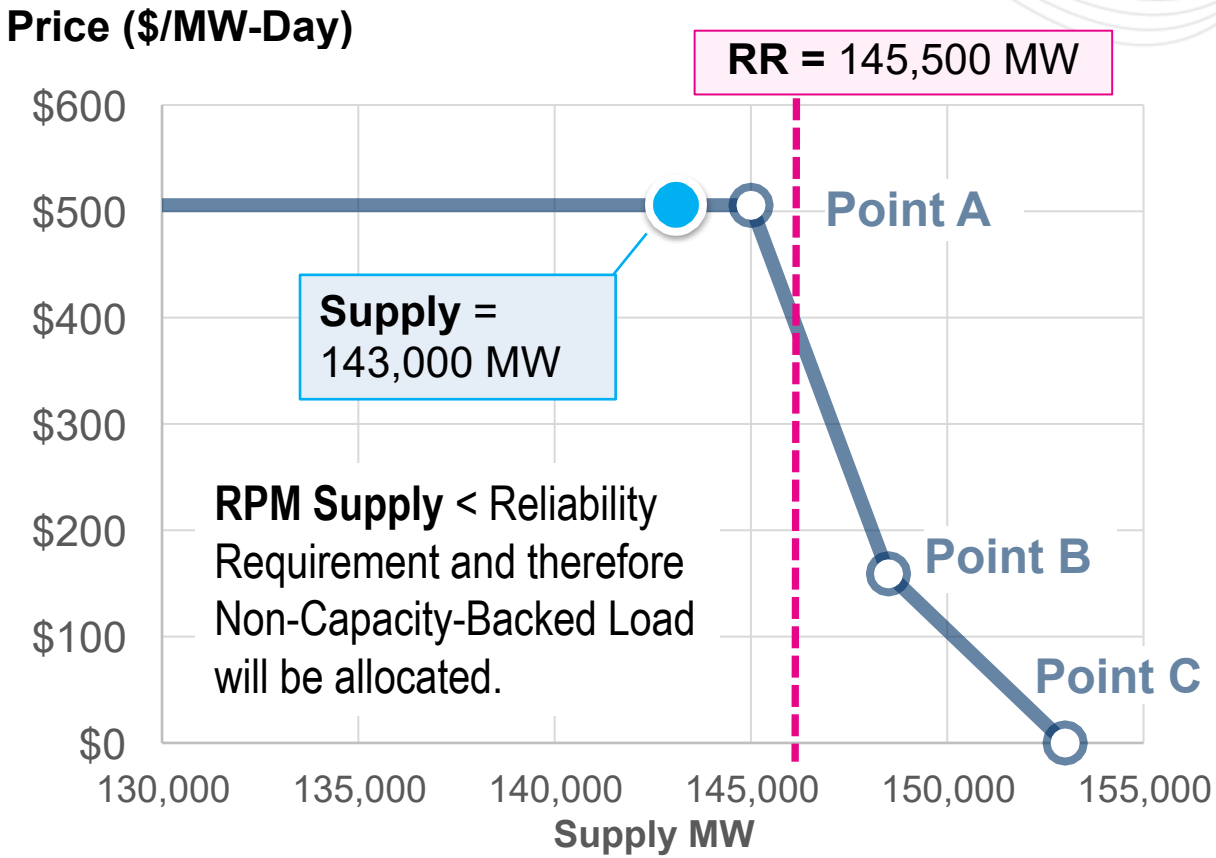
1	Determine if there is an RTO-wide shortage by comparing the RTO Reliability Requirement vs. RPM supply.	**RTO Shortage** = 5,000 MW
2	Award NCBL to Voluntary LL	**Is Voluntary > RTO shortage?** = No
		Award all as follows: A3 = 1,000, A4 = 1,000, A5 = 500.
		Total awarded = 2,500 MW
3	Is there still an RTO shortage?	**Yes, RTO Shortage =** 5,000-2,500 = 2,500 MW

Example of Allocation Process for Non-Capacity-Backed-Load by Area

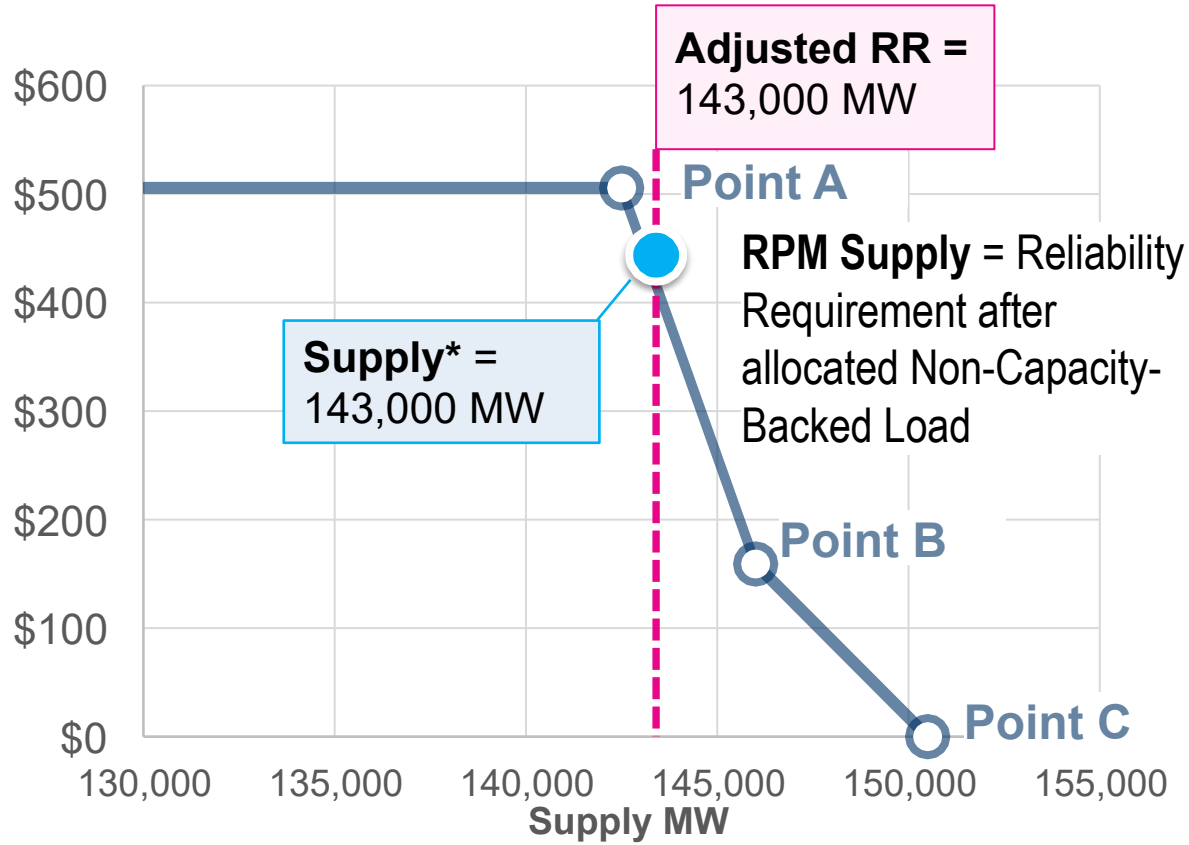
STEP:	Assign pro-rata as follows:
4 Assign Mandatory NCBL.	**A1** = 2,500*(1,500/4,500) = 833.3 MW
	A2 = 2,500*(500/4,500) = 277.8 MW
	A4 = 2,500*(1,000/4,500) = 555.5 MW
	A5 = 2,500*(1,500/4,500) = 833.3 MW
	Total awarded = 2,500 MW
5 Is there still an RTO shortage?	**No**
6 PJM lower the RTO Reliability Requirement and shift VRR Curve by the awarded Non-Capacity-Backed Load.	**Total Allocated Non-Capacity-Backed Load** = 5,000 MW
	RTO Reliability Requirement reduced from 135,000 to 130,000 MW
	RTO Reliability Requirement = RPM supply

Example of VRR Curve Impact With Inclusion of Non-Capacity-Backed Load

Example VRR Curve
Supply < Reliability Requirement



Example VRR Curve
Supply = Reliability Requirement



Key Point: Non-Capacity-Backed Load is allocated for reliability purposes and may result in prices lower than the RPM maximum price (point A).

*RPM supply that cleared before the inclusion of NCBL will continue to clear and if necessary be made whole to their offer.

Non-Capacity-Backed Load Example – Market Impacts

Markets Example: L1 500 MW Non-Capacity-Backed Load

Forecasted Supply
= 146,000 MW

Reliability Requirement
= 150,000 MW

Total System Non-Capacity-Backed Load
= 4,000 MW

L1 Non-Capacity-Backed Load
= 500 MW

Updated Reliability Requirement
= 150,000 MW – 4,000 MW
= 146,000 MW

RPM Results:

RTO clearing Price = $325/MW-day

Cost to Load = $325/MW-day * 365 days * 146,000 MW = $17.3 billion

Cost Savings to L1 Non-Capacity-Backed Load

RPM savings:
= $325/MW-day
= $13.54/MW-hr.
= $118,625/MW-year

Total system yearly RPM savings (4,000 MW non-capacity backed)
= $475 million

Cost▲ to run back-up diesel units:
= $4/gal * 71 gal/MW-hr.
= $284/MW-hr.

Maximum run hr./year of backup unit before loss: = $118,625 / $284
= 417 hr./year

L1 savings if back-up runs 50 hr./year = $104,425/MW-year; Total savings (500 MW Non-Capacity-Backed Load) **= $52 million**

▲ *Assumes back-up diesel average fuel price = $4/gallon and average consumption = 71 gallon/MW-hr. Additional costs to run back-up units costs may apply and not included in this example*

Key Point: At a $325/MW-day RPM clearing price a large load that chooses Non-Capacity-Backed Load could run its back-up diesel units up to 417 hours per year and still be profitable.

Reference Materials

Training Resources: https://www.pjm.com/training/training-resources

Capacity Market

- Capacity Market Manual 18: https://www.pjm.com/pjmfiles/directory/manuals/m18/index.html
- RPM Cost Allocation Education: https://www.pjm.com/-/media/DotCom/committees-groups/task-forces/202cstf/2025/20250722/20250722-item-03---202cstf-rpm-cost-allocation-education---presentation.pdf

Operations

- Emergency Procedures, Manual 13: https://www.pjm.com/pjmfiles/directory/manuals/m13/index.html

Planning

- Large Load Adjustments Process, Manual 19 Attachment B: https://www.pjm.com/-/media/DotCom/documents/manuals/m19.pdf
- Load Adjustment Request Implementation: https://www.pjm.com/-/media/DotCom/committees-groups/subcommittees/las/postings/load-adjustment-request-implementation.pdf
- Load Forecast: https://www.pjm.com/planning/resource-adequacy-planning/load-forecast-dev-process
- Load Analysis Subcommittee: https://www.pjm.com/committees-and-groups/subcommittees/las