

PA House of Representatives

Republican Policy Committee

414, Main Capitol Building Harrisburg, PA 17120 (717) 260-6144

> **Rep. Joshua D. Kail** Chairman

PA House Republican Policy Committee Hearing				
	"Fighting to Keep the Lights On in PA"			
October 1, 2024, at 9 a.m.				
	House Republican Caucus Room Room 418, Main Capitol Building Harrisburg, PA			
9:00 a.m.	Welcome and Pledge of Allegiance			
9:10 a.m.	Stephen Bennett Senior Manager of Regulatory and Legislative Affairs, PJM Interconnection			
9:15 a.m.	Questions for the Testifier			
9:45 a.m.	Closing Comments			



Testifier Biography

PA House of Representatives Policy Committee Hearing

"Fighting to Keep the Lights On in PA"



Stephen Bennett Senior Manager of Regulatory and Legislative Affairs, PJM Interconnection

With over twenty years of experience in the competitive energy industry, Stephen currently serves as the Senior Manager of Regulatory and Legislative Affairs for PJM Interconnection. He has previously held director and senior management positions for several prominent companies, including Energy Advocacy, LLC, PPL Energy Supply/Talen Energy, and Exelon.

Stephen holds a Bachelor of Science degree in Civil Engineering, with an environmental concentration, from the University of Maryland.

Founded in 1927 and headquartered in Valley Forge, Pennsylvania, PJM is a regional transmission organization (RTO) that coordinates the movement of wholesale electricity in all or parts of 13 states and the District of Columbia.





PJM Capacity Market

Pennsylvania House Republican Policy Committee

Stephen Bennett Sr. Manager, Governmental Services

October 1, 2024













PJM's capacity market, also known as the Reliability Pricing Model (RPM), is designed to secure enough power supplies in a cost-effective manner to maintain resource adequacy three years into the future.

PJM's capacity market:

- Is designed to assure future availability of energy resources
- Encourages investment in generation infrastructure
- Involves both generation and demand response capacity resources
- Includes resource accreditation and testing requirements to account for performance of resource classes

Reserve Requirement

PJM calculates how much power will be needed for a particular delivery year.

Locational Pricing

PJM estimates future power requirements by local transmission zone

Accreditation

PJM estimates resource performance during periods of extreme weather conditions and high correlated outage events

PJM's capacity market ensures that enough power is procured, in advance and at a reasonable cost, to maintain reliable grid operations in the future.

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The 2025/2026 BRA cleared enough capacity to meet the RTO reliability requirement, but the reserve margin is lower than prior years and there is minimal uncleared capacity that was offered in the auction.

Dominion and Baltimore Gas & Electric	The auction cleared a diverse mix of resources, including (on a UCAP basis):		
requirements due to load growth and retirements	 48% natural gas 1% wind 21% nuclear 4% hydro 		
 Prices in these LDAs are at the price caps. 	 – 18% coal – 5% demand response – 1% solar 		

Auction results send a clear investment signal across the RTO.

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Primary Contributors to Price Increase and Reduced Excess Capacity

Increase in Capacity Demand

Summer peak load: Increased by 3,243 MW

Installed Reserve Margin (IRM): Increased by 3.1% (from 14.7% to 17.8%)

The IRM would have increased to 17.7% absent the new reliability modeling from the CIFP; 2% of that increase was due to load uncertainty.

Reduction in Capacity Supply

Net reduction: ~6,591 MW ICAP

to meet the increased capacity demand in the RTO (excluding EE)

This tightening occurs regardless of the CIFP changes.

ELCCs for solar and wind are materially lower than resources they are replacing.

CIFP Rule Changes

Net effect is a tightening of supply by: ~2,682 MW UCAP relative to the impact on demand.

New reliability analysis better reflects winter risk and correlated outage effects on supply.

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Supply/demand balance has tightened since the 2024/2025 BRA. – Reduction in supply offers in the auction – Increased projected summer peak load – Increase in IRM – FERC-approved CIFP changes	Annual UCAP offered in the auction (cleared and uncleared) in excess of the reliability requirement has gone from over 16 GW to less than 1 GW.	CIFP changes complicate direct comparisons to prior years.



The system has gotten much tighter since the 2024/2025 BRA.

- This is aligned with the study entitled "Energy Transition in PJM: Resource Retirements, Replacements & Risks" issued in February 2023.
- CIFP changes to risk modeling and accreditation have contributed to this but to a lesser degree than other changes that have occurred.

The capacity market is signaling the need for investment now.

The load forecast and IRM in 2026/2027 are both increasing relative to 2025/2026.



Generation Accreditation

Enhance reliability risk modeling in resource adequacy studies.

Improve capacity accreditation to reflect resources' contribution during periods of risk.

Maintain the **capacity performance framework but enhance** the rules and testing requirements.

Improve other areas of the market construct, including balanced **market power mitigation** rules.

The following table provides the <u>ELCC Class Ratings</u> applicable to the 2025/2026 Base Residual Auction (BRA) as calculated under the methodology approved by FERC on Jan. 30, 2024, in FERC Docket No. ER24-99.

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	2025/2026 BRA ELCC Class Ratings
Onshore Wind	35%
Offshore Wind	60%
Fixed-Tilt Solar	9%
Tracking Solar	14%
Landfill Intermittent	54%
Hydro Intermittent	37%
4-hr Storage	59%
6-hr Storage	67%
8-hr Storage	68%
10-hr Storage	78%
Demand Resource	76%
Nuclear	95%
Coal	84%
Gas Combined Cycle	79%
Gas Combustion Turbine	62%
Gas Combustion Turbine Dual Fuel	79%
Diesel Utility	92%
Steam	75%

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PJM's capacity market ensures that enough power is procured, in advance and at a reasonable cost, to maintain reliable grid operations in the future.

Capacity Market Supports Reliability

PJM's capacity market, also known as the Reliability Pricing Model (RPM), is designed to secure enough power supplies in a costeffective manner to maintain resource adequacy three years into the future. Put simply, the market pays participants for the promise to produce electricity when called upon by PJM.

Capacity resources include generators that produce electricity and other resources, such as demand response, which incents consumers to reduce electricity use and help operators keep the supply and demand for electricity in balance.

To meet federally mandated reliability requirements, a utility that delivers electricity to end-use customers must have the resources available to meet customers' demand. Utilities must also secure reserves necessary for emergencies. PJM utilities meet these mandates with capacity they own, capacity purchased elsewhere or capacity procured from the capacity market.

PJM's capacity market:

- Is designed to assure future availability of energy resources
- Encourages investment in generation infrastructure
- Involves both generation and demand response capacity resources
- Includes resource accreditation and testing requirements to account for performance of resource classes

How the Auction Price Is Set

In a capacity market auction, PJM first accepts offers to provide power at the lowest cost. As the auction progresses, PJM accepts progressively higher-priced offers until enough capacity is assembled to meet the projected reserve requirement for the future delivery year. At that point, when the auction clears, all sellers receive the last or "marginal" offer price. This marginal price is also known as the auction clearing price.

The History of the PJM Capacity Market

Before 2007, PJM used a short-term capacity model that was characterized by low prices and significant investor risk. It neither encouraged enough investment in new generation in the needed locations nor procured enough supply to meet future energy demand. Areas of PJM faced the prospect of insufficient resources to serve customers in the future. As a whole, PJM had enough generating capacity. However, the pace of generation development had slowed because revenues were low. There was not enough financial incentive and too much uncertainty to attract necessary investment in new power resources. Low prices had also forced generation to retire in certain areas.

Three-Year-Forward Auction Fosters Competition

Since 2007, PJM's evolving capacity market has used the power of markets to commit enough resources to meet future reliability targets. The three-year-forward auction allows for competition between existing and new resources while attracting participation from across the PJM region. This design creates a wide scope for the market and provides transparent price signals to attract investment and induce less efficient resources to retire.

Key Capacity Market Design Principles

Forward Auction

Capacity auctions procure enough power to meet resource adequacy targets three years ahead. Power resources receive payment during the delivery year they committed to be available.

Reserve Requirement

PJM calculates how much power will be needed for a particular delivery year. Elements of this market design reduce investor risk and help to lower the price for all capacity acquired in the auction.

Locational Pricing

PJM estimates future power requirements by local transmission zone and ensures that capacity resources can safely deliver power to specific areas inside of local transmission limits.

Accreditation

PJM estimates resource performance during periods of extreme weather conditions and high correlated outage events to determine how each capacity resource class can be relied upon to provide energy in every hour of the year across all potentially actionable scenarios. Resources are also tested for performance during summer and winter. In 2024, the Federal Energy Regulatory Commission accepted a new, more accurate method for PJM to value a resource's contribution to reliability. It is called Effective Load Carrying Capability, or ELCC.

Must-Offer Requirement

Most generation capacity resources must offer into the capacity auction, unless PJM approves an exception with input from its market monitor.

Market Seller Offer Cap

The Market Seller Offer Cap (MSOC) ensures that resources do not exercise seller-side market power to inflate clearing prices. Rules set the cap at a value that subtracts a resource's historic net energy and ancillary service market revenue from its Avoidable Cost Rate (ACR). The ACR reflects the cost incurred by the resource if it is not used for the delivery year and excludes all expenses included in cost-based energy offers. Resources may use a default ACR if one exists or request a resource-specific ACR. All resource-specific MSOC values are reviewed by PJM and its market monitor.

July 16, 2024

Operations

Generator Production

Emissions Data

⊅ ∙pjm	Executive S 2023 Pennsylvania State Infra	UMMARY astructure Report
	In the Pennsylvania service territory:	
Existing Capacity:	 In Pennsylvania, natural gas represents 52% of the total installed capacity represents 20% and coal 17%. 	while nuclear
	 In PJM, natural gas and coal are 48% and 22% of total installed capacity, v represents 18%. 	while nuclear
Interconnection Requests:	 Solar represents 74% of new interconnection requests while storage reprenew requests. 	sents 24% of
Deactivations:	 1,936.6 MW of generation deactivated in Pennsylvania in 2023. 	
	An additional 760 MW of generation announced its intention to deactivate i	in future years.
RTEP 2023 :	Pennsylvania's 2023 RTEP project total represents approximately \$898.47 m investment.	illion in
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⊅ ∙pjm	Executive Summary 2023 Pennsylvania State Infrastructure Report
	In the Pennsylvania service territory:
Load Forecast:	Pennsylvania's summer peak load growth is projected to range between 0.1% and 2.0% annually over the next ten years, while the winter peak is projected to increase by 0.1% to 2.1% percent, depending on the transmission zone.
Capacity Market:	No Base Residual Auction was conducted in 2023. For the most recent auction results please see the 2022 Pennsylvania Infrastructure Report.
Market Performance:	Pennsylvania's average hourly LMPs were lower than the PJM average hourly LMP.
Emissions:	Pennsylvania's average CO_2 emissions decreased in 2023 compared to 2022 levels.

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Pennsylvania – 2023 Generator Deactivations

Unit	TO Zone	Fuel Type	Request Received to Deactivate	Actual or Projected Deactivation Date	Age (Years)	Capacity (MW)
EDDYSTONE 4	DECO	Oil	12/1/23	5/31/2025	53	380
EDDYSTONE 3	FEGU					380
HOMER CITY 3	PENELEC	Coal	3/31/23	7/1/2023	46	650
HOMER CITY 2					54 -	614
HOMER CITY 1						620
Martins Creek CT 1					18	
Martins Creek CT 2	ΓΓL	UII	2/10/2022	6/1/2023	50	17.3
Martins Creek CT 4	PPL	Natural Gas				17.3

Planning Transmission Infrastructure Analysis

For reporting purposes, the 2023 state infrastructure reports provide maps displaying all baseline, network, and supplemental projects for the respective state. The reports also include aggregated project costs for each type of project within each state. The costs listed in the state infrastructure reports and 2023 Annual RTEP Report are not indicative of each project's cost allocation.

For a detailed list of each project shown on a state's project map, please see that state's section in the **2023 Annual RTEP Report** on PJM.com: <u>https://pim.com/-/media/library/reports-notices/2023-rtep/2023-rtep-report.ashx</u>.

The complete list of all RTEP projects in PJM, including those from prior years, can be found at the **RTEP Upgrades & Status – Transmission Construction Status** page on PJM.com: <u>https://www.pjm.com/planning/m/project-construction</u>.

Note: Baseline upgrades are those that resolve a system reliability criteria violation. Baseline projects listed in the annual RTEP report reflect project costs within a specific location and are not indicative of the project's cost allocation.

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Pennsylvania Network Projects (as of Dec. 31. 2023) 92 m Mox Susquehanna Sunbury airview Energy Cente 10 20 Energy Resource The 2023 RTEP has Lion \$75.13 million in network upgrades located in Ple Pennsylvania. Dominion Note: Network projects are new or upgraded facilities required primarily to eliminate reliability criteria violations caused by proposed generation,

Note: Network projects are new or upgraded facilities required primarily to eliminate reliability criteria violations caused by proposed generation, merchant transmission or long-term firm transmission service requests, as well as certain direct connection facilities required to interconnect proposed generation projects. The costs of network projects are borne by the interconnection customer.

Note: Supplemental projects are transmission expansions or enhancements that are not required for compliance with PJM criteria and are not state public policy projects according to the PJM Operating Agreement. These projects are used as inputs to RTEP models, but are not required for reliability, economic efficiency or operational performance criteria, as determined by PJM.

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