ENERGY & CLIMATE

What Happened in the 2023/2024 PJM Capacity Auction?

2023/2024 PJM Capacity Market Prices

PJM overall cleared at $34.13 per megawatt (MW)-day. BGE, MAAC, and DPL-South were somewhat higher. All zones were priced significantly lower than in the prior auction.

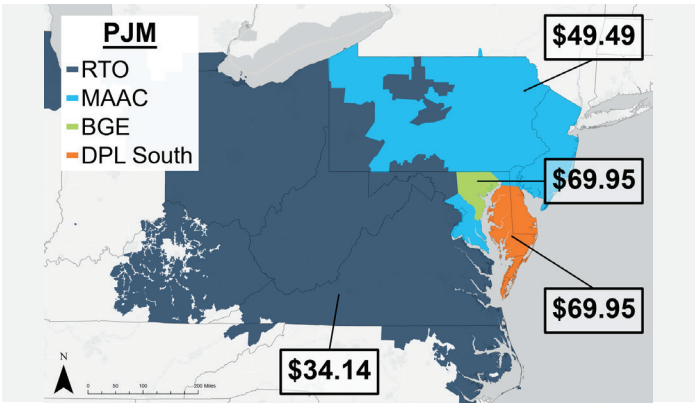

Figure 1. PJM Auction Clearing Prices

Source: Image adapted from PJM Interconnection, "PJM Capacity Auction Secures Electricity Supplies at Competitive Prices." (June 21, 2022).https://insidelines.pjm.com/pjm-capacity-auction-secures-electricity-supplies-at-competitive-prices/

What Drove the Continued Very Low Prices?

Auction timing and bidding behavior were the largest drivers of low market prices. Regulatory changes such as the revised minimum offer price rule (MOPR) likely had some impact, but not enough to explain $34/MW-day clearing prices.

BRG Energy & Climate professionals estimate that approximately 25,000 MW of resources are underwater at these prices, even with the currently elevated energy revenues. A further 10,000 to 15,000 MW of nuclear and renewables cleared that have other sources of revenues, such as renewable energy certificates (RECs) or state subsidies.

This means that many resources are bidding lower than their "missing money" in order to guarantee clearing. These tend to be peaking fossil units that make little energy margin, even in a high-priced period.

BRG professionals believe that the timing of the auction to be only one year before delivery drives bids. Essentially, resource owners fear not clearing and receiving no revenue, and there is insufficient time to use the auction price to drive retirement decisions for many resources.

The past base auction and incremental auctions demonstrate the basis for this fear:

- The 2022/2023 auction cleared at $50/MW-day, with ~22,000 MW uncleared.
- The uncleared resources either retired or entered the incremental auction in February 2022. This cleared at $19 with ~12,000 MW participating and ~6,000 MW clearing.
- This likely convinced even more marginal resource owners to modify their bids to get something in the 2023/2024 base auction—lowering the prices still further.
- Fundamentally, it makes sense for marginal resource owners to act as price takers because of the expectation that other marginal resource owners will do the same.

How long will this dynamic last? In PJM, 12,000 MW uncleared is historically low, suggesting that it may be a tighter market than prices suggest.

Impact of Bid Changes

Bidding behavior has such a large impact because the PJM demand curve is steep. Approximately 2,100 MW of cleared capacity separates $34/MW-day from $100/MW-day clearing price. Just a few bidding changes can have outsized impact on market prices.

The fundamental question is how much longer marginal participants will accept losing money to raise prices.

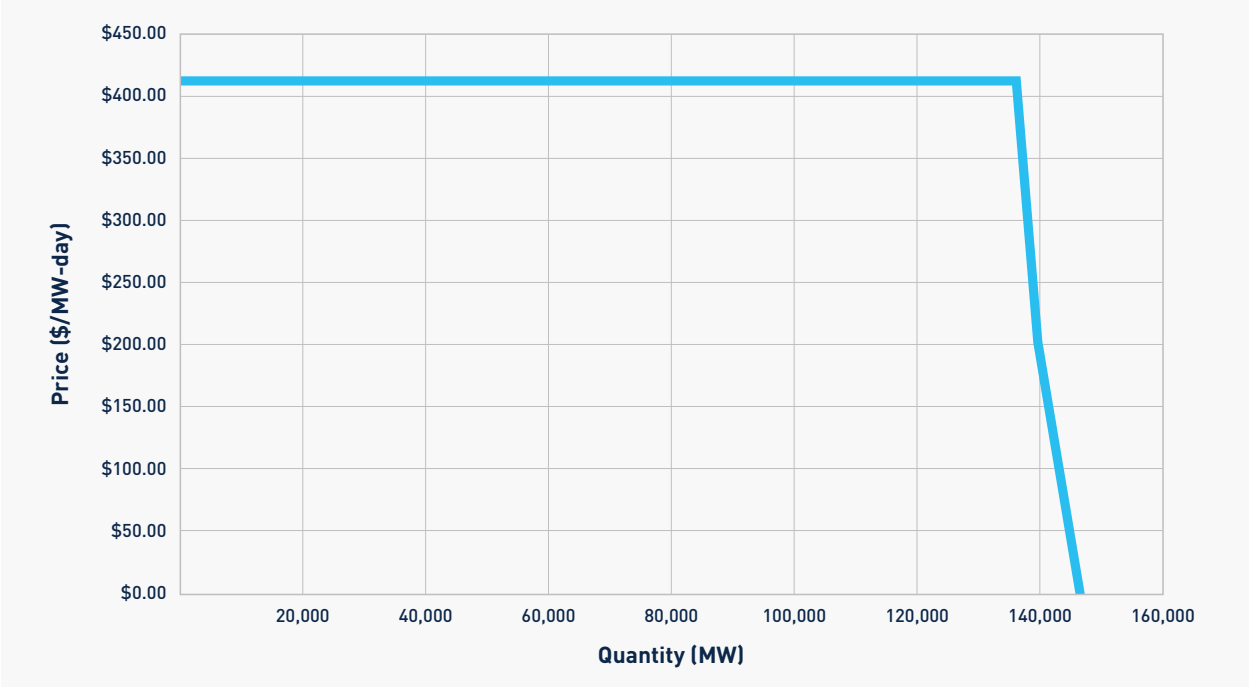

Figure 2. PJM Capacity Demand Curve

Other Regulatory Changes

PJM made other regulatory changes, but BRG professionals do not believe that these had nearly as severe an impact as auction timing and bidding behavior.

MOPR	- The weakened MOPR allowed nuclear units to clear that otherwise may have been subject to the MOPR. This was particularly relevant in COMED. - Only 76 MW of resources were impacted by the current MO.
MSOC	- Our analysis assumes that units bid their actual costs, and this has benchmarked well to historical results. - The MSOC may have had a small impact if non-zero were below their avoidable cost rate (ACR).
EAS Offset	- Going back to the prior methodology, this is a change of using a historical rather than forecast energy and ancillary services offset. - Given rapidly increasing energy margins for many units, this would have little to a potentially positive impact on capacity prices.
ELCC	- Changing the methodology by which renewable units' capacity value is determined resulted in a slight decrease in the total capacity value of renewables. - This had little impact on the results.

INTELLIGENCE THAT WORKS

Key Takeaways for Eastern PJM Portfolio

Eastern PJM prices separated because those markets are tighter than the rest of PJM with diminishing uncleared capacity.

Region	Separated?	2022/2023 uncleared	2023/2024 uncleared
MAAC	Yes, from RTO	~6,500 MW	~4,800 MW*
EMAAC	No, from MAAC	~3,400 MW	~900 MW*
BGE	Yes, from MAAC	~350 MW	~450 MW

** historically low uncleared capacity*

Retiring or changing the bid of 500 MW of MAAC capacity would have caused prices to increase 60 percent to approximately $80/MW-day. EMAAC and BGE are even more sensitive to changes in resources or bid strategy.

The challenge and question for assets in this region are whether enough capacity will change bids or pull out of the market going forward to cause the market to rebound. The near-term results of any particular bidding strategy depend on what the other regional participants do.

Expectations Going Forward

The bid dynamics of the next few auctions are highly uncertain. A large quantity of generation in PJM is underwater at these prices, but it will be a few years before the auction returns to being a full three-year-forward auction.

THE BEARISH CASE

- The next PJM auction is in December, only 1.5 years ahead of the delivery period.
- The same bidding behavior could continue, and without retirements being announced, the supply/demand balance and resulting prices would stay suppressed.
- If few units announce retirement plans in the next six months, that would be a sign that this case is likely.

THE BULLISH CASE

- PJM is actually tighter than prices suggest. Only 12,000 MW uncleared capacity means only a few retirements/bid changes would have an outsized impact.
- Prices could rise rapidly back to low $100s/MW-day if this occurred.
- If there are retirements/announcements that plants are exporting capacity to neighboring regions, combined with tight incremental auctions, that would be a sign that this case is likely.

THE MISO/P10 CASE

- Recent extremely high MISO prices show what happens when a capacity market tightens after a long period of suppressed prices.
- Because the PJM capacity curve is so steep, prices could rise to historically high levels with a combination of many retirements plus load growth plus lack of faith in the auction by potential financers of new builds.
- In the 2024/2025 auction, this case is unlikely but possible if the market overreacts to the current low prices and PJM demand grows materially.

BRG Energy & Climate Practice

We work with clients to:

- Identify, manage, and mitigate risk
- Optimize capital deployment and performance
- Capture value in an increasingly complex and competitive global energy marketplace

Power and Renewables

- Comprehensive advisory services for all asset classes to help clients understand and manage the requirements and impacts of renewable integration and energy transition across the power sector.

Clean Fuels

- Mastering the environmental, economic, commercial, and financial opportunities and challenges across production, delivery, marketing, and consumption.

Upstream

- Seasoned expertise provided by strategists, engineers, geologists, valuators, and financiers to help clients achieve sustainable growth through responsible contributions to the energy transition.

INTELLIGENCE THAT WORKS

Our Team

VIR CHAHAL

Managing Director | *Washington, DC*

Amanvir (Vir) Chahal has fifteen years of experience assisting stakeholder decisions in the power sector. His expertise includes wholesale energy, capacity, and ancillary services markets, transaction support, power-market entrant strategy, and renewable integration studies.

Mr. Chahal has performed dozens of market due diligence transaction support engagements for developers, investors, utilities, and power generation owners using portfolio optimization, production cost simulation, and dispatch models. He is also an expert in renewable integration studies, avoided cost studies, state energy and resource adequacy planning, and energy storage modeling. He has testified before regulatory commissions on topics including transmission benefits quantification.

Mr. Chahal has a deep understanding of market rules and regulations and the fundamental drivers of power markets. He uses these skills to help clients assess the value of power generation assets and shape their portfolios to best meet their financial, reliability, regulatory, and environmental needs.

MATTHEW TANNER

Managing Director | *Washington, DC*

Matthew Tanner, PhD, has over twelve years of experience advising clients across the power-sector value chain on strategy, risk, and planning matters. His expertise includes renewable integration, market transformation, power systems' modeling and forecasting, utility resource planning, and risk simulation. He advises clients on market opportunities, risks of changing market structures, resource planning, and investment strategy under uncertainty.

Dr. Tanner provides highly analytical and creative approaches for utilities, investors, independent power producers, and other market participants to evaluate emerging market opportunities and adapt their business models as decarbonization drives market changes. He has deep expertise in modeling power markets, optimizing generator portfolios, and assessing the impact of technology on the power sector. He helps clients understand underlying market drivers and regulatory and technological changes in the power sector and helps utilities operate their systems reliably, reduce emissions, and minimize cost.

In recent years, Dr. Tanner has worked with both developers and utilities to understand the future requirements to maintain power system reliability as intermittent renewable generation increases on the system. He has testified before state utility commissions on renewable integration requirements. He has worked with developers and investors to understand how the capabilities of flexible resources such as storage, gas, and hydro can meet system requirements and how future market constructs might value such capabilities.

About BRG

Berkeley Research Group, LLC (BRG) is a global consulting firm that helps leading organizations advance in three key areas: disputes and investigations, corporate finance, and performance improvement and advisory. Headquartered in California with offices around the world, we are an integrated group of experts, industry leaders, academics, data scientists, and professionals working across borders and disciplines. We harness our collective expertise to deliver the inspired insights and practical strategies our clients need to stay ahead of what's next.

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