

Explanations for the 2025 PJM Electric Price Crisis

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Statement:

In June of 2025 New Jersey customers' electric bills jumped by 18% on average. This was not a New Jersey problem; it happened throughout the territory of the grid operator PJM, whose territory encompasses 13 states and D.C., and includes 20% of the U.S. population. These states have no jurisdiction over PJM. PJM is under federal *jurisdiction* (FERC), but PJM is *governed* by its members. 80% of its voting is controlled by energy companies.

The root causes of the price increase are artificial, could easily have been avoided, and could be reversed.

PJM and its member companies are responsible for the price increase, which resulted from a PJM auction in October 2024 for capacity payments, and two subsequent auctions. PJM created the market and the auction rules, and manipulated the parameters of the 2024 auction and the two subsequent auctions.

NJ Gov. Murphy and other PJM region governors are currently working together to craft solutions to the problem.

The authors of this analysis describe in detail the root causes of the problem, and suggest solutions.

Note: Annotations shown in red in graphs and images are by the authors of this document

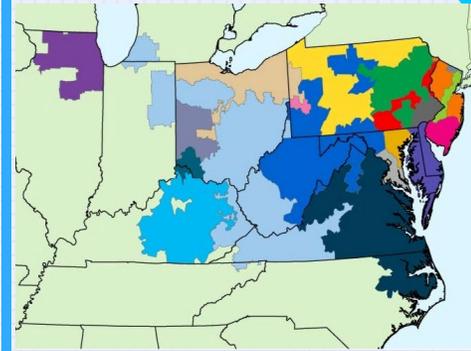


Figure 2 RTO market supply/demand curves: 2025/2026 RPM Base Residual Auction¹⁷

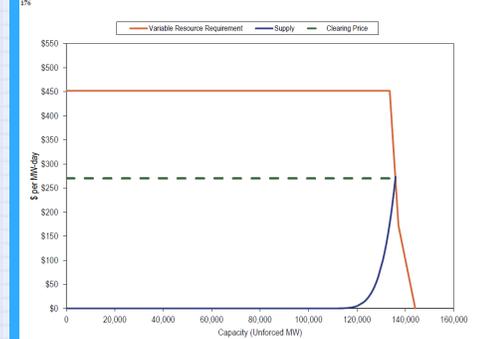
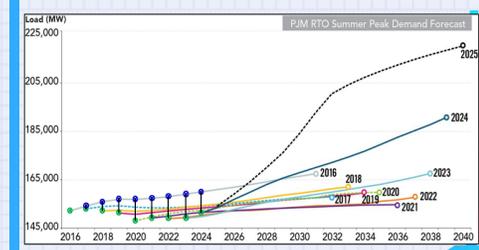
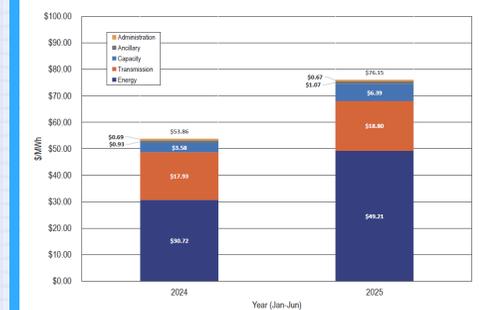
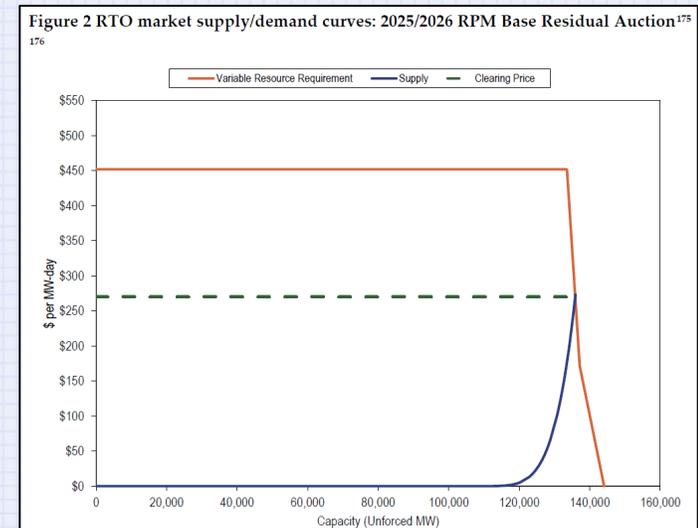


Figure 1-3 Total cost per MWh by category: January through June, 2024 and 2025



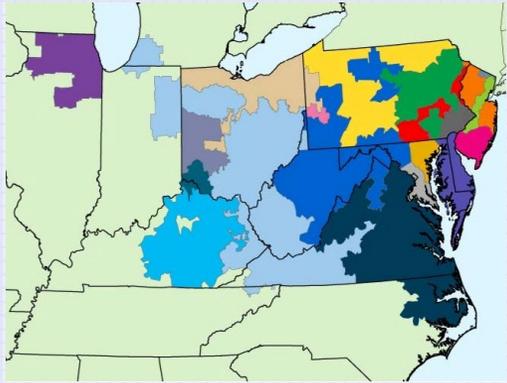
CAUSES OF PJM PRICE HIKES: PJM MARKET MANIPULATION

1. PJM created the capacity market structure with a structure that virtually guarantees higher capacity prices (“Single Clearing Price Mechanism”)
2. PJM exaggerated the predicted demand, and also applied a long-term growth scenario to a 10-month actual time period.
3. PJM improperly reduced the eligible capacity by slashing the “ELCC” ratings for several important capacity categories, including the largest source, natural gas.
4. PJM then continued accepting bids beyond the parameters they had set up, causing a dramatic, further increase in capacity prices.



SUMMARY OF FINDINGS

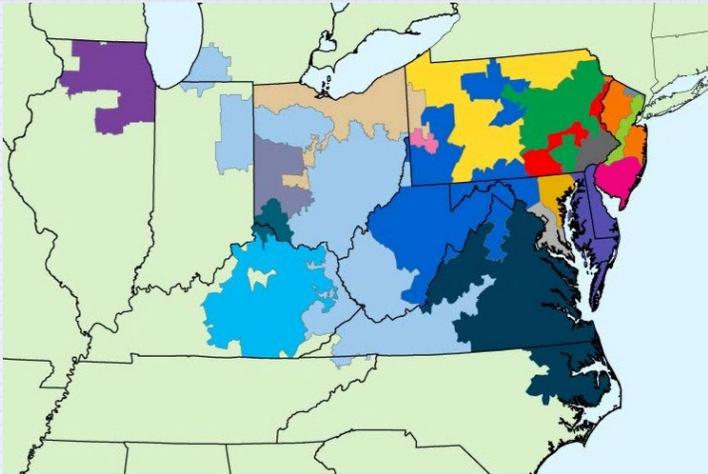
Territory of PJM Interconnection, LLC



- In New Jersey this June, **electric prices jumped by an average of 18%**.
- This was not just a New Jersey problem. **It occurred over a region** encompassing 20% of the U.S. population, across 13 states and D.C. The price hikes were caused primarily by market manipulation by **PJM**, the regional grid operator, who runs the wholesale energy markets for the region.
- **States do not have jurisdiction over PJM.** The Federal Energy Regulatory Commission (FERC) has jurisdiction; but PJM is governed by its members.
- **PJM voting is dominated by energy companies, who control 80% of the voting.** In turn, PJM's decisions determine those companies' profits. **It's a fundamental conflict of interest; "the fox is guarding the henhouse"**.
- PJM operates a "capacity market" that is supposed to provide funds to bring new generating capacity into the market and fill a "gap" in revenue provided by PJM'S energy market. The October 2024 capacity auction caused a **9.3X increase in those capacity costs**. PJM is responsible for the auction design and for factors that determine price each year.
- **Lack of adequate capacity resources was not an important cause of the increase. Neither was actual demand** (NJ demand dropped by 6% over the past 6 years, and PJM-wide demand dropped by 4.9% over a similar period). The real causes were entirely artificial, based on market manipulation by PJM.
- The capacity market costs will impose a **\$31 billion burden** on PJM ratepayers over the next two years. **None of that money will go to build new capacity resources.** All of it will go to old power plants. 2/3 of the capacity resources in PJM are over 20 years old.
- There are a number of **solutions that really could roll back the price increases.**
- According to NJ BPU, the price hikes would have been 60% worse if it had not been for solar & onshore wind in PJM.

Who is PJM?

PJM is the nation's largest RTO (Regional Transmission Organization). It controls the transmission system and wholesale electric energy markets for all or parts of 13 states and D.C., a territory that includes 20% of the U.S. population.



Mission

As the primary task, to ensure the safety, reliability and security of the bulk electric power system.

Understand customer needs and deliver valued service to meet those needs in a cost-efficient manner.

Create and operate robust, competitive and non-discriminatory electric power markets.

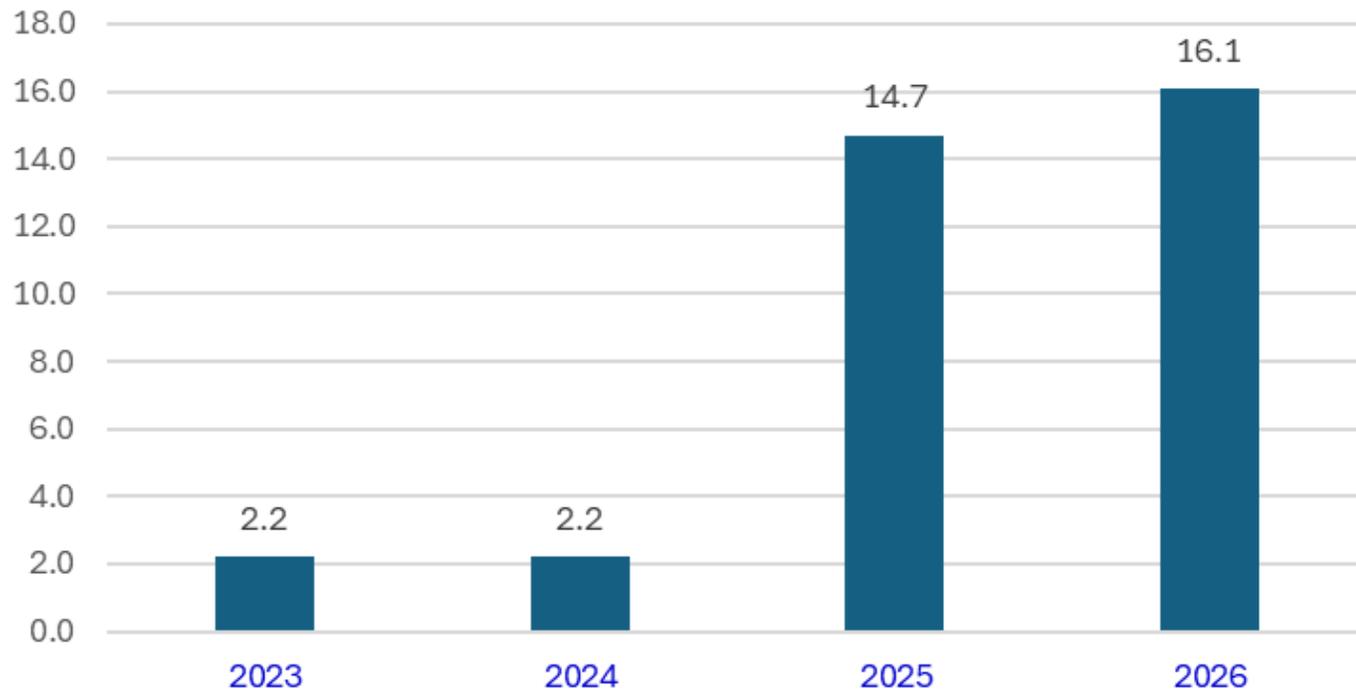
Achieve productivity through the efficient union of superior knowledge workers and technology advances.

- PJM's stated primary mission is "to ensure the safety, reliability, and security" of the grid.
- **States do not have jurisdiction over PJM.** The Federal Energy Regulatory Commission (FERC) has jurisdiction, but PJM is governed by its members.
- PJM voting is divided into 5 categories. 4 of the 5 are for energy companies, and one is for state consumer agencies. Each category votes separately on matters, then each category has one vote. Thus, **energy companies control 80% of the voting. In turn, these decisions determine these companies' profits. It's a fundamental conflict of interest; "the fox is guarding the henhouse"**.
- The wholesale cost of electricity is primarily composed of three elements – energy costs, transmission costs, and capacity costs.
- The electric price shock of 2025 was primarily caused by a 9.3X increase in the PJM capacity price, based on an Oct. 2024 PJM auction. It is a highly artificial market.
- This presentation focuses on root causes of the 2025 price increase. It concludes that PJM practices appear to be focused more on producing desired price levels than ensuring reliability. PJM market manipulation is directly responsible for the increases.

IT'S A REALLY BIG DEAL

PJM CAPACITY MARKET – \$26.4B IN INCREASED COSTS OVER 2 YEARS, \$30.8B TOTAL

The cost of PJM's capacity auction in \$billions



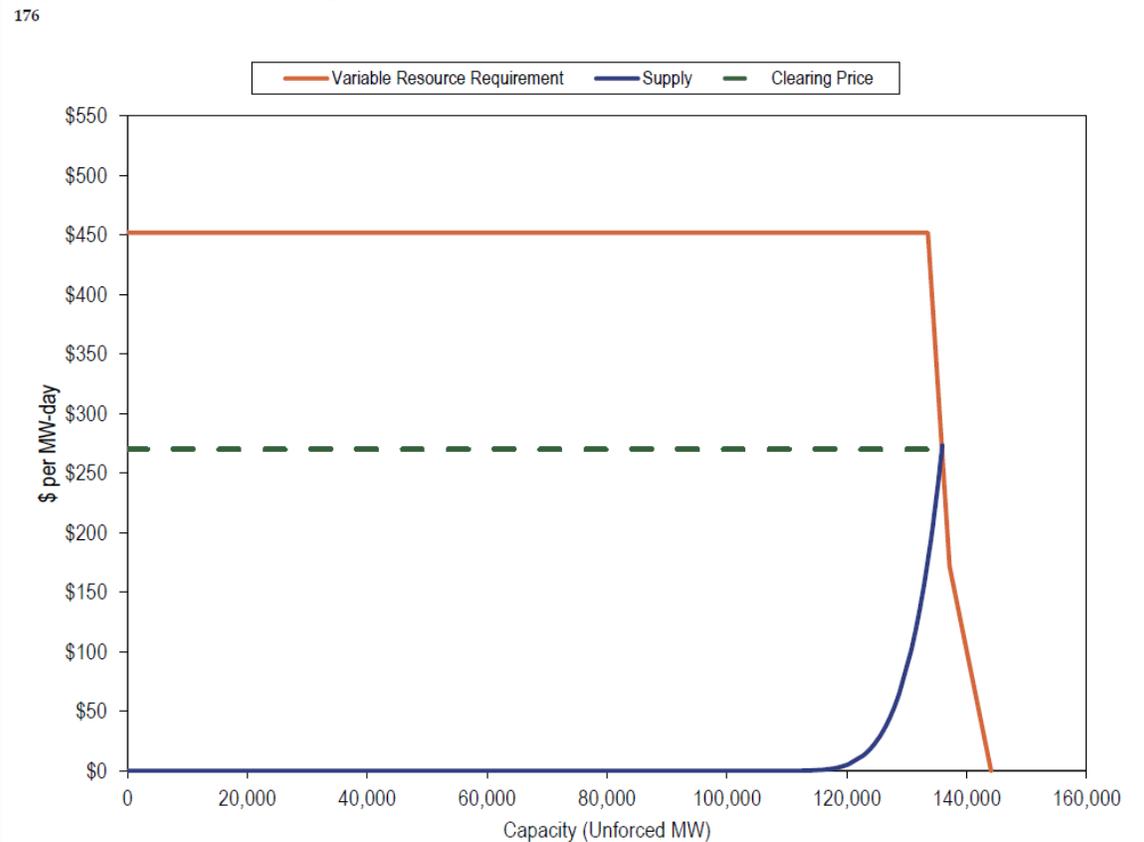
Data Source: PJM

- In New Jersey this June, because of the artificial spike in capacity costs, **electric prices jumped by an average of 18%**.
- The **\$31 billion** in capacity costs over the next two year will not go to new capacity resources. All of it will be paid to existing power plants.
- 2/3 of the capacity resources in PJM are over 20 years old.

THE PJM CAPACITY MARKET – PROBLEMS TOP TO BOTTOM*

* *and lack of adequate capacity is not the cause of the crisis.*

Figure 2 RTO market supply/demand curves: 2025/2026 RPM Base Residual Auction¹⁷⁵



Source: Monitoring Analytics

PJM Issues

1. The **capacity auction design** is flawed (Single Clearing Price), creating prices that are far higher than needed, and creating extreme volatility.
2. PJM inappropriately **inflated demand**.
3. PJM inappropriately **deflated eligible supply**.
4. **False timing** – increased costs are not paid to new resources, they just add profit to old ones.
5. Due to large increases in the energy component of wholesale power prices, **the capacity market is no longer needed** for most generation resources.

1. The capacity auction design is fundamentally unsound (Single Clearing Price) (1 of 3)

PJM CAPACITY MARKET – EXTREME VOLATILITY

In a joint legislative hearing in NJ, a PJM official was being grilled by a legislator about the capacity price explosion, and he said, “you must understand that the capacity auction is extremely sensitive to small changes”

But why is that?

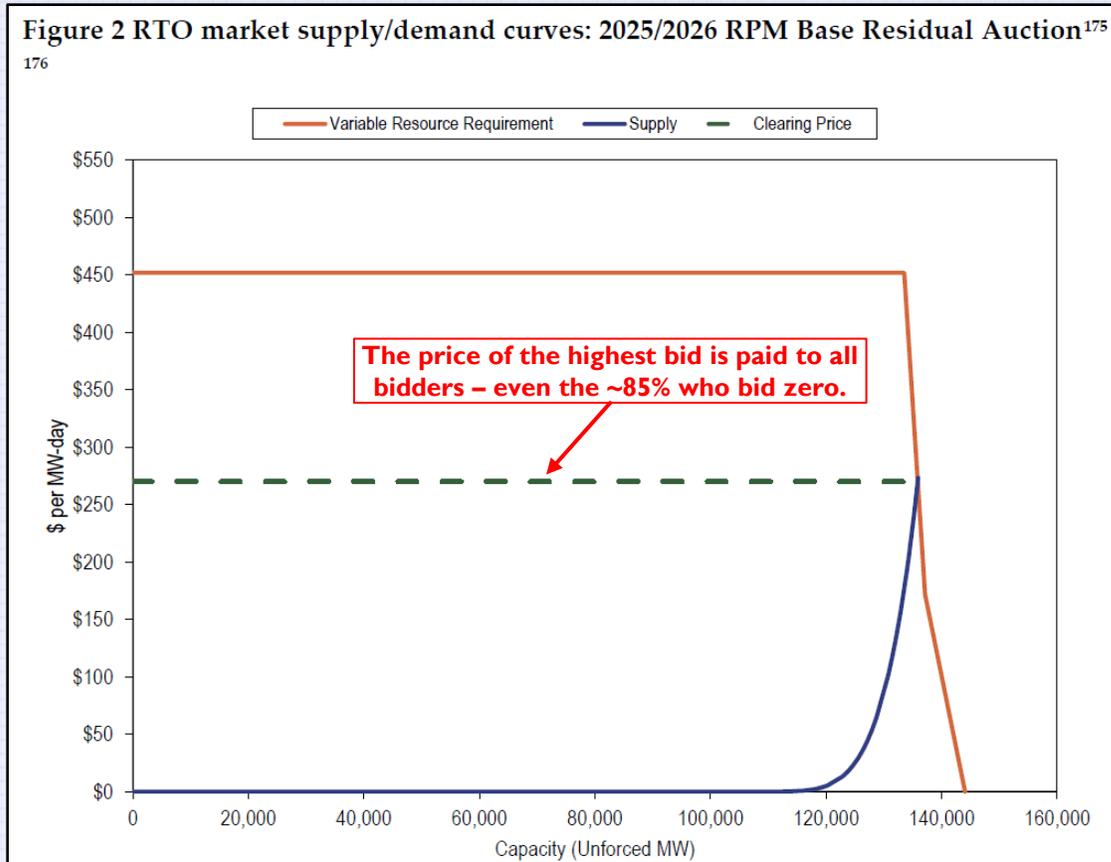


This chart shows the volatility of the PJM capacity market over the last 20 years, including the current price shock.

1. The capacity auction design is fundamentally unsound (Single Clearing Price) (2 of 3)

PJM CAPACITY MARKET – THE “SINGLE CLEARING PRICE MECHANISM”

Bid curve for the PJM Oct. 2024 Capacity Auction (in blue)



Source: Monitoring Analytics

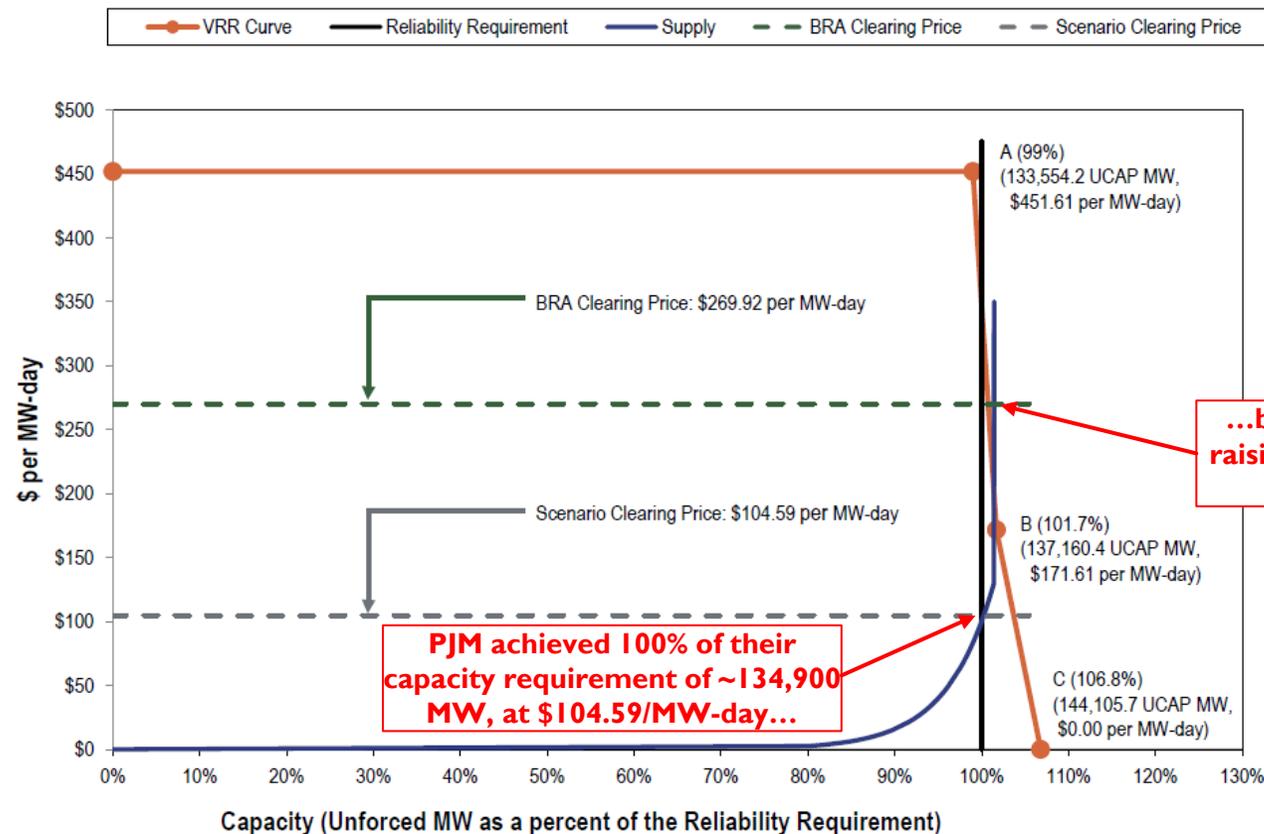
The Single Clearing Price Mechanism (SCP):

1. In a market or auction with an SCP, bids are ranked according to price, and added until a pre-determined capacity target is reached. The price of the **single, last bid** that is accepted is then paid to **all bidders**.
2. When there is a “hockey stick-shaped” bid curve (like the PJM capacity market), **this makes the price extremely sensitive to small changes in supply, demand, and administrative adjustments**. It can lead to skyrocketing prices (like the PJM auction for the 2025 delivery year). It *always* leads to higher prices than pay-as-bid (because how could the average price bid possibly be equal to the highest price bid?)
3. In 2023 then-FERC Commissioner (and later FERC Chairman) Mark Christie published a paper called “It’s Time to Reconsider Single-Clearing Price Mechanisms in U.S. Energy Markets”, where he recommended moving to pay-as-bid.
4. In other energy markets (such as clean energy competitive procurements), pay-as-bid is always used.

1. The capacity auction design is fundamentally unsound (Single Clearing Price) (3 of 3)

PJM CAPACITY MARKET – THE FINAL MANIPULATION IN THE OCTOBER 2024 AUCTION

Figure 1 Shape of the VRR curve relative to the reliability requirement: 2025/2026 RPM Base Residual Auction



To make things worse, PJM continued taking more bids even **after** they had reached their target (called the “Reliability Requirement”), represented in the graph by the vertical black line.

Adding another 1.7% to the target, PJM ended the action at 101.7% of the requirement. That 1.7% excess raised the price 158%, from \$104.59/MW-day to \$269.92/MW-day.

...but then added just 1.7% more, raising the price from \$104.59/MW-day to \$269.92/MW-day

PJM achieved 100% of their capacity requirement of ~134,900 MW, at \$104.59/MW-day...

2. PJM inappropriately inflated demand

The Capacity Market was developed by PJM to do two things: 1) Provide the “missing money” if the wholesale price of energy is not enough to make electric generators profitable; and 2) send a “market signal” for investment in new generation resources.

As we’ve just shown, having created a capacity auction design that is inherently extremely volatile and designed to vastly overpay most energy resources, PJM can then drive prices by setting the way their demand prediction for future years, and their discounting of generation resources, fix the balance of supply and demand.

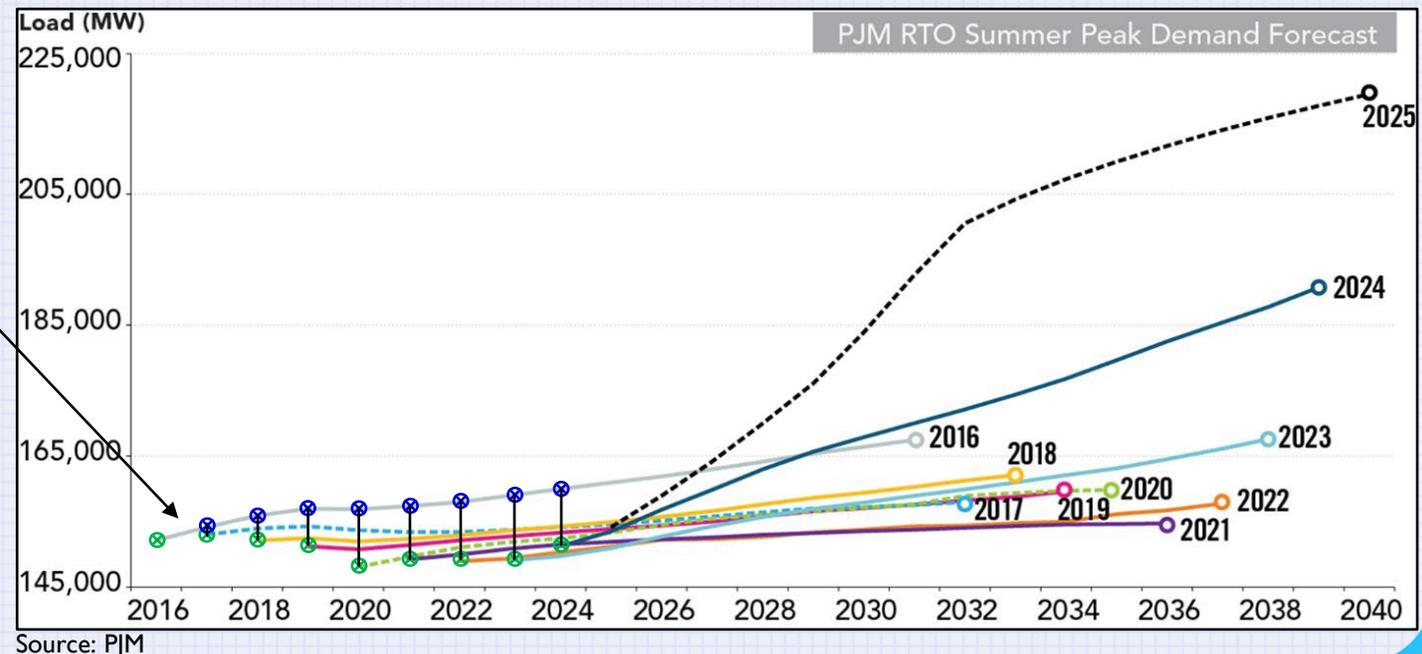
For the Oct. 2024 auction (for the delivery year 2025/26, PJM made a dramatic and unprecedented prediction of future growth. Their explanation for the prediction focused on data centers, electric vehicles, and building electrification. Examination of each of these factors have shown PJM’s predictions to be exaggerated. In fact, PJM has a history of consistently overestimating growth, as can be seen by examining the graph below.

With all the hype about demand growth, most people think that demand is growing rapidly in New Jersey. In fact, from 2019 through 2024, New Jersey’s total electric usage has *fallen* significantly – by 6%. For the period 2018 through 2023, PJM’s total load also fell, by 4.9%.

PJM HAS A HISTORY OF OVERESTIMATING GROWTH

The obvious feature of this PJM chart is the 2025 growth prediction, far steeper than any previous growth prediction.

Less obvious is what it shows about PJM’s history of predicting growth. The added green markers are the starting points for each year’s growth prediction. They represent the *actual* load for each year. If they are compared with PJM’s *predicted* load, it can be seen that PJM’s predictions have been consistently higher than reality. For example, PJM’s 2016 predictions (blue markers) are significantly higher than the actual load for each year through 2024.



Source: PJM

3. PJM inappropriately deflated supply

PJM assigns a discounted percentage to the rated power of resource classes, to determine how much it will credit for each class towards the demand target in the capacity auctions. Recently PJM decreased this factor for some resource classes. Doing so has artificially subtracted many gigawatts of resources that could have contributed to the auction and kept prices low. The Independent Market Monitor (IMM) has leveled considerable criticism regarding these changes. PJM started using the “ELCC” method for

determining these factors recently. The IMM has found that the ELCC method is fatally flawed and that a new method should take its place.

Notably, PJM sharply reduced the factor for natural gas power (the largest resource by far), from what was the mid-90’s pre-ELCC to 60-74% now.

Fixed solar was initially valued at 38%, and has been reduced to 8%.

ELCC Class Ratings for the 2026/2027 Base Residual Auction

The following table provides the ELCC Class Ratings for the 2026/2027 Delivery Year and will be applied to the 2026/2027 Base Residual Auction (BRA).

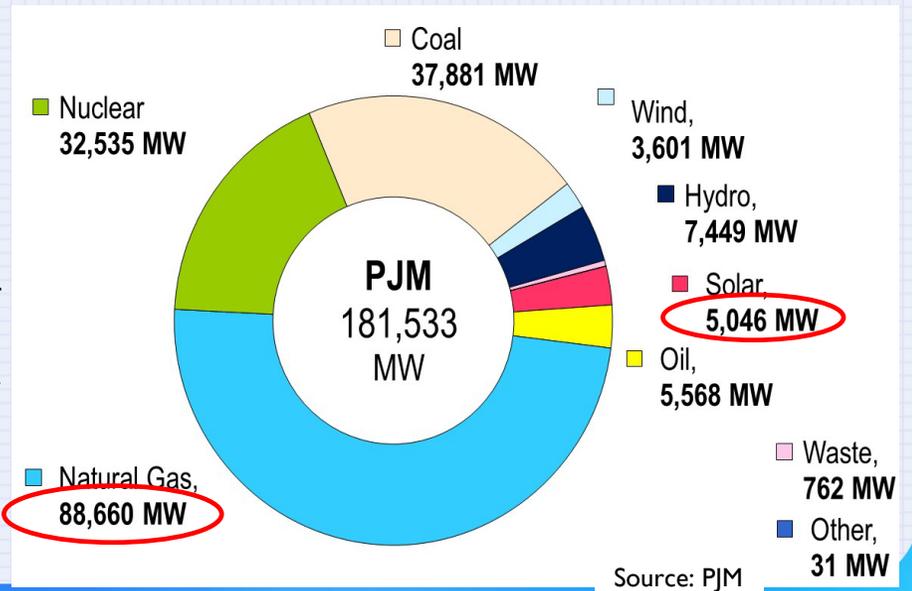
	2026/2027 BRA ELCC Class Ratings
Onshore Wind	41%
Offshore Wind	69%
Fixed-Tilt Solar	8%
Tracking Solar	11%
Landfill Intermittent	50%
Hydro Intermittent	38%
4-hr Storage	50%
6-hr Storage	58%
8-hr Storage	62%
10-hr Storage	72%
Demand Resource	69%
Nuclear	95%
Coal	83%
Gas Combined Cycle	74%
Gas Combustion Turbine	60%
Gas Combustion Turbine Dual Fuel	78%
Diesel Utility	91%
Steam	73%

From 38% initially

From 90's in previous years (pre-ELCC)

Source: PJM

PJM Existing Installed Capacity Mix (Capacity Interconnection Rights – as of Dec. 31, 2024)



Source: PJM

4. False timing.

The PJM capacity market does not do what it is purportedly meant to do

1. The capacity market is supposed to pay a price sufficient to produce profitable operation for new-entry resources, and thus induce construction of those new investments. The capacity auction is supposed to take place 3 years before the delivery year it applies to. But the Oct. 2024 auction was only 10 months before the peak summer period of the delivery year it applied to – the 2025/26 delivery year. New natural gas power plants take at least 5 to 7 years to develop and construct.
2. None of the nearly \$31 billion in capacity costs for 2025/26 and 2026/27 will be paid to new capacity. That capacity will not exist during that time. It will be paid to old power plants.
3. About 80% of the capacity resources in PJM are over 10 years old, and 2/3 are over 20 years old. The older plants have already paid for their capital costs and produced a rate of return. Their cost to fulfill their promises to provide capacity when called upon are essentially zero.
4. Based on the available information from PJM, comments from the IMM, and other sources, it is hard to escape the impression that the capacity market, as well as other activities of PJM, are more about achieving a desired price than they are about achieving what they profess to exist for – achieving a desired standard of reliability.

5. The capacity market is **no longer needed** for most generation resources.

Interpretation: PJM posits that a subsidy is necessary to overcome a “gap” in the revenue provided by its energy market, so it develops a separate market to cover the gap.

But the recipients of this subsidy are effectively in control of setting the subsidy structure and amount.

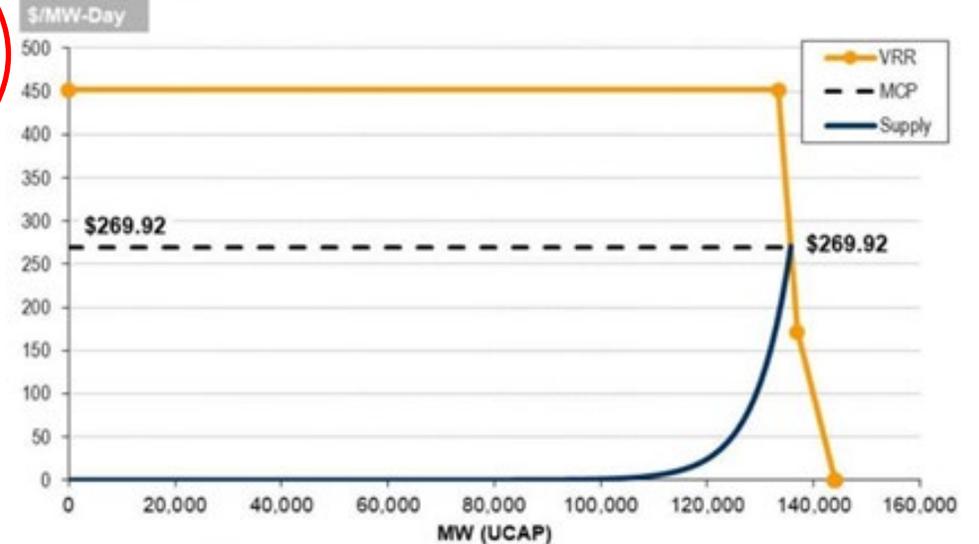
It is a dysfunctional framework with outcomes for ratepayers in the tens of billions of dollars per year.



Capacity Auction Supply Curve

- Supply and Demand Curve Two purposes:
 - ~~“missing money”~~
 - market signal for new investment
- 3yr forward market
 - Recent/prolonged administrative delays

Figure 1. RTO Smoothed Supply (2025/2026 Base Residual Auction RTP Supply Curve)



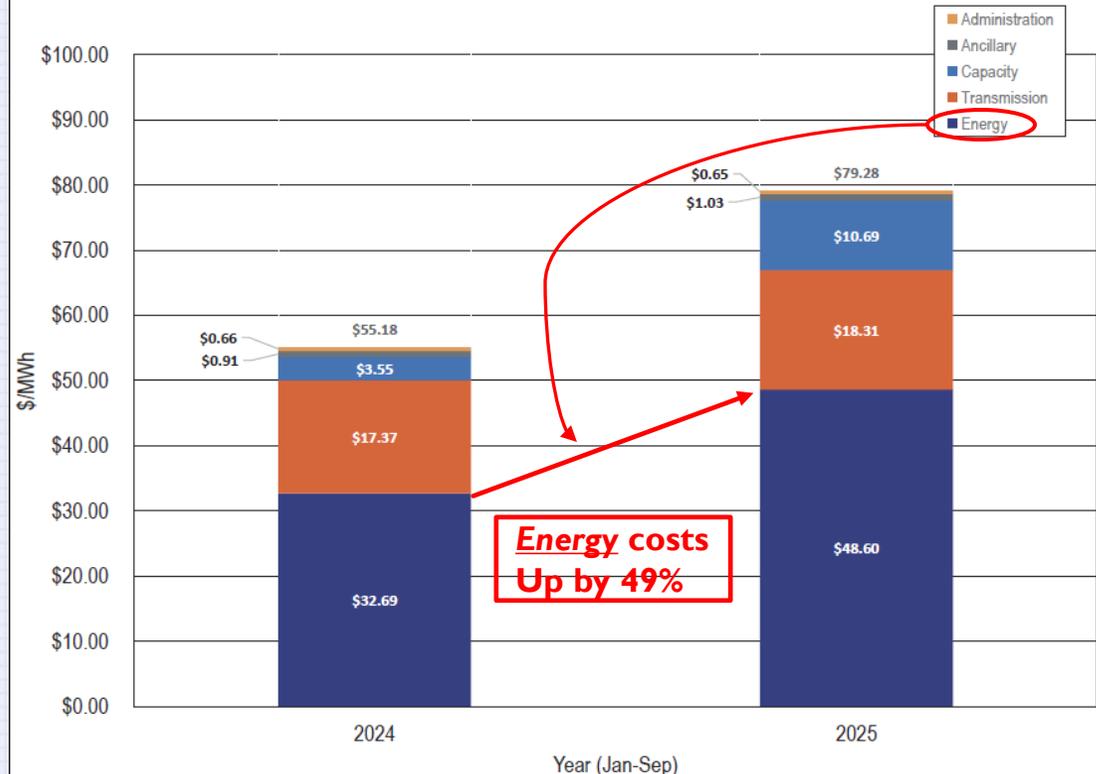
Source: PJM's 2025-2026 BRA Report



5. The capacity market is **no longer needed** for most generation resources.

Figure 1-3 shows the total cost of wholesale power in the first nine months of 2024 and 2025.

Figure 1-3 Total cost per MWh by category: January through September, 2024 and 2025



Source: Monitoring Analytics

- **PJM energy prices are up ~50%** for Q1-Q3 2025 vs. Q1-Q3 2024
- Energy costs (dark blue) are a much bigger revenue source for generators than capacity payments (light blue).
- The higher energy prices erase the “gap” (for both existing and new generation that is the supposed reason for capacity payments).
- Of the 7 major RTO’s in the U.S., 3 do not have capacity markets

“The capacity market ... equates essentially to a spot market for capacity... It's unreasonable ... to think that some market participant is ... going to rely entirely upon a spot market signal in order to maintain or satisfy their obligations.” – *excerpted from opening statements of Stu Bresler, EVP of markets at PJM, at BPU Resource Adequacy Technical Conference, 8/5/25*