Powering Reliability Through Market Design:

Addressing Rising Demand and Constrained Supply, and Stimulating Investment To Support Durable Reliability

Walter Graf
Chief Economist, PJM

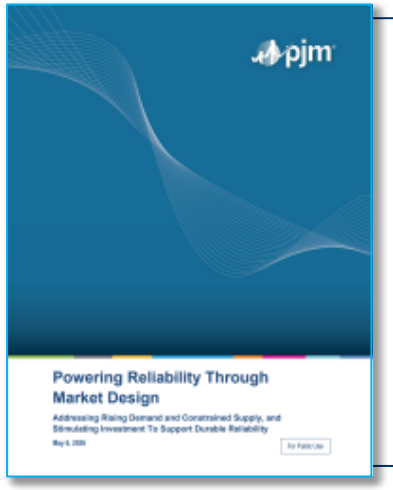
June 12, 2026 (initially presented at the May 20 MRC meeting)

PJM © 2026

Introduction & Context

In January 2026, the Board gave us a clear charge.
This paper is our direct response.

- The PJM Board directed staff to examine whether the foundational assumptions of the market design still hold in light of current resource adequacy challenges
- Named the core tension: price volatility that is economically rational is placing unsustainable stress on the regional compact that allows the market to function



This paper does not recommend a path.

These are choices for the region — with PJM's role being to ensure the trade-offs are clearly understood.

Following the release of this initial discussion paper, the task ahead is well summarized in Commissioner Rosner's recent concurrence:

"[…] PJM, its members, and its states must come together to turn good intentions into durable market design and state policies that support needed investment in new energy infrastructure."

PJM © 2026

Chapter II – Why Electricity is Different

Electricity markets face two problems no other commodity market does

These two features made a special market mechanism necessary — though they may be changing.

1 Customers barely respond to prices.

- Most customers pay flat monthly rates and never see real-time wholesale prices.
- When the grid is stressed, they have no financial reason to reduce consumption.
- As a result, the market cannot "clear" through demand reduction the way other markets can.

2 The grid can't discriminate between those who planned (contracted) ahead and those who didn't.

- Once power flows onto the transmission system, physics — not contracts — determine where it goes.
- In a shortage, load shed obligations are shared, regardless of who arranged supply in advance (and who didn't).
- This creates a free-rider problem: why plan ahead if you likely get the reliability either way?

These features create a shared adequacy problem that electricity markets alone cannot solve and requires administrative rules.

The Missing Money problem then arises when the energy market's administratively-determined price ceilings are insufficient to provide the revenues needed to support that amount of capacity: when at target reliability, some generators can't earn enough from the energy market alone to justify the cost of staying available for the rare, critical hours the grid needs them most

PJM © 2026

Chapter II – What RPM Was Built to Do

The capacity market created a pooled insurance system — and it worked.
For nearly 20 years, competitive markets delivered reliable supply at lower cost than the alternative.

The design: PJM acts as the purchasing agent for all customers in RPM, procuring capacity through competitive auctions and sharing the cost across the entire grid	**50+ GW of aging generation retired and replaced** — without the lights going out	**40+ GW of new generation built with private investor capital,** not ratepayer guarantees
	Nearly 10 GW of demand response created, giving customers a way to reduce bills during emergencies	**Survived several polar vortex events** and a decade of fuel-switching and growth of intermittent resources

But the market was designed for a specific set of conditions:

Relatively gradual and predictable load growth and retirements

Generation that could be built in ~3 years

Investors willing to develop based on forward expectations of annual auction revenues

PJM © 2026

Chapter III – Everything Changed at Once

The current shortage is structural, not cyclical

This is not a temporary supply gap; rather, it is the predictable result of concurrent structural shifts.

Demand is surging faster than supply can follow.

- Hyperscale data centers are adding load at an unprecedented pace, and while a data center can connect in 2–3 years, a new power plant takes 4 (optimistically) to 6 or more.
- The gap between demand arrival and supply response is the core of the shortage.

Building new generation costs twice as much and takes twice as long as before.

- Capital costs for a new CC have roughly doubled, and for a CT increased by over 50%. Further, investors today require significantly more long-term revenue certainty than before.
- And supply chain backlogs, permitting timelines, and equipment scarcity are around to stay. In short: barriers to entry are much higher than when the market was designed.

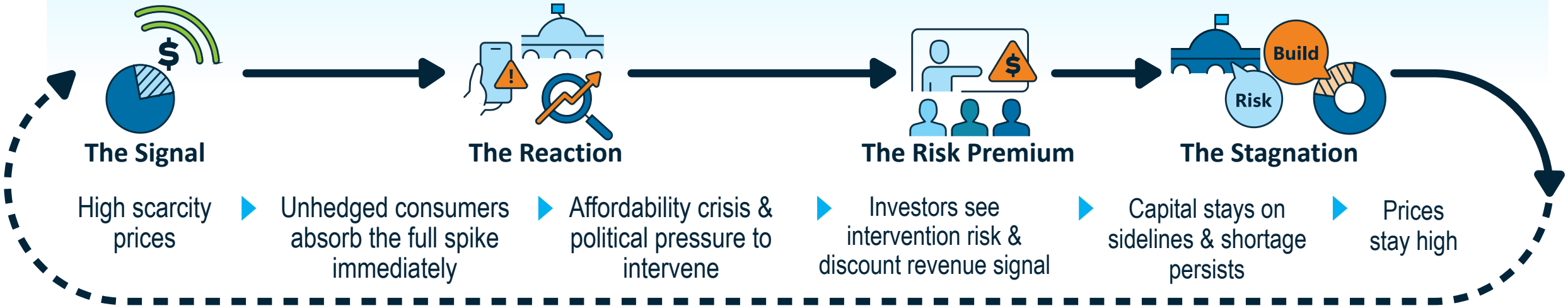
As a result, in the absence of the Connect & Manage framework, new loads would be borrowing reliability they haven't yet been able to help provide: the shared pool is being drawn down faster than it is being replenished, and the system is tight.

This disequilibrium will not resolve itself quickly. We are likely looking at a decade-long transition, not a one or two year gap.

PJM © 2026

Chapter III – The Credibility Trap

The market is sending the right signal, but the signal is destroying itself. High prices are supposed to attract new investment. Instead, they are triggering the intervention that prevents it.



The root cause:
The capacity market was designed assuming most load would be protected from spot price spikes through long-term supply contracts. That protection was never consistently put in place.

The consequence:
The signal meant to solve the problem is the same signal that triggers the intervention that undermines it.

PJM © 2026

Chapter IV – The Foundational Questions

Before we can choose a path, we must confront foundational questions

Some of these are primarily policy questions, the answers to which shape the market design that follows.

1 **Should we preserve the concept of resource adequacy as a common good that is shared by all, also known as the "shared reliability compact" — and if so, who is responsible for making it financially durable?**

For a century, PJM's grid has operated on the principle that all customers share in a common standard of reliability and willingness to pay to meet it. Preserving that compact in a period of structural scarcity requires that most load be insulated from spot market price volatility through long-term forward commitments. But mandatory hedging involves choices about who bears the burden of those requirements, how they are enforced, and who holds the contracts.

2 **Or should we decide that reliability, in a period of scarcity, must be explicitly rationed?**

If not all load can be served at the historical 1-in-10 standard, the system must develop the operational capability to prioritize — whether by geography, by customer class, or by contractual contribution to supply.

3 **In either case: should the primary long-term hedging instrument be the capacity product or energy?**

If long-term contracting is required under any path, both to create revenue certainty for investors and insulate consumers from price and cost volatility, should the market be designed to incentivize long-term contracting around the separately administered capacity product or the underlying physical commodity – energy?

PJM © 2026

Chapter IV – Path A

Path A

Preserve the shared reliability compact, but require everyone to come prepared.

"Stabilized Markets" make the shared reliability compact financially durable

The core idea

Vast majority of load is required to be covered through long-term forward commitments **before** the capacity spot auction, not after.

- The capacity spot market continues to function and print the right prices during scarcity
- Most customers are insulated from those spikes because suppliers locked in prices years in advance
- High prices and longer-term contracting help retain and attract investment without triggering a retail affordability crisis

How it works in practice:

A de-centralized approach could require LSEs demonstrate long-term supply coverage before each auction (like a "forward showing").

A PJM-administered, centralized long-term procurement could be used such as a tiered, multi-year capacity market. In either case, moves toward longer-term contracting and less reliance on the Base *Residual* Auction capacity price.

The trade-off:

Long-term contracts reduce flexibility and shift some risk from investors to consumers

Market power issues will need to be addressed, and a reasonable transition time will be needed to allow load to enter long-term arrangements under fair terms

PJM © 2026

Path **B**

Accept that scarce capacity must be rationed, and do it on principle.
"Differential Reliability" invites stakeholders to have the conversations on how to ration capacity when in shortage

If supply cannot keep pace with demand,
the region should decide how to allocate scarce reliability deliberately (at the regional wholesale level – already occurs today within EDCs and States)

The near-term application (already underway):

- Large new loads that connected without bringing new generation should face interruption before legacy customers who built and paid for the shared system.
- "Connect and manage" new load gets access, but without the same reliability standing as the load that funded the pool.

The harder extensions (longer-term, multi-institution):

Geographic differentiation: states could choose higher or lower reliability standards for their customers

Customer-class differentiation: different reliability tiers based on who needs it most or who caused the scarcity

The governance reality:

These harder extensions require FERC, state commissions, and state legislatures to act in coordination — this is a multi-year undertaking, not a near-term market design tweak.

PJM © 2026

Path **C**

Path C: Rethink which market should be at the center for resource adequacy

"Energy Market Transition" — shift revenue recovery from the capacity product to the energy market

The foundational argument:

The capacity market helped solve a financing problem created by suppressed energy prices. But if we're considering longer-term requirements in Path A, should we reconsider keeping the capacity market at center?

What this means in practice:

- Move towards allowing energy market prices to rise to levels that reflect the true cost of a grid emergency.
- Require utilities and suppliers to hold long-term energy contracts
- Revenue flows to generators who perform when the system is tightest.

Why this matters:

A megawatt-hour of electricity is a standardized commodity traded in established markets

Long-term energy contracts are more bankable for project finance than capacity contracts. Reduces the market's vulnerability to "stroke-of-the-pen" risk

An honest limitation:

This is a decade-long directional commitment, not a solution for 2027 or 2028.

It requires substantial energy market reform as a prerequisite.

PJM © 2026

Chapter IV – The Paths Together

These are not mutually exclusive, and the region may need to move on multiple tracks.

Direction matters more than choosing a single path

	Preserves Shared Reliability Compact?	Near-term Applicability	Key Mechanism	Primary Institution	Timeline
Path **A**	Yes	High	Long-term capacity contracts	PJM States FERC	2–4 years
Path **B**	Partially	High	Curtailment priority rules		Near-term + long-term
Path **C**	Yes	Medium *(Need to commit)*	Long-term energy contracts		Decade-horizon

The Critical Overlaps:

Mandatory long-term contracting (Path A) is the same mechanism Path C would require for consumer protection

Path B's curtailment priority work is a near-term operational necessity regardless of path

Energy market reform (central to Path C) improves reliability and reduces costs under all three paths

PJM © 2026

Chapter IV – Supporting Capacity Market Reforms

There are additional capacity market reforms that warrant further consideration

While certain reforms to the capacity market aren't directly responsive to the primary strains on the construct today, they're still significant and warrant further discussion under multiple paths forward

Sub-Annual Capacity Market	Further review and consideration of a sub-annual capacity market design, as discussed with stakeholders and recommended by Analysis Group in the Sub-Annual Capacity Market STF
Forward Capacity Auction Timeline	The region would benefit from a re-evaluation of the forward capacity auction timeline in conjunction with exploring potential market constructs under Path A
Accreditation Enhancements	Further review and consideration of ELCC accreditation enhancements, as discussed with stakeholders and reviewed by E3 in the ELCCSTF

These reforms warrant further stakeholder discussion and consideration under multiple paths forward

PJM © 2026

Chapter IV – Energy Market Reforms

Updating the energy markets is necessary, and doesn't need to wait for the bigger questions.

Some energy market reforms don't depend on the chosen capacity market path

Reserve Market Reforms	Pricing signals have not been meaningfully updated in nearly 20 years.	E&AS markets need to evolve	PJM believes its proposed RCSTF package needs to proceed.
Demand Flexibility	The region would benefit from a conversation on enabling higher energy prices that better unlock the flexibility of the large data centers		

These reforms should proceed now in parallel with the longer-run path deliberations, not contingent on them

Path **C**

Taking E&AS Reforms Farther

- Developing a pathway toward letting the energy market recover more of the revenue generators need
- Reducing reliance on the capacity market over time.

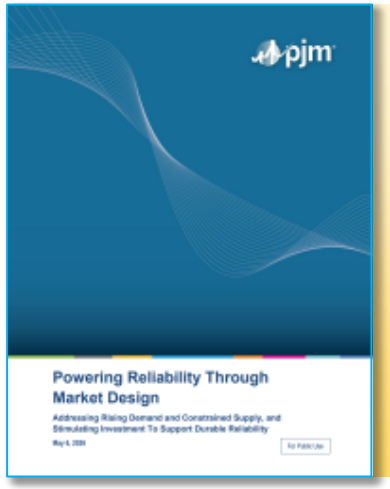
- Long-term supply contracts insulate customers from that real-time volatility.
- The total cost of keeping the lights on does not increase; it becomes more transparently priced.

PJM © 2026

Next Steps

PJM initiating workshops in June 2026 to discuss the topics raised in this paper

- May 20: Initial presentation
- Mid June: Additional Q&A and discussion
- End June – August: PJM planning workshops on roughly a two-week cadence to hear stakeholder feedback and begin to chart out a path for collaborative engagement with stakeholders



The urgency is real... The time available to make these decisions deliberately, before operational conditions force them by default, is measured in years, not decades. PJM's commitment is to ensure that the region uses that time well.

PJM © 2026

Contact

SME/Presenter:
Walter Graf,
Walter.Graf@pjm.com

Pat Bruno,
Patrick.Bruno@pjm.com

Member Hotline

(610) 666 – 8980

(866) 400 – 8980

custsvc@pjm.com

PJM © 2026

PROTECT THE POWER GRID

THINK BEFORE YOU CLICK!

pjm

Be alert to malicious phishing emails.

Report suspicious email activity to PJM.

(610) 666-2244 / it_ops_ctr_shift@pjm.com