

Electric-Gas Coordination & The Evolving Role of Natural Gas (PJM Large Load Growth Challenges)

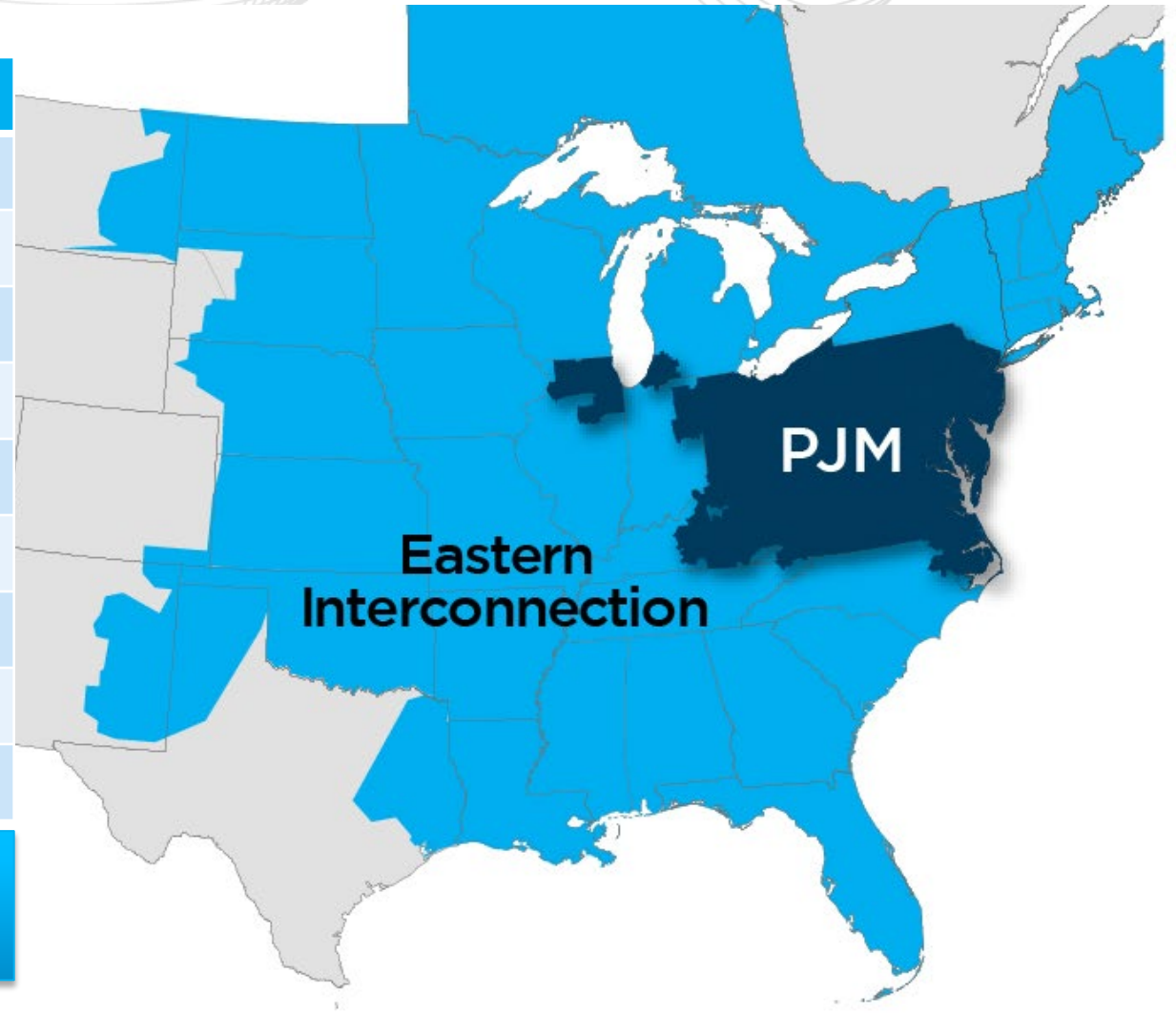
Aftab Khan
Northeast Gas Association
Executive Conference
September 14, 2026

PJM Overview

Key Statistics

Member companies	1,116
Millions of people served	67+
Peak load in megawatts	165,563
Megawatts of generating capacity	185,989
Miles of transmission lines (Bulk Electric System)	88,417
Gigawatt hours of annual energy	828,161
Generation sources	1,673
Square miles of territory	368,906
States served	13 + DC

- 25.6% of generation in Eastern Interconnection
- 25.2% of load in Eastern Interconnection



As of 2/2026



PJM's Role as a Regional Transmission Organization

PLANNING



Planning for the future like...



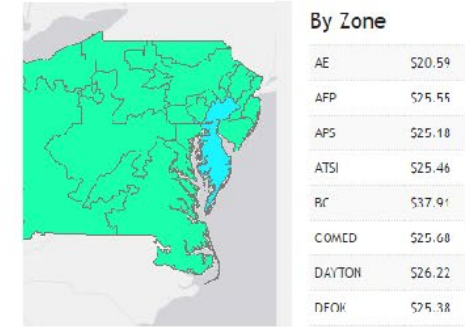
OPERATIONS



Matches supply with demand like...



MARKETS



Energy Market Pricing like...

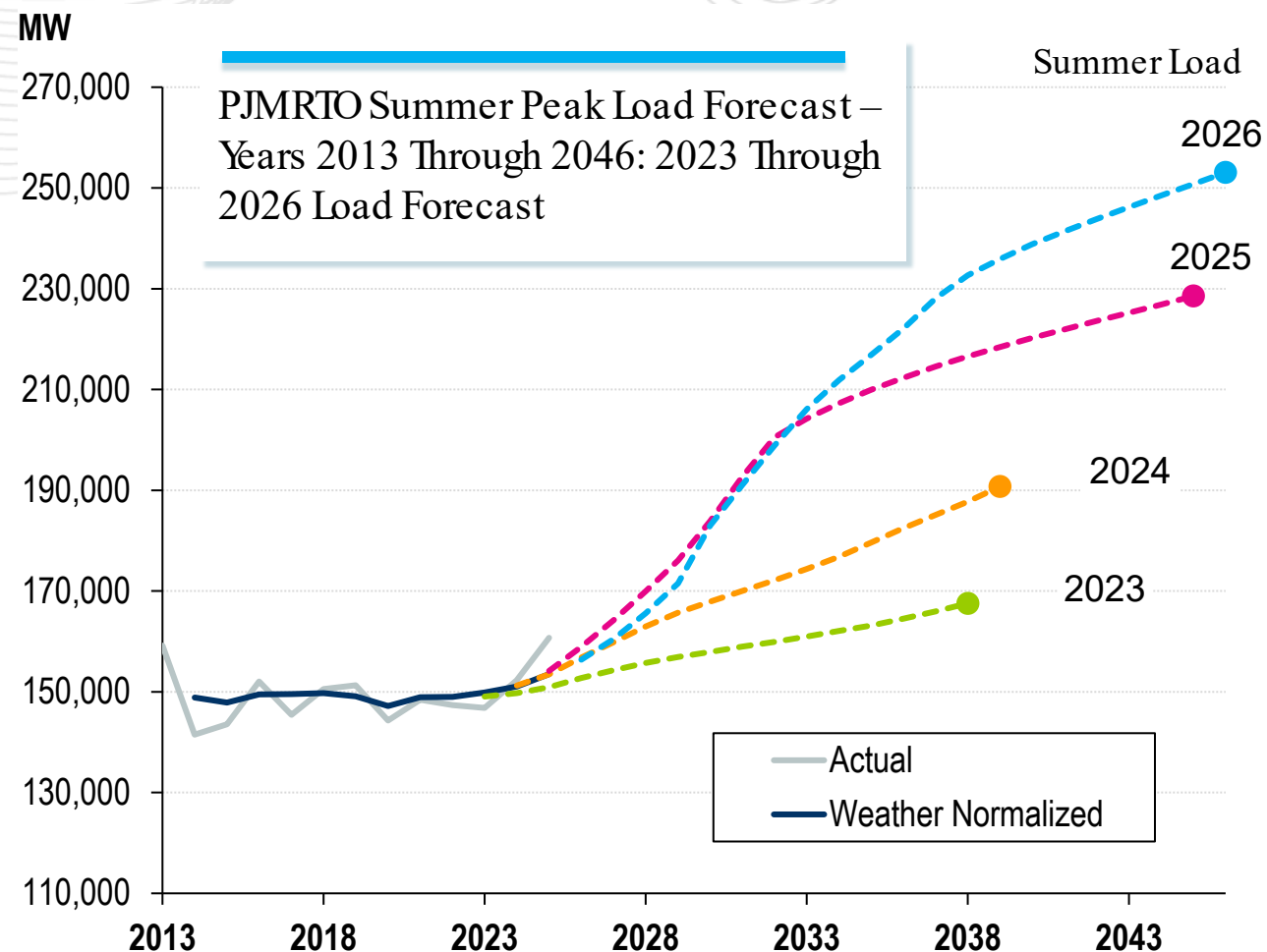


Changing Operating Landscape

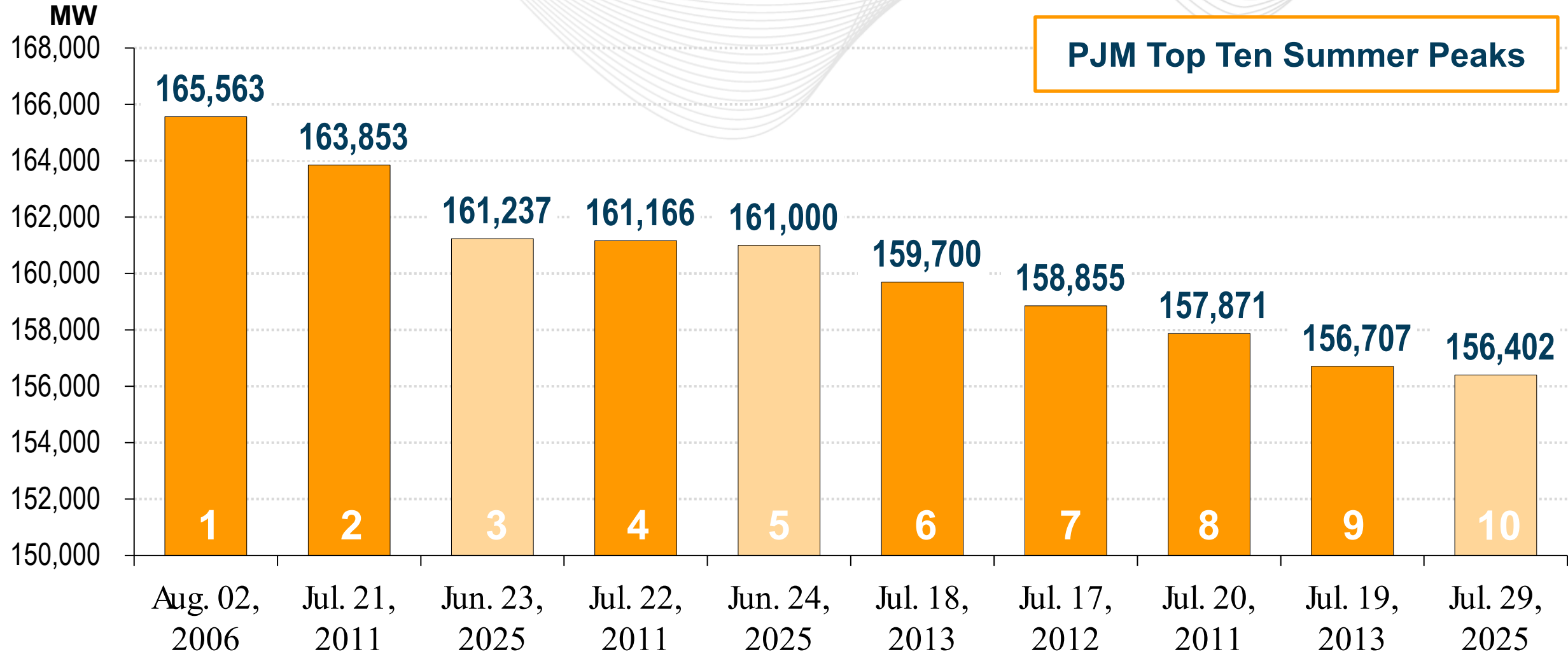
Over a decade of predictable flat load growth is over

- Demand for electricity is accelerating
- Capacity is increasingly constrained
- Our grid's operational characteristics and risks are evolving
- Our macroeconomic environment is becoming more volatile

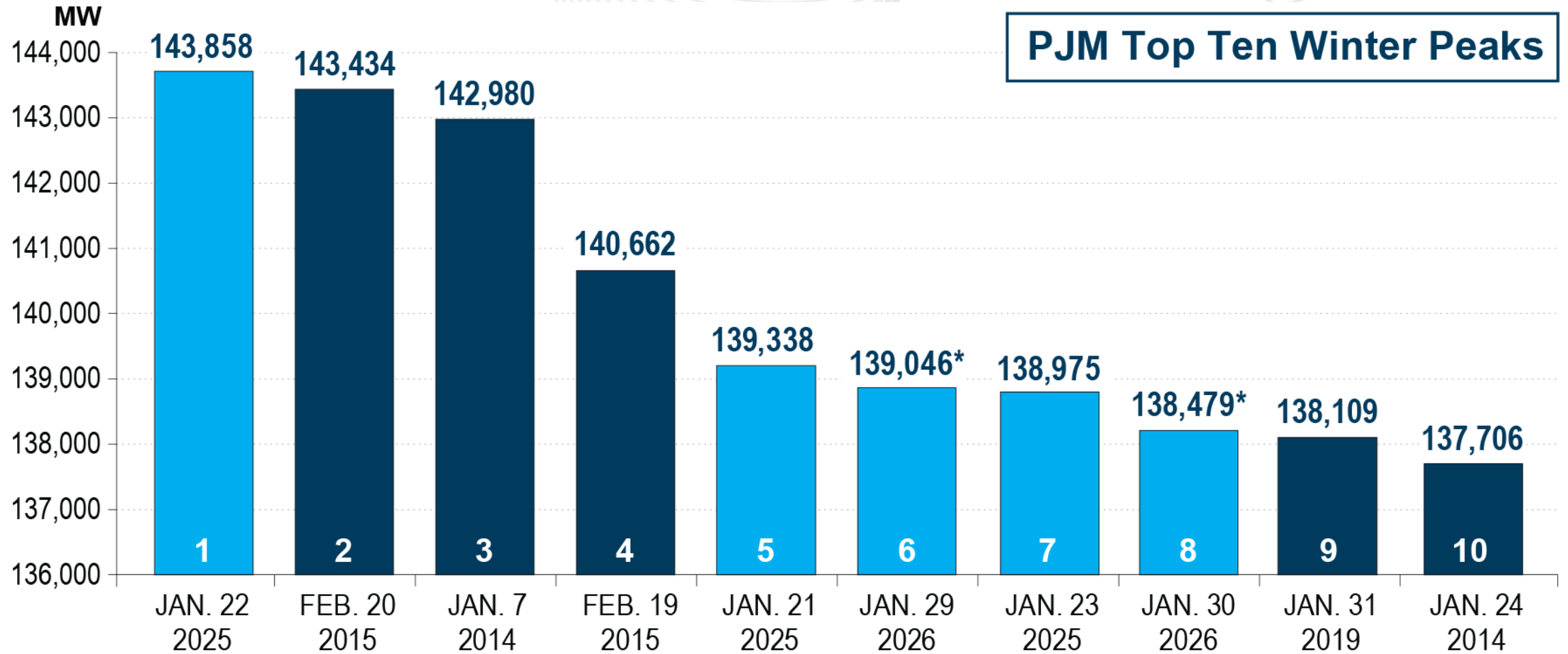
Our industry is changing in structural ways



PJM Top Ten Summer Peaks

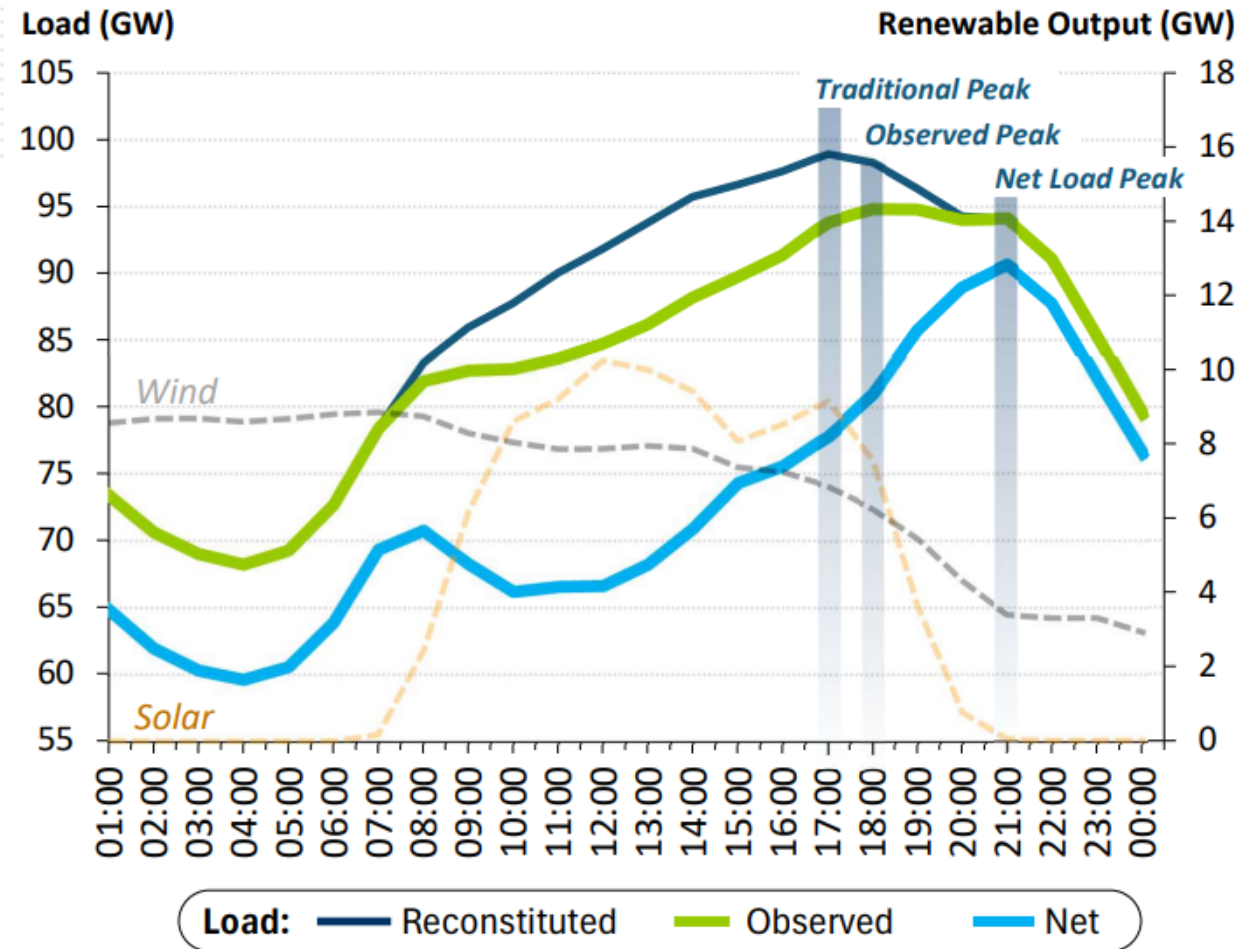


As of March 24, 2026



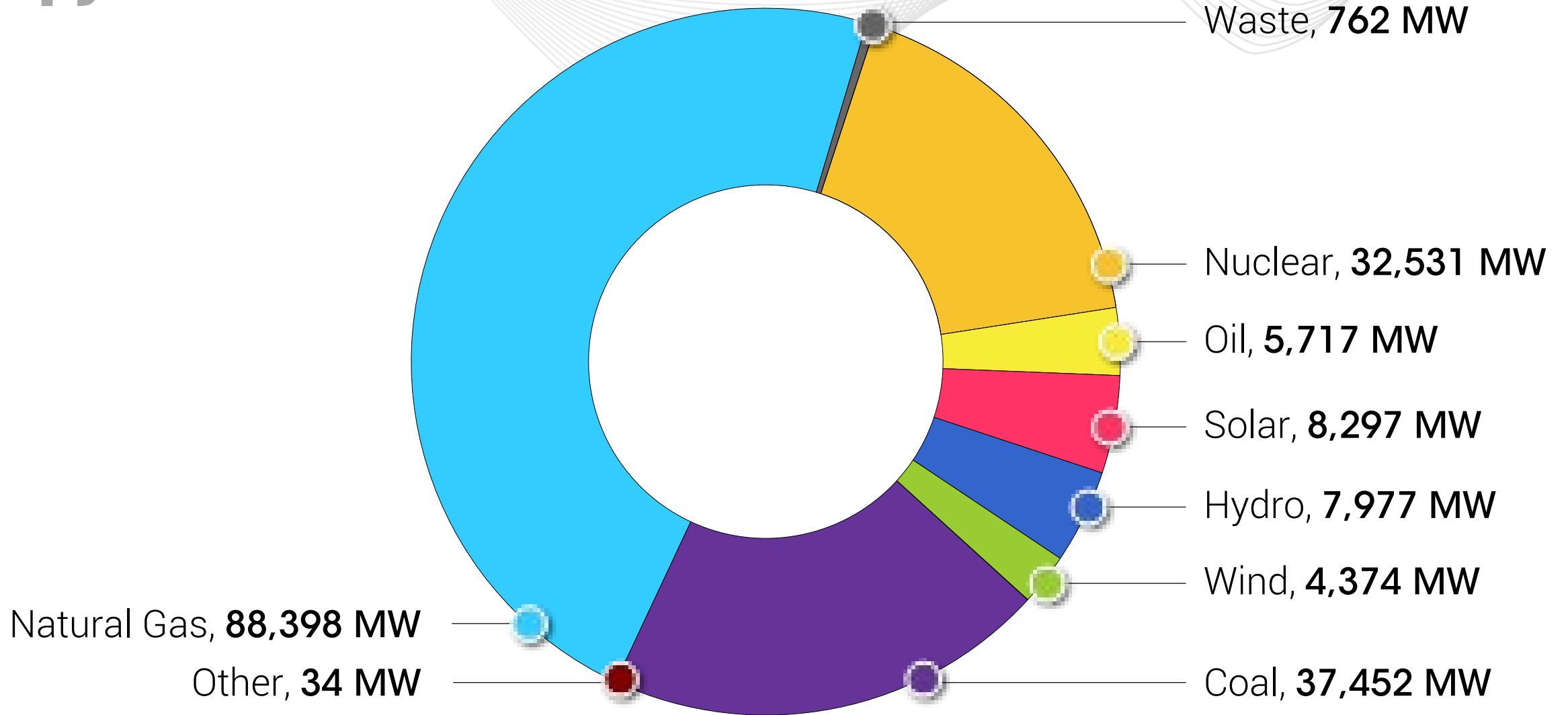
* This data is preliminary should not be used as the basis for decision-making. As of Feb. 1, 2026.

- Peak load and peak net load occur at different times due to solar and wind behavior
- Net load ramp: solar output decreases faster than load decreases
- Traditional resources (e.g. steam, hydro or combustion turbines) must be dispatched to serve steep ramp of net load



Generation & Transmission Expansion

2025 PJM Installed Generating Capacity (186 GW)

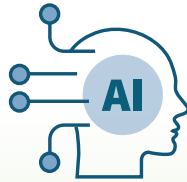


As of Dec. 31, 2025

PJM's Reformed Generation Interconnection Queue



**Queue Not
Closed: 1-2 Year
Turnaround
Time to be Studied**



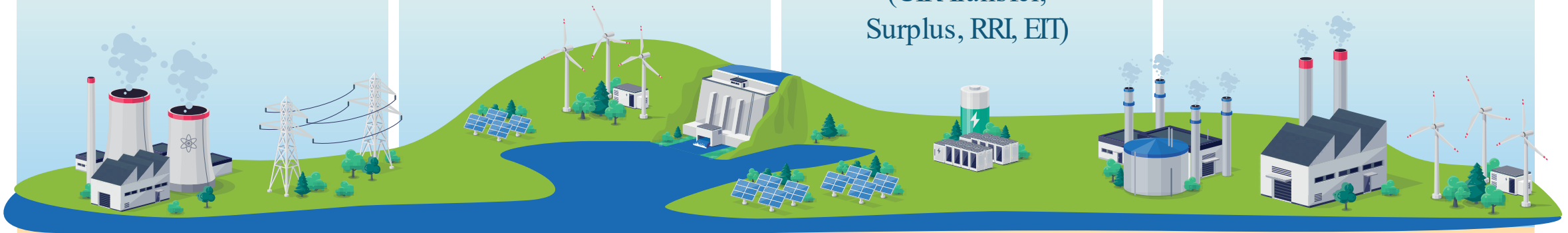
**Google AI to
Further Expedite**



**Creation of
On-Ramps to Go
Quicker**
(CIR Transfer,
Surplus, RRI, EIT)



**~57 GW
Have Agreements**



PJM has shifted from queue reform to delivery with faster study timelines, new on-ramps, and significant new supply already approved or connected.

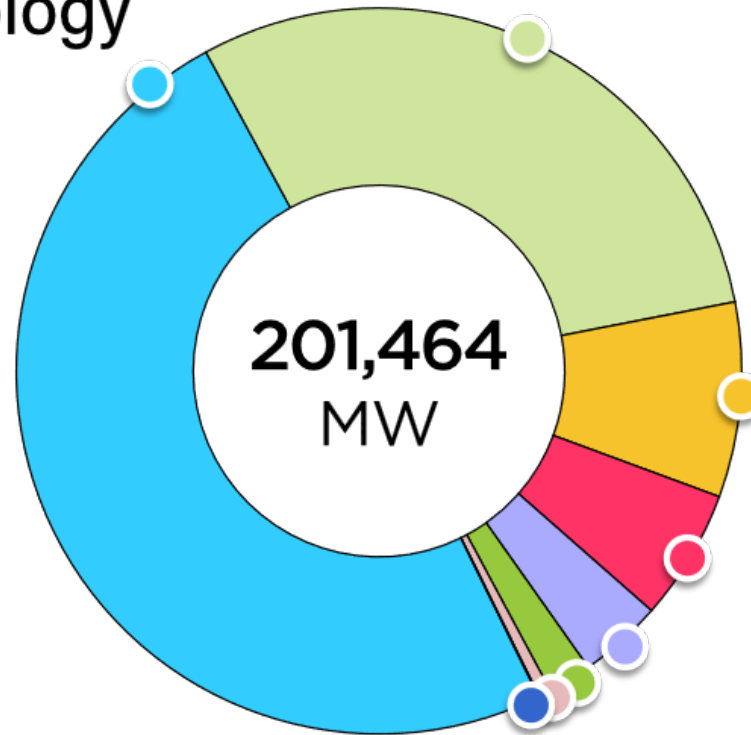
New Generation Projects Seek To Connect Under PJM's Reformed Process

Cycle 1 by Fuel/Technology Type (MWE)

No. of Units:

715
Generation
Interconnection
Requests

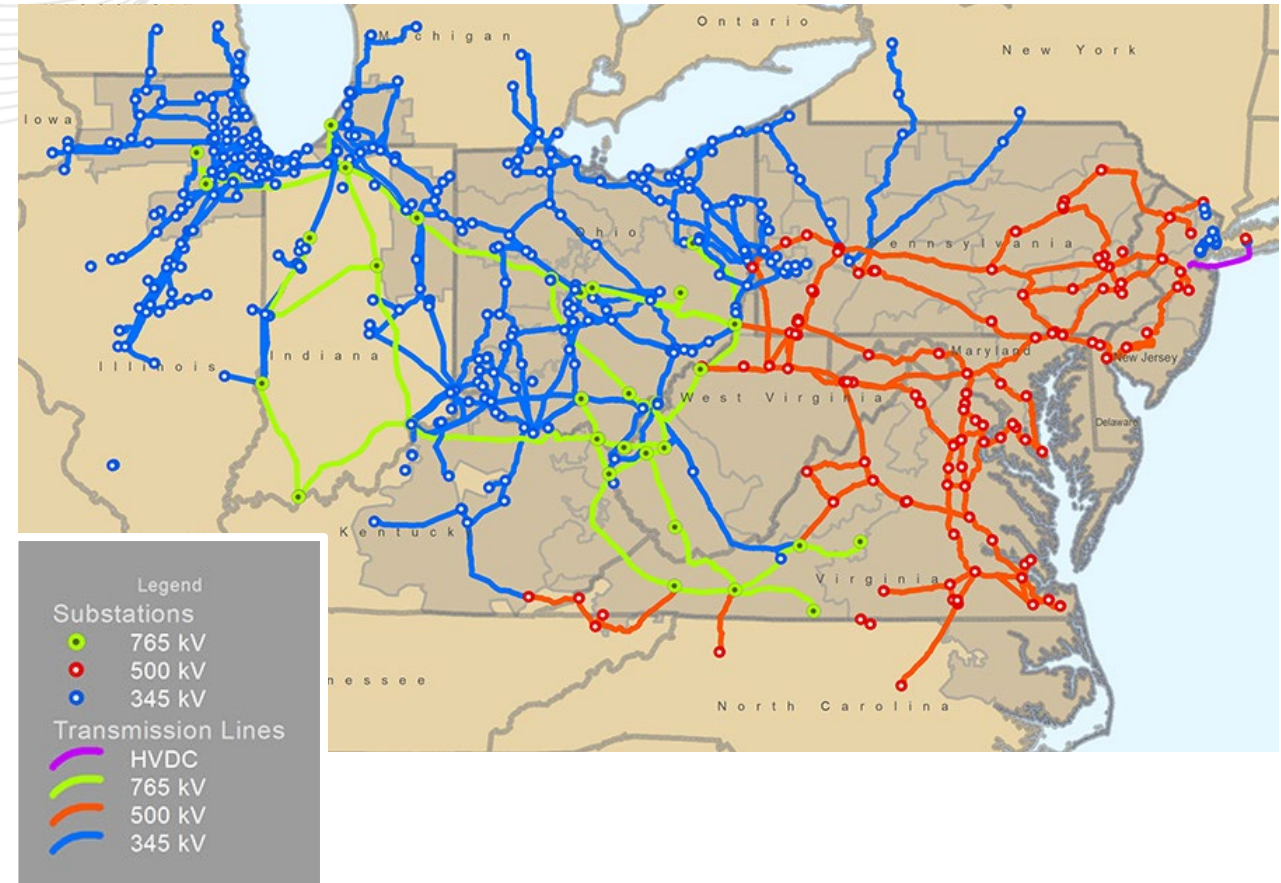
As of August 3, 2026



● Natural Gas , 99,791 MW	147
<i>Includes single and dual fuel</i>	
● Storage , 60,014 MW	314
● Nuclear , 17,306 MW	24
● Solar , 11,754 MW	117
● Solar/Storage , 7,546 MW	37
● Wind , 3,888 MW	61
● Other , 1,099 MW	10
<i>Includes Biomass, Coal, Fuel Cell, Fusion, Methane</i>	
● Hydro , 66 MW	5

- In 2025 & 2026, PJM approved ~ \$20 billion in total transmission construction
 - 2025: \$7.6 billion (\$5.9 billion in baseline reliability projects and \$1.7 billion for network upgrades)
 - 2026: \$12.76 billion (\$11.8 billion in baseline reliability transmission projects and about \$959 million in network upgrades)

Existing PJM Backbone Transmission System



Gas-Electric Coordination

PJM Gas Generation Delivery Sources

~ 90 GW
of installed gas
generation

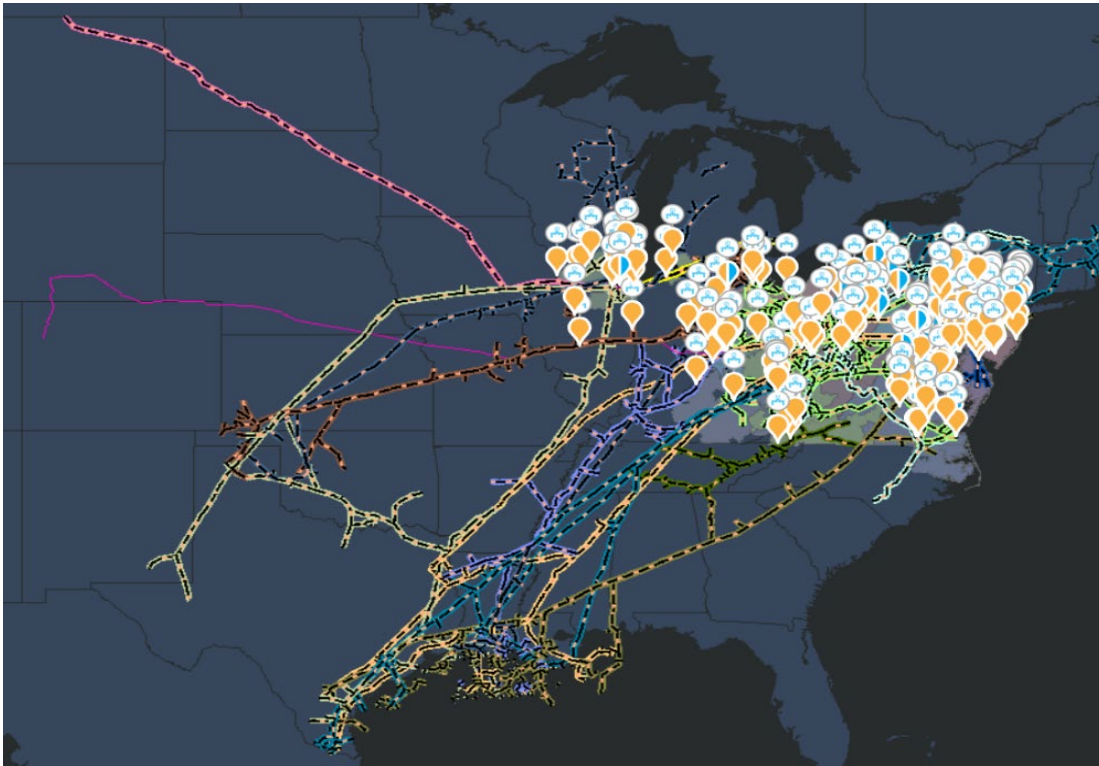
80%
served directly by
interstate pipelines

19.8%
served by local
distribution companies

0.2%
served via gas
gathering systems

29%
dual
fuel

51%
firm delivery –
gas only



25
interstate
pipelines
serving the PJM
system

32
local
distribution
companies across
the footprint

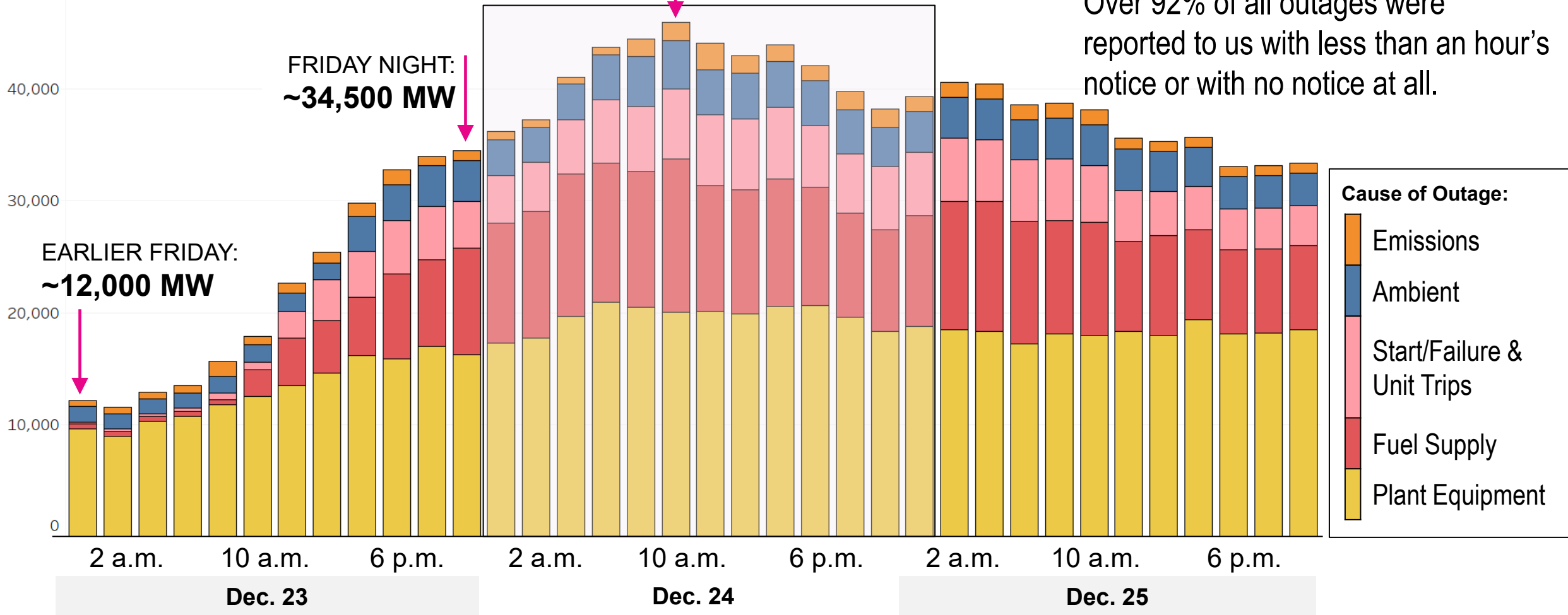
2022 Winter Storm Elliott Generator Outage (~46 GW)

SATURDAY:
~46,000 MW

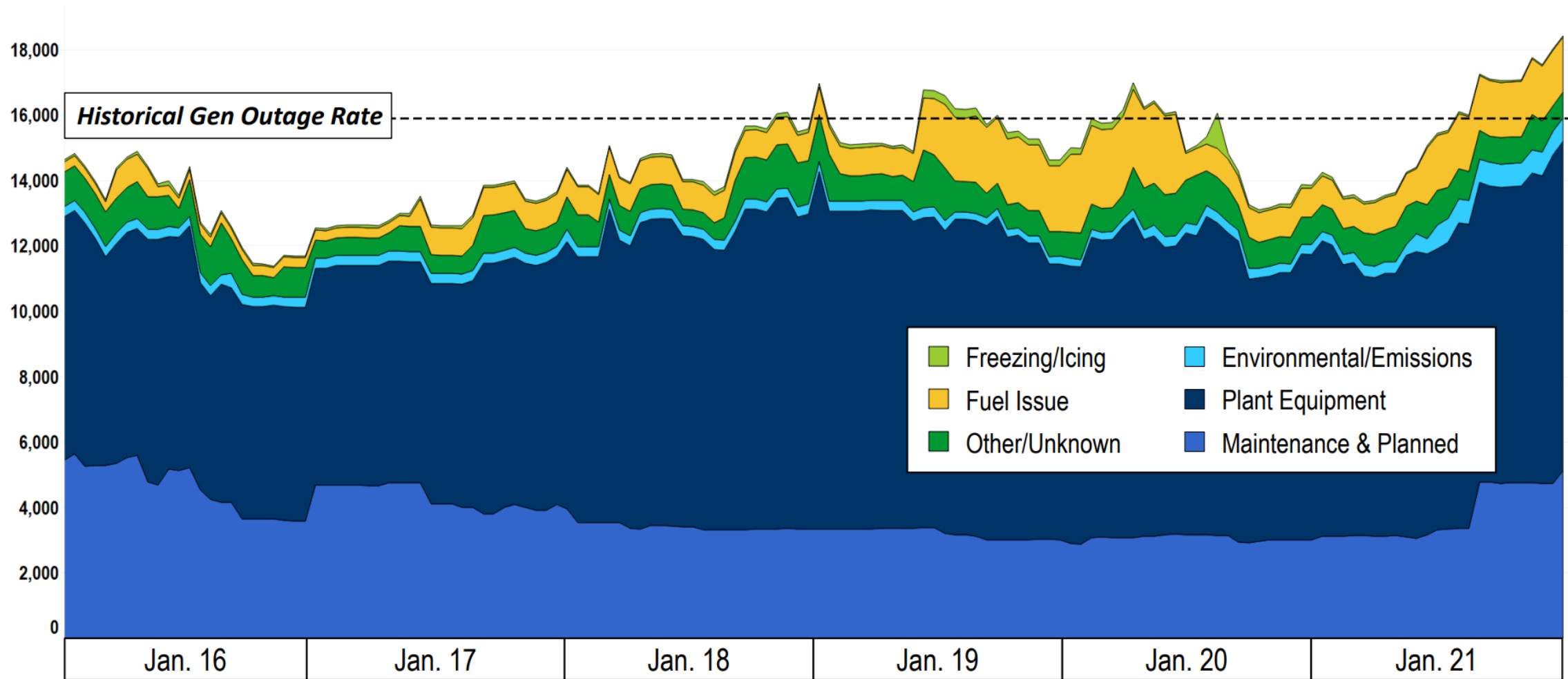
FRIDAY NIGHT:
~34,500 MW

EARLIER FRIDAY:
~12,000 MW

Over 92% of all outages were reported to us with less than an hour's notice or with no notice at all.



2026 Winter Storm Fern Generation Outage (~18 GW)



Note: Outage data shown is collected from eDART and considered preliminary.

Electric Gas Coordination Subcommittee

- Quarterly meetings commenced March 2025
- Maintain dialogue with PJM stakeholders on strategic gas electric coordination topics

Reserve Certainty Senior Task Force

- Ensuring availability of gas units that are being relied on to meet reserve requirements (uncertainty & ramping)
- Consider fuel delivery arrangements, supply liquidity and pipeline operating conditions

Capacity Accreditation

- Properly valuing generating resource fuel assurance and availability
- Gas generator dual fuel capability and firmness of gas deliveries

Winter Storm Elliott Recommendations

- Closing internal critical gaps in operations and markets (e.g. cold weather operating limits)
- Addressing issues external to PJM with federal, state and industry resources

Joint RTO Gas-Electric Whitepaper

- Released February 2024
- PJM-ISONE-MISO-SPP collaboration
- Identified key issues that require further dialog and investigation between the industries

NPC Gas Electric Alignment Task Force

- Led by National Petroleum Council
- Kicked off Q1 2025
- Focused on critical recommendations to improve electric and gas industry misalignment
- Final report with recommendations issued Q4 2025

NARUC GEAR Report

- Kicked off November 2023
- Cross Industry group along with state utility commissioners examining opportunities for improvements to gas electric coordination issues
- Final report with recommendations issued Q4 2025

Natural Gas Industry

- Robust Communication with Interstate Pipelines and Local Distribution Companies
- Industry Trade Organizations: INGAA (Pipelines), NGSA (Gas Supply), API (Gas/Oil industries), AGA (LDCs)

Managing Large Load Growth

Managing Rapid Demand Growth Interim Resource Adequacy Service (IRAS)*

► IRAS helps protect reliability as large new customers connect to the grid

- 1 *Demand is growing rapidly* – large load new customers adding significant electricity demand to the grid
- 2 *Extreme conditions stress the grid* – during extreme weather or other grid emergencies, available power supplies can tighten significantly.
- 3 *IRAS helps reduce the strain* – reducing consumption or temporarily reducing power from the grid (e.g. use backup generation) –begin June 2027*
- 4 *Reliability is protected* – reducing demand helps avoid more serious emergency actions



* Filed with FERC in August and pending FERC approval

- The proposal addresses the shortfall from the PJM Reliability Requirement of the recent capacity auction (~6.8 GW unforced capacity)
- With this one-time action, PJM is focused on its core responsibility to preserve grid reliability

The parallel path approach is:

A Central Procurement

Begins in September

Bilateral Contract Matchmaking

Already underway



* Filed with FERC in July and pending FERC approval

Market prices reflect actual operating conditions.



Market incentives – market participants are partners with RTO to maintain reliability through price signals.



- Financial product development
- Information transparency
- Price rationalization

Result for physical market participants:



- Strong incentives to act in a manner that reinforces grid reliability
- Transfer capability of transmission system is maximized

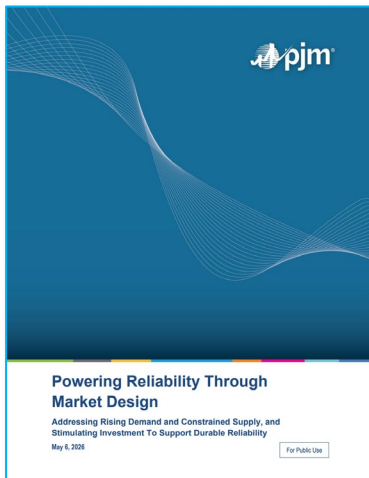
Bilateral trades properly form the bulk of market activity.



Maintaining reliability through markets

January 2026 PJM Board of Managers

- Directed PJM staff to examine whether the foundational assumptions of the market design still hold
- Named the core tension: *price volatility that is economically rational is placing unsustainable stress on the regional compact that allows the market to function*



PJM issued whitepaper
(identifying key issues and
needed decisions)

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

Following the release, 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.”*

The current supply shortage is **structural**, not cyclical

Demand surging faster than new supply



- Hyperscale data centers are adding load at an unprecedented pace - a data center can connect in 2–3 years, a new power plant takes 4 (optimistically) to 6 or more.

New generation costs twice as much, takes twice as long



- Capital costs for a new Combined Cycle plant have ~doubled
- Supply chain backlogs & permitting timelines add to the delay

Rapid growth of new large loads without new supply create significant risks for maintaining reliability

Long-term decade-long transition, not a one or two year gap

The Foundational Questions for PJM Markets

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

1

Is resource adequacy a common good that is shared by all – “shared reliability compact” and who is responsible for making it financially durable?

- *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 requires that most load be insulated from spot market price volatility through long-term forward commitments – who bears the burden of those requirements?*

2 Or should we decide that reliability must be explicitly rationed?

- *If not all load can be served at the historical 1-in-10 standard, prioritize by geography, customer class, or 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, should the market be designed to incentivize long-term contracting around a capacity product or the underlying physical commodity – energy?*

- Rapid data center demand growth is having unprecedented impact
- Next 5-10 years will have heavy dependence on natural gas generation to maintain system reliability
- Transmission & generation build-out will need corresponding natural gas infrastructure buildout
- Gas & electric markets will need to evolve to support needed investments

