



PENNSYLVANIA HOUSE OF REPRESENTATIVES HOUSE ENERGY COMMITTEE

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October 6, 2026

For Public Use

Executive Summary

On behalf of PJM Interconnection, L.L.C. (PJM), the largest electric grid operator in North America, I am honored to present our views on the steps being undertaken to ensure the reliability of the electric power grid in Pennsylvania and the 12 additional states that we serve along with the District of Columbia. As a regional grid operator, we face significant challenges, as well as opportunities, given the changing mix of electric generation resources combined with significantly increasing demand for electricity.

Specifically, in this testimony, I detail:

- The complex operational and economic transitions facing the electric grid from the “Hyperscale Paradigm Shift” that is bringing data centers of unprecedented scale to the PJM region and across the country
- The significant new demand/load forecasted to enter the system, due primarily to data center proliferation but also due to expansion of the electric vehicle market, electrification of building heating systems and growth in U.S. manufacturing
- Concerning trends as we see the pace of supply/generation retirements far exceeding the addition of new supply/generation being added to the system
- Actions PJM has undertaken to bring new supply to the system and to continue to appropriately reflect supply/demand fundamentals in our market
- Components of a recent plan put forth by the PJM Board of Managers to further enhance and accelerate our efforts to integrate artificial intelligence data centers to the grid while maintaining reliability and facilitating appropriate cost allocation

We look forward to continuing to work with the House Energy Committee and members on both sides of the aisle, as we have done in the past, to address these issues constructively and proactively. We are heartened that your Committee is conducting this hearing and by the Legislature’s interest in these important issues. We thank you for your consideration.

Introduction

Chair Fiedler, Minority Chair Causer, and Members of the House Energy Committee:

Thank you for the invitation to participate in this hearing to provide PJM's perspective as it relates to preserving electric grid reliability during this period of heavy forecasted demand growth. My name is Stephen Bennett, and I serve as Senior Manager of Governmental Services for PJM Interconnection.

Based in Valley Forge, Pennsylvania, PJM ensures the reliable flow of power to 67 million customers in all or parts of 13 states and the District of Columbia. PJM has no profit motive, as it effectively functions as a not-for-profit entity that is fully regulated by the Federal Energy Regulatory Commission (FERC).

We liken our role to that of an air traffic controller, but for the electric grid. We do not own the high-voltage transmission lines that carry electricity where it is needed most, but we direct and balance the flow of that power throughout our footprint and to neighboring regions when they need it.

In addition to managing reliable operations, PJM also plans necessary enhancements to the grid to ensure reliability in the future and operates electricity markets within its region to competitively procure capacity and to efficiently dispatch resources to meet electricity demand, or load, in real time. The purpose of these electricity markets is to cost-effectively reinforce reliable grid operations.

PJM is a mission-driven organization that serves the public interest as a FERC-authorized Regional Transmission Organization (RTO). We are clear about our priorities: Reliability is our North Star. People and businesses in the PJM region depend on us to keep the lights on, and we exist to uphold that trust.

Testimony

A Region at a Crossroads

The region that PJM serves is currently navigating one of the most complex operational and economic transitions in its history. For nearly two decades, the PJM footprint benefited from a surplus of installed capacity and an era of relative stability for the electric grid. During this period, the primary challenge of the resource adequacy (RA) construct was to manage the orderly retirement of aging thermal generation while signaling the entry of competitive new resources. This environment was characterized by an electric grid with predictable, gradually changing load; a coal-to-gas fuel transition that could be managed over a years-long horizon; and a generation development timeline that aligned with the market's three-year forward horizon.

Today, those conditions have fundamentally changed. The PJM region is now faced with a convergence of three structural forces that have pushed the system into disequilibrium:

1. An unprecedented surge in demand driven by the rapid expansion of Large Load data centers and broader economy-wide electrification
2. The accelerated retirement of dispatchable generation due to environmental policy and economics
3. Significant supply chain and permitting frictions that have extended the time required to bring new resources online

The result is a transition from an era of managing surplus to an era of managing scarcity – one that is anticipated to persist for some time based on current projections, because new generation simply cannot be built fast enough to offset the combined effect of retiring supply and surging demand.

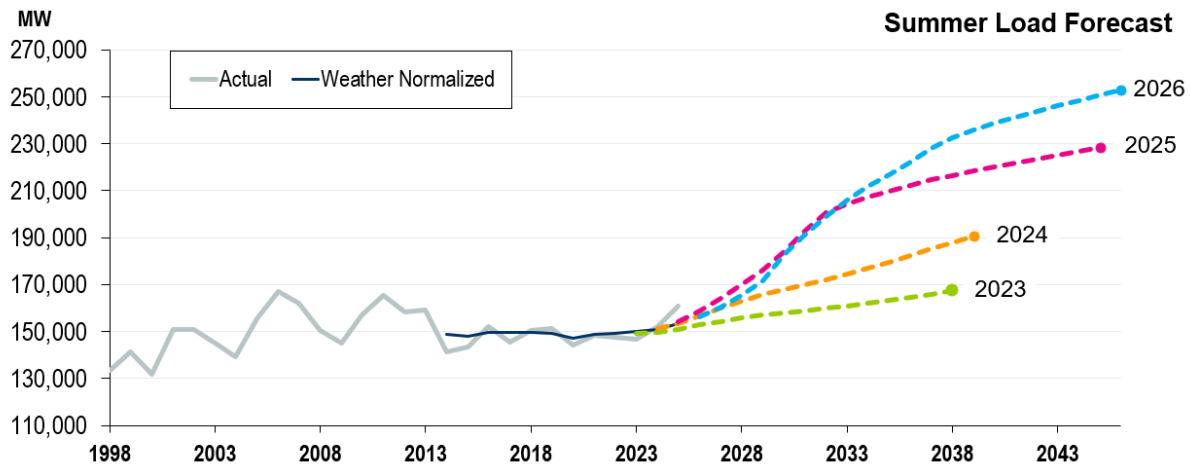
Major Demand Increases Forecasted

The PJM annual load forecast issued in January of 2026 confirms the trend of significant growth in electricity demand over the next 20 years as shown in **Figure 1**. It is worth noting that this forecast includes substantial demand increases when compared to the forecasts issued just a few years ago, showing how quickly these industry dynamics are accelerating. Demand increases in PJM are being driven primarily by data center proliferation.

According to the 2026 forecast, PJM expects its summer peak to climb about 85,000 MW, to 241,000 MW, over the next 15 years. The record summer peak for the PJM footprint occurred in 2026 at 168,158 MW.

While winter peaks will remain slightly lower, the forecast shows winter closing the gap in peak electricity use, estimated at 224,000 MW by 2041. PJM's record-high winter peak occurred in January 2025, when PJM served a load of 143,858 MW.

Figure 1. Electricity Demand Growth – PJM RTO Peak Summer Load Forecast (1998-2046)



PJM believes that the forecasted increase in demand is an “all hands on deck” event, and that we will need all of our resources to meet both the opportunity and challenge that this demand increase presents.

The Hyperscale Paradigm Shift

The coming wave of macro-load is fundamentally different from the residential and commercial load that defined the grid of the 20th century. Hyperscale data centers are unprecedented in their scale, with individual facilities approaching the size of traditional power plants. And they are managed by highly sophisticated entities that possess a deep understanding of energy markets, advanced operational capabilities and multiple levers of inherent flexibility:

Workload flexibility. AI compute workloads are divided into two categories with fundamentally different flexibility profiles. AI inference – the real-time use of trained models to answer queries – is latency-sensitive and effectively firm load. AI training – the process of building models from large datasets – is throughput-oriented and has natural flexibility. Google estimates that 40% of its AI energy use comes from the training phase.¹ Training workloads have built-in “flex points” at checkpoint intervals, gradient accumulation windows and parallelism strategy boundaries that can tolerate short slowdowns or pauses without compromising the training run’s ultimate output. These are not theoretical flexibilities; they represent real operating practices that sophisticated operators already manage to allow them to reschedule lower urgency computational needs while protecting the highest-priority workloads.

On-site generation and storage. Data centers have historically been built with diesel backup generators capable of running the full facility load during grid outages. As battery energy storage becomes cost-competitive, replacing those diesel generators with lithium-ion batteries creates a resource that is not merely a passive backup – it may be configured to be able to actively discharge to the grid during peak demand hours, providing both the data center’s IT reliability and a grid service simultaneously.

¹ Sidewalk Infrastructure Partners (SIP), *Data Center Flexibility: A Call to Action* (March 2024)

Advanced load control architectures. Next-generation data center facilities are being designed with granular, software-controlled load management that can reduce facility demand on a graduated rather than binary basis. This is qualitatively different from traditional industrial curtailment (which typically means stopping a process entirely): These systems can reduce power by 10%, 20% or 30% in seconds through integrated, coordinated control of workload scheduling flexibility and on-site storage discharge.²

The uniqueness of this type of load, combined with the scale of load growth, presents a generational opportunity to rethink not only the solutions to the resource adequacy problem but also the problem itself. Consequently, PJM is undertaking a wide range of efforts to analyze, optimize and enhance our processes and procedures to keep pace with this paradigm shifting moment.

Load Forecast Improvements

Load forecasts are the fundamental building blocks upon which resource adequacy and grid reliability are built. The PJM capacity market is designed to procure accredited capacity to meet the needs defined in the load forecast. Additionally, the load forecast is one of the primary inputs in the Regional Transmission Expansion Plan (RTEP) – the process by which PJM plans regional transmission needs. Given the importance of the load forecast, the PJM Board of Managers (“the Board”) directed PJM to improve the existing load forecasting process and methodology. These improvements include adding a step for state review of Large Load additions submitted to PJM by Transmission Owners (TOs), addressing duplicative requests for Large Load additions, the use of additional third-party review of Large Load additions and forecast methodology, and overall increased transparency of the load forecasting process.

PJM recently initiated its annual review of proposed Large Load Adjustments to determine the impact to PJM’s 2027 Long-Term Load Forecast, using the updated guidelines to better account for viability of proposed projects. PJM has standardized the submission process to require TOs to provide additional information to PJM including contract status to determine firm commitments.

For the first time, PJM also has retained an independent consultant, Charles River Associates, to assess data center demand trends and the factors that could affect future growth. That analysis will consider issues including artificial intelligence adoption and the evolution of the digital economy, as well as potential constraints involving power, materials and regional development.

In November, PJM will explain how it is incorporating this information into a final load adjustment for the 2027 Long-Term Load Forecast, which will be published in January.

² For further discussion of data center flexibility capabilities and demonstrations, see:

NVIDIA and Emerald AI, Press Release, CERAWEEK 2026 (March 2026),

Sidewalk Infrastructure Partners (SIP), *Data Center Flexibility: A Call to Action* (March 2024),

Emerald AI, EPRI, National Grid, and Nebius, *Power-Flexible AI Factories: A UK-First Demonstration of Grid-Responsive AI Infrastructure* (March 2026), pp. 2, 5–6. The demonstration was conducted as part of EPRI’s DCFlex initiative.

Further Generation Interconnection Queue Acceleration

Since 2020, PJM has processed more than 500 GW of projects through its transitional queue and newly implemented interconnection cycle. To date, this has resulted in over 100 GW worth of projects with signed interconnection agreements.

PJM began accepting generation applications as part of a new and reformed interconnection process in April of this year. Initially, 811 new generation projects, capable of generating 220 GW of electricity, applied to connect to the grid through the first Cycle (Cycle 1) of PJM's reformed interconnection process. Of the initial Cycle 1 submissions, 715 generation projects, capable of generating more than 200 GW of electricity, made it through an initial screening process that assessed applications for required technical information and financial deposits. In the most recent Cycle 1 phase, 617 projects (approximately 169 GW) agreed to make the first round of at-risk deposits while 98 projects withdrew from the cycle. The applications include a diverse mix of generation resources:

- 617 projects, led by storage (265), natural gas (124), solar (101), wind (58), solar/storage (29), nuclear (25), other (9) and hydro (6)
- 168.6 GW of nameplate capacity, led by natural gas (81.1 GW), storage (50.1 GW), nuclear (17.6 GW), solar (9.4 GW), solar/storage (6.0 GW), wind (3.5 GW), other (0.789 GW) and hydro (0.086 GW)

PJM currently has 51 GW of generation with signed agreements that have not moved fully to the construction phase. Obstacles to construction continue to be permitting and siting delays, supply chain backlogs, increased interest rates, and inflationary price pressures on infrastructure and components. PJM expects to significantly add to the number of projects with signed agreements at the completion of Transition Cycle 2 in early 2027 and Cycle 1 in 2028.

While our interconnection timelines are fully approved by FERC, PJM is committed to streamlining our interconnection process wherever possible, and we actively share these efforts with stakeholders and gather feedback at our regular Interconnection Process Subcommittee meetings.

Interim Resource Adequacy Service

PJM Interconnection recently filed at FERC its proposed framework to connect new data centers and other Large Load customers that bring their own power supplies consistent with the Ratepayer Protection Pledge. PJM's proposal would establish a new Interim Resource Adequacy Service (IRAS) for those new Large Load customers who do not bring their own power supply. When electricity supply on the grid approaches dangerously low levels, a new emergency procedure would notify utilities to reduce or transfer the electricity demand from new Large Load customers ahead of any action that would serve to shut off traditional consumers, including residential consumers.

IRAS would apply to new Large Loads that have not brought their own new capacity or had their capacity needs covered through the Reliability Backstop Procurement, a special process designed to fill forecasted capacity shortfalls, which is also pending at FERC.

The IRAS framework encourages states and the Electrical Distributors that serve their residents to reevaluate and amend the established plans that utilities and other Load Serving Entities (LSEs) follow when directed by PJM to reduce electricity demand, or load.

The proposal is intentionally designed to avoid conflicts with state authority by leaving established and regulated retail load reduction plans and retail cost allocation to state-level entities, while IRAS provides PJM the necessary tools to address situations where regional power shortages would jeopardize reliability and threaten wider outages.

To support the IRAS framework, PJM would require utilities and other LSEs to bring new capacity in an amount that equals or exceeds the combined peak demand of the new Large Loads. Failing that, PJM would direct these zones during emergencies to reduce electricity demand in proportion to their area's share of new Large Load not supported by new generation. This curtailment of service would come before calling on Load Management customers, who are paid in advance to reduce their electricity use when directed by PJM in emergencies. States could use the Large Load Registry to identify which customers would be subject to IRAS.

As laid out in PJM's filing, this model is consistent with the Ratepayer Protection Pledge introduced in March 2026 and recently expanded in July 2026, which states that new Large Loads will "build, bring, or buy the new generation resources and electricity needed to satisfy their new energy demands, paying the full cost of those resources whether by building, or buying from, new or otherwise additive power plants" because it "advances self-sufficiency and protects Americans from higher prices."

A Large Load that is ordered to reduce its power usage could receive credit for helping maintain grid reliability. States and their local utilities would manage how these retail costs are shared among customers in affected areas. Large Loads could also waive that compensation consistent with the Ratepayer Protection Pledge to "protect the American people from increased utility bills as a result of the development of these data centers."

The Large Load Registry, a database of information pertaining to Large Loads that will be established and maintained by PJM, will aid PJM in administering IRAS and other Large Load initiatives to help balance supply and demand. PJM would make this information available to states, utilities and regulators, subject to confidentiality requirements.

Notably, PJM proposes that beginning with the 2029/2030 capacity auction, new Large Loads that do not bring their own new supply to the system will not be included when calculating the future power needs to be procured in those auctions.

Affordability

While this informational hearing is focused on reliability, the subject of affordability is inextricably linked with any discussion of resource adequacy and grid reliability. PJM knows that affordability matters. We recognize the pressure that rising electricity costs place on families and businesses. We will act within our power to help address this challenge by providing power reliably and cost-efficiently through competitive markets and decisions in planning and operations, while providing insight into PJM and system costs. Although PJM does not set retail rates, we will be transparent and accountable for costs that are within our control.

Additional Perspectives on Moving Forward and Policy Guidance

Grid reliability and, in particular, resource adequacy are national issues. NERC has identified that nearly two-thirds of the country is experiencing similar conditions to PJM. As demand rises, we must continue to maintain reliability for our consumers in as cost-effective a manner as possible. PJM has been warning of our concerns for some years now, and we are grateful to the Committee for the seriousness with which you are approaching this issue. After years of flat demand, the dynamics we are collectively experiencing now provide the opportunity for collaboration and advancement for the betterment of our nation.

As noted above, PJM is doing everything within its authority to try and tackle this supply/demand challenge. It is also very conscientious of maintaining cost-effectiveness for consumers while simultaneously attempting to balance the varied policy priorities of our policymakers.

Conclusion

The stakes for delivering reliable power are high: 67 million people rely on PJM to power their homes, their work and their daily lives. Reliable, abundant electricity is a foundation on which economic opportunity, industrial growth and American technological leadership depend. These demands on PJM and its members are not transitory: In the next five years, the region needs a grid that delivers. Our region is falling short of what this moment demands. Not enough new generation is connecting to the grid, too many projects are delayed due to permitting and supply chain issues, and investors require more market certainty prior to making long-term investments in new infrastructure.

As the region faces accelerated demand growth, driven by the continued growth of Large Loads and data centers, the state of the interconnection is not tenable. Fixing this will require the concerted partnership of PJM, states, utilities, generators and Large Load customers alike. We hear the expectation for PJM's clear direction and leadership on the grid's future, which should be informed by the voice of the consumer.

Thank you for the opportunity to present my testimony today. I look forward to your questions.