TESTIMONY OF THE NATURAL RESOURCES DEFENSE COUNCIL

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on Data Centers: Impacts, Operations, and Policy Considerations

before the Senate Democratic Policy Committee

Scranton, Pennsylvania

September 2, 2025

Chair Miller, Senator Flynn, and honorable members of the Senate Democratic Policy Committee, thank you for the opportunity to testify today on this critical issue. There's been a flurry of announcements about data center projects and significant planned investments in Pennsylvania in recent months, making this a particularly timely hearing to understand the facts and how best to ensure your constituents are protected from (1) unjust cost shifts threatening to spike monthly electric bills and (2) harmful emissions outcomes associated with any new electric generation or from existing fossil assets being inefficiently utilized.

My name is Robert Routh, and I am a senior attorney with NRDC (Natural Resources Defense Council), an international non-profit organization with over three million members and online activists. Since 1970, NRDC's lawyers, scientists, and other environmental specialists have worked to protect our natural resources, public health, and climate. In my role as Pennsylvania State Lead for the Climate & Energy Department, I work to advance decarbonization across all 67 counties in the Commonwealth with most of my attention paid to statewide efforts in Harrisburg. My job is to advocate for laws and policies that will drive a more sustainable, equitable, and prosperous clean energy economy for all Pennsylvanians.

Pennsylvania, like the rest of the country, is faced with unprecedented opportunities related to data centers, high-tech cloud computing, and artificial intelligence ("AI") campuses – new "large loads" characterized by their significant demands for electricity. These facilities can spur economic growth, including through job creation, increased municipal tax revenue, and various infrastructure investments. However, their rapid anticipated growth and unique operational behaviors require specialized planning to maintain grid reliability and accurately forecast peak demand in the coming years.

One key principle to internalize: **if a new large load does not bring its own new, clean, firm generation to power its operations, the inherent results will be increased pollution, increased strain on the grid, and a financial blow to residential ratepayers**.

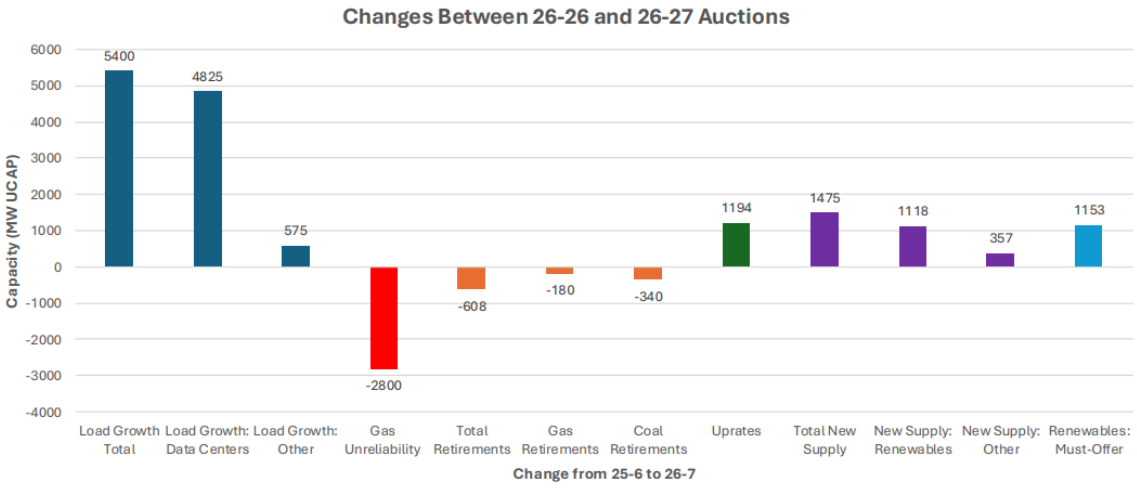
Already, consumers are facing increased utility costs driven, in large part, by projected data center buildout. The price impacts that your constituents and those across the 13-state PJM footprint will experience to varying degrees starting in June 2026 can be traced back to the most recent capacity auction held by PJM in July 2025 for the 2026-27 delivery year. It cleared at a historically high price, breaking the record set by the previous auction in July 2024 (the effects of which just started hitting Pennsylvanians this June).

PJM's capacity market is set up to ensure that there is enough electricity to meet demand on the hottest and coldest days of the year. Capacity auctions are designed to happen annually to procure

sufficient power supply for three years in the future, including a healthy reserve margin for reliability. Power plants are paid through capacity auctions to commit to be available (or customers are paid to conserve during emergencies) whether that electricity is ultimately needed or not; those power plants are also paid separately when they do sell their electricity to the grid. The July 2025 auction saw a clearing price of $329.17/MW-day, hitting the newly lowered price cap negotiated by Governor Shapiro and resulting in total costs of nearly $16.1 billion spread across the region.

It's worth noting the capacity price "collar" settlement that the Shapiro administration reached with PJM (following its filing of a complaint with the Federal Energy Regulatory Commission in December 2024 arguing that PJM's markets were unjust and unreasonable) helped mitigate the severity of the price impacts. PJM's own analysis after July's auction estimated that costs would have soared $2.9 billion higher absent the new cap, which is currently in place only through the next auction scheduled for December (for 2027-28 delivery year). FERC approved the temporary agreement to buy time to fix structural, underlying issues with PJM's interconnection queue, capacity market design, and forecasted increase in large loads.

The growing electricity supply/demand imbalance in the region is made manifest by the interest in data centers. One critical change between PJM's capacity auctions in 2024 and 2025: there was over 5,400 megawatts (MW) of increased demand forecast, of which 4,800 MW (nearly 90%) were traceable to large loads (primarily, although not exclusively, data centers). PJM's markets currently allow for different practices by electric utilities in determining future demand, which can lead to overprocuring supply for double counted data centers or for data centers that are shopping around but may never be built.



SUSTAINABLE FERC PROJECT

Accurate Load Forecasting

National, regional, and utility territory-specific forecasts for near- and long-term demand growth are made highly uncertain by: (1) speculative bids from prospective data center developers; (2) unpredictable market conditions for AI technologies affecting their future uptake; and (3) potential advancements in chip technology or model architectures, which could drastically reduce the energy requirements of AI over time. This uncertainty means that data center demand may currently be overestimated by a factor of five to 10.

The variable nature of load forecasts poses great risks to all other customers. If actual demand falls short of projected forecasts, infrastructure could be overbuilt, stranding other customers with the costs. Conversely, if infrastructure is underbuilt and large loads are brought online, this could create capacity shortfalls and threaten reliability. Even if the system is "right sized," absent deliberate, thoughtful, and proactive steps from regulators (as well as the legislative enactment of regulatory frameworks), there are risks that costs to serve large load customers will be allocated in a manner that unfairly shifts the burden to other ratepayers.

Earlier this year, NRDC submitted comments to the PA Public Utility Commission (PUC) following its *en banc* hearing on interconnection and tariffs for large load customers. We provided a series of recommendations to increase demand certainty and align infrastructure investments with real demand. This would require new large load customers to provide near- and long-term guarantees that they are committed to siting in Pennsylvania with the capacity and energy requirements that they request. It would serve to benefit large load customers by providing certainty, transparent costs, and roadmaps for expanding their operations:

1. **Upfront financial/siting commitments**. Requiring early fees to enter the queue, such as collateral or deposits, and other commitments like site control can help filter out speculative customers while prioritizing customers who are committed to siting in Pennsylvania (e.g., ComEd in Illinois currently requires site control and $1 million upfront to be counted in load forecasts). Prior to interconnection, any study associated with a new large load customer or aggregation of large load customers should be paid for solely by these customers.

2. **Exit fees and resizing clauses**: In the case that a large load customer ceases operations or wishes to decrease their energy usage, adequate fees should be assessed to recover unmet costs due to early termination or a reduction in load. For new data centers, it is of particular concern that AI uptake will not meet expectations, resulting in vacant facilities; additionally, large efficiency gains in chip technology or model architectures could significantly reduce energy and capacity requirements in the future. These potential risks complicate the cost recovery of new infrastructure, as it can strand other customers with the costs. One potential

solution can be found in Indiana Michigan Power's Industrial Power Tariff Settlement, which provides that customers may reduce load by up to 20% with 42-months' notice and may terminate a contract after the first five years with an exit fee assessed as the nominal value of the remaining minimum charge for the terminated/reduced capacity.

3. **Minimum load charges**: Even if a large load customer's actual consumption is lower than their contracted amount, a take-or-pay clause would require the customer to pay for a minimum amount of energy, regardless of how much they use. This would ensure the utility recovers the costs associated with providing reliable power to the customer even if their actual consumption falls below their contracted obligations (e.g., under the AEP Ohio tariff, the customer pays the greater of either their actual monthly use or 85% of their contracted capacity).

4. **Load Shedding and Demand Response**: There are abundant benefits to requiring large customers to maintain flexibility and curtail load with day-ahead notice. However, for data centers and other industries with high uptime like microchip processing and battery manufacturing, the existing participation in demand response programs is extremely low, proving that financial payments alone are not sufficient incentives. Requiring large load customers to respond to emergency load reduction events should be deemed necessary to maintain grid reliability and stability. There is a critical role for PJM to play on this front, and NRDC and partners recently filed comments on some of the RTO's proposals to address resource adequacy constraints being driven by data centers. Moreover, there is a need to review and account for the true benefits of curtailing load from data centers that can do so without consequence, such as data centers that can shift their computational loads to different facilities or to different hours of the day while ensuring data center loads that rely on diesel backup generators for flexibility do not result in adverse health and environmental impacts on local communities.

5. **Regulation and monitoring of backup generation**: Diesel backup generation can allow for demand response and flexibility from some data centers but also poses risks to air, water, and land quality from dirty fuels; it could potentially allow large load customers to strategically reduce their peak demand in key hours to avoid peak demand charges, shifting their costs onto all other customers. Because battery storage is not designed for quick charging (and discharging large volumes of power is not currently economically or technically feasible to scale), backup diesel generators are widely used. To protect local communities, diesel generators should be required to: (1) operate with the cleanest fuels (Tier 4 or higher); (2) only be allowed to run in emergency circumstances deemed appropriate by regulators; and (3) meet all existing air quality standards. Enforceable rules

should be developed, which rely on continuous monitoring and reporting of backup generation use and its associated emissions.

Further, to mitigate rising electricity and capacity costs, NRDC has urged the PUC to direct utilities that adopt large load tariffs to propose a volumetric charge on new large load customers to contribute to universal service programs to support energy efficiency, demand response, and low-income payment programs in Pennsylvania. The funds collected under such a system benefit charge must *not* supplant existing programming.

Benefits of Bringing Your Own Clean Generation

In June, Governor Shapiro announced that Amazon planned to invest at least $20 billion to establish multiple high-tech cloud computing and AI innovation campuses across the state, the largest private sector investment in PA's history. Salem Township, home to the 2,476 MW Susquehanna nuclear power plant in neighboring Luzerne County, was listed as one of the first two sites. This likely reflects the plant operator's announcement that it has entered into a power purchase agreement (PPA) with Amazon to provide 1,920 MW of power for a data center campus by 2032 (the contract runs through 2042 and calls for delivering 840 – 1,200 MW in 2029 and 1,680 – 1,920 MW in 2032). The announcement also stated Amazon and Talen plan to "explore" building new small modular reactors (SMRs) and "pursue" uprates at the Susquehanna plant to potentially add net-new energy to PJM's grid.

While this agreement gives the appearance that Amazon will power its data center with zero emissions electricity (technically it is), the net result would actually be an increase in emissions of carbon on our grid and increased pollution like NOx in the communities near gas plants that would come online to meet demand that was previously met by Susquehanna. Fed up with volatile energy and capacity markets in PJM, it's understandable that nuclear plant owners would be more than happy to sign a long-term PPA with a data center company, thereby providing revenue certainty and the comparable bump in stock price that would ensue. Unfortunately, we're already in a massive "carbon hole." Digging deeper by cannibalizing existing zero emissions resources is precisely not how to dig our way out.

NRDC is not new to reckoning with the impact of massive new load commitments to the electric grid. We have long advocated for the "three pillars" in the context of ensuring hydrogen production and use in fact reduces emissions overall. One of these pillars is additionality (also known as incrementality), which simply means that if we're going to power something new with zero emissions electricity—whether it be a hydrogen electrolyzer or a data center—it must be powered by a resource that is *additional* (i.e. not "existing"). Otherwise, that new demand is in fact directly responsible for *increasing* emissions from the broader grid, since removing an existing nuclear or

renewable energy plant from the grid supply immediately results in those same MWhs being backfilled by gas plants for at least the near- and medium-term. Due to a continued backlog with PJM's interconnection queue, new clean energy to fill this gap could take years to come online.

This arrangement is also in stark contrast to the announcement last year that Microsoft would be entering into a long-term contract with Constellation to restart Unit 1 at Three Mile Island (now "Crane Clean Energy Center") to meet demand from its new data centers in PJM. Unlike in the Talen/Amazon transaction, Unit 1 had been closed—since 2019, because it was no longer economical—so this arrangement will result in *new* low-carbon electricity coming online. Accordingly, from a climate, consumer, and grid impact perspective, this Constellation/Microsoft arrangement will result in a better outcome than the alternative: data centers powered by polluting gas plants.

Put simply, data centers and other large load customers co-located with self-funded carbon free energy generation and battery storage in "energy parks," especially when sited at existing grid connections like retired generation sites to avoid new transmission needs, are ideal for consumer protections, emissions outcomes, and grid reliability. This would also serve as a hedge for data center operators against future grid instability while providing a faster timeline for scaling up new generation and storage if those resources can avoid PJM's interconnection queue.

Conclusion

The electricity supply situation in PJM is precarious, and if not managed carefully, could cost consumers tens of billions of dollars and risk life-threatening winter power outages. We know that data center buildout is a leading cause of rising electricity prices and could potentially increase harmful pollution, but we have a diverse array of tools available to address the issue. NRDC looks forward to working with the General Assembly and relevant stakeholders in the months ahead on diligent regulatory frameworks for data centers that can simultaneously lower consumer bills, reduce climate pollution, and grow and protect energy jobs.

Thank you for the opportunity to testify, and I look forward to answering any questions.

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