

December 16, 2025

Pennsylvania Public Utility Commission
Commonwealth Keystone Building
400 North Street, 2nd Floor
Harrisburg, PA 17120

Re: Comments on Large Load Interconnection Tariff for Commercial Data Centers and Other Large Flexible Loads

Docket Number: M-2025-3054271

Dear Commissioners:

Thank you for the opportunity to submit comments on the development of a Large Load Interconnection Tariff (“LLIT”). Pennsylvania is entering a period of significant large-load growth driven by data centers and digital infrastructure. These loads present unique and systemic risks to grid reliability, planning adequacy, and cost allocation. A carefully designed tariff is essential to ensuring transparent, predictable, and non-discriminatory rules while preventing reliability events such as the July 10, 2024 Northern Virginia incident¹, which nearly caused a cascading blackout following the instantaneous disconnection of ~1,500 MW of hyperscale load.

The following recommendations reflect principles used in other jurisdictions—Virginia (Dominion internal practices), Ohio (PUCO large-load tariff), and ERCOT’s Large Flexible Load rules—while adapting them for Pennsylvania’s regulatory structure and the PJM interconnection framework.

Applicability Threshold

Recommendation:

Apply the LLIT to **commercial data centers and other large flexible loads ≥ 25 MW**, whether connecting at transmission or distribution voltage.

Rationale:

- 25 MW is large enough to materially affect distribution and transmission reliability.
- Smaller facilities (<25 MW) may be addressed through standard distribution tariffs.
- Clustering of mid-size facilities is a major emerging issue; therefore, the threshold must not be set so high that real risks fall outside the tariff.

1

<https://www.datacenterdynamics.com/en/news/virginia-narrowly-avoided-power-cuts-when-60-data-center-s-dropped-off-the-grid-at-once/>

Interconnection Application Requirements & Queue Discipline

The LLIT should require utilities to apply consistent and transparent sponsorship criteria for projects seeking PJM interconnection.

Site Control, Local Permitting, and Demonstrated Project Readiness

A public utility may not forward or sponsor a large-load interconnection request to PJM unless the applicant demonstrates:

1. **Site control** (ownership, lease, or option with defined term);
2. **Local zoning consistency and preliminary land development approval** or affirmatively certified progress;
3. **State-level readiness deposit** (amount defined in tariff);
4. **Utility-approved engineering feasibility study** showing that the request is technically viable.

Rationale:

These measures prevent “phantom load” projects from entering PJM’s queue, triggering costly upgrades that are later abandoned and socialized to ratepayers.

Milestones and Withdrawal Penalties

The tariff should require:

- Project development milestones aligned with PJM milestones
- Escalating deposits tied to milestone progress
- Full cost responsibility for studies or upgrades triggered if the project withdraws or materially downsizes

Rationale:

Without withdrawal cost recovery, speculative projects impose real costs on utilities and consumers.

Grid Interaction & Load Drop Mitigation Plans

All large loads ≥ 25 MW should be required to file a **Grid Interaction & Load Drop Mitigation Plan (GILDMP)** as part of interconnection approval.

Plan Components

The LLIT should require the following minimum elements:

1. **Dynamic Ride-Through Capability**
 - Demonstration of voltage/frequency ride-through performance consistent with IEEE 1547-2018 for distribution-connected facilities.
 - Demonstration of IEEE P2800-type capabilities for transmission-connected campuses (>100 MW).
 - Description of UPS/BESS behavior during grid faults and restoration.
2. **Staged Disconnection Sequencing**
 - No instantaneous, whole-facility disconnection exceeding **50 MW** at a single point of common coupling (PCC).
 - Maximum **20% load drop per 2 seconds** and **50% per 10 seconds**, unless exempted based on redundancy or topology.
3. **Automated Restart Coordination**
 - “Soft-start” logic preventing simultaneous cold-load pickup.
 - Sequenced restoration protocols coordinated with utility and PJM.
4. **Telemetry and Communications**
 - Real-time telemetry to the utility and regional transmission operator.
 - 24/7 utility contact and dispatch capability.
5. **Annual Testing and Certification**
 - Annual validation of ride-through performance and staged-shed capability.
 - Corrective action timelines and penalties for non-compliance.

Rationale:

The 2024 Fairfax/Dominion² event demonstrated that simultaneous, instantaneous load drop can destabilize regional power systems. Mandated staged-shed behavior is a critical requirement the PUC can impose through tariff.

Clustering and Substation-Capacity Risk Mitigation

Utilities must evaluate clustering impacts during the interconnection review to reduce systemic single-point-of-failure risk.

Required Utility Analysis

² https://www.nerc.com/globalassets/our-work/reports/event-reports/incident_review_large_load_loss.pdf

- Thermal, voltage, and contingency (N-1/N-1-1) analysis under clustered load assumptions.
- Local distribution “fault ride-through” and protection coordination modeling.
- Requirement to propose mitigations before approval.

Potential Tariff-Based Mitigation Requirements

The tariff should expressly allow utilities to require:

- Redundant interconnection or looped topology
- Protection scheme upgrades
- Distribution or substation reconfiguration
- Staged startup logic coordinated among clustered customers
- Additional reliability deposits or infrastructure contributions

Rationale:

Data centers cluster for economic reasons; the LLIT must ensure clustering does not create systemic single-point-of-failure risk.

Emergency Curtailment Requirements Aligned With PJM

The tariff should include:

1. **Mandatory participation in utility/PJM emergency operations**, including capacity performance events, voltage reduction orders, and RTO-designated emergencies.
2. **Defined notice periods**, acknowledging that notice may be minimal in emergency reliability events.
3. **Compensation consistent with PJM demand response rules**, ensuring no double payment or conflicting obligations.
4. **Utility authority to require pre-event testing** of demand-response capability.

Rationale:

Unlike Texas’s SB 6 mandate or ERCOT protocols, PJM relies heavily on voluntary demand response. Large loads must demonstrate actual curtailment ability.

Cost Allocation and Backstop Requirements

Applicant Pays for Triggered Upgrades

The tariff must require that large-load applicants:

- Pay for utility system upgrades triggered solely by their interconnection
- Bear the cost of any PJM upgrade allocations prior to commercial operation date (COD)
- Reimburse ratepayers if the project withdraws after triggering costs

Backstop requirements should include financial security instruments, true-up obligations, pay-before-COD rules, and default protections to prevent cost-shifting

Reliability Contribution Charge (Optional Tariff-Based Fee)

A modest reliability fee could and should appear in the tariff and be applied to large loads that:

Increase system reliability risk,
Accelerate utility capital investments, or
Require enhanced operational services from the utility.

A Reliability Contribution Charge should be narrowly tailored to recover only those incremental reliability-related costs demonstrably attributable to large, non-diverse, high-duty-cycle loads, including feeder hardening, contingency planning, advanced monitoring, and integration into emergency curtailment schemes. This type of cost-based reliability service charge is permissible under Pennsylvania's cost-of-service ratemaking standards and is common in other states with substantial data center or high-density load interconnections.

Reporting and Transparency

The tariff should require utilities to file annual reports to the PUC including:

- Number of large-load applications received
- Queue movement and withdrawals
- Clustering risk assessments
- Reliability incidents involving large loads
- Annual GILDM compliance reports

Thank you,

Jen Quinn