Comment on Tentative Order by the Pennsylvania Public Utility Commission (PUC), after *En Banc Hearing In re: Interconnection and Tariffs for Large Load Customers*

Institute for Cyber-Physical Infrastructure and Energy (I-CPIE)
Lehigh University *

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In response to the invitation for comments on Docket No. M-2025-3054271 by the Pennsylvania Public Utility Commission (PUC), we are providing recommendations on three aspects of the PUC's tentative order, after *En Banc Hearing In re: Interconnection and Tariffs for Large Load Customers*.

1 Risk Allocation and Potential for Cross-Subsidization

The principle of cost causation implies that any customer whose consumption incurs a cost should bear that cost to ensure efficient pricing and avoid cross-subsidies. Customers that provide benefits to the system should also be rewarded for the service provided.

1. Under "Universal Service Cost Allocation," the Tentative Order suggests a mandatory annual contribution to the public utility's Hardship Fund, with contributions up to $1,000,000 for large load customers (LLCs) with peak demands of more than 500MW. The contributions suggested are fixed and follow a schedule according to the peak demand, as outlined in the Appendix.

   Comment: A fixed contribution schedule provides a predictable revenue stream. A transparent social funding mechanism is desirable, to avoid blurring the cost causation principles and distorting price signals and investment decisions. However, these fixed contributions raise three issues:

*Alberto J. Lamadrid L, director of the Institute for Cyber-Physical Infrastructure and Energy, I-CPIE, at Lehigh University compiled this document. We acknowledge the valuable input received from faculty members of the Center for Accelerating Community Electrification Solutions (ACES) at Lehigh University. The views and opinions expressed herein are solely those of faculty affiliated with I-CPIE and ACES that responded to this request for comment, and do not necessarily represent the official views or policies of Lehigh University faculty and officials. All omissions or errors remain our responsibility. E-mail: `incpie@lehigh.edu`

(a) The schedule breakpoints can create incentives to LLCs to cluster demand just before the next breakpoint to avoid the fixed charge. This may result in a cluster of applications with expected demand peaks just below 75 Megawatts (MWs), just below 100MW, and just below 500 MW.

(b) Fixed schedules do not reflect the marginal cost impacts, and are disconnected from marginal or incremental strains induced. Therefore, other consumers will need to be charged to cover for these costs.

(c) Fixed contributions do not provide incentives for improving demand management. Therefore LLCs may not be aligned with the objectives of system operators and could jeopardize reliability in extreme situations.

The PUC can consider adjustments and alternatives to fund the Hardship Fund. Instead of a fixed contribution according to peak demand, the PUC can consider contributions related to actual system costs, including performance-based contributions and dynamic pricing that is reflective of the marginal impacts on the level and the changes (ramping) of the demand.

The PUC can also consider dynamic pricing with two-part schemes (fixed and variable components). For the fixed part, the PUC can use a tiered pricing structure with breakpoints (i.e., 25-75 MW, 75-100 MW, 100-250 MW, 250-500 MW, and higher). LLCs with peaks beyond 500MW, can have a fixed pricing structure with rebates or discounts in Year 2 onwards. The variable components can be implemented through various forms of dynamic pricing, including rates indexed to the Locational Marginal Prices (LMPs) calculated at the specific interconnection node and ramping costs for large variations in a period of time.

These alternative models can create the conditions that will make the LLCs active participants in the energy market and encourage flexibility that can support the electrical system in times of stress.

2. The Tentative Order contains the following language in the "Deposits, Financial Security, or Collateral" section:

> We tentatively determine that financial security should be sufficient to cover the cost of any LLC's share of network upgrades for which the LLC is the majority beneficiary and that will be partially allocated to other customers of the electric distribution company (EDC).

Consider one possible scenario: An LLC requires new assets (e.g., an upgrade to a transmission line), and the Contribution in Aid of Construction (CIAC) is used only if the LLC is the majority beneficiary (more than half of the facility). This rationale creates a threshold at 50 percent, which can have the following consequences. An LLC can connect and trigger the need for a new asset investment, given the additional demand that needs to be covered. If the LLC receives just below the majority (e.g., 49 percent of the benefits), the investment is placed into

the rate base and the other customers, not the cost-incurring LLC, pay for the investment.

Comment: Instead of a majority beneficiary criterion, the PUC should consider having the customer that triggers the need for a lumpy investment pay its full marginal cost, or base the CIAC on the percentage of use estimated to be needed.

3. The Tentative Order also discusses Minimum Demand Charges (e.g., 90 percent of the highest between on-peak capacity recommended by OCA and EarthJustice). A demand charge follows a logic of paying for the fixed costs of dedicated infrastructure, even when actual consumption or load factors are low. Sometimes the peak of a given demand such as an LLC does not happen when the system is under stress, or is not coincident with the system peak demand. In many instances, the demand for LLCs increases the overall efficient use of the electric system, for example by increasing utilization at times with spare capacity.

   Comment: Instead of minimum demand charges, and similar to the fixed annual contributions to the utilities' Hardship Fund, consider having mechanisms that elicit flexibility from the demands. One possible model would expose LLCs to dynamic pricing that gives them signals to internalize the overall state of the electric network at any time. It is possible, and even likely, that LLCs are insulated from the real-time LMPs, costs of ramping up and down, or other forms of prices due to the adoption of fixed price contracts and other mechanisms. In such cases, the PUC can try to design proxies to the incentives provided by dynamic prices that encourage flexibility and are reflective of the marginal costs of serving an additional unit (e.g., kWh) of energy, a ramping event over a set period, or avoid having to curtail other demands.

4. Different LLCs can have spillovers affecting water use (Lei et al., 2025). Therefore, the PUC might design pricing that accounts for the additional use of water resources.

2 Mitigation of Stranded Assets

The rapid advancement of graphical processing units (GPUs), tensor processing units (TPUs) and related technologies, and large investments, mean that new, more energy-efficient technologies can enter the market, and companies involved in these investments may exit due to e.g., illiquidity, bankruptcy, or just due to the economics of running the facility. In both cases, there is a risk that the rate base will end up with infrastructures costs due to lower-than-expected energy consumption or the premature exit of LLCs.

Moreover, in the current proposal

> The Commission tentatively defines the minimum contract term as no less than 5 years.

However, the investments in assets typically have longer lifespans (e.g., 20 years). The exit fees suggested could help alleviate this issue. If the LLCs leave early, other customers can end up paying for the cost of these investments.

Comment: Consider instead of a breakpoint at five years, creating exit fees aligned with the depreciation schedule of the assets invested in connecting the LLCs.

3 Transaction costs

The process of connecting new demand should have low transaction costs, with financial guards in place. There are two desirable objectives: first, removing the negative impacts of speculative applications; and second, providing incentives for participants for truthful information and conditions based on the cost exerted.

The use of collateral requirements covering "Network Improvements Costs and Interconnection Facilities costs" is a mechanism that may allow for the filtering of speculative projects. However, many LLCs may not be budget-constrained due to the amount of funding interest in this area (from comments made by several panelists at the ACES Symposium on Energy & Water Challenges for AI Data Centers held at Lehigh University, October 2025).

The tentative order suggests a negotiated, multi-year ramp (3-5 years). For the sake of transparency it is desirable to implement a method for the ramp schedule to reduce information asymmetry and reduce transaction costs in the negotiations.

Comment: Instead of a negotiated multi-year ramp, we suggest having ramp schedules reflective of the marginal costs (and marginal benefits) of bringing up an additional MWh of demand per period. A standard guideline for the schedule improves predictability and can help to lower the cost of entry for qualified LLCs and improve long-term resource planning.

4 References

In addition to the comments above, we include here a selection of references that can further inform this Tentative Order for review by the PUC. Barth et al. (2025) discuss resource adequacy, extreme weather, supply-chain delays, permitting bottlenecks, labor shortages, and affordability as six major challenges for the interconnection of LLCs, all germane to the issues in the tentative order. Countries like Spain have implemented "contests" where projects are interconnected based on criteria (e.g., contributions to security of the system). See (LoSchiavo, 2025, e.g., Table 1), where the PUC can find further examples from overseas and the US. The PUC may consider customer protection considerations as discussed in Martin and Peskoe (2025). Please refer to Satchwell et al. (2025) regarding practices and opportunities for pricing designs in this space that can also inform the tentative order.

References

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