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June 6, 2025

VIA ELECTRONIC FILING

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

Re: En Banc Hearing Concerning Interconnection and Tariffs for Large Load Customers; Docket No. M-2025-3054271

Dear Secretary Homsher:

Pursuant to the Pennsylvania Public Utility Commission's Secretarial Letter dated April 12, 2025, in the above-captioned proceeding, enclosed herewith for filing are the Joint Comments of FirstEnergy Pennsylvania Electric Company, Mid-Atlantic Interstate Transmission, LLC, Keystone Appalachian Transmission Company, American Transmission Systems, Incorporated, and Trans-Allegheny Interstate Line Company.

Please contact me if you have any questions regarding this matter.

Very truly yours,

A handwritten signature in blue ink that reads "Timothy K. McHugh".

Timothy K. McHugh

TKM/krak

Enclosures

**BEFORE THE
PENNSYLVANIA PUBLIC UTILITY COMMISSION**

En Banc Hearing Concerning :
Interconnection and Tariffs for Large Load : Docket No. M-2025-3054271
Customers :

**JOINT COMMENTS
OF
FIRSTENERGY PENNSYLVANIA ELECTRIC COMPANY, MID-ATLANTIC
INTERSTATE TRANSMISSION, LLC, KEYSTONE APPALACHIAN TRANSMISSION
COMPANY, AMERICAN TRANSMISSION SYSTEMS, INCORPORATED, AND
TRANS-ALLEGHENY INTERSTATE LINE COMPANY**

I. INTRODUCTION

On March 27, 2025, the Pennsylvania Public Utility Commission (“Commission”) unanimously approved the Motion of Chairman Stephen M. DeFrank (“Motion”) to convene an *en banc* hearing to explore the growing impact of large-scale electric customers on the Commonwealth’s electric grid and the broader PJM Interconnection, LLC (“PJM”) region. The hearing was scheduled for April 24, 2025, and sought testimony from electric distribution companies (“EDCs”), large load customers, and public advocates to address the topics identified in the Motion. Individuals who were selected to serve as panelists at the hearing were to file their testimony no later than April 23, 2025. Interested parties were requested to file written comments and reply comments no later than May 27, 2025 and June 11, 2025, respectively.¹ The Motion further provided that the Commission’s Law Bureau, Bureau of Technical Utility Services, and Office of Competitive Market Oversight will review the testimony and written comments and develop a proposed model tariff for large load customers for the Commission to review.

¹ By Secretarial Letter issued on May 15, 2025, the Commission approved the Energy Association of Pennsylvania’s request for a 10-day extension to file comments and reply comments. As a result, comments are now due on June 6, 2025, and reply comments are due on June 23, 2025.

By Secretarial Letter issued on April 2, 2025, FirstEnergy Pennsylvania Electric Company (“FE PA”) was invited to present in-person testimony at the hearing. On April 23, 2025, FE PA submitted the written testimony of Kelly Gower, Vice President of Finance and Regulatory, who also testified at the hearing. On May 1, 2025, Vice Chair Kimberly Barrow encouraged interested stakeholders to further respond to her Directed Questions. FE PA is pleased to submit these comments on behalf of itself and the affiliated transmission companies under the FirstEnergy Corp. (“FirstEnergy”) umbrella, including Mid-Atlantic Interstate Transmission, LLC (“MAIT”), Keystone Appalachian Transmission Company (“KATCo”), American Transmission Systems, Incorporated (“ATSI”), and Trans-Allegheny Interstate Line Company (“TrAILCo”) (collectively, the “FirstEnergy transmission companies” and together with FE PA referred to as the “Companies”).

The Companies commend the Commission for recognizing the impact of the increasing number of large load customers and the significant new demand they will place on the electric grid. As such, the Companies’ comments will address the following topics in order: (i) Chairman DeFrank’s Directed Topics; (ii) certain stakeholder testimony from the April 24 *en banc* hearing; (iii) Vice Chair Barrow’s Directed Questions, including the *en banc* hearing exhibit; and (iv) additional comments on large load rate design considerations.

II. RESPONSES TO THE COMMISSION’S DIRECTED TOPICS

The Companies understand both the significant challenges and opportunities presented by the increasing number of large load customers seeking to interconnect to the electric grid in Pennsylvania. While the Companies have been preparing for such, the responses below are provided knowing that this is an evolving issue that will require continued coordination and planning efforts. To that end, the Companies are committed to working with the various

stakeholders to ensure that grid security is prioritized in a manner that protects the Commonwealth's ratepayers.

1. Appropriate MW size designations for large load tariffs.

It is difficult to identify a specific megawatt ("MW") threshold by which to define large load customers, especially where it is not uncommon for customers to adopt phase-in development or business strategies. As IBM reported in early 2024, a typical data center may be sized at 100 MW, while "hyperscaler" data centers often exceed 100 MW load.² While the Companies do not proffer a specific MW threshold for classifying a large load customer, the FirstEnergy transmission companies have adopted certain protections that apply to data centers to ensure other transmission customers are not adversely affected by this incoming load. Initially, this is being achieved by setting a minimum demand level or load factor requirement of 85%, which is described in the "Rate Design Considerations" ("Rate Design") Section V. below.

2. Deposits or financial security from large load customers.

As reflected in "Rate Design" Section V. below, the Companies require surety instruments, such as a letter of credit, surety bond, etc., from large load customers to cover the financial risk that exists during the construction period. Furthermore, the Companies require additional deposits and surety instruments from large load customers to ensure proper cash flow and cover the risk of non-payment that occurs during regular billing. This is consistent with the approach to security that the Companies are seeing elsewhere in the industry, which addresses the issue by way of individualized contracts based on the project. See Rate Design Section V. below for how the Companies address financial security through a service agreement for certain large data center loads.

² IBM, *What Is A Hyperscale Data Center* (Mar. 21, 2024), available at <https://www.ibm.com/think/topics/hyperscale-data-center#:~:text=Average%20data%20center:%20The%20average,Energy%20draw:%20Around%20100MW.>

3. Appropriate calculations of contributions in aid of construction.

Determining the appropriate calculations for any contribution in aid of construction (“CIAC”) depends on whether the incremental infrastructure needed to facilitate the new interconnection will serve only the large load customer or if the upgrades to the system support service to all customers. If the facilities will only serve the new load (generally local radials and the customer-side of the switch/switch yard), then such facilities generally should be funded by that customer through a CIAC payment or, in limited circumstances, will be owned and paid for entirely by the customer. If the customer self-funds through a CIAC or similar model, the payment covers the Companies’ construction costs for the facilities in question. If, however, the upgrades are to be used to serve many customers, then they are generally rolled into rate base for recovery through rates that are charged to all customers. This could result in increased costs to all customers if the rate base that is the basis for the FirstEnergy transmission companies’ rates were to increase at a faster rate than the load that is to be served by that rate base actually materializes. Put differently, there are two variables that factor into the question of whether material investment in network rate base will increase or decrease rates to other customers: (i) size and timing of the new load (relative to the existing load) and (ii) amount of the new capital investment (relative to the existing capital rate base). If the size of the new load is comparatively greater than the size of the new capital investment, then adding the new load could be dilutive to rates (as total cost is spread over more load).

4. Minimum contract terms.

As reflected in Rate Design Section V. below, the Companies have adopted a 10-year contract model with security for the entire amount of the network distribution/transmission upgrades, amortized at 20% per year over the last 5 years of the 10-year term. In addition, if the

project is removed from network rates during the first 10 years of service, the Companies would pull the security and apply the proceeds to offset the resulting impacts to other customers.

5. Maximum times for interconnection studies and agreements.

It is difficult to outline universal maximum times for large-load interconnection studies and agreements insofar as the Companies consider the requirements specific to each customer load request, including, but not limited to, customer-specific details, system-specific details, project technical information, potential violations, and potential impacts or harm to the grid. Additionally, the Companies process interconnection study requests for all customers on a first-in-queue basis, where a customer's position in FE PA's or its affiliated transmission companies' interconnection queue is based on the date when their application is considered complete. Each application in queue must await the completion of the other detailed load studies ("DLSs") ahead of it.

6. Appropriate fees or expenses for interconnection studies.

The Companies charge customers a deposit for interconnection studies following sound cost causation and allocation principles. There are a variety of deposit tiers that coordinate with the load levels being studied. This allows the customer's financial commitment to match the Companies' estimated time and resources required to find the best engineering solution and other study deliverables for each project. These deposits all contain a true-up provision, so each customer pays exactly what their study actually costs to perform.

7. Load ramping schedules for customers that may phase in their usage.

For the Companies, the load ramp is provided and refined by the large load customer at multiple steps in the process. It is provided at the conceptual load study and DLS stages, and then again when the customer is ready for construction and the Electric Service Agreement ("ESA") paperwork. The Companies use the load ramp to correlate with the minimum contract demands in the ESA.

8. Exit or early termination fees.

FE PA does not set universal exit or early termination fees; however, and as described in Rate Design Section V. below, the Companies address and include such fees in the service agreement, which includes security. The policy of the Federal Energy Regulatory Commission (“FERC”) and any FERC orders that approve FERC-jurisdictional elements of a filed service agreement will determine interconnection fees related to FERC-jurisdictional facilities.

9. Distinctions in tariff designs for firm service versus interruptible large load customers.

FE PA understands this question to relate to “power,” in which case, any distinction between tariff designs for firm service versus interruptible large load customers will be coordinated with PJM’s demand resource programs. However, any tariff related to this must have firm ceilings and floors to protect the EDCs, transmission companies, and their customers.

10. Large customers bringing primary or back-up generation to serve their load, and any prudent standby rates.

Certain large load customers could have back-up generators on-site and planned equipment yards. Large load customers that utilize on-site generation, which needs to connect to the grid in order for the EDC to pick up their load when necessary, must pay for the “standby” generation at regular rates or a contract minimum demand as is required of any customer with such a construct in place. It is important to note that FERC has an open proceeding on this matter, and the Companies’ position is that co-located load configurations that are visible to PJM are transmission customers and, as a result, should pay the associated transmission rates.

11. Transparent cost structures for interconnection.

The Companies support transparent cost structures for interconnection projects; however, each project is unique with different scopes of work. As such, there can be clarity in cost categories and how costs are assigned, but it would be difficult to provide actual pricing that can be assumed

without consideration of the variables unique to each project. The actual pricing will be highly dependent on the desired interconnection, and the respective Commission/FERC jurisdictions must be factored into questions of rate design, interconnection process, and forms of agreement.

12. Optionality for infrastructure upgrades to be made directly by prospective interconnecting large load customers, and appropriate tariff subcategories to accommodate such option.

Currently, customers are responsible for building, owning, and maintaining their customer-owned substations. In addition, large load customers are required to build the distribution from any customer-owned substation to the facility to be serviced.

13. Expedited interconnection for users willing to construct infrastructure or system upgrades at their own expense.

The Companies will consider proposals for non-transmission infrastructure being built by the customer. For example, a customer may propose to build a radial facility that will interconnect with the integrated transmission network. However, any such radial facility work must meet the Companies' standards -- i.e., incorporate the Companies' designs, materials, and approved vendors/contractors. Transmission interconnection facilities are subject to FERC-mandated rules and processes, and the FirstEnergy transmission companies must continue to comply with these rules/processes.

14. Best practices learned from other jurisdictions.

See Rate Design Section V. below for the Companies' observations about how Dayton Power & Light ("Dayton") developed a novel service agreement that included discrete transmission/FERC-jurisdictional elements. As noted below, the Companies have developed a modified form of this approach for their respective footprints.

15. Any other procedures, rules, or tariff designs that can facilitate the efficient and timely interconnection of this unique category of electric customer.

As mentioned in response to the prior question, the Companies offer observations about how Dayton addressed customer service issues, including interconnection issues, in a novel service agreement more fully within Rate Design Section V. to follow. Pertinent to the Companies, however, is that FE PA provides Commission-jurisdictional distribution service, while the FirstEnergy transmission companies provide FERC-jurisdictional transmission service. As this Commission is aware, FERC has extensive rules and processes for transmission interconnection, and the FirstEnergy transmission companies must continue to comply with these rules and processes as the Companies interconnect data centers in Pennsylvania. As noted in Rate Design Section V. below, the Companies have developed a modified form of Dayton's approach as they interconnect data centers in Pennsylvania.

III. VICE CHAIR BARROW'S DIRECTED QUESTIONS

For Build-to-Own Data Center Developers

While the Companies recognize the questions in this subsection are directed to build-to-own large load developers, they offer the below comments from the perspective of the developer's integral project partner. The Companies do not presume to stand in front any developer's specific response but, instead, seek only to provide more rounded insight into the issues raised in this segment.

1. What contract structures (e.g., minimum demand charges, exit fees) do you find most acceptable to balance the need for cost predictability with the need to prevent uncompensated stranded assets?

Rate Design Section V. of these comments offers Companies' observations about how Dayton handled these issues through a novel type of service agreement. As noted below, the

Companies currently implement a modified form of this service agreement approach as they interconnect data centers in Pennsylvania.

2. How flexible are your operations in terms of geographic load-shifting or demand response, and how should that flexibility be reflected via rate discount in tariff design or expedited interconnection processes?

Load-shifting is a matter of rate design. Regarding transmission rates, Rate Design Section V. below describes how the FE transmission companies address the transmission rate design elements that are in play through a modified form of the service agreement that was used by Dayton. Load-shifting also is a matter of wholesale/retail power rates and ratemaking. Demand response is about power consumption. As Pennsylvania is a “retail choice” state, FE PA submits that those elements of load-shifting and demand response are handled through applicable FE PA tariffs (as to demand response; note that the FE PA tariffs are structured to align with applicable PJM power markets tariffs) and in the arrangements that the data center has with its retail power supplier.

3. To what extent are energy storage and other technologies integrated into the design of your facilities to address oversizing of compute beyond existing needs—driving increased design load—and enable participation in demand response programs?

FE PA has an obligation to serve. Customers that request service at a given level take service at that level per applicable tariffs. As noted in Rate Design Section V. below, there are certain transmission rate design elements that could be in play, and the FirstEnergy transmission companies advise below of how they propose to protect other transmission customers from certain potential adverse transmission rate outcomes through a transmission rate design that will be written into the customer service agreement. Demand response is about power consumption. See above response to Question No. 2 regarding handling through applicable tariffs and retail supplier arrangements.

4. To what extent do you intend to collaborate with grid operators on the timing of discretionary high-load tasks like model training in order to avoid increasing coincident peaks?

FE PA is a distribution utility that provides distribution service. As such, it is a transmission customer. The FirstEnergy transmission companies provide transmission service through PJM's "open access" transmission tariff. They do not regulate a transmission customer's power usage and thus cannot influence directly customer efforts to manage "coincident peaks." As noted in Rate Design Section V. below, there is potential that "peak shaving" could expose other transmission customers to certain transmission rate risks. However, the FirstEnergy transmission companies also describe below a transmission rate design that is written into the service agreement and that, if approved by FERC, protects other transmission customers from transmission rate impacts that could result from "peak shaving" by the data center customer.

For Independent Data Center Developers

Similar to the previous subsection, the Companies offer the below responses to questions directed at independent data center developers as additional insight from the perspective of the transmission system owner and the developer's project partner.

5. In a business model where a data center is developed and then compute is leased or resold, how do you manage risk associated with customer churn and underutilized capacity, and what tariff design elements help you manage that risk? How can these risk savings benefit other ratepayers?

The Companies do not generally manage customer business operations on the customer side of the meter. As such, absent state law that prohibits data center "computer leasing" or "resale" of data center capacity, our understanding is that these customers are free to pursue their lawful business enterprises.

As described in Rate Design Section V. below, the FirstEnergy transmission companies have written certain transmission rate protections into the service agreement that, if approved by

FERC, serve to protect other transmission customers against peak shaving and some of the transmission rate outcomes that could come from potential variability in data center load.

6. Can a data center which is developed to be resold utilize tariff flexibility incentives, or does building in flexibility make it impossible to plan the data center development?

As described in Rate Design Section V. below, the FirstEnergy transmission companies have written certain transmission rate protections into the service agreement that, if approved by FERC, serve to protect other transmission customers against peak shaving and some of the transmission rate outcomes that could come from potential variability in data center load.

For Electric Distribution and Transmission Utilities

7. How should costs be allocated when a data center triggers a major upgrade—should it be directly assigned, shared by the EDC, or spread across the TO zone, and under what criteria? Should existing methods be re-examined for these customers? Should they be re-examined for all customers?

Generally, the costs for radial transmission-voltage facilities that will only serve the new customer load would be funded directly by the new load through a CIAC payment or, in some limited cases, through self-ownership.

For those network transmission upgrades that are used to serve all customers, FERC's policy is that when facilities are integrated, and thus provide system-wide benefits, the facility costs are "rolled-into" the zonal transmission rate and charged to all customers served by the transmission utility.³ FERC's policy is based on the logic that the transmission grid is a single interconnected system serving and benefitting all transmission customers. Further, FERC's default assumption is that network transmission facilities serve all customers, and hence the costs of such facilities are rolled into the zonal network transmission rate.⁴ Accordingly, and as noted in Rate

³ See *Pinnacle West Capital Corp.*, 131 FERC ¶ 61,143, at P 42 (2010),

⁴ See e.g., *Sw. Power Pool, Inc.*, 182 FERC ¶ 61,141, at P 101 (2023).

Design Section V. below, the FirstEnergy transmission companies roll network transmission system upgrades into their respective zonal transmission rates.

8. What tariff design features (e.g., minimum load factor, monthly demand floors) have proven most effective in ensuring reliable forecasts from large-load additions?

The Companies support large load customers being financially responsible for their load forecast. This can include, but is not limited to, a study deposit based on the load request, billing based on installed infrastructure capacity, surety instruments during the construction period, and/or minimum monthly demand billing.

As described in Rate Design Section V. below, the FirstEnergy transmission companies have written certain transmission rates protections into the service agreement that, if approved by FERC, serve to protect other transmission customers against peak shaving and some of the potential outcomes that could come from potential variability in data center load.

9. One hearing commenter suggested that only load under contract should be used in demand forecasts. Do you agree?

Including only load under contract, meaning a construction or line extension contract/agreement, would give more certainty to those forecasts. However, it would also limit the market's ability to respond to those forecast signals, such as building new generation or transmission, due to the shortened timeline. This is a tradeoff of certainty versus notice. Waiting for increased certainty would cause longer wait times for interconnection

The Companies provide annual load forecasts to PJM that includes both organic grid growth and projects, such as data centers, that are 100 MW or larger. This forecast looks forward over a 20-year period. PJM accumulates the load forecasts and applies its own algorithm to those forecasts to reflect the probability of projects not materializing or not reaching their full build out. The Companies only include projects in their PJM forecasts, which have signed and paid for

engineering studies—meaning a load study contract—and that have met other variables to indicate that they have a sound probability of entering a construction contract in the near term. This helps the Companies find a balance between certainty and notice timeline in demand forecasts.

10. How do you assess the risk of early termination, and what role do exit fees and collateral requirements play in mitigating that risk for your infrastructure investments?

The risk of early termination for large load customers can be high given the current political and economic environment. Exit fees and collateral requirements are therefore necessary to mitigate that risk and protect against transitory load so that customers are protected from the substantial investment needed to complete these data centers. As noted in Rate Design Section V. below, under the Companies’ service agreement approach, large load customers are required to post security in the amount of the network transmission upgrade costs. The security covers a 10-year period and will be amortized 20% per year over the last 5 years. If the large load remains interconnected for less than 10 years, the utility can pull the security and apply the proceeds against the Network Integration Transmission Service (“NITS”) rate.

11. Would you be willing to trade off speed of interconnection in exchange for greater load flexibility commitments from data centers—and how would you quantify that tradeoff?

The Companies do not provide, nor would they support, a trade-off of speed of interconnection in exchange for great load flexibility from data centers. Many of the large load customer projects, especially those that will require transmission upgrades or projects, will require large and complex studies that could take 6 to 12 months to complete and may require regional solutions that extend beyond the Companies’ footprint. Furthermore, the internal approval process, contract creation and execution, required siting approval (e.g., letter of notification or full siting application) bidding process, and construction itself will require additional time and should not be compromised for greater load flexibility commitments from data centers. Finally, if and to the

extent that “interconnection” includes transmission interconnection, the Companies will be subject to applicable FERC/PJM interconnection rules and processes.

12. What technical and tariff design features, in your view, stand in the way of facilitating demand response programs for large loads?

It is worth noting that most data centers (as opposed to crypto miners⁵) are likely to want or need 24/7 power and, thus, would likely be unwilling to participate in demand response programs. Further, transmission planning is done to system peak, so “demand response” will not avoid the transmission expansion costs.

Demand response is about power consumption. As Pennsylvania is a “retail choice” state, FE PA submits that demand response is handled through applicable FE PA tariffs (as to demand response; note that these tariffs are structured to align with applicable PJM power markets tariffs) and in the arrangements that the data center has with its retail power supplier.

From a technical perspective, PJM has a robust market for demand response programs for both conservation service providers (“CSPs”) and large loads that CSPs facilitate their participation. The overlap of ACT 129 and PJM programs creates competition between CSPs and/or PJM programs. This often results in “double dipping” in both EDC and PJM/CSP programs, which results in double counting impacts and double payments.

For Consumer Advocates, Industrial Customers, Other Ratepayers, and Public Interest Stakeholders

13. What safeguards do you believe are essential to prevent cost-shifting from speculative or short-lived data center investments onto existing ratepayers?

Please see the Companies’ responses to the Commission’s Directed Topics 2, 3, and 11, above.

⁵ Crypto mining is a process of using powerful computers to solve complex math problems required to validate transaction on the blockchain for cryptocurrency. Thomas Barrabi, *What is crypto mining and how does it work*, New York Post (Apr. 30, 2025), <https://nypost.com/business/what-is-crypto-mining/>.

14. How can we ensure tariff structures are transparent enough to allow meaningful public input on what constitutes fair cost allocation, especially when commercial contracts are confidential?

Please see the Companies' responses to the Commission's Directed Topics 2, 3, and 11, above.

En Banc Hearing Exhibit: Harvard Electricity Law Initiative Research Paper

At the April 24 *en banc* hearing, an exhibit was submitted by Vice Chair Barrow of a publication by the Harvard Law School's Environmental & Energy Law Program, titled *Extracting Profits from the Public: How Utility Ratepayers Are Paying for Big Tech's Power*.⁶ As explained below, the publication appears to be based on only partially informed understandings of utility ratemaking, which leads the authors to make oversimplified and conclusory statements about the utility ratemaking process, while questioning the capabilities of regulators to perform their function and the state of the industry.

The *en banc* conversation⁷ centered on a purported case study that seems to be based on text found on page 16 of the document:

Obsolete PUC cost allocation formulas can also cause ratepayers to pay for transmission costs that are not regionally shared. For instance, in July 2024, Virginia's largest utility applied to the PUC for permission to build infrastructure that would serve a new large data center. PUC staff reviewing the proposal found that but for the data center's request, the project "likely, if not certainly, would not be needed at this time." In its application, the utility told state regulators that the \$23 million project would be paid for through its FERC-approved transmission tariff. Under the utility's existing state-approved tariff, about half of all costs assigned through the FERC-regulated tariff are billed to residential ratepayers, and the remaining half are billed to other existing ratepayers. The bottom line is that existing tariffs force the public to foot the bill for the data center's transmission.⁸

⁶ Harvard Law School Environmental & Energy Law Program, *Extracting Profits from the Public: How Utility Ratepayers Are Paying for Big Tech's Power* (March 2025), available at <https://eelp.law.harvard.edu/wp-content/uploads/2025/03/Harvard-ELI-Extracting-Profits-from-the-Public.pdf>.

⁷ Pennsylvania Public Utility Commission (2025), *En Banc Hearing on Interconnection and Tariffs for Large Load Customers* – Statutory Advocates Panel, 37:20 [YouTube video], available at https://www.youtube.com/watch?v=Z83c3m_9A-M.

⁸ *Extracting Profits*, p. 16.

The first line of the case study suggests that “obsolete” regulatory formulas cause ratepayers to pay for costs that are not regionally shared. Some background will help frame the issue. First, cost allocation for transmission projects is one of the most difficult questions that FERC confronts. Only certain classes of projects qualify for regional sharing, with the rest being assigned to the transmission zone of the project developer.

For projects that qualify for regional allocation, the Seventh Circuit Court of Appeals explains that costs should be allocated in a manner that is roughly proportionate to the benefits of the user of the grid,⁹ and FERC is required to advance a careful explanation of how it matched costs to benefits lest it shift disproportionate costs to customers that receive only incidental benefits.¹⁰ Worth noting here is that disputes about the cost allocation formula that were before the Seventh Circuit in 2009 and 2014 continue these many years later, as various parties continue to debate various elements in further proceedings.¹¹ The learned authors of the report do not account for these ongoing debates and instead assert that the cost allocation formulas are “obsolete.”¹² It is not clear if the word “obsolete” is limited to transmission ratemaking for projects with costs going only to the host zone, or whether the term is intended to encompass all transmission ratemaking. In any event, the case study’s core issue seems to be with ratemaking for new utility facilities that reflect new utility load, and the analysis concludes with the damning line that “existing tariffs force the public to foot the bill” for utility capital investment.¹³

The Companies do not agree with this conclusion. First, there is nothing surprising about the fact that material new utility load causes “but for” capital investment. “But for” the new load,

⁹ *ICC v FERC*, 576 F.3d 470, 476 (7th Cir. 2009).

¹⁰ *ICC v FERC*, 756 F.3d 556 (7th Cir. 2014).

¹¹ FERC Docket Nos. EL21-39, ER22-1606, *PJM*, Settlement Agreement & Offer of Settlement (Feb. 14, 2025).

¹² *Extracting Profits*, p. 16. Note that allocating transmission costs on a regional basis would be an outcome that is at odds with the authors’ apparent preferred outcome of direct charging all costs to the data centers.

¹³ *Extracting Profits*, p. 16.

new lines and poles would not be needed. The case study attempts to suggest that there is some unexpected and unacceptable rate outcome when new homes and businesses locate into a community and the utility infrastructure is built to serve this new load. New utility infrastructure is “rolled into” existing rate base, which then is allocated for recovery through regulatory commission-approved rates to all of the given utility’s customers. Usually, only certain types of local facilities are direct charged to a customer.¹⁴

The Harvard paper’s base theory seems to be that all of the capital costs for utility facilities to serve a data center should be direct charged to the data center. While this theory could have superficial appeal, this suggestion is more complicated than it seems. First, the case study cited in the publication speaks to transmission facilities, which the publication notes are recovered through the “FERC-approved” transmission rate.¹⁵ While FERC determines how transmission facility costs are to be recovered through transmission rates, for those facilities and rates that are state-jurisdictional, this Commission has settled policies and tariffs that it generally controls, and the Commission can adjust those rules as it deems fit.

Next, and as this Commission’s own history of ratemaking establishes, there are long-standing policies that favor rolling the costs of new facilities into the larger network rate base. All customers use the network and, generally, new network facilities benefit some or all existing customers, and not just the new load or new customer that is the occasion for the investment. As some or all existing customers benefit from the upgrades, the costs are spread to all customers. Further, new large loads at times can be diluted to network rates. If the rate of load-growth exceeds the rate of network investment, the new large load will be dilutive to rates (i.e., rates will go down).

¹⁴ See, e.g., FirstEnergy Pennsylvania Electric Company, Supplement No. 14 to Electric Pa PUC No. 1, at 34, “Extension of Company Facilities: System Upgrades” (Jan. 1, 2024).

¹⁵ *Extracting Profits*, p. 16.

As regulatory commissions generally are required to ensure some variant of “just and reasonable” rate outcomes, a regulator would be pressed to explain why it is willing to spread network upgrade costs where a new large load is dilutive to rates, but direct charge 100% of the network upgrade costs where rate base growth exceeds the rate of load growth. This is particularly the case for “network upgrades” that will be used by some or all of the existing customers, and not exclusively by the new load.

Speaking more generally, the document is filled with groundless assertions and allegations. Take, for example, the assertion that utilities are supposedly shifting costs to customers through “secret contracts.”¹⁶ This is a mischaracterization of what happens. Applicable statutes and regulations require utilities to file agreements for electric service of this type with the FERC and, in some instances, with state regulatory agencies. They also obligate the utility to obtain certain regulatory authorizations in advance of providing new service or making changes to existing service.¹⁷ The authors advance no compelling facts that demonstrate broad-based non-compliance with these statutory requirements.

Another example is the assertion that “regulators frequently approve special contracts in short and conclusory orders.”¹⁸ The larger context is the authors’ working theory that “special contracts” somehow are unfair, and that regulators cannot or will not protect customers in special contracts proceedings. However, and as this Commission’s orders demonstrate,¹⁹ special contracts are an accepted form of state policymaking, where responsible and accountable state leaders have

¹⁶ *Extracting Profits*, p. 11.

¹⁷ *E.g.*, 16 U.S.C. § 824d(c, d); 66 Pa.C.S. § 1506.

¹⁸ *Id.*

¹⁹ *E.g.*, *Petition of Duquesne Light Company for Approval of a Customer Rate Contract*, 2020 Pa. PUC LEXIS 204 (June 18, 2020); *Pennsylvania Pub. Util. Comm’n v. Duquesne Light Co.*, 1997 Pa. PUC LEXIS 107 (Oct. 2, 1997), *aff’d* 1997 Pa. PUC LEXIS 103 (Nov. 24, 1997); *Petition of Pa. Power Co. for Expedited Declaratory Order*, 1990 Pa. PUC LEXIS 56 (Aug. 16, 1990) (approving a special contract allowing customer to repay deferred revenue over a four-year period rather than the two-year period as required by utility’s tariff rider).

weighed the competing interests and determined the appropriate balance for a given situation that does not qualify for treatment under existing utility regulatory tariffs.

These and other examples demonstrate that the Harvard paper largely is intended as political advocacy for the authors' policy views which only recognizes a portion of the picture of how the regulatory construct is designed. And, while there may be superficial appeal in direct charging all of the costs to serve a data center to the data center, there are regulatory and jurisdictional considerations that need to be evaluated carefully. In short, the paper is a single data point and should be given only such weight as its partially-informed conclusions merit.

IV. RATE DESIGN CONSIDERATIONS

The Companies' cost allocation and rate design practices are grounded in well-established cause causation principles—i.e., where costs of transmission upgrades are directly caused by a customer, and there are no material benefits to other customers or the system as a whole, the cost causer should pay. As explained in further detail in this section, new large loads often require further investment in the electric system, which leads to incremental rate increases for customers served by the system. When interconnecting large loads, the Companies' measured solutions ensure that no customer will receive undue benefit from a large load project to the detriment of other customers.

Interconnecting large loads may affect or implicate some or all of the following categories of electric system facilities: transmission facilities, distribution facilities, and customer facilities. Because of the accretive manner in which the current physical grid has developed over the years, and because usage patterns change as external economic cycles ebb and flow, available "headroom" on the transmission and distribution systems to accommodate large customer loads typically will vary by site.

As cited earlier in these comments, the relative size of data center loads is also informative. Early in 2024, IBM reported that whereas a typical data center may be sized at 100 MW, “hyperscaler” data centers are often more than 100 MW.²⁰ As noted below, the industry now is seeing load applications that start at hundreds of megawatts, which then potentially scale up to more than 1,000 MW. Loads of this size may necessitate material upgrades to the transmission system. Where this occurs, it is evidence that there is little “headroom” remaining on the legacy transmission system, which means that material transmission expansion is required to serve material amounts of new load.

This background sets the stage to note the concept that addition of data center load will likely be dilutive to, or as described below may increase, the zonal transmission NITS rates which are utilized to determine the allocation of the annual transmission NITS revenue requirements. Two core variables determine zonal transmission NITS rate impacts: (i) size of the data center load; and (ii) amount of required network transmission upgrades relative to the total size of the zonal transmission rate base. A larger data center load with comparatively limited required network transmission upgrades can be dilutive to the zonal transmission NITS rate as the zonal transmission revenue requirement is spread over more load. Comparatively, a data center load with larger network transmission system upgrades can increase the zonal transmission NITS rate as the increase in the transmission NITS revenue requirement exceeds the rate of growth for the load to which the revenue requirement is spread. An example might illustrate the issue. Assume the following:

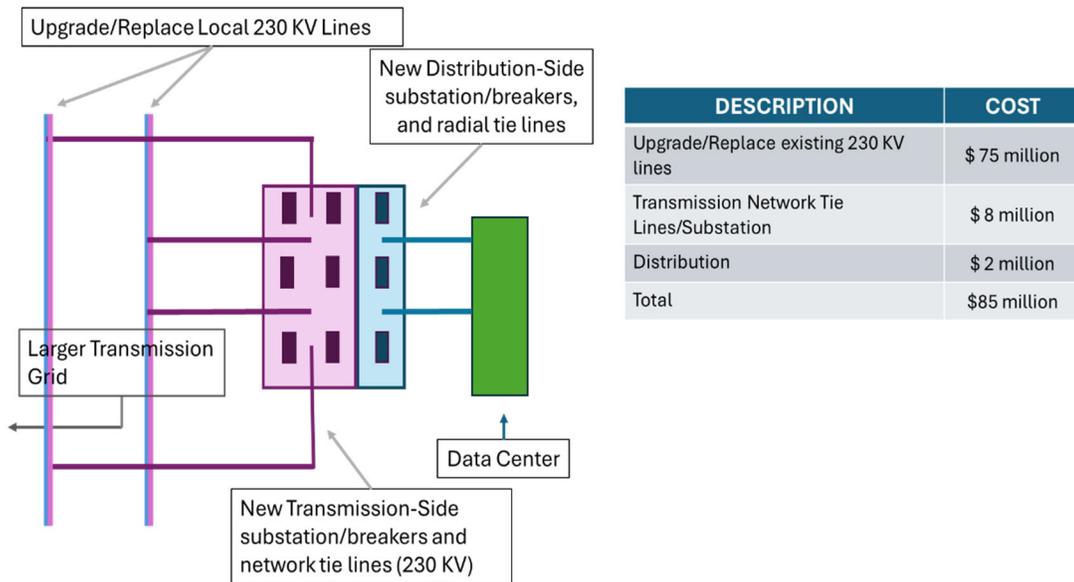
- a large greenfield data center of 250 MW that wants to interconnect; and
- that there is little headroom left on the local 230KV transmission system.

²⁰ IBM, *What Is A Hyperscale Data Center*, (3/21/24), available <https://www.ibm.com/think/topics/hyperscale-data-center#:~:text=Average%20data%20center:%20The%20average,Energy%20draw:%20Around%20100MW>.

The company completes a DLS and identifies the following necessary upgrades:

- the capacity of the existing 230 KV transmission system will need to be expanded/upgraded, and that the best technical solution is to replace the existing lines with larger diameter cables at a total estimated cost of \$75 million;
- the existing 230 KV transmission system should be networked together through a ring-bus substation to ensure continued reliable service for all customers at an estimated cost of \$8 million;
- \$2 million of customer-side tie breakers and tie-lines will be needed to provide service to the customer’s facility.

Interconnecting a Large Data Center: Illustrative Example



This example identifies that service to the customer will implicate both transmission and distribution construction upgrades.

The usual practice is to proceed with the construction only after the customer signs a “construction agreement” of some type. The question is how to craft a document that addresses

construction of both types of facilities (transmission, distribution). This issue is of particular importance for the Companies as FE PA provides retail service in Pennsylvania through a distribution-only utility. FE PA interconnects to transmission-only affiliates, and purchases transmission service from them. However, and as noted throughout these comments, retail service to a moderately-sized or larger data center may require transmission system upgrades, which means that the FirstEnergy transmission companies also must be involved. The proper vehicle that addresses the responsibilities among the affected parties is through a construction service agreement that is signed by each participating entity (distribution utility, transmission utility, and customer), which then is filed for approval with the relevant jurisdictions as appropriate. This is the approach adopted by the Companies.

As the data center is a retail customer, the PA PUC has jurisdiction over the retail rate and terms of service as between the distribution utility and the data center. Accordingly, it is possible to establish a construction service agreement that would describe the retail rate and retail terms of service.

Meanwhile, FERC maintains jurisdiction over transmission facilities, transmission service, and related transmission rates issues. As significant transmission expansion to serve the data center is required in the example above, it is possible to utilize a construction service agreement that includes discrete paragraphs that speak to the transmission facilities, service and rates that are in play, while the remainder of the agreement reflects the typical requirements for retail service.

The Companies respectfully submit that the proper vehicle to address the proposed rate treatment for network transmission, distribution, and interconnection costs incurred by large load is a construction service agreement for large load. The Companies have developed such an agreement for use in their respective service areas. The service agreement is signed by the data

center, the distribution utility, and the transmission utility, and will be filed with the appropriate regulatory agencies as respectively required.

There is recent precedent for this approach. In September of 2024, Dayton signed a construction service agreement with Amazon that calls for Dayton to provide retail service to an Amazon data center that would be constructed in Dayton's service territory.²¹ The data center load was expected to start at 65 MW and then ramp through 480 MW for the first phase, and possibly to 1,500MW in later phases. Dayton would be required to build \$22.8 million of network transmission facilities to support the first phase of the Amazon data center project.²² Dayton also was required to build distribution facilities to serve Amazon. Dayton filed the agreement for approval with FERC. In its order accepting the transmission agreement, FERC documented Dayton's representation that the agreement was for service to a retail customer, but that Dayton had filed the agreement with FERC as some elements of the agreement could be construed as affecting FERC-jurisdictional transmission service, rates and practices.²³ FERC accepted the agreement for filing, and made certain rulings as and only to the FERC-jurisdictional service, rates and practices that were described in the agreement.²⁴

The Dayton example also is notable for illustrating that transmission system upgrades can comprise the majority of the costs for providing service to data centers. In the illustrative example above, \$83 million of the \$85 million in new construction consists of network transmission system upgrades. Similarly, Dayton's contract with Amazon notes \$29.8 million in total costs, of which \$22.8 million relates to network transmission system upgrades to be included in transmission network rates and \$7 million relates to direct connection facilities to be paid for by Amazon. These

²¹ FERC Docket No. ER25-192, *Dayton Power & Light*, Filing Letter at p. 3 (Oct. 23, 2024).

²² *Id.*, Attachment B (Public Version): Transmission New or Upgraded Construction Service Agreement, p. 1.

²³ *Id.*, Order Accepting Construction Service Agreement, 189 FERC ¶ 61,220 at P. 2 (2024).

²⁴ *Id.*, 189 FERC ¶ 61,220 at PP. 20-23.

upgrades and related costs are to serve the 480 MW of Phase I of Amazon's projected 1,500 MW load. It is plausible that significant additional transmission system reinforcement will be required to serve the additional 1,020 MW of load.

Material transmission investment from large-load projects could impact the zonal transmission rate. With regard to the transmission rate design, the FirstEnergy transmission companies will continue to follow FERC's rolled-in rate treatment of network transmission upgrade costs, with certain ratepayer protections, for data center-related transmission upgrades. That is, network transmission facilities will be rolled into the transmission owner's NITS rate base as outlined by FERC guidance. Transmission and distribution ratepayer protections take the form of retail-level transmission demand charges that are set forth in the service agreement. The distribution demand charge consists of a monthly demand charge of the greater of actual demand or 85% of the customer's stated demand (based on the highest monthly service reservation in the year service commences). Should the customer's demand fall below the floor of 85%, the customer will be charged at 85%. Additionally, a wholesale transmission allocation ensures that the large load will cover any shortfall if demand is less than 85% during the annual zonal coincident peak. This allocation is a one-time, annual payment. Thus, the large load takes the higher of the actual demand or the 85% minimum load imputation for purposes of calculating the annual transmission rate allocation share. This wholesale transmission allocation is credited against the transmission owner's formula rate revenue requirement to the benefit of all customers.

To attempt to further protect against large load being transitory, the service agreement also contains a clause that requires the large load to be responsible directly for the costs of any network transmission upgrades that are otherwise excluded from being rolled into the NITS rate. The clause typically provides that if, at some future date, the additional costs incurred by the Company in

support of a project are excluded by FERC or PJM from the Company's formula transmission rate, then the customer shall be responsible for the costs of such facilities and that the customer will cooperate fully with the Company in developing an agreement that provides for the customer to pay such costs.

Finally, security serves as a further protection to other customers. Specifically, to secure the transmission investment, the large load is required to post security in the amount of the network transmission upgrade costs. The security covers a 10-year period and will be amortized 20% over the last 5 years. If the large load is transitory—that is, it fails to materialize in whole or in part, or remains interconnected for less than 10 years—the utility can pull the security and apply the proceeds against the NITS rate.

There are, of course, certain implementing details that will need to be addressed as the “Construction Agreement – Data Center” form document is further refined.

The Companies appreciate the opportunity to provide informative comments as the Commission considers the concept of a model tariff for large load customers. Bearing in mind that a tariff would be limited to distribution, the Companies have adopted and further recommend the construction service agreement approach, which is designed around the unique qualities of large load customers. Where transmission system upgrades can comprise the majority of costs for providing service to large load customers, the customer service agreement covers both transmission and distribution elements and can include specific transmission and distribution ratepayer protections to help ensure equitable cost responsibility and prevent unintended cost shifting to other customers. Moreover, the executed agreement will be filed with the Commission and FERC for approvals of the respective state and federal jurisdictional rate elements.

V. **CONCLUSION**

FirstEnergy Pennsylvania Electric Company appreciates the opportunity to provide comments in response to the Commission's Secretarial Letter. The Company looks forward to further collaboration and discussion with the Commission and interested stakeholders on this important topic.

Respectfully submitted,

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