



June 10, 2026

VIA E-FILING

Secretary Matthew L. Homsher
Pennsylvania Public Utility Commission
Commonwealth Keystone Building
400 North Street
Harrisburg, PA 17120

Re: *In re: Distributed Energy Resources Participation in Wholesale Markets*
Docket No. L-2023-3044115

Dear Secretary Homsher,

Please find enclosed for filing the Comments of the Energy Justice Advocates in regard to the Notice of Proposed Rulemaking Order on the above-referenced docket. Should you have any questions, please do not hesitate to contact me. Thank you.

Sincerely,

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**BEFORE THE
PENNSYLVANIA PUBLIC UTILITY COMMISSION**

In re: Distributed Energy Resources
Participation in Wholesale Markets

Docket No. L-2023-3044115

COMMENTS OF THE ENERGY JUSTICE ADVOCATES

June 10, 2026

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I. Introduction

A. Overview

On December 18, 2025, the Pennsylvania Public Utility Commission (“PA PUC”) released a proposed regulation (“Proposed Regulation”) to implement Order 2222 of the Federal Energy Regulatory Commission (“FERC”), and invited public comment.¹ Pursuant to that invitation, POWER Interfaith, Sierra Club, Vote Solar, Physicians for Social Responsibility Pennsylvania (“PSR PA”), Clean Air Council, Pennsylvania Stands Up, and Third Act Pennsylvania (collectively, the “Energy Justice Advocates” or “EJA”), respectfully submit this comment letter (“Comment Letter”).

EJA believe that aggregations of distributed energy resources (“DERs”), also known as virtual power plants, can play a critical role in advancing affordability and decarbonization objectives. EJA appreciates the PA PUC’s actions to date to implement to Order 2222 in Pennsylvania and appreciates the opportunity to offer these comments.

B. Commenter Background Information

POWER Interfaith is a Pennsylvania grassroots organization of congregations and individuals committed to racial justice, economic justice, and a livable planet. It represents more than fifty congregations across Southeastern and Central Pennsylvania, organized into regional chapters.

The Sierra Club is one of the oldest and most influential grassroots environmental organizations in the United States. Its mission is to explore, enjoy, and protect the wild places of

¹ Pa. P.U.C., Notice of Proposed Rulemaking Order, *Distributed Energy Resources Participation in Wholesale Markets*, Docket No. L-2023-3044115 (Dec. 18, 2025).

the earth, to practice and promote the responsible use of the earth's ecosystems and resources, to educate and enlist humanity to protect and restore the quality of the natural and human environment, and to use all lawful means to carry out these objectives. The Sierra Club advances that mission through a national community of members and state and local chapters, including nearly 24,000 members in Pennsylvania.

Vote Solar is a national nonprofit organization, founded in 2002, that advocates for an affordable and 100% clean energy future that supports the needs, health, and well-being of everyone. It advocates for clean energy policy in state legislatures and before public utility commissions, where most decisions about electricity are made.

PSR PA is a public health nonprofit advancing its mission through programs focused on health, environmental justice, and youth empowerment. Supported by health professionals who advocate for and confront the root causes of environmental and health inequities, PSR PA is committed to protecting communities across our region.

Clean Air Council is a member-supported environmental and public health nonprofit, founded in 1967 and headquartered in Philadelphia. It is one of the oldest environmental and public health organizations in Pennsylvania and its surrounding areas. The Clean Air Council is dedicated to protecting everyone's right to a healthy environment.

Pennsylvania Stands Up is a diverse advocacy organization composed of multiple chapters in several PA counties. Its focus is on justice – economic, racial, social, and environmental – in order to create a Pennsylvania that works for all of us.

Third Act Pennsylvania is an organization that mobilizes Americans over the age of sixty to act on climate change and to protect democracy. It was founded in 2021 by author and environmentalist Bill McKibben, a co-founder of 350.org. Third Act Pennsylvania seeks to bring

the numbers, experience, and resources of older Americans to bear through public education and advocacy.

C. Legal Framework and Procedural History

1. Federal

The Federal Power Act (“FPA”) divides regulatory authority over electricity between the federal government and the states. Section 201 gives FERC jurisdiction over the transmission of electric energy in interstate commerce and the wholesale sale of electric energy in interstate commerce, together with the facilities used for those activities. The same section reserves to the states jurisdiction over retail sales and local distribution.² Sections 205 and 206 extend FERC’s ratemaking authority beyond jurisdictional rates themselves to the rules, regulations, practices, and contracts affecting those rates.³

The FPA does not, however, give federal regulators plenary authority over the electricity sector. Instead, it preserves exclusive state jurisdiction over retail sales of electricity, “facilities used for the generation of electric energy” (that is, power plants), and “facilities used in local distribution” of electricity.⁴

Order No. 2222 rests on this framework. FERC issued the rule under Section 206 to keep Regional Transmission Organization (“RTO”) and Independent System Operator (“ISO”) tariffs just, reasonable, and not unduly discriminatory or preferential.⁵ Its authority over aggregators

² 16 U.S.C. § 824(b); *Participation of Distributed Energy Res. Aggregations in Mkts. Operated by Reg'l Transmission Orgs. & Indep. Sys. Operators*, Order No. 2222, 172 FERC ¶ 61,247, at P 38 (2020).

³ 16 U.S.C. § 824d; 16 U.S.C. § 824e.

⁴ 16 U.S.C. § 824(b)(1).

⁵ *Participation of Distributed Energy Res. Aggregations in Mkts. Operated by Reg'l Transmission Orgs. & Indep. Sys. Operators*, Order No. 2222, 172 FERC ¶ 61,247, at PP 1, 31 (2020).

stems both from its jurisdiction over their wholesale sales into RTO and ISO markets and from its jurisdiction over practices affecting wholesale rates,⁶ an approach the Supreme Court endorsed in *FERC v. Electric Power Supply Association*.⁷

Order No. 2222-A resolved the first round of rehearing requests and refined how state authorities may limit demand response participation. FERC set aside one aspect of Order No. 2222. It held that a state regulatory authority's opt-out would reach only those aggregations composed solely of demand response, meaning aggregations built entirely from retail customers' resources.⁸ FERC declined to extend the opt-out to "heterogeneous" aggregations that mix demand response with other DERs.⁹ It reasoned that applying the opt-out to mixed aggregations would inhibit innovation by preventing aggregators from combining the operational attributes of different resource types.¹⁰ Order No. 2222-A also directed that each distribution utility's review of proposed component resources take no longer than 60 days.¹¹

Order No. 2222-B reversed the heterogeneous-aggregation holding and restored the broader state opt-out. FERC set aside Order No. 2222-A and returned to states the ability to opt out all demand response resources, including those participating in heterogeneous aggregations.¹² FERC nonetheless rejected the argument that it was legally required to grant the opt-out, relying

⁶ *Id.* at PP 39–41 (stating that FERC's authority over distributed energy resource aggregations "stems from both the Commission's jurisdiction over the wholesale sales by distributed energy resource aggregators into RTO/ISO markets and from its jurisdiction over practices affecting wholesale rates.").

⁷ *FERC v. Elec. Power Supply Ass'n*, 577 U.S. 260 (2016), as revised (Jan. 28, 2016).

⁸ *Participation of Distributed Energy Res. Aggregations in Mkts. Operated by Reg'l Transmission Orgs. & Indep. Sys. Operators*, Order No. 2222-A, 174 FERC ¶ 61,197, at P 22 (2021).

⁹ *Id.* at PP 22–23.

¹⁰ *Id.* at P 24.

¹¹ *Id.* at P 72.

¹² *Participation of Distributed Energy Res. Aggregations in Mkts. Operated by Reg'l Transmission Orgs. & Indep. Sys. Operators*, Order No. 2222-B, 175 FERC ¶ 61,227, at P 6 (2021).

on the Supreme Court’s holding that federal regulation of demand response participation in wholesale markets does not violate the FPA.¹³ The order also clarified that a behind-the-meter resource deployed solely to reduce customer load counts as a demand response resource for opt-out purposes.¹⁴ It further clarified the circumstances under which behind-the-meter resources participating as DERs may receive the full locational marginal price.¹⁵

2. Commonwealth

To position Pennsylvania to implement Order No. 2222, on November 9, 2023 the PA PUC entered a Joint Motion of Chairman Stephen M. DeFrank and Vice Chair Kimberly Barrow (“Joint Motion”) at the above-captioned docket. The Joint Motion directed the PA PUC’s Law Bureau, in consultation with its Bureau of Technical Utility Services (“TUS”), to prepare, by February 28, 2024, an Advance Notice of Proposed Rulemaking (“ANOPR”) addressing any changes or additions to PA PUC regulations or policy statements needed to align them with Order No. 2222.¹⁶

In anticipation of the rulemaking, the PA PUC’s Law Bureau and TUS staff convened three virtual stakeholder meetings to gather information and formulate topics: a December 11, 2023 meeting with Pennsylvania electric distribution companies (“EDCs”) and the Energy Association of Pennsylvania; a February 1, 2024 meeting with members of the DER aggregator

¹³ *Id.* at PP 26-29; *FERC v. Elec. Power Supply Ass’n*, 577 U.S. 260 (2016), as revised (Jan. 28, 2016).

¹⁴ *Participation of Distributed Energy Res. Aggregations in Mkts. Operated by Reg’l Transmission Orgs. & Indep. Sys. Operators*, Order No. 2222-B, 175 FERC ¶ 61,227, at P 36 (2021).

¹⁵ *Id.* at P 42.

¹⁶ Pa. P.U.C., Joint Motion of Chairman Stephen M. DeFrank and Vice Chair Kimberly Barrow, at Ordering ¶¶ 1–3, *Distributed Energy Resources Participation in Wholesale Markets*, Docket No. L-2023-3044115 (Nov. 9, 2023).

community, at which the Office of Consumer Advocate was also present; and a February 6, 2024 meeting with ratepayer advocates.¹⁷

At its public meeting held on February 22, 2024, the PA PUC entered an ANOPR at the above-captioned docket, formally initiating its investigation of the PA PUC's role in implementing Order No. 2222 and seeking comments from interested stakeholders on a comprehensive list of topics. As the ANOPR framed them, those topics included changes to interconnection rules, changes to metering requirements, cost allocation issues, adjudication of DER registration disputes, EDC overrides of DER dispatch, consumer protection for DER owners, prevention of double compensation and double counting of services, and electronic data exchange, together with related and additional topics suggested by staff and stakeholders. The ANOPR directed that it be served on all EDCs, the Office of Consumer Advocate, and the Office of Small Business Advocate, and it provided a sixty-day public comment period to run from publication of notice of the ANOPR in the Pennsylvania Bulletin.¹⁸ Chairman DeFrank and Vice Chair Barrow issued a Joint Statement that same day, inviting commenters to provide information on how similar regulatory changes may be implemented in other states and observing that avoiding a "patchwork quilt of regulation" should help to optimize deployment.¹⁹

Notice of the ANOPR was published in the Pennsylvania Bulletin on March 30, 2024, commencing the sixty-day public comment period; the ANOPR itself was posted to the PA

¹⁷ Pa. P.U.C., Advance Notice of Proposed Rulemaking Order, at 18–19, *Distributed Energy Resources Participation in Wholesale Markets*, Docket No. L-2023-3044115 (Feb. 22, 2024).

¹⁸ *Id.* at 1–2, 19–45, 46–48.

¹⁹ Pa. P.U.C., Joint Statement of Chairman Stephen M. DeFrank & Vice Chair Kimberly Barrow, *Distributed Energy Resources Participation in Wholesale Markets*, Docket No. L-2023-3044115 (Feb. 22, 2024).

PUC’s website on April 10, 2024.²⁰ The PA PUC received comments from more than two dozen parties, including EDCs, the Office of Consumer Advocate, the Energy Association of Pennsylvania, DER aggregators and their trade coalitions, clean-energy and public-interest organizations, the City of Philadelphia and the Philadelphia Energy Authority, the University of Delaware, and individual members of the public.²¹

After reviewing the comments, the PA PUC entered the Notice of Proposed Rulemaking Order (the “NOPR”) at the above-captioned docket on December 18, 2025. The NOPR proposes to add a new Subchapter P, relating to DERs, to Chapter 57 of Title 52 of the Pennsylvania Code, beginning with proposed Section 57.261.²² The PA PUC thereafter issued an Errata Notice correcting an erroneous docket-number reference in Ordering Paragraph No. 8 of the NOPR Preamble.²³

The PA PUC did not hold any public input hearings concerning the specific terms proposed for codification in the Proposed Regulation once it had been released. However, POWER Interfaith convened a People’s Hearing on the Proposed Regulation and Order 2222 implementation more broadly in Philadelphia on April 26, 2026.²⁴

As discussed in greater detail in the summary and analysis report on the People’s Hearing attached hereto as Exhibit A, attendees strongly supported the fast and equitable deployment of

²⁰ Pa. Bulletin, Proposed Rulemaking, *Distributed Energy Resources Participation in Wholesale Markets*, 54 Pa.B. 1668 (Mar. 30, 2024), <https://www.pacodeandbulletin.gov/Display/pabull?file=/secure/pabulletin/data/vol54/54-13/427.html>; Pa. P.U.C., Notice of Proposed Rulemaking Order, at 7, *Distributed Energy Resources Participation in Wholesale Markets*, Docket No. L-2023-3044115 (Dec. 18, 2025).

²¹ Pa. P.U.C., Notice of Proposed Rulemaking Order, at 7, *Distributed Energy Resources Participation in Wholesale Markets*, Docket No. L-2023-3044115 (Dec. 18, 2025).

²² *Id.* at 1, 7–8.

²³ Pa. P.U.C., Errata Notice, *Distributed Energy Resources Participation in Wholesale Markets*, Docket No. L-2023-3044115 (Dec. 30, 2025).

²⁴ Exh. A, People’s Hearing Summary and Analysis Report, at 2 (Apr. 26, 2026).

DER aggregations in Pennsylvania.²⁵ Attendees cited both the importance of protecting affordability and of fighting climate change as important motivations for doing so.²⁶

Issues highlighted specifically by attendees included: (1) ensuring equitable access for low- and moderate-income households, renters, people with disabilities, and others who lack capital for DER-enabling technologies; (2) accelerating the implementation of DER aggregation to address urgent climate, health, and affordability harms; (3) establishing strong, enforceable consumer protections to prevent predatory or deceptive aggregator practices; (4) requiring transparent, plain-language contracts and clear disclosure of override conditions, compensation structures, and device-control parameters; (5) reinvesting system-wide savings from avoided peaker plants and reduced transmission and distribution spending into subsidies for batteries, smart thermostats, and other DER-enabling technologies in underserved communities; (6) improving grid access and interconnection timelines for small-scale DER owners; (7) protecting participant autonomy by ensuring that household energy needs take priority over aggregator claims and that remote device control is strictly opt-in; (8) strengthening grid resilience and safeguarding medically vulnerable and high-risk populations; (9) supporting community-based and faith-based aggregation models that deliver benefits at the neighborhood scale; and (10) maintaining transparency and meaningful public participation throughout rule development and program oversight.²⁷

²⁵ *Id.* at 7.

²⁶ *Id.* at 7.

²⁷ *Id.* at 1.

II. Recommendations

After initial review of the Proposed Regulation, the Energy Justice Advocates retained a technical expert, Michael Freeman, to assist in preparing recommended changes to the Proposed Regulation that, in light of the above factors, would bring the final regulation that the PA PUC issues on this docket (the “Final Regulation”) into closer alignment with the principles of energy justice. Those recommendations are discussed in detail in the Technical Report of Michael Freeman, attached hereto as Exhibit B. Michael Freeman is a principal at Emerald Energy Consulting. He worked for Exelon Generation Co., LLC for 21 years in origination, portfolio management and mergers and acquisitions before co-founding Emerald Energy Consulting in 2013.²⁸

This Comment Letter will provide a high-level summary of the recommended changes outlined in Mr. Freeman’s report before providing discussion and analysis of why those changes matter in light of three key contextual factors: (1) the principles of energy justice; (2) Pennsylvania’s energy supply challenges and the potential of DER aggregations to provide relief; and (3) the climate crisis and its impacts on Pennsylvania.

Recommendation #1: Incorporate measures to accelerate EDC review of DER interconnection

The first category of recommended changes to the Proposed Regulation concerns interconnection rules. Interconnection is the first step of a DER becoming a Component DER (“CDER”)²⁹ that is integrated into a DER aggregation participating in federally-regulated

²⁸ Exh. B, Technical Report of Michael Freeman, at 1 (June 10, 2026).

²⁹ Pa P.U.C., Notice of Proposed Rulemaking Order, Proposed Regulation, § 57.262, “Component DER,” *Distributed Energy Resources Participation in Wholesale Markets*, Docket No. L-2023-3044115 (Dec. 18, 2025).

markets. A DER must be physically interconnected before it can join such an aggregation. As such, delays and uncertainty relating to DER interconnection will also affect DER aggregation deployment.

EJA recommends two changes to existing interconnection rules. First, the interconnection process should include a non-binding supplemental review step that provides developers with a non-binding estimate in plain language of interconnection cost and complexity for a particular DER at a particular site.³⁰ This is important, because it reduces uncertainty during the interconnection process, which reduces costs and delays. Reducing costs and delays, in turn, helps accelerate DER aggregation deployment and helps ensure that the power supplied is as affordable as possible.

Second, the PA PUC should set reasonable deadlines for each major phase of the interconnection application review process.³¹ Such deadlines could be set with reference to the system size and set penalties for delay. This can help provide clear direction to EDCs to process interconnection applications in a timely fashion, which is a necessary component of implementing Order 2222 as effectively as possible.

Recommendation #2: Incorporate measures to accelerate EDC review of Component DER applications to participate as DER Aggregation Resources in PJM markets

The Final Regulation should also contain measures to accelerate DER aggregation participation in PJM markets.³² First, it should direct EDCs to collaborate in a transparent

³⁰ Exh. B, Technical Report of Michael Freeman, at 1 (June 10, 2026).

³¹ *Id.* at 4.

³² Exh. B, Technical Report of Michael Freeman, at 7 (June 10, 2026).

fashion with PJM to expand PJM's existing DER Model to include DERs too small to participate individually in PJM markets but which are participating in DER aggregations.³³ This would mean that EDCs provide detailed information to PJM concerning such CDERs, including detail on participation in a retail program (e.g., net metering, price-responsive demand) to police double-counting and eligibility for PJM wholesale markets; and into which distribution circuit a CDER is injecting.

This inclusion of CDERs in a public registry (with any sensitive personal information redacted) can assist with infrastructure planning, and also build towards the development of public distribution system hosting capacity maps, which could further accelerate DER deployment generally. Such a distribution system hosting capacity map, in turn, would help lay the foundation for comprehensive integrated distribution planning, which could further drive cost reductions for utility service in Pennsylvania.³⁴ The PA PUC should not miss the opportunity presented by the Proposed Regulation to both address immediate needs and lay the foundation for a more affordable and sustainable future.

Additionally, in light of the public importance of bringing on additional supply promptly,³⁵ the Final Regulation should set tighter timeframes for EDC review of CDER participation in a DER aggregation than the maximum allowed by FERC. Where Order 2222 sets a maximum of 60 calendar days for DER aggregation review by EDCs, the PA PUC should set a deadline of 50 calendar days. Given that physical interconnection review for all CDERs will

³³ *Id.* at 5.

³⁴ Tim Lindl et al., *Integrated Distribution Planning Concept Paper: A Proactive Approach for Accommodating High Penetrations of Distributed Generation Resources* Interstate Renewable Energy Council, at 2 (May 2013), <https://www.cpuc.ca.gov/-/media/cpuc-website/files/legacyfiles/i/5115-irec-s-integrated-distribution-planning-concept-pape-irec.pdf>.

³⁵ *See infra*, at Part III.B.

have been completed by this stage, there is no reason that review of a CDER seeking to participate in a DER aggregation should take 60 calendar days as a general matter. 50 calendar days would be a meaningful but reasonable reduction in the timeline.

For CDERs that are located in environmental justice areas (as defined by the Pennsylvania Department of Environmental Protection (“PA DEP”)), the timeline for EDC review should be set for 45 days. This will incentivize EDCs to prioritize the expeditious review of such DER aggregations, which aligns with principles of energy justice.³⁶

In either case, EDCs should be required to share detailed reasoning for any denied DER aggregation application in a decision report that the applicant is free to make public if they wish and which the applicant may contest using the PA PUC’s existing complaint procedures.

Recommendation #3: Incorporate measures to ensure the owners of Component DERs bear their own costs and non-participants are fully protected

In order to protect equity, the Final Regulation should ensure that owners of CDERs should bear any costs related to the participation of their CDER in a DER aggregation.³⁷ This should include both any associated infrastructure costs as well as a proportional share of DER aggregation program administration costs. Since CDER owners would be customers of an EDC, whereas DER aggregation administrators may not be, costs can be allocated to the CDER owners, and it can then be priced into any DER aggregation participation contracts offered to such owners by DER aggregation administrators. Additionally, any such DER aggregation-related charges should be classified as non-basic service charges. This would ensure that service

³⁶ See *infra*, at Part III.A.

³⁷ Exh. B, Technical Report of Michael Freeman, at 10 (June 10, 2026).

cannot be disconnected based on non-payment of such charges, which is an appropriate protection given the importance of access to electricity.

Recommendation #4: Require EDCs with less than 100,000 customers to seek PA PUC approval to opt-out, not to opt-in

The Proposed Regulation currently provides that small EDCs with less than 100,000 customers are automatically exempted from Order 2222 compliance, though if they wish to participate, they may provide an evidence-based petition to the PA PUC to do so.³⁸ In light of the important public policy goals at stake, this approach in the Proposed Regulation should be reversed. The PA PUC should not assume that it is necessarily burdensome or infeasible for a small EDC to enable its customers to participate in DER aggregations. To the extent that any small EDC does believe that facts support a conclusion that DER aggregation participation is not possible, the PA PUC should provide the opportunity to petition the PA PUC with evidence supporting an opt-out. In reviewing such a petition, the PA PUC should consider the equity impacts of the proposed opt-out, including the exclusion of the EDC's customers from the benefits of DER aggregation participation.

Recommendation #5: Institute a robust consumer protection framework

In order to ensure that DER aggregation expansion is equitable and sustainable in Pennsylvania, robust consumer protections are a necessary component of the Final Regulation.³⁹ Such protections should be formulated into a DER Aggregator Code of Conduct incorporated

³⁸ Exh. B, Technical Report of Michael Freeman, at 17 (June 10, 2026).

³⁹ Exh. B, Technical Report of Michael Freeman, at 19 (June 10, 2026).

into the Final Regulation. Such a DER Aggregator Code of Conduct should be modeled after, and aligned with, Pennsylvania’s Energy Generation Supplier (“EGS”) Code of Conduct⁴⁰ as well as the U.S. Department of Energy’s (“DOE’s”) Code of Conduct for DER Aggregators.⁴¹

A key principle to be included in a DER Aggregator Code of Conduct is that the affirmative written consent of customers should be required before enrollment of a CDER that they own into a DER aggregation. This should preclude automatic enrollment through any other regulatory program and should require specific disclosures concerning the terms of the deal.

A second key principle is that the PA PUC should develop standardized disclosures that provide information, in plain language, on key aspects of the contract, including the full schedule of fees and charges, the process for contract termination, and the data to be collected and shared. Such disclosures should be made in all languages in regular use in the EDC’s service territory.

A third key principle is that customers must be allowed to override automated control over the CDERs they own if ever needed to protect health and safety. While some level of external automation is a basic part of how DER aggregations function, implementing a clear health and safety limitation on such automation is a necessary and reasonable consumer protection, particularly for customers reliant on medical devices requiring electricity.

Recommendation #6: Develop a standardized data sharing protocol that facilitates necessary data exchanges while protecting customer privacy

⁴⁰ 52 Pa. Code § 54.122.

⁴¹ U.S. Dep’t of Energy, Office of Electricity, *DER Aggregator Code of Conduct: A Reference for Consumer Engagement*, at 6 (Nov. 2023), https://www.energy.gov/sites/default/files/2023-11/2023-11-01%20DER%20Aggregator%20Code%20of%20Conduct%20nov%202023_optimized.pdf.

Since the assembly and ongoing administration of DER aggregations will require substantial flows of data between customer-owners of CDERs, DER aggregators, EDCs, and PJM, the Final Regulation should also include a standardized data sharing protocol that facilitates necessary data exchanges while also protecting customer privacy.⁴² Such a protocol should build on processes used to handle retail choice transactions and settlements, which have been in use for several decades and benefited from substantial practical testing. The Green Button standard, established by the Green Button Alliance, a nonprofit energy data standards organization, has been adopted by the New Jersey Board of Public Utilities for DER-related data exchange and would be an appropriate choice here.

Recommendation #7: Incorporate measures to maximize DER aggregation contributions to PJM markets while still preventing double-counting

The PA PUC's order accompanying the Proposed Regulation notes the importance of preventing double-counting, that is, the attempted sale of the same service from the same DER twice, which poses nonperformance and reliability risks if the DER is called on by both purchasers at the same time.⁴³ While this is an important concern, the Proposed Regulation paints with too broad a brush, unnecessarily preventing DER aggregations from contributing to their fullest technical potential much-needed services to PJM markets.⁴⁴

⁴² Exh. B, Technical Report of Michael Freeman, at 23 (June 10, 2026).

⁴³ Pa. P.U.C., Notice of Proposed Rulemaking Order, at 22–25, *Distributed Energy Resources Participation in Wholesale Markets*, Docket No. L-2023-3044115 (Dec. 18, 2025).

⁴⁴ Exh. B, Technical Report of Michael Freeman, at 26 (June 10, 2026).

The Proposed Regulation provides that no customer enrolled in a net metering tariff may enroll a CDER located behind their meter in a DER aggregation.⁴⁵ Such an approach fails to account for an increasingly common scenario in which a customer may own both a DER enrolled in net metering and a DER that is not, such as a demand-side management technology like smart thermostats. The customer can receive no compensation through the net metering tariff for the operation of its smart thermostats, meaning there is no risk of double compensation, but is nevertheless barred from enrolling its smart thermostats in a DER aggregation. To avoid this result, the Proposed Regulation should be amended to shift from being structured around a basic categorization of *the customer* being allowed or disallowed from DER aggregation participation to a categorization based on *particular DERs* being allowed or disallowed from DER aggregation participation on the basis of double compensation rules.

More broadly, the PA PUC should also focus on preventing actual rather than hypothetical double compensation. This principle should ultimately allow a customer to have a DER that is enabled for both retail-level and wholesale-level provision of energy services (whether that be generation, demand response, or other energy services), and to choose which to sell for given periods (though never duplicatively into both). While technically demanding, such an approach can help ensure all of the technical capabilities of DERs are utilized as fully as possible, which serves affordability and reliability objectives. To the extent that it is not feasible to incorporate such a framework via revisions to the Proposed Regulation, the PA PUC should consider the matter for future regulatory action.

⁴⁵ Pa. P.U.C., Notice of Proposed Rulemaking Order, Proposed Regulation, § 57.263(a)(1), *Distributed Energy Resources Participation in Wholesale Markets*, Docket No. L-2023-3044115 (Dec. 18, 2025).

Recommendation #8: Incorporate reporting requirements

Given the importance of the public policy issues at stake, the Proposed Regulation should also be amended to incorporate reporting requirements to enhance transparency and oversight over EDC activities to implement Order 2222 in their service territory. This should include an annual report (“DER Aggregation Annual Report”) on such activities, which should be focused on efficiency and equity, and should include the data described in the Technical Report attached hereto.⁴⁶

Such annual reports should be made publicly available on the PA PUC’s website. Any evidence of systematic or inequitable delays or other noncompliance should be the subject of PA PUC investigation. The PA PUC should also use the information from this public reporting to inform evaluation of whether EDCs can drive further reliability and affordability savings for ratepayers by prioritizing DER and DER aggregation deployment in particular underserved areas of their service territories and whether EDCs should offer additional outreach and support to segments of their customer base to support their access to DER aggregation participation.

Additionally, if any EDC (or EDC affiliate) chooses to act as a DER aggregator, then the DER Aggregation Annual Report for the applicable EDC should include an annex addressing compliance with the competition protection policies described *supra* in Recommendation #8. For EDCs acting as DER aggregators, this annex must include a description of how they have complied with requirements to (1) prioritize review of CDER applications in EJ Areas; and (2) use all profits from DER aggregation activities to lower customer rates. For EDCs with affiliates engaged in DER aggregation, this annex must include a description of how the EDC has ensured

⁴⁶ Exh. B, Technical Report of Michael Freeman, at 30 (June 10, 2026).

that all material data provided to its affiliated aggregator has been provided to third-party aggregators and how the EDC has ensured that no favoritism has been shown to its affiliated aggregator, including in regard to interconnection requests and CDER review requests.

Recommendation #9: Incorporate competition protection policies

The Final Regulation should be strengthened to include policies to protect competition against the risks associated with EDCs and EDC affiliates acting as DER aggregators.⁴⁷ Competition can be a powerful force driving affordability and innovation,⁴⁸ and there is no natural monopoly in DER aggregator services. These competition protection policies should include a requirement that EDCs do not show any favoritism to themselves or to EDC-affiliated DER aggregators, including with regard to interconnection approvals, DER aggregation approvals, or any other aspect of DER aggregation operations. Any material data EDCs share with EDC-affiliated DER aggregators, they must be required to make available on equal terms to non-affiliated DER aggregators.

EDCs that act as DER aggregators must be required to (1) prioritize for integration into aggregations CDERs located in any areas that are not being effectively reached by other DER aggregators; and (2) apply all profits from acting as a DER aggregator to reducing the cost of service for their customers.

In addition, the PA PUC should include in its Final Regulation a determination that EDCs must act in a non-discriminatory fashion to help foster a competitive market for DER

⁴⁷ Exh. B, Technical Report of Michael Freeman, at 31 (June 10, 2026).

⁴⁸ See, e.g. *Otter Tail Power Co. v. United States*, 410 U.S. 366, 374 (1973) (“[T]he history of Part II of the Federal Power Act indicates an overriding policy of maintaining competition to the maximum extent possible consistent with the public interest”).

aggregation providers. The PA PUC should also include a determination that in two years from the adoption of the Final Regulation, it will review the functioning of the DER aggregator market and investigate whether there is any evidence of anti-competitive behavior relating to EDC-affiliated DER aggregators. This investigation should include, but not be limited to, review of the annual reports described in Recommendation #8, *supra*. Should that investigation surface problems, the PA PUC should adopt remedial measures, up to and including a prohibition on EDCs and their affiliates serving as DER aggregators.

Recommendation #10: Potential corrections

EJA also recommends that the PA PUC address the potential corrections discussed in the Technical Report.⁴⁹

III. Context and Analysis

The above-described recommendations, discussed in greater detail in the attached Technical Report, share as a central theme the objective of accelerating the equitable deployment of DER aggregations in Pennsylvania. This is an important concern in light of three key contextual factors: (1) the principles of energy justice; (2) Pennsylvania's energy supply challenges and the potential of DER aggregations to help alleviate it; and (3) the climate crisis and its projected impacts on Pennsylvania. Each of those contextual factors will now be discussed in turn.

⁴⁹ See Exh. B, Technical Report of Michael Freeman, at 34 (June 10, 2026).

A. Energy Justice Principles

As a starting point, the recommendations set out in this Comment Letter are grounded in a set of principles that regulators, researchers, and advocates increasingly group under the heading of “energy justice.”⁵⁰ This section describes those principles and shows why, taken together, they support a Final Regulation that both accelerates the deployment of clean DERs and ensures that the benefits of those resources are equitably shared.

1. Core principles of energy justice

Energy justice is an analytic framework for evaluating how the benefits and burdens of the energy system are allocated across society. It describes the goal of achieving socially and economically equitable participation in the energy system while remediating the social, economic, and health burdens borne by communities historically harmed by that system.⁵¹ Its framework is conventionally organized around three recognized tenets. *Distributional* justice concerns the equitable allocation of the outcomes of energy investments.⁵² *Procedural* justice concerns whether the decisions that shape the energy system are made through processes that are

⁵⁰ See generally Benjamin K. Sovacool & Michael H. Dworkin, *Energy Justice: Conceptual Insights and Practical Applications*, 142 *Applied Energy* 435 (2015) <https://www.sciencedirect.com/science/article/abs/pii/S0306261915000082>; Kirsten Jenkins et al., *Energy Justice: A Conceptual Review*, 11 *Energy Rsch. & Soc. Sci.* 174 (2016) http://www.cl.uw.edu.pl/dok/Energy-justice--A-conceptual-review_2016_Energy-Research---Social-Science.pdf; Shalanda H. Baker, *Revolutionary Power: An Activist's Guide to the Energy Transition* (2021).

⁵¹ Brittany Speetles et al., *Virtual Power Plants and Energy Justice*, Nat'l Renewable Energy Lab'y, at v, NREL/TP-7A40-86607 (2023), <https://docs.nrel.gov/docs/fy24osti/86607.pdf>; see also Shalanda Baker et al., *The Energy Justice Workbook*, Initiative for Energy Justice, at 9–23 (Dec. 2019), <https://iejusa.org/wp-content/uploads/2019/12/The-Energy-Justice-Workbook-2019-web.pdf>.

⁵² Kirsten Jenkins et al., *Energy Justice: A Conceptual Review*, 11 *Energy Rsch. & Soc. Sci.* 174, at 176–177 (2016), http://www.cl.uw.edu.pl/dok/Energy-justice--A-conceptual-review_2016_Energy-Research---Social-Science.pdf.

fair, transparent, and open to participation.⁵³ *Recognition* justice concerns whether the distinct needs of vulnerable and underserved communities are identified and accounted for.⁵⁴

A central premise of this framework is that equitable outcomes do not occur on their own. Distributed energy programs have the capacity to advance energy justice, but underserved communities face cost-based, socioeconomic, and historical barriers that make participation more difficult; absent deliberate design, those barriers persist.⁵⁵ Energy justice therefore treats equity not as an optional addition to a program but as a design parameter that must be built in from the outset.⁵⁶

2. Energy justice encompasses climate justice

Climate justice is an aspect of energy justice, because an attribute of a just energy system is that it is consistent with a stable climate that does not impose inequitable burdens on vulnerable communities. As the Initiative for Energy Justice explains, energy justice “cannot be separated from environmental justice and climate justice.”⁵⁷ A regulator applying an energy-justice lens to an energy-system decision must necessarily consider climate justice as part of that analysis.

Notably, the impacts of climate change do not fall evenly. Communities of color and low-income communities in the United States are recognized to face the deepest impacts of climate

⁵³ *Id.* at 178–179.

⁵⁴ *Id.* at 177–178.

⁵⁵ See Brittany Speetles et al., *Virtual Power Plants and Energy Justice*, Nat’l Renewable Energy Lab’y, at v–viii, NREL/TP-7A40-86607 (Oct. 2023), <https://docs.nrel.gov/docs/fy24osti/86607.pdf>.

⁵⁶ *Id.* at vii–viii.

⁵⁷ Shalanda Baker, et al., *The Energy Justice Workbook*, Initiative for Energy Justice, at 5 (Dec. 2019), <https://iejusa.org/wp-content/uploads/2019/12/The-Energy-Justice-Workbook-2019-web.pdf>.

change, in part because legacies of segregation, redlining, and disinvestment have left them on land and in economic circumstances that make them the most vulnerable, and with the fewest resources to recover from climate-driven events.⁵⁸ Those same communities bear a disproportionate share of the air-pollution burden from the fossil-fueled infrastructure that drives climate change, including the “peaker” plants dispatched to meet peak demand.⁵⁹ The electricity system is thus a principal site at which energy decisions and climate harms converge, and the distributive and recognition tenets of energy justice extend directly to the climate consequences of those decisions.⁶⁰

3. Application to the Proposed Regulation

These principles bear directly on the Proposed Regulation. How the PA PUC exercises its regulatory authority in connection with the implementation of Order 2222 will shape, for years to come, who can most fully access the benefits of distributed clean energy in Pennsylvania, on what terms, and how fast. Aggregations of clean DERs can lower system costs and customer bills, accelerate the adoption of renewable energy, and displace reliance on aging, fossil-fueled peaker plants that are disproportionately sited in low-income communities.⁶¹

⁵⁸ *Id.* at 9–23.

⁵⁹ RMI, *Aggregated Distributed Energy Resources in 2024: The Fundamentals*, Nat’l Ass’n of Regul. Util. Comm’rs, at 12 (2024), <https://pubs.naruc.org/pub/98FBE453-02C0-1FE3-0249-3A456BA1E3E7> (prepared by RMI for National Association of Regulatory Utility Commissioners).

⁶⁰ See Shalanda Baker et al., *The Energy Justice Workbook*, Initiative for Energy Justice, 9–23 (Dec. 2019), <https://iejusa.org/wp-content/uploads/2019/12/The-Energy-Justice-Workbook-2019-web.pdf>; Brittany Speetles et al., *Virtual Power Plants and Energy Justice*, Nat’l Renewable Energy Lab’y, at vi, NREL/TP-7A40-86607 (Oct. 2023), <https://docs.nrel.gov/docs/fy24osti/86607.pdf>; RMI, *Aggregated Distributed Energy Resources in 2024: The Fundamentals*, Nat’l Ass’n of Regul. Util. Comm’rs, at 12 (2024), <https://pubs.naruc.org/pub/98FBE453-02C0-1FE3-0249-3A456BA1E3E7> (prepared by RMI for National Association of Regulatory Utility Commissioners).

⁶¹ See Brittany Speetles et al., *Virtual Power Plants and Energy Justice*, Nat’l Renewable Energy Lab’y, at v, NREL/TP-7A40-86607 (Oct. 2023), <https://docs.nrel.gov/docs/fy24osti/86607.pdf>; The Pew Charitable Trs., *Distributed Energy Can Unleash the Resilient, Affordable Grid of the Future*, at 1 (Apr. 2026),

Energy justice principles therefore support a Final Regulation that performs two functions. First, it should affirmatively accelerate the deployment of clean DERs by minimizing unnecessary procedural friction, delay, and cost in the aggregation framework, so that the cost, reliability, emissions, and climate benefits of these resources reach Pennsylvania ratepayers as quickly as is practicable.⁶² Second, it should ensure, to the greatest degree possible, that access to those benefits is equitably distributed.⁶³ The recommendations articulated in this Comment Letter are offered to advance both objectives.

B. Pennsylvania’s Energy Supply Challenges and Aggregated DER Potential

1. Data center loads are worsening Pennsylvania’s existing energy affordability crisis

Across the country, ratepayers are experiencing an energy affordability crisis. More Americans are struggling to pay their utility bills, with 61% of Americans saying their energy bills have added to their financial stress in 2026.⁶⁴ In the past five years alone, rates have increased by almost 40% nationwide, outpacing headline inflation as shown in Figure 1.⁶⁵ As a

<https://www.pew.org/en/research-and-analysis/reports/2026/04/distributed-energy-can-unleash-the-resilient-affordable-grid-of-the-future> (distributed energy resources and virtual power plants can supply peak-demand power at roughly 40% to 60% of the cost of traditional solutions and can reduce customer bills) (download PDF report at link under “downloads” on left hand vertical column); RMI, *Aggregated Distributed Energy Resources in 2024: The Fundamentals*, Nat’l Ass’n of Regul. Util. Comm’rs, at 12 (2024), <https://pubs.naruc.org/pub/98FBE453-02C0-1FE3-0249-3A456BA1E3E7> (prepared by RMI for National Association of Regulatory Utility Commissioners).

⁶² See The Pew Charitable Trs., *Distributed Energy Can Unleash the Resilient, Affordable Grid of the Future*, at 1 (Apr. 2026), <https://www.pew.org/en/research-and-analysis/reports/2026/04/distributed-energy-can-unleash-the-resilient-affordable-grid-of-the-future> (download PDF report at link under “downloads” on left hand vertical column).

⁶³ Brittany Speetles et al., *Virtual Power Plants and Energy Justice*, Nat’l Renewable Energy Lab’y, at v–viii, NREL/TP-7A40-86607 (Oct. 2023), <https://docs.nrel.gov/docs/fy24osti/86607.pdf>.

⁶⁴ PowerLines, *Utility Bills Are Rising: Q1 2026*, at 9 (May 2026), https://powerlines.org/wp-content/uploads/2026/05/0511_PowerLines_Rising-Utility-Bills-Q1-2026.pdf.

⁶⁵ *Id.* at 5; see also U.S. Bureau of Labor Stats., *CPI Inflation Calculator*, https://www.bls.gov/data/inflation_calculator.htm (last accessed June 8, 2026).

result, the average overdue balance on American utility bills increased by 32%, leaving 1 in 20 Americans with utility debt so severe that it has been or will be sent to collections.⁶⁶ This burden disproportionately falls on Black and Asian ratepayers, whose average overdue balance nears \$900, \$150 more than White consumers.⁶⁷

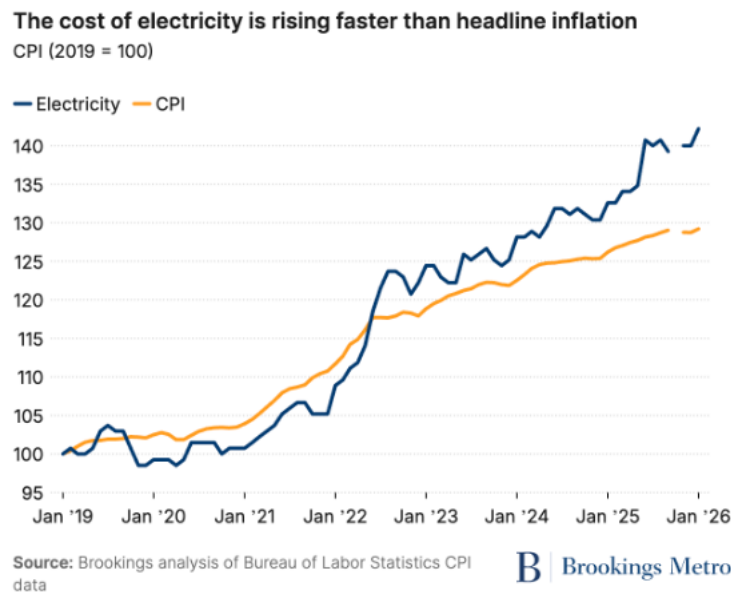


Figure 1. Electricity prices versus headline inflation, 2019 – 2026⁶⁸

S&P Global reported that investor-owned utilities nationwide requested record rate increases in 2025, totaling \$22.06 billion, with \$18.23 billion coming from electric utilities alone.⁶⁹

⁶⁶ Julie Margetta Morgan et al., *Fueling Debt: How Rising Utility Costs Are Overwhelming American Families*, The Century Found. (Nov. 17, 2025), <https://tcf.org/content/commentary/fueling-debt-how-rising-utility-costs-are-overwhelming-american-families/>.

⁶⁷ *Id.*

⁶⁸ Charles Lane & Joseph W. Kane, *Confronting and Addressing Rising Energy Bills Linked to Data Centers*, Brookings Inst., Figure 1 (Mar. 13, 2026), <https://www.brookings.edu/articles/confronting-and-addressing-rising-energy-bills-linked-to-data-centers/>.

⁶⁹ Dan Lowrey, *Record Amount of Utility Rate Requests in 2025 Amid Affordability Concerns*, S&P Global Market Intelligence (Jan. 23, 2026), <https://www.spglobal.com/market-intelligence/en/news-insights/research/2026/01/record-amount-of-utility-rate-requests-in-2025-amid-affordability-concerns>.

The result of rate hikes has led to increased public distrust of state governments' regulatory approaches. According to polling from PowerLines' Q1 2026 report, only 29% of those surveyed felt their state government was adequately protecting customers when regulating local utilities.⁷⁰ This number represents a nearly 10% drop from last year.⁷¹

While these rate hikes are caused in part by aging infrastructure and severe weather events such as wildfires in the West, data centers are responsible for significant cost increases, particularly in areas with otherwise stagnant growth.⁷² This reality is acknowledged by tech companies themselves, many of whom have issued public statements promising to cover grid costs related to new data centers. However, these commitments are largely vague, and there are few mechanisms to enforce them. Without protective regulations, these costs remain largely borne by ratepayers.⁷³

In PJM, data center-related rate hikes have become a serious issue in recent years. According to PJM's Market Monitor, "[d]ata center load growth is the core reliability issue facing PJM markets at present. . . . [c]ustomers are already bearing billions of dollars in higher costs as a direct result of existing and forecast data center load."⁷⁴ These costs represent "irreversible" impacts across several cost channels, including transmission costs, higher energy market prices, and higher capacity market prices.⁷⁵ According to analysis by the Union of

⁷⁰ PowerLines, *Utility Bills Are Rising: Q1 2026*, at 7 (May 2026), https://powerlines.org/wp-content/uploads/2026/05/0511_PowerLines_Rising-Utility-Bills-Q1-2026.pdf.

⁷¹ *Id.* at 7.

⁷² *Id.* at 19.

⁷³ Ella Nilsen, *Big Tech Is Increasingly Promising to Pay for Spiking Power Costs. But There's Not Much to Enforce It*, CNN, <https://www.cnn.com/2026/01/22/climate/big-tech-warren-electricity-data-centers> (last updated Jan. 22, 2026).

⁷⁴ Monitoring Analytics, LLC, *2025 Annual State of the Market Report for PJM: Volume 1*, at 45 (Mar. 12, 2026), https://www.monitoringanalytics.com/reports/PJM_State_of_the_Market/2025/2025-som-pjm-vol1.pdf.

⁷⁵ *Id.* at 1–2.

Concerned Scientists, in 2024, PJM passed \$4.3 billion in transmission costs onto ratepayers in 7 states, including PA.⁷⁶ The total transmission costs borne by Pennsylvania ratepayers was \$491.8 million, with approximately 94% of costs falling on ratepayers in the PPL service territory.⁷⁷

2. Significant data center load growth is planned for Pennsylvania, though reports are inconsistent

Amidst the affordability crisis, demand for Pennsylvania’s energy over the next several years is expected to grow substantially. Energy infrastructure is built to meet need in the moments of peak system demand. In 2024, peak load in Pennsylvania was 30,323 MW.⁷⁸ While residential and commercial loads are expected to remain relatively flat over the next several years, industrial loads are expected to jump, which is “driven primarily by PPL’s forecast peak loads due to large load users such as data centers.”⁷⁹ However, estimates vary about precisely how large this jump may be. In the PA PUC’s 2024-2029 Electric Power Outlook, PPL’s 2029 peak load is estimated at 14.5 gigawatts (“GW”).⁸⁰ However, in PJM’s 2026 Load Forecast Report, PPL’s 2029 peak load is estimated at approximately 12 GW.⁸¹ This is a substantial

⁷⁶ Union of Concerned Scientists, *Connection Costs: Loophole Costs Customers Over \$4 Billion to Connect Data Centers to Power Grid*, at 1 (Sep. 2025), <https://www.ucs.org/sites/default/files/2025-09/PJM%20Data%20Center%20Issue%20Brief%20-%20Sep%202025.pdf>.

⁷⁷ Union of Concerned Scientists, *Connection Costs: Loophole Costs Customers Over \$4 Billion to Connect Data Centers to Power Grid, Appendix – Compilation of Utility Projects by State*, at 10, Table 6 (Sep. 2025), <https://www.ucs.org/sites/default/files/2025-09/PJM%20Data%20Center%20Issue%20Brief%20Appendix%20-%20Sep%202025.pdf#:~:text=Connection%20Costs,Mike%20Jacobs>.

⁷⁸ PA PUC, *Electric Power Outlook for Pennsylvania: 2024-2029*, at 28, Table 1 (Aug. 2025), <https://www.puc.pa.gov/media/3586/final-draft-2025-epo-2024-2029-8-2025.pdf>.

⁷⁹ *Id.* at 31–32 (Aug. 2025).

⁸⁰ *Id.* at 46, Figure 24.

⁸¹ PJM, *2026 PJM Load Forecast Report*, at 22 (Jan. 14, 2026), <https://www.pjm.com/-/media/DotCom/library/reports-notice/load-forecast/2026-load-report.pdf>.

difference, especially considering current peak load in PPL is just under 8 GW. Accurate load forecasting is a critical piece of ensuring affordability and of accurately identifying which resources, including demand-side resources, may be able to meet expected load.

3. Aggregated DERs could offer substantial capacity at lower cost than alternatives

According to the PA PUC's 2024-2029 Electric Power Outlook, peak load in Pennsylvania is estimated to jump from 30.5 GW to 37 GW, a 21% increase.⁸² Given the inconsistent forecasts in PPL's service territory noted above, it is hard to know exactly how quickly this jump may occur. Regardless of the precise pace, Pennsylvania is in clear need of energy resources that can meet this substantial new demand. Aggregated DERs, if effectively integrated via policies that recognize and fairly value DERs as a supply-side resource, can meet a substantial portion, if not all, of this need. In their 2023 comprehensive report on the issue, U.S. DOE estimated that aggregated DERs (which they call virtual power plants) by 2030 "could contribute approximately 10-20% of peak demand, with local variation."⁸³ In various updates to their report, including as recently as January 2025, they have maintained this estimate, highlighting that aggregated DERs are a proven, low-cost technology to meet demand needs, and that they are especially well suited to meet the moment of uncertain forecasted demand growth: "This uncertainty increases the importance of prioritizing the most cost-effective and flexible resources to serve rapidly changing conditions."⁸⁴

⁸² PA PUC, *Electric Power Outlook for Pennsylvania: 2024-2029*, at 31, Figure 9 (Aug. 2025), <https://www.puc.pa.gov/media/3586/final-draft-2025-epo-2024-2029-8-2025.pdf> (best estimates based on figure being referred).

⁸³ U.S. DOE, *Pathways to Commercial Liftoff: Virtual Power Plants*, at 3 (Sep. 2023), https://climateprogramportal.org/wp-content/uploads/2025/06/LIFTOFF_DOE_VPP_2023.pdf.

⁸⁴ U.S. DOE, *Pathways to Commercial Liftoff: Virtual Power Plants 2025 Update*, at 7 (Jan. 2025), https://www.smartenergydecisions.com/wp-content/uploads/2025/04/liftoff_doe_virtualpowerplants2025update.pdf.

Regional evaluations of aggregated DER potential have confirmed the potential capacity of these resources if policies effectively facilitate their deployment. In California, Brattle estimates that there is an aggregated DER market potential of 7.6 GW by 2035, which represents 15.3% of estimated 2035 peak load.⁸⁵ In Ontario, Brattle estimates 3 GW of potential, about 9% of estimated peak load in 2045, which excludes existing industrial demand response in the province.⁸⁶ These DOE and Brattle reports also consistently find that integrating aggregated DERs as a capacity resource has significant cost saving potential.

Given these consistent estimates in other regions, in Pennsylvania, it is likely that aggregated DER potential is somewhere between 10 and 20% of current peak load, which would be in the range of 3 to 6 GW. This potential capacity could offset a significant amount of the proposed incoming data center demand. While there is some amount of existing conventional demand response in Pennsylvania, it does not get close to the GW range in the near term. In the Act 129 process, a study of demand response potential is prepared for the PA PUC. This study estimates future retail Demand Response potential using typical industry incentives in each Pennsylvania service territory. The study then establishes a “Maximum Achievable Potential,” which we can consider to be the high end of potential retail demand response in the Commonwealth. In 2029, this Maximum Achievable Potential is estimated to be between 400 and 500 MW.⁸⁷ Even assuming this capacity would be a part of the overall aggregated DER

⁸⁵ Ryan Hledik et al., *California's Virtual Power Potential: How Five Consumer Technologies Could Improve the State's Energy Affordability*, Brattle, at 5 (Apr. 2024), <https://gridlab.org/wp-content/uploads/2024/04/Californias-Virtual-Power-Potential-Vol-I-Summary-Report.pdf> (prepared for GridLab).

⁸⁶ Sanem Sergici et al, *The Value of Using DERs for Distribution System Services in Ontario*, Brattle, at 4 (Mar. 2026), <https://cleanenergycanada.org/wp-content/uploads/2026/04/Distribution-Value-of-DERs-in-Ontario-Final-1.pdf> (prepared for Clean Energy Canada)

⁸⁷ Demand Side Analytics, *Phase V Demand Response Potential Study*, at 8, Figure 3 (Feb. 2025), <https://www.puc.pa.gov/pdocs/1867287.pdf> (prepared for the Pennsylvania Public Utility Commission).

potential, there are likely still multiple GW of aggregated DER potentially in addition to this demand response capacity.

C. Climate Change and Pennsylvania

Climate change is already harming Pennsylvania, and the harm is accelerating. The Commonwealth’s own scientific assessment, released by PA DEP in April 2025, finds that “Pennsylvania is expected to get hotter with dangerous heat waves and droughts while at the same time experiencing more intense storms and damaging flooding.”⁸⁸ That harm falls on Pennsylvanians today, and it bears directly on the question before the PA PUC in this rulemaking: whether to issue a Final Regulation that is designed to accelerate the equitable deployment of clean DERs to the greatest degree reasonably possible. The climate crisis gives the PA PUC one more strong reason to adopt a Final Regulation that efficiently and equitably opens wholesale markets to robust participation by DER aggregations in Pennsylvania.

1. Climate change is already inflicting measurable harm on Pennsylvania

Pennsylvania’s climate has already shifted. Statewide average annual temperature rose about 1.2°F from 2000 to 2023.⁸⁹ In summer 2023, Harrisburg saw nineteen days above 90°F, and an attribution analysis found that the heat events in Philadelphia, Harrisburg, and Allentown that summer were roughly twice as likely as they would have been without human-caused

⁸⁸ Pa. Dep’t of Env’t Prot., *Pennsylvania Climate Impacts Assessment 2024*, at 1 (Apr. 2025) <https://greenport.pa.gov/elibrary/GetDocument?docId=9587655&DocName=PA%20CLIMATE%20IMPACTS%20ASSESSMENT%202024.PDF>.

⁸⁹ *Id.* at 12.

climate change.⁹⁰ Heavy rain is rising too. More than 80% of surveyed Cooperative Observer Program sites recorded more heavy rain events in the 2010s than in the 1980s.⁹¹ Flooding is now the Commonwealth’s highest-risk climate hazard. The state logged 663 flood and flash flood events between 2010 and 2022, and twenty-seven of its sixty-seven counties now average at least one flood a year.⁹²

2. Projected future climate impacts are severe

In 2025, PA DEP and a multi-agency advisory committee, including the PA PUC, released the Commonwealth’s most recent public report on climate change and its impacts on Pennsylvania, the Pennsylvania Climate Action Plan 2024.⁹³ The report concluded that “[c]limate change presents unprecedented challenges to the Commonwealth of Pennsylvania,” and that “[t]he current impacts and future risks of climate change require swift and collaborative action to prevent the worst impacts from becoming a reality.”⁹⁴

The latest report of the Intergovernmental Panel on Climate Change (“IPCC”) reaches similar conclusions.⁹⁵ The IPCC noted that “[w]ithout urgent, effective, and equitable mitigation and adaptation actions, climate change increasingly threatens ecosystems, biodiversity, and the

⁹⁰ *Id.* at 12–13, 39–40.

⁹¹ *Id.* at 28.

⁹² *Id.* at 28, 53.

⁹³ Pa. Dep’t of Env’t Prot., *Pennsylvania Climate Action Plan 2024* (Apr. 2025), <https://greenport.pa.gov/elibrary/GetDocument?docId=9584245&DocName=PENNSYLVANIA%20CLIMATE%20ACTION%20PLAN%202024.PDF>.

⁹⁴ *Id.* at 1.

⁹⁵ Hoesung Lee and José Romero (eds.), *Climate Change 2023 Synthesis Report*, Intergovernmental Panel on Climate Change (2023), https://www.ipcc.ch/report/ar6/syr/downloads/report/IPCC_AR6_SYR_FullVolume.pdf.

livelihoods, health and well-being of current and future generations.”⁹⁶ Since greenhouse gas emissions continue to drive harmful climate change over the long-term, the IPCC emphasized that “[t]he choices and actions implemented in this decade will have impacts now and for thousands of years.”⁹⁷

3. *Climate change disproportionately harms vulnerable Pennsylvanians*

Climate harm does not fall evenly. Environmental justice communities flagged by PA DEP’s PennEnviroScreen tool face greater exposure shaped by housing quality, where people live and work, and the lasting effects of redlining.⁹⁸ In the Northeast, low-income census blocks have up to 30% less tree cover and run 7.2°F hotter than wealthier ones, and some formerly redlined neighborhoods reach 22°F hotter than other parts of the same city.⁹⁹ As of 2023, about 1.6 million Pennsylvanians, roughly 27% of the workforce, work outdoors.¹⁰⁰ Weather caused about 83% of major U.S. power outages from 2000 to 2021, and in 2021 alone more than 177,000 Pennsylvania customers were hit by major outage events.¹⁰¹ Furthermore, Pennsylvania’s electric infrastructure faces high or medium-high climate risk across nearly every asset class the PA PUC regulates.¹⁰²

⁹⁶ *Id.* at 24.

⁹⁷ *Id.* at 24.

⁹⁸ Pa. Dep’t of Env’t Prot., *Pennsylvania Climate Impacts Assessment 2024*, at 43–44, 50, 56, 63 (Apr. 2025) <https://greenport.pa.gov/elibrary/GetDocument?docId=9587655&DocName=PA%20CLIMATE%20IMPACTS%20ASSESSMENT%202024.PDF>.

⁹⁹ *Id.* at 63.

¹⁰⁰ *Id.* at 62.

¹⁰¹ *Id.* at 66.

¹⁰² *Id.* at 69–71.

4. The PA PUC's duty as an ERA trustee supports a Final Regulation accelerating the equitable deployment of clean DERs

The PA PUC's duties under the Environmental Rights Amendment ("ERA") give it added reason to act prudently in this context. Article I, Section 27 of the Pennsylvania Constitution makes the Commonwealth's public natural resources the common property of all the people, including generations yet to come, and names the Commonwealth their trustee.¹⁰³ The Pennsylvania Supreme Court has held that these trustee duties run to every branch and level of government, and each Commonwealth agency, the PA PUC included, owes fiduciary duties of prudence, loyalty, and impartiality to the beneficiaries of Pennsylvania's environmental trust.¹⁰⁴

Pennsylvania's 2024 Climate Action Plan, released on April 25, 2025, commits the Commonwealth to a net-zero pathway by 2050 and identifies strategies, including onsite solar, building electrification, and grid modernization, that will be shaped by the PA PUC's actions or inaction with regard to DERs and DER aggregations.¹⁰⁵ DERs like rooftop and community solar, distributed storage, and demand-side flexibility technologies cut reliance on the centralized fossil generation that contributes to climate change. Accordingly, a Final Regulation that serves to accelerate the equitable deployment of clean DER aggregations in Pennsylvania would be a prudent course of action consistent with the PA PUC's constitutional duties as trustee of Pennsylvania's public natural resources under the ERA.

¹⁰³ Pa. Const. art. I, § 27.

¹⁰⁴ *Pa. Env't Def. Found. v. Commonwealth*, 161 A.3d 911, 919 (Pa. 2017); *Twp. of Marple v. Pa. Pub. Util. Comm'n*, 294 A.3d 965, 974–75 (Pa. Commw. 2023).

¹⁰⁵ Pa. Dep't of Env't Prot., *Pennsylvania Climate Action Plan 2024*, 5–6 (Apr. 2025), <https://greenport.pa.gov/elibrary/GetDocument?docId=9584245&DocName=PENNSYLVANIA+CLIMATE+ACTION+PLAN+2024.PDF>.

IV. Conclusion

In light of the foregoing, the Energy Justice Advocates respectfully request that the PA PUC incorporate the recommendations described in Part II of this Comment Letter and in the attached Technical Report into the PA PUC's Final Regulation regarding DER aggregations.

Signatures

Dated: June 10, 2026

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BEFORE THE PENNSYLVANIA PUBLIC UTILITY COMMISSION
Proposed Rulemaking on Distributed Energy Resources Participation in
Wholesale Markets, Chapter 57

Docket No. L-2023-3044115

SUMMARY AND ANALYSIS OF PUBLIC TESTIMONY COLLECTED AT THE
PEOPLE'S HEARING ON DISTRIBUTED ENERGY RESOURCE
AGGREGATION April 26, 2026

Submitted by:

POWER Interfaith

EXECUTIVE SUMMARY

This Executive Summary presents the core points from sixteen oral and written testimonies collected at the April 26, 2026 People’s Hearing on the Pennsylvania Public Utility Commission’s proposed regulation implementing FERC Order 2222, concerning distributed energy resource (“DER”) aggregations. Testimony was analyzed using a mixed human–AI method: POWER organizers reviewed all statements for accuracy and fidelity, while AI-assisted thematic analysis was used to reduce individual summarizer bias and ensure consistent treatment of the full testimonial record. The recommendations below reflect the recurring concerns and priorities voiced across diverse demographic groups.

Residents urged the Commission to adopt DER aggregation rules that: **(1)** ensure equitable access for low- and moderate-income households, renters, people with disabilities, and others who lack capital for DER-enabling technologies; **(2)** accelerate the implementation of DER aggregation to address urgent climate, health, and affordability harms; **(3)** establish strong, enforceable consumer protections to prevent predatory or deceptive aggregator practices; **(4)** require transparent, plain-language contracts and clear disclosure of override conditions, compensation structures, and device-control parameters; **(5)** reinvest system-wide savings from avoided peaker plants and reduced transmission and distribution spending into subsidies for batteries, smart thermostats, and other DER-enabling technologies in underserved communities; **(6)** improve grid access and interconnection timelines for small-scale DER owners; **(7)** protect participant autonomy by ensuring that household energy needs take priority over aggregator claims and that remote device control is strictly opt-in; **(8)** strengthen grid resilience and safeguard medically vulnerable and high-risk populations; **(9)** support community-based and faith-based aggregation models that deliver benefits at the neighborhood scale; and **(10)** maintain transparency and meaningful public participation throughout rule development and program oversight.

Collectively, these recommendations reflect a unified call for DER aggregation rules that are fair, transparent, community-oriented, and designed to maximize public trust and participation.

I. Introduction

On April 26, 2026, POWER Interfaith convened a People's Hearing on Affordable Clean Energy in response to the Pennsylvania Public Utility Commission's proposed rulemaking on Distributed Energy Resource Participation in Wholesale Energy Markets, Chapter 57, Docket L-2023-30444115. The hearing was organized to ensure that the voices of ordinary ratepayers — residents of the PECO service territory and beyond — are formally heard regarding the proposed regulation. This document presents a structured summary and ethnographic analysis of the testimony collected at that hearing and is submitted as formal comments in the above-captioned proceeding.

Sixteen individuals provided testimony, including residents of Philadelphia, Lower Merion, Lower Bucks County, and surrounding communities. Speakers ranged in age, income level, housing situation, health status, and technical familiarity with energy systems. Their perspectives collectively illuminate the human stakes of the Commission's rulemaking decisions.

Ethnographic testimony provides insight into how regulatory structures function in practice, revealing barriers, harms, and lived impacts that are not captured in technical modeling or economic analysis. This form of community expertise is essential for understanding how proposed rules will affect real households and neighborhoods.

The sections that follow summarize the testimony, identify recurring themes, present ethnographic observations, and outline the specific regulatory requests voiced by participants. The last section provides methodological details and caveats.

II. Context and Public Testimony

The People's Hearing followed a structured agenda designed to ensure that participants could offer informed testimony. Attendees first received a brief educational introduction to DER aggregations and virtual power plants (“VPPs”), providing accessible explanations of the technical issues in the proposed rulemaking. This was followed by a panel discussion offering practical, equity-focused, and community-oriented perspectives on DER aggregation. After the panel, community members delivered public testimony grounded in their own experiences and priorities; the panel provided context but did not shape or direct the substance of public comment.

The testimonies reflect a community grappling simultaneously with the urgency of climate change, the burden of rising energy costs, and the promise — and risks — of distributed energy resources. Speakers came from diverse circumstances: a grandmother in a Center City high-rise, a resident of a cooperative community in Lower Bucks County who already shares rooftop solar with neighbors, a disabled apartment-dweller who cannot install solar, a retired pastor managing chronic asthma, a low-income West Philadelphia homeowner without a smartphone. Despite their differences, their testimonies converged on a shared set of concerns, aspirations, and demands of the Commission.

The following is a summary of the specific regulatory requests that emerged from the testimony. These are organized not as POWER's advocacy positions, but as an accurate representation of what speakers asked of the Commission.

III. Thematic Analysis

The following themes recur across multiple testimonies and are identified here as the primary concerns and priorities voiced by community participants following presentations that described DER aggregations.

Theme 1: Equitable Access for Low- and Moderate-Income Ratepayers and Renters

This was the most frequently raised concern across the testimonial record. Multiple speakers noted that the upfront costs of solar panels, battery storage, electric vehicles, and smart thermostats are prohibitive for low- and moderate-income households. Several speakers raised the particular vulnerability of renters, who cannot install equipment in their units and have no control over building-level energy decisions. One speaker with disabilities, who relies heavily on in-home electricity, emphasized that apartment residents are disproportionately excluded from current solar incentive structures. Speakers called for the Commission to require that DER aggregation programs be affirmatively designed to include these populations, not merely permit their participation in theory.

Representative statements:

- *"I want to see programs and regulations that make sure that moderate and low-income people can participate just as much as high-income people." — Wendy Greenspan*
- *"Philadelphia is a city where a large portion of residents are tenants, not home owners. We are already struggling with a cost of living and housing crisis... Please do not add to this financial burden." — Skylar Iles*
- *"My neighbors who live in North Philadelphia... spend maybe upwards of 30% of their income... paying their electric bills." — Susan Thompson*

Theme 2: Robust Consumer Protections Against Predatory Aggregators

Multiple speakers raised concerns about the potential for aggregators to engage in abusive or deceptive practices toward residential customers, particularly those who are elderly, low-income, or less familiar with energy markets. Several described direct personal experience with predatory competitive electricity suppliers — unsolicited calls from companies impersonating PECO, complex contracts that consumers could not readily evaluate, and financial harm resulting from switching to unscrupulous competitive providers. Speakers explicitly cautioned the Commission not to replicate this experience in the DER aggregation context. Speakers called for clear, enforceable contracts; penalties for abuse; and regulatory oversight that ensures participating households receive the financial benefits they are promised.

Representative statements:

- *"Unregulated capitalism is not a good alternative to monopolistic control. We need community-led responses and really strong consumer protection." — Mitch Chanin*
- *"Would I be able to even understand the contract? It has to be clear. It has to be transparent. There has to be legal ramifications if some of these companies aren't above board." — Susan Thompson*

- *"I would want to know that it was being done for the benefit of the whole community and not just for some company's profit." — Nancy Wygant*

Theme 3: Transparency, Clarity, and Understandability of Rules and Contracts

Speakers across the socioeconomic spectrum expressed concern that the rules governing DER aggregation be written in plain, accessible language that ordinary residents — including seniors, low-income households, and people without technical backgrounds — can understand and act upon. Several speakers noted that complexity itself functions as a barrier to participation, effectively excluding those who lack legal counsel or industry expertise. The call for transparency extended to the regulatory process itself: one faith community specifically requested that the PUC's rule development process be more open and participatory.

Representative statements:

- *"I want the rules to be clear, trustworthy, fair." — Barbara Atkinson*
- *"I want the rules to be clear and easy to follow by ordinary citizens, especially those who live in Philadelphia's tight-knit neighborhoods." — Rev. Geneva Butz*
- *"We ask that grid access become more transparent and the process for developing the new rules be similarly transparent." — Creation Care Team, UCC Valley Forge*

Theme 4: Urgency of Climate Action and the Moral Imperative to Act

Virtually every testimony situated the DER aggregation rulemaking within the broader context of the climate emergency. Speakers described personal experiences with extreme weather, insurance cancellation, flooding, and worsening air quality. Several invoked the health of their communities — including Philadelphia's documented asthma crisis — as evidence that fossil fuel combustion is causing tangible harm now. Intergenerational responsibility — the obligation to leave a livable world for children and grandchildren — was a recurring frame in both secular and faith-based testimony. This theme was not merely rhetorical: speakers consistently tied their moral urgency to specific, actionable regulatory requests.

Representative statements:

- *"We need to move really quickly. I am not the only asthma sufferer. There are more than 200,000 asthma sufferers in Philadelphia." — Rev. Geneva Butz*
- *"The legacy that I had always thought we would be able to give our future generations is a livable earth." — Susan Shipley*
- *"Renewables have to happen everywhere, as much as possible, as quickly as possible, equitably, and public policy must support that." — Claudia Crane*

Theme 5: Economic Relief — Energy Affordability and Bill Reduction

Several speakers testified about the direct financial burden of rising electricity costs, particularly on low-income households and fixed-income seniors. One speaker noted that neighbors in North Philadelphia spend up to 30% of their income on electricity. Several speakers connected DER aggregation and virtual power plants specifically to the prospect of bill reduction — both through direct participation in aggregation programs and through the system-level savings that come from displacing expensive peaker plant construction. One speaker offered a more detailed

structural argument: that distributed energy reduces the capital that utilities must spend on long-distance transmission lines and high-cost peak power infrastructure, and that those savings should be reinvested as subsidies for batteries, smart thermostats, and other distributed equipment in low- and moderate-income communities — creating a self-reinforcing cycle in which efficiency gains fund equitable access. One speaker noted the large rate increase they observed in their January and February bills, underscoring that rate volatility is a present harm, not a future risk.

Representative statements:

- *"Virtual power plants have a real capacity to bring money to low-income people, bring money to communities by keeping utilities from building these big peaker plants." — Rev. Allen Drew*
- *"Creating this kind of flexibility is one of the fastest ways that we can avoid energy bill increases and avoid the need for extremely expensive infrastructure construction." — Mitch Chanin*
- *"Savings in the energy market resulting from reduced transmission/distribution infrastructure spending should be regulated to supporting further distributed energy infrastructure." — Peter Furcht*

Theme 6: Grid Resilience, Energy Security, and Protection of Vulnerable Populations

Several speakers raised concerns about grid resilience and the protection of vulnerable populations during outages. One speaker noted that distributed, aggregated resources are inherently more resilient than large centralized plants, which are more susceptible to disruption. Another speaker raised the practical concern of ensuring that people with medical dependencies — who may require powered medical equipment — are protected and identified in emergency response plans. The theme reflects a dual concern: that DER aggregation enhances grid reliability at the system level, and that the most vulnerable ratepayers are not left behind when disruptions occur.

Representative statements:

- *"Large power plants are more vulnerable to disruption than aggregated resources." — Barbara Atkinson*
- *"I wonder what will happen to people who are vulnerable... they wouldn't have any kind of battery backup." — Ettie Davis*

Theme 7: Protection of Participant Rights and Autonomy in DER Agreements

Multiple speakers raised specific concerns about maintaining the autonomy and control of individual DER participants in aggregation agreements. Concerns included: ensuring that homeowners' own energy needs are met before surplus is transferred to aggregators; specifying in advance the conditions under which aggregators may remotely control home devices such as thermostats; and ensuring that participating in an aggregation program does not create unwanted dependency or loss of control over a household's energy use. One speaker also raised the issue of corporate energy overconsumption — large office buildings that over-air-condition in summer — as an equity concern in the context of fair energy allocation.

Representative statements:

- *"I would want to know when the thermostat got turned down, by how much, and all of that." — Nancy Wygant*
- *"Consumer protections for individuals... to protect the homeowner's use of their solar for their total use of the solar energy, and only use the extra energy for the aggregators." — Rosemary McKinley*

Theme 8: Community and Faith-Based Stewardship

Testimony from faith communities and cooperative housing residents reflected a vision of DER aggregation as a vehicle for collective responsibility and community-scale benefit, not merely individual gain. Two United Church of Christ congregations submitted testimony framing the rulemaking in terms of stewardship of God's creation and intergenerational obligation. A resident of a cooperative community described the appeal of aggregating collectively owned solar and EV resources for shared benefit. These perspectives emphasize that the regulatory framework should be oriented toward community benefit and democratic participation, not only market efficiency.

Representative statements:

- *"We have a responsibility to each other and for future generations to find solutions and energy production that are clean and affordable and that produce good jobs." — Rev. Nathaniel Mahlberg*
- *"I love the idea of having us go together and aggregating our resources and getting some benefit from that." — Barbara Atkinson*

IV. Ethnographic Observations

The testimony collected at the April 26 People's Hearing reflects several ethnographically significant patterns that are relevant to the Commission's deliberations.

Lived experience as regulatory knowledge. Speakers drew on direct personal experience — insurance cancellation, flooding near their homes, high medical costs from asthma, unaffordable electricity bills — to ground their regulatory positions. This testimony constitutes a form of community expertise that supplements technical analysis and belongs in the regulatory record. Regulatory decisions that fail to account for these lived realities risk adopting frameworks that are technically coherent but practically inaccessible or inequitable.

Convergence across diverse demographics. Although speakers varied widely in age, income, housing type, health status, and technical familiarity, their core demands converged: equitable access, consumer protection, transparency, and community benefit. This convergence across demographic lines suggests that the concerns raised are not idiosyncratic but reflect genuine structural features of the proposed regulatory environment as experienced by diverse communities.

Distrust rooted in prior experience. Several speakers articulated distrust of aggregators not as abstract skepticism but as the product of prior harmful experiences with competitive energy suppliers. This distrust is rational and evidence-based. Rules that do not directly address the

conditions that generated this distrust are unlikely to produce the broad-based participation that would maximize the public benefit of DER aggregation.

Aspirational engagement despite barriers. Even speakers who currently lack the resources to participate in DER programs — the resident without a smartphone, the apartment-dweller who cannot install solar — expressed genuine interest in participating if the conditions were right: fair compensation, clear agreements, community benefit, and trustworthy oversight. This aspirational engagement is a significant asset. The Commission has an opportunity to channel it into meaningful participation by writing rules that actively reduce barriers to entry.

Moral and spiritual framing. The presence of multiple faith communities — and the prevalence of intergenerational and stewardship language even in secular testimony — signals that residents understand this rulemaking in terms that exceed market optimization. The Commission is being asked not only to establish technically sound rules but to make value choices about who benefits, who is protected, and what kind of energy system Pennsylvania's communities will inhabit.

V. Summary of Regulatory Requests from Testimony

The following is a summary of the specific regulatory requests that emerged from the testimony. These are organized not as POWER's advocacy positions, but as an accurate representation of what speakers requests of the Commission:

- Design DER aggregation programs with affirmative provisions ensuring access for low- and moderate-income households, renters, people with disabilities, and others who lack the capital for solar panels or smart devices.
- Accelerate the implementation of DER aggregation programs to respond to the immediate and worsening impacts of climate change, rising energy costs, and grid stress. Speakers emphasized that distributed resources and virtual power plants represent one of the fastest available pathways to reduce emissions, improve resilience, and lower bills.
- Establish strong, enforceable consumer protections, including clear contract terms, disclosure requirements, penalties for deceptive practices, and guaranteed delivery of promised financial benefits.
- Write rules in plain, accessible language that ordinary residents can understand without legal or technical expertise.
- Require transparent disclosure of aggregator practices, compensation structures, and grid participation terms.
- Protect participant autonomy, including ensuring that a homeowner's or renter's own energy needs take priority over aggregator claims, and that remote control of household devices is governed by clear, opt-in agreements with specified parameters.
- Address interconnection backlogs that impede timely grid access for small-scale DER owners.
- Ensure that the rulemaking process itself is transparent and meaningfully open to community input.

- Prioritize rules that enable DER aggregation to function as an alternative to peaker plant construction, reducing both carbon emissions and costs passed on to ratepayers.
- Require that savings to utilities and ratepayers resulting from reduced transmission and distribution infrastructure spending be reinvested to subsidize distributed energy equipment — including batteries and smart thermostats — in low- and moderate-income communities, so that system-wide efficiency gains directly fund equitable access.

VI. Conclusion

The testimony collected at the April 26 People's Hearing represents a substantial and diverse record of community voices that deserve a meaningful place in the Commission's deliberations. Speakers supported the principle of DER aggregation, but conditioned that support on rules that prioritize equity, consumer protection, transparency, community benefit, and participant autonomy. *These are not merely preferences — they suggest the conditions under which communities will trust and participate in DER aggregation programs, and therefore the conditions under which those programs can achieve their full public benefit.*

VII. Methodology

A. Event Structure and Testimony Collection

The People's Hearing followed a structured agenda designed to ensure that participants could offer informed testimony. Prior to public testimony, POWER volunteers provided attendees with a brief educational introduction to DER aggregations and VPPs, offering accessible explanations of the technical concepts at issue in the proposed rulemaking.

The educational session was followed by a panel discussion featuring:

- **Alon Abramson**, Vice President at Philadelphia Energy Authority (“PEA”) and board member of the Energy Efficiency Alliance, who addressed the PEA's vision for DER Aggregations and what implementation would look like in practice;
- **Rev. Allen Drew**, Director of the Hunting Park Community Solar Initiative, East Coast Regional Organizer for the Climate Witness Project, and Philadelphia Regional Project Coach for Solar Faithful, who spoke to why community-based clean energy matters in underserved neighborhoods and how it can improve the lives of ordinary people; and
- **Kartik Amarnath**, Mid-Atlantic Regulatory Director at Vote Solar, who discussed the importance of addressing equity, fairness, and community participation and benefits in the rules for DER aggregations.

Following the panel discussion, community members offered public testimony. The panelists’ remarks provided technical and contextual grounding but did not direct, script, or shape the content of public testimony. Community members spoke from their own experiences, concerns, and priorities.

Testimonials were delivered in three forms: (1) oral extemporaneous statements delivered during the hearing; (2) oral testimony based on previously prepared written remarks; and (3) written

testimony submitted subsequently by participants who wished to supplement their oral comments.

POWER did not edit, filter, or curate the substance of any testimony; all statements were included as transcribed by an automated transcription service. This ensured that the record reflects the authentic perspectives of participants without organizational shaping or modification.

B. Use of AI-Assisted Summarization

To reduce interpretive bias by POWER in summarizing the testimonial record, POWER utilized AI large language models (“LLMs”) to assist with thematic analysis and narrative synthesis. LLMs also carry biases derived from their pretraining data; however, these biases arise from broad statistical patterns in large text corpora rather than from the political experiences or advocacy commitments of POWER’s organizers. Additionally, outputs from multiple LLMs were compared to reduce the influence of any single model’s biases.

The AI was tasked with producing three outputs:

- A neutral narrative synthesis of the full set of testimonials;
- A thematic analysis identifying recurring concerns, values, and priorities; and
- Representative quotations by theme.

C. Instructions to the AI to Ensure Fidelity and Neutrality

To ensure transparency and minimize interpretive drift, POWER provided the AI with the following explicit instructions:

- Summarize the content without altering meaning or introducing normative judgments.
- Treat all speakers' perspectives with equal weight.
- Identify themes only when supported by multiple testimonies.
- Avoid speculation, inference of motives, or extrapolation beyond the text.
- Maintain a tone appropriate for regulatory comments: clear, neutral, and evidence-based.
- Preserve short, representative quotations to anchor themes in the speakers' own words.

These instructions were designed to minimize interpretive drift and ensure fidelity to the original voices. All interpretations, framing decisions, and final language in this document have been reviewed and validated by POWER's human organizers.

All AI-generated summaries and quotes were crosschecked against the original testimony to ensure fidelity, prevent omission of outlier perspectives, and confirm that no content was introduced that did not appear in the testimonial record.

D. Limits of Analysis

While the testimonial record is not statistically representative of all Pennsylvania ratepayers, the convergence of themes across diverse demographics suggests that these concerns reflect structural features of the energy system rather than isolated or anecdotal experiences.

E. Participant Characteristics

Sixteen individuals provided testimony at the People's Hearing. Participants represented a range of ages, income levels, housing types, health statuses, and geographic locations within the PECO service territory. The following list summarizes the demographic and contextual information speakers disclosed in their testimony; no additional information was inferred or supplemented.

1. **Peggy Greenfeld** — Penn Valley (Lower Merion Township), PA; PECO ratepayer
2. **Barbara Atkinson** — Lower Bucks County, PA; PECO customer; energy cooperative provider; resident of Bryn Gweled Homesteads cooperative community
3. **Claudia Crane** — Philadelphia (The Philadelphian); grandmother; age approximately 75
4. **Mitch Chanin** — Somerton, Northeast Philadelphia
5. **Susan Thompson** — Fairmount, Philadelphia; age approximately 82
6. **Rev. Nathaniel Mahlberg** — Philadelphia; Pastor, United Church of Christ in Valley Forge (Tredyffrin Township); PECO customer
7. **Rosemary McKinley** — Representative, United Church of Christ in Valley Forge
8. **Ettie Davis** — Philadelphia (The Philadelphian)
9. **Wendy Greenspan** — Philadelphia; PECO ratepayer
10. **Rev. Allen Drew** — Northwest Philadelphia; Director, Hunting Park Community Solar Initiative; East Coast Regional Organizer, Climate Witness Project; Philadelphia Regional Project Coach, Solar Faithful
11. **Nancy Wygant** — West Philadelphia
12. **Susan Shipley** — Philadelphia; PECO customer; artist
13. **Jean Miller and Creation Care Team** — United Church of Christ in Valley Forge; PECO-region ratepayers
14. **Skylar Iles** — Philadelphia; disabled PECO customer; apartment renter
15. **Rev. Geneva Butz** — Fairmount, Philadelphia; retired pastor (19 years, Center City Philadelphia)
16. **Peter Furcht** — Philadelphia; condominium resident; PECO customer

Respectfully submitted,

POWER Interfaith

April 2026



EMERALD
ENERGY
CONSULTING

June 10, 2026

Secretary Matthew L. Homsher
Pennsylvania Public Utility Commission
Commonwealth Keystone Building
400 North Street
Harrisburg, PA 17120

Re: Draft Regulation and Request for Comments, Docket No. L-2023-3044115

Dear Secretary Homsher,

I have reviewed the Pennsylvania Public Utility Commission's draft regulation and call for public comments at the above-listed docket number. Please find enclosed my Technical Report in support of the Comment Letter of the Energy Justice Advocates.

Sincerely,

Michael S. Freeman

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EMERALD
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Technical Report of Michael Freeman
on the PA PUC's Proposed Regulation to Implement Order 2222

June 10, 2026

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I. Introduction and Qualifications

I have been retained in this matter to provide expert technical support to the Energy Justice Advocates for their public comments on the Pennsylvania Public Utility Commission’s (“PA PUC”) proposed regulation to implement FERC Order 2222 (“Proposed Regulation”). The following recommendations are based, in large measure, on long experience in the PJM region with (1) assisting generation developers with wholesale market operations and commercial activity; (2) obtaining interconnection rights at the distribution or transmission level; (3) working with interconnection personnel at Electric Distribution Companies (“EDCs”) and PJM; (4) offering strategy advice regarding wholesale markets; and (5) contracting.¹

I have reviewed the Proposed Regulation with the goal of increasing the probability of achieving efficient and equitable compliance with Order 2222 without placing undue burden on any of the market participants – EDCs, aggregators, project developers and ratepayers. My overall conclusion is that, with a number of changes, including appropriate reform of existing statewide interconnection standards and provision of information that will be critical to market participants, Pennsylvania can achieve efficient, timely compliance with Order 2222.

¹ I worked for Exelon Generation Co., LLC, for 21 years in origination, portfolio management and mergers and acquisitions, before co-founding Emerald Energy Consulting, LLC, on March 1, 2013.

II. Recommendations and Analysis

Recommendation #1: Incorporate measures to accelerate EDC review of DER interconnection

1.1 Reform existing interconnection standards

The purpose would be to give project developers and owner-operators a non-binding indication of interconnection cost and complexity. Without access to a preliminary indication, developers either commission their own interconnection analysis and assume the risk (or negotiate with the buyer a cost-sharing mechanism) that the utility study will uncover additional upgrade costs; or they use an estimate based on previous projects, plus a contingency fee to cover the risk of additional cost because the characteristics of previous interconnections may differ significantly from the one under study.

In either case, the risk cost, including the cost of an independent study, is incorporated into the price that the buyer will pay. Even with a cost-sharing mechanism, both seller and buyer assume virtually uncapped risk. Because of that aspect of the transaction, sellers will try to set the cost cap (above which the cost is shared) as high as possible. One concern is that buyers generally lack the sophistication and knowledge to protect themselves against taking on too much risk. For the developer, cost uncertainty causes delays in equipment-ordering, civil engineering at the project site and construction.

None of the interconnection rules of the Pennsylvania EDCs has a supplemental review step, but not because the EDCs necessarily object to supplemental reviews or aren't aware of the significant value such reviews provide to new projects. The issue is structural -- Pennsylvania's interconnection standards apply to customer-generators with net-metered, small generator facilities of 2 MW (nameplate) or less (or up to 5 MW if the resource agrees to redispatch in the

event of a system emergency), are not subject to the interconnection requirements of an RTO, and are designed to operate in parallel with the distribution system. The framework uses four levels of review, with no supplemental review step between them.

Reform of Pennsylvania’s interconnection standards for compliance with FERC Order 2222 would involve at least two major challenges: i) expanding the existing size limitations and narrow application to accommodate distribution-interconnected resources that are in front of the retail meter; and ii) developing new standards that are fair, reasonable and clear to the EDCs and applicants – in other words, as prescriptive and precise as possible but with some flexibility.

Although Pennsylvania does not have a defined supplemental review process, the concept has been adopted in many states, starting with California in 2011. FERC subsequently adopted its analogous process in 2013.²

The following is a suggested framework³ that incorporates supplemental review:

1. Three levels⁴ based on planned installed capacity
 - a. Level 1 for inverter-based customer-generator facilities of 10 kW or less that meet certification requirements
 - b. Level 2 for inverter-based customer-generator facilities of 2 MW or less that meet certification requirements

² FERC Order No. 792, 145 FERC ¶ 61,159 (Nov. 22, 2013); IA Admin. Code, ch. 45.9(6) (Jan. 18, 2017); MN Distributed Energy Resources Interconnection Process § 3.4 (MN DIP) (April 19, 2019); AZ Admin. Code § R14-2-2620; IL Admin. Code, tit. 83, § 466.100(f); OH Admin. Code Chapter 4901:1-22-07(E).

³ The recommended fee structure for each level is outside the scope of this report.

⁴ Screening criteria for each level to be determined by EDCs but generally include long-established engineering standards associated with system stability and equipment compatibility, including IEEE 1547-2018 (Levels II and III), which governs physical interconnection (note: 1547-2018 is referenced in § 57.262 in the definition of “Electric distribution system”); and UL 1741 SB (testing and certification requirements). IEEE 2030.5, which governs the communications layer needed for aggregation dispatch, should also be considered. PJM’s DER Aggregation Resource compliance filing didn’t specify 2030.5 because it said communications protocols should be left to the EDCs and aggregators.

- c. Level 3 for applications up to 20 MW that do not qualify for either Level 1 or Level 2
- 2. Potential outcomes (assumes that EDC has approved customer-generator's application) within 15 business days of application approval
 - a. **Approval.** Facility meets all applicable screening requirements
 - b. **Approval despite screen failure.** Facility has failed one or more applicable requirements, but EDC has determined that facility can be interconnected consistent with safety, reliability, and power quality standards
 - c. **Additional review (the supplemental review equivalent).** Facility has failed one or more applicable requirements, but initial review indicates that additional review may enable EDC to determine that facility can be interconnected consistent with safety, reliability, and power quality standards
 - d. **Denial.** Facility has failed one or more requirements; initial review indicates that additional review would not enable EDC to determine that facility could be interconnected consistent with safety, reliability, and power quality standards⁵
- 3. Define "additional review" by including standard screens that would be applied in all cases and require the EDCs to make results available to the applicant within

⁵ If application for Level 2 review fails as described in outcome 3 or 4, or is denied, applicant may resubmit application under Level 3 interconnection review procedure.

15 business days. Provide applicants whose projects are denied interconnection with the right to request additional review

4. Give EDCs the right to place boundaries on the period within which interconnection applications can be submitted – for example, an applications window could be six months of a calendar or planning (June 1-May 31) year. No applications for a given year would be accepted outside the window

1.2 The PA PUC should set deadlines for each level of interconnection application review

The deadlines would be the maximum number of calendar days for the completion of a study after EDC notice of acceptance of an interconnection application. The U.S. Department of Energy’s (“DOE”) January 2025 *DER Interconnection Roadmap*⁶ calls for implementing and enforcing interconnection study timelines with penalties for delays, and for expanding and standardizing reporting of interconnection data. The roadmap sets a target of median interconnection times under 75 calendar days for systems between 50 kW and 5 MW by 2030 (Figure 1), with public queue data available for all U.S. states and territories (such data does not now exist).

⁶ <https://www.energy.gov/sites/default/files/2025-01/i2X%20DER%20Interconnection%20Roadmap.pdf>.

Figure 1.

Table ES 1. 2030 Roadmap Targets

	Target	System Size*	2030 Target Value
Timing	(1) Median time from DER interconnection request to agreement [§]	< 50 kW	Within 1 day [†]
		50 kW–5 MW	< 75 days
		> 5 MW	< 140 days
Access	(2) Completion rate from entering the queue to execution of interconnection agreement	< 50 kW	> 99%
		50 kW–5 MW	> 90%
		> 5 MW	> 85%
Data	(3) Availability of public state-level interconnection queue data	All	50 states, Washington, D.C., and territories have public, detailed, and current queue data

A reasonable approach would be to establish a multi-year declining schedule of deadlines for each level of application, with the EDCs required to file quarterly reports about their ability to meet the deadlines and document reasons why the next year’s deadlines shouldn’t proceed as planned.

Below in Figure 2 is a proposed schedule that reflects such an approach:

Figure 2.

	Size	Calendar Days		
		Year 1	Year 2	Year 3
Level 1	≤ 10 kW	15	5	1
Level 2	≤ 2 MW	30	20	15
Level 3	≤ 20 MW	90	60	30
Supplemental Review	NA	30	20	30

Recommendation #2: Incorporate measures to accelerate EDC review of Component DER applications to participate as DER Aggregation Resources in PJM markets

2.1 Direct EDC collaboration with PJM to facilitate Component DER integration to PJM’s DER Model Registry

In order to accelerate Component DER participation as DER Aggregation Resources in PJM markets, the PA PUC should direct the EDCs to collaborate with PJM on expanding PJM’s DER Model to include pertinent information about Component DERs. A tracking system, or registry, benefits all market participants: EDCs, system operators and planners, aggregators, developers, customer-generators and regulators. As a recent NERC white paper noted:

Large penetrations of distributed energy resources are significantly increasing variability and uncertainty within Bulk Electric System planning and operations. This uncertainty is largely driven by lack of knowledge of the quantity, location, and characteristics of DERs, especially as related to their impacts on the bulk power system. The need to reduce uncertainty about DER impacts has been made more urgent by the introduction of FERC Order 2222.⁷

A useful example comes from the renewable energy credit (“REC”) market, which is facilitated by 10 regional tracking systems but was once dependent on one-page attestations from seller to buyer that guaranteed (at least on paper) that the RECs being sold originated with the electrical output of a particular generating resource during the period in question and were not double-sold. There was no centralized data repository to track existing and new resources; to store and update metered generation; and to transact. The administrative burden of auditing

⁷ https://naesb.org/pdf4/weq_rmq_bps080825w7.pdf.

attestations was such that few market participants took the trouble,⁸ making the attestation method essentially reliant on a seller's honesty⁹.

Tracking systems, which started with PJM-GATS¹⁰ in 2005, greatly lowered transaction costs by eliminating the need for attestations and audits. Public-domain reports¹¹ maintained by the tracking systems give market participants detailed information on generating resources and in which states they are eligible to qualify for state renewable portfolio standard laws. The advent of "REC Aggregators" created market efficiencies by combining RECs associated with multiple individual resources.

While DER Aggregation Resources don't yet have a transactable product such as RECs, the market facilitation aspect of renewable tracking systems can directly be applied to compliance with Order 2222. As with REC markets before tracking systems existed, a lack of information and collaboration likely would cause market inefficiencies – for transmission system operators such as PJM but also for regulators, aggregators and project developers.

At the system operations level, a significant difference between RECs and DER Aggregation Resources is that the former is a financial transaction and doesn't have a direct impact on power system operations, while the latter potentially is a change to the physical system.

Pre-Order 2222, PJM modeled DER resources as load reductions (i.e., netting against load), not generation, but will modify its classification and approach with DER Aggregation

⁸ "Electronic tracking systems significantly reduce the administrative requirements to prevent double counting," according to the National Renewable Energy Laboratory (<https://docs.nrel.gov/docs/fy15osti/64558.pdf>).

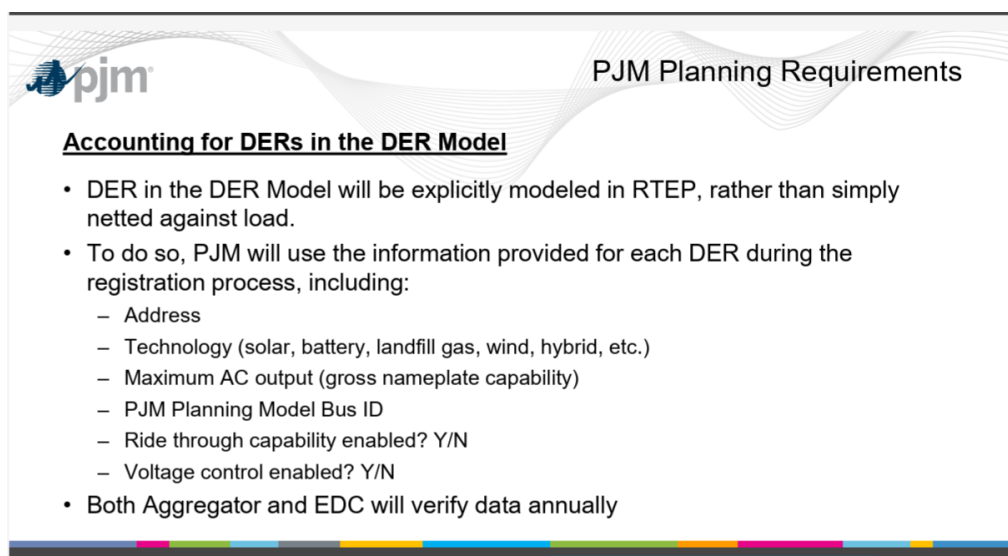
⁹ While it's unknown how often double-selling occurred, there was enough suspicion that the Federal Trade Commission and the National Association of State Attorneys General issued guidance on the legal implications of fraudulent claims.

¹⁰ Generator Attribute Tracking System.

¹¹ See, for example, <https://gats.pjm-eis.com/gats2/PublicReports/RenewableGeneratorsRegisteredinGATS>.

Resources such that they will be treated as incremental generation (and, in the case of energy storage, incremental load as well)¹². Figure 3 shows a list of project attributes that PJM will include in the DER model. Additional information that would help facilitate DER Aggregation Resources would include, at the Component DER level, the same data points as will be collected by PJM for DER Aggregation Resources, along with detail on participation in a retail program (e.g., net metering, price-responsive demand) to police double-counting and eligibility for PJM wholesale markets; and into which distribution circuit a Component DER is injecting.

Figure 3.



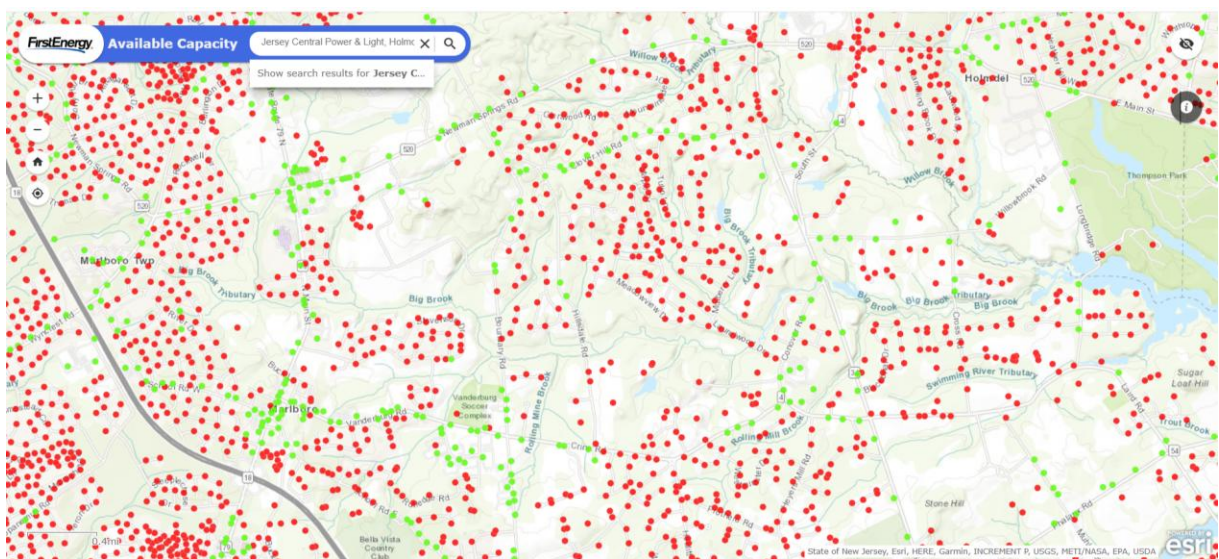
Eventually, Pennsylvania may want to develop a transactable product¹³ to support a DER Aggregation Resource market, and a centralized system already in place would be the appropriate platform.

¹² <https://www.pjm.com/-/media/DotCom/committees-groups/subcommittees/disrs/2026/20260309/20260309-item-05---updated-der-aggregator-participation-model---full-model-design---informational-only.pdf>.

¹³ The Clean Peak Energy Credit in Massachusetts is an example (<https://www.mass.gov/clean-peak-energy-standard>).

A more ambitious step would be a requirement that the EDCs develop a system mapping tool that shows the maximum hosting capacity for each distinct circuit voltage class in the selected geographical grid. For example, First Energy developed the Solar Accommodation Map (Figure 4) for Jersey Central Power & Light (“JCPL”)¹⁴, which shows available (ac) capacity for every transformer location in the JCPL system (red dot = <100 kW; yellow dot = 100-1,000 kW; green dot = >1,000 kW).

Figure 4.



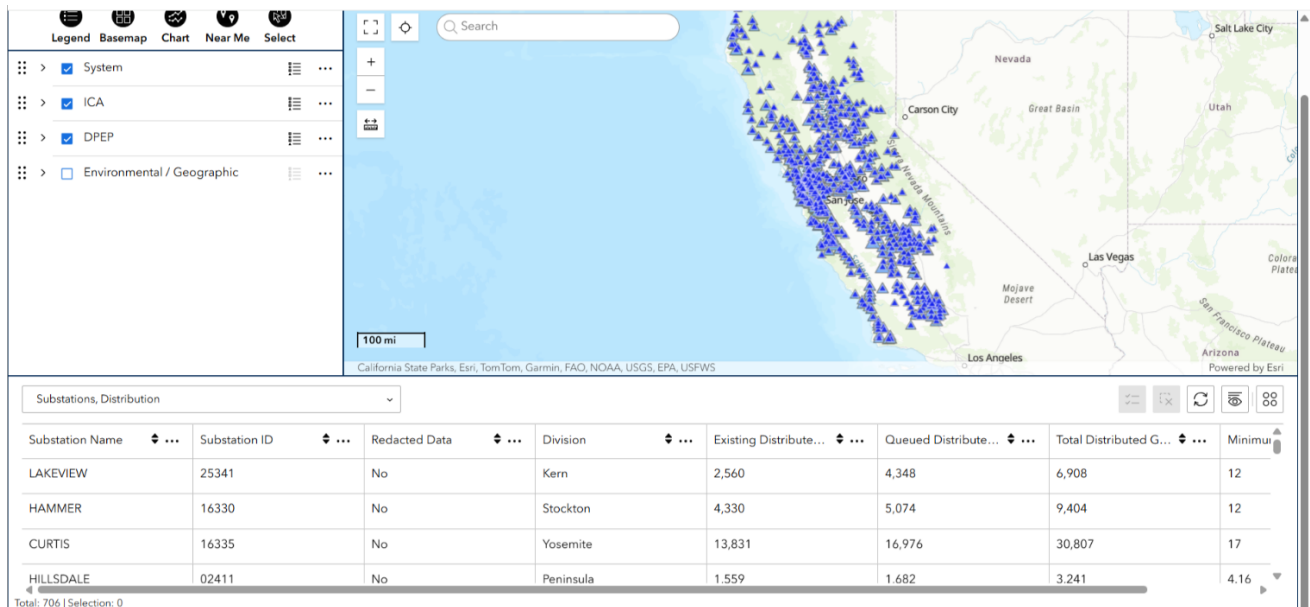
The California EDCs developed similar tools, but with significantly more information for each electrical location (see Figure 5 below).¹⁵ Besides New Jersey and California, 10 other states require EDCs to publish similar tools, and EDCs in 15 states have voluntarily done so.¹⁶

¹⁴ <https://www.firstenergycorp.com/feconnect/newjersey/solar-accommodation-map.html>.

¹⁵ See, for example, <https://grip.pge.com/>.

¹⁶ <https://www.climatepolicydashboard.org/policies/electricity/interconnection-standards>.

Figure 5.



2.2 Set tighter EDC review timelines

The Proposed Regulation provides that when a DER aggregator requests EDC review of a proposed DER Aggregation Resource, “[t]he EDC shall complete review of the request within 60 days of submission.”¹⁷ Order 2222-A subsequently set a binding outer limit of 60 days for EDC review of DER Aggregation Resources.¹⁸ In so doing, FERC noted that, as it had observed in Order 2222, “a lengthy review time or the lack of a deadline could erect a barrier to distributed energy resource participation in the RTO/ISO markets and may unduly delay participation.”¹⁹ FERC also noted that 60 days is the “maximum time” to be taken, and stated that “we encourage

¹⁷ § 57.264.

¹⁸ Order 2222-A, P 72.

¹⁹ Order 2222-A, P 72, cited in Order 2222, P 295.

shorter review periods for smaller aggregations and resources to the maximum extent practicable, and reiterate that any proposed review period must be shown to be reasonable based on what is being reviewed.”²⁰

Order 2222-A also clarified that when an EDC is reviewing for reliability issues during the review period, the review should address “incremental impacts from a resource's participation in a distributed energy resource aggregation that were not previously considered by the distribution utility during the interconnection study process for that resource.”²¹

As an RTO subject to Order 2222, PJM was required to submit a compliance filing with tariff modifications to implement the order. PJM’s approved tariff modifications, set to go into effect on February 1, 2028, describe a fifteen-day period of review and a following forty-five-day period of review:

The Electric Distribution Company review process shall consist of two periods, in sum not to exceed sixty calendar days. The first shall be a single period, not to exceed fifteen calendar days, during which time the Electric Distribution Company and the Office of the Interconnection shall review and verify each Component DER for which a location was created. The second shall be a single period, not to exceed forty-five calendar days, during which the Electric Distribution Company shall perform a reliability review of the DER Aggregation Resource.²²

I’ll discuss each of these two periods now.

The Fifteen-Day Review Period

PJM specifies that in the first fifteen-day period, the EDC “may review and verify” (i) location and other data associated with each Component DER; (ii) participation of any Component DER in retail programs that would preclude participation in any PJM market; (iii)

²⁰ Order 2222-A, P 72.

²¹ Order 2222-A, P 79.

²² PJM Order 2222 Compliance Filing, May 29, 2026, Attachment A, at 45.

compliance with applicable retail regulatory authority requirements; (iv) all needed authorization for participation from the retail regulatory authority.

The Forty-Five Day Review Period

For the forty-five day period that follows, PJM’s tariff specifies that the EDC should verify that “the participation of the DER Aggregation Resource in the PJM energy, capacity, and/or ancillary service markets does not pose a threat to the reliable and safe operation of the distribution system, the public, or Electric Distribution Company personnel.”²³

PJM’s tariff further provides that “[t]he scope of the Electric Distribution Company review of distribution system reliability impacts shall be limited to any incremental impacts arising from a Component DER participation in a DER Aggregation Resource that were not previously considered by the Electric Distribution Company during the interconnection study process for that Component DER.”²⁴

Recommendation

With regard to the Proposed Regulation, I share FERC’s concern that excessive EDC review periods for DER Aggregation Resources could result in undue barriers to Component DER participation in federally regulated markets. I recommend that the Final Regulation incorporate more detail into its provision governing EDC review of DER Aggregation Resources and adopt tighter timetables than the maximums allowed by FERC and PJM in light of the energy supply and affordability crisis in Pennsylvania and PJM as a whole. Proposed edits are described below, marked in red.

²³ PJM Order 2222 Compliance Filing, May 29, 2026, Attachment A, at 47.

²⁴ *Id.*

Recommended Changes

§ 57.264. Review of Component DER Applications.

(a) EDCs shall establish a process for receiving and reviewing requests from a DER Aggregation Resource, DER operator or PJM for approval of a Component DER to participate in the PJM energy, capacity, and/or ancillary services markets as a DER Aggregation Resource in the PJM DER Aggregator Participation Model with the following conditions:

- (1) The process must allow for electronic submission of requests.
- (2) The EDC shall complete review of the request within a total of 50 days of submission.
 - (i) Within 15 days of submission, the EDC shall complete review of the eligibility under applicable law for the Component DER to participate in PJM markets as a DER Aggregation Resource
 - (ii) Within 50 days of submission, the EDC shall complete review of any potential incremental impacts on the reliable and safe operation of the distribution system arising from a Component DER's participation in a DER Aggregation Resource that were not previously considered by the Electric Distribution Company during the interconnection study process for that Component DER as well as any other review required by PJM
 - (iii) Notwithstanding the foregoing, if the Component DER that is the subject of the request is located within an Environmental Justice Area as identified by the Department of Environmental Protection, the EDC shall complete its review review within 45 days

(3) The EDC shall describe in detail the reasons for any denial of a request. The EDC shall also promptly communicate with the requestor regarding any problems it identifies or additional information it requires without waiting for the end of the review period. The requestor should have the right to resubmit an amended interconnection request.

(b) The EDC may establish a fee approved by the Commission for processing a request.

These recommended changes will generally help support the expeditious review of requests for Component DERs to participate in DER Aggregation Resources, in line with federal and state public policy priorities. These changes will encourage the prompt development of the automated review processes that will save administrative costs in the long run and enable much-needed supply to come online as quickly as possible. They will also help encourage the expeditious review of Component DERs in PA DEP-recognized Environmental Justice areas that currently suffer disproportionate environmental burdens. This can help ensure that projects in these areas can access the benefits of DER Aggregation Resource participation, which is appropriate in light of energy justice principles that take into consideration disproportionate burdens when identifying equitable decisions regarding energy infrastructure.

Recommendation #3: Incorporate measures to ensure the owners of Component DERs bear their own costs and non-participants are fully protected

Non-participating ratepayers should not bear any cost responsibility for DER aggregation administration costs or local or network upgrades that are caused by the energy injection and/or withdrawal of new Component DERs, unless the EDC planned to do the upgrades prior to Component DERs applying for interconnection. Most RTOs,²⁵ including PJM, require interconnection applicants to bear the full cost of upgrades. This is consistent with the principle of cost causation. Electric utilities for years have adhered to the traditional cost-causation principle, under which the generator (or load) that triggers a distribution upgrade must pay for all interconnection costs and distribution system upgrade costs.²⁶

Additionally, relating to such charges, the PA PUC should classify any DER Aggregation Resource-related charge applied to a customer-owner of a Component DER as a “non-basic service charge,” so that nonpayment of such a charge can never serve as a basis for terminating essential electric service. The classification operates through an existing protection: 52 Pa. Code § 56.83(3) provides that, absent express and specific PA PUC authorization, electric service may not be terminated for nonpayment of non-basic charges, defined as charges for merchandise, appliances, or special services “that are not essential to delivery or metering of service.”

²⁵ The California ISO is a notable exception.

²⁶ Other states, such as Maryland and Maine, have proposed socialization of some interconnection costs, with the remainder borne by the Component DER owner – potentially shared with an aggregator – or recovered in retail rates by the EDC. Maine would limit cost-sharing to systems of 25 kW or smaller, while Maryland is considering a similar approach but hasn’t yet identified a size threshold.

Recommendation #4: Require EDCs with less than 100,000 customers to seek PA PUC approval to opt-out, not to opt-in

Smaller EDCs should not automatically be exempted from Order 2222 compliance based on a generalized, *a priori* assumption that is necessarily infeasible for them to comply. The processes that would have to be put in place are not burdensome or expensive, and the supply-demand balance throughout PJM is under significant pressure primarily because of new data center electric load, unit retirements, interconnection delays and electrical equipment scarcity²⁷. New supply in the form of DER Aggregation Resources would help mitigate the potential shortage no matter how retail ratepayers are distributed throughout the Commonwealth. The smaller EDCs should be required to demonstrate to the PA PUC why they need to opt out. They should provide notice to their customers of any such opt-out request, and their customers should be afforded an opportunity to comment.

Please see the below recommended language for the Proposed Regulation.

Recommended Changes*

§ 57.263. General provisions.

(a) EDCs ~~with 100,000 or more customers~~ shall allow DER Aggregation Resource participation within their service territories under the following conditions:

(1) Customer-generators receiving service under the EDC's net metering tariff are precluded from participating as a DER Aggregator Resource in the PJM capacity and energy markets.

(2) The Component DER was approved by the EDC as part of a DER Aggregation Resource of a DERA to participate in the energy, capacity, and/or ancillary services markets of PJM through the PJM DER Aggregator Participation Model.

²⁷ <https://www.pjm.com/-/media/DotCom/markets-ops/rpm/rpm-auction-info/2027-2028/2027-2028-bra-reserve-target-shortfall-report.pdf>.

(b) EDCs with less than 100,000 customers may petition for Commission approval for an exemption from compliance with this subchapter P. Such a petition must explain in detail why it is not feasible for the EDC to comply. The EDC must provide public notice of the petition to its customers and such customers shall be provided an opportunity to comment on the petition once filed.

(c) An EDC allowing DER Aggregation Resource participation within their service territory shall file a tariff with the Commission that provides for DER Aggregation Resource participation consistent with this chapter.

* Please note I also recommend other changes to this subsection relating to other issues but for clarity I am only presenting here the changes relevant to the issue I am discussing in this section of my report.

Recommendation #5: Institute a robust consumer protection framework

The Proposed Regulation establishes detailed standards governing the relationship between electric distribution companies and distributed energy resource aggregators, but does not establish standards governing the relationship between a DER aggregator and its Component DER customers. However, the Proposed Regulation contains no code of conduct, no marketing or disclosure standards, no rules governing the quality of consent required for enrollment, and no billing protections applicable to the DER aggregator–customer relationship. The PA PUC should close that gap by adopting the following recommendations as part of a DER aggregator Code of Conduct.

5.1 Require affirmative written consent

The PA PUC should require fully informed, affirmative, written consent before any customer is enrolled in a DER Aggregation Resource, and should prohibit the automatic or default enrollment of households that received subsidized energy-efficiency or conservation measures through the Low-Income Usage Reduction Program (“LIURP”), Act 129, or any comparable program. The U.S. Department of Energy’s reference code treats affirmative written contracting as foundational: before a customer enters a flexibility-services contract, the aggregator must, “in writing,” inform the customer “that they are entering into a legally binding contract” and present “a standard flexibility services contract form that clearly states the terms and conditions.”²⁸

²⁸ U.S. Dep’t of Energy, Office of Electricity, *DER Aggregator Code of Conduct: A Reference for Consumer Engagement*, at 5 (Nov. 2023), https://www.energy.gov/sites/default/files/2023-11/2023-11-01%20DER%20Aggregator%20Code%20of%20Conduct%20nov%202023_optimized.pdf.

The prohibition on default enrollment is necessary to protect the integrity of Pennsylvania’s low-income energy programs. LIURP requires public utilities to provide subsidized usage-reduction measures to low-income residential customers, and Act 129 requires large EDCs to operate PA PUC-approved energy-efficiency programs that include measures for low-income households.²⁹ A Component DER—a smart thermostat or battery—installed through these programs could otherwise be swept into an aggregation and dispatched in wholesale markets without the household’s knowledge or agreement. That outcome would convert a public benefit into a private revenue stream and divert from the household the bill-reduction benefit the programs are designed to deliver.

5.2 Require standardized, plain-language pre-enrollment disclosures

The PA PUC should require DER aggregators to provide, in a PA PUC-approved plain-language format and before enrollment, disclosure of (i) what customer data will be collected and with whom it may be shared, (ii) the full schedule of fees, charges, and performance penalties, (iii) the method by which charges will be calculated and billed, and (iv) the process and any costs for withdrawing from the aggregation. The U.S. Department of Energy’s reference code already identifies most of these elements as essential: the aggregator’s written pre-contract proposal must include “any fees clearly and thoroughly explained,” “a clear and transparent statement of the operational parameters under which the customer will be dispatched,” and financial estimates, accompanied by a plain-language “Key Facts” document.³⁰

²⁹ 52 Pa. Code §§ 58.1–58.18; 66 Pa. Cons. Stat. §§ 2806.1–2806.2.

³⁰ U.S. Dep’t of Energy, Office of Electricity, *DER Aggregator Code of Conduct: A Reference for Consumer Engagement*, at 5–6 (Nov. 2023), https://www.energy.gov/sites/default/files/2023-11/2023-11-01%20DER%20Aggregator%20Code%20of%20Conduct%20nov%202023_optimized.pdf.

Mandatory, standardized pre-enrollment disclosure is necessary because the economics of aggregation are otherwise opaque to a residential customer. A customer cannot determine whether participation is beneficial without knowing the fee structure, the billing method, and the cost of exit. A PA PUC-approved standard format, analogous to the disclosure statement the PA PUC already requires of electric generation suppliers,³¹ would allow customers to compare offers, and the inclusion of withdrawal terms would guard against lock-in. Plain-language disclosure is the precondition of informed consent under Recommendation 6.2; without it, choice systematically favors the most sophisticated customers.

5.3 Preserve customer ownership and operational control of Component DERs

The PA PUC should guarantee that customers retain ownership of, and ultimate operational control over, Component DERs located on their premises, including an absolute, penalty-free right to override an aggregator’s dispatch signal to maintain temperature, lighting, medical equipment, or other conditions necessary for health and safety. The U.S. Department of Energy’s reference code recognizes the core of this principle: “customers must be provided with the ability to override or opt out of automation events,” and flexibility-services operations “must respect customer health and safety issues before and during operational dispatch,” with operational constraints “consistent with governmental health agencies’ guidelines” built into the dispatch parameters.³²

³¹ 52 Pa. Code § 54.5.

³² U.S. Dep’t of Energy, Office of Electricity, *DER Aggregator Code of Conduct: A Reference for Consumer Engagement* 6 (Nov. 2023), https://www.energy.gov/sites/default/files/2023-11/2023-11-01%20DER%20Aggregator%20Code%20of%20Conduct%20nov%202023_optimized.pdf.

This protection is necessary because aggregation functions by dispatching customer-sited equipment in response to wholesale market signals. Without a guaranteed override, a market-driven dispatch could leave a household dangerously hot or cold, dim its lighting, or interrupt power to medical equipment. The override right must be exercisable without penalty, because a right that triggers a financial charge each time it is invoked is illusory for the households most likely to need it. Vulnerable customers, such as elderly residents, people with disabilities, and those who rely on in-home medical equipment, bear the greatest physical risk from uncontrolled dispatch.

Recommendation #6: Develop a standardized data sharing protocol that facilitates necessary data exchange while protecting customer privacy

Order 2222 requires RTOs/ISOs to have access to DER data to support wholesale market operations, products and settlements, while EDCs and DER aggregators also need access to DER data for retail programs, settlements and system operations studies. FERC has ordered RTOs/ISOs to coordinate with EDCs and regulators to establish protocols for sharing DER metering and telemetry data in a manner that minimizes costs and addresses privacy and cybersecurity concerns (FERC left the specifics to states). Conceptually, the development of data-sharing rules and protocols shouldn't be a significant obstacle because of long-standing precedent: the data-sharing protocols for retail choice transactions and settlements, which have been in place in varying formats for almost 30 years.

With DER aggregation, there are four distinct data flows: i) EDC to Aggregator; ii) Aggregator to EDC; iii) to/from customer-generators (i.e., owners of Component DERs); and iv) EDC to RTO/ISO. All four data flows are directly analogous to the data flows that support retail choice; although the data-sharing technology has improved, the information that is needed is the same:

- Billing-quality or “raw” usage data (including interval data, such as hourly or intra-hourly) in a standard format
- Billing data including customer rate/tariff information
- Customer and account information

The most significant issues with the current state of data-sharing include the following:³³

- Privacy
- Cyber disruptions
- Third-party registration hurdles
- Confusing, multi-step process
- Ambiguous or unclear consent
- Manual processes and long lag times
- Incomplete datasets and coverage

The software industry has developed advanced protocols to address all of these concerns. The authorization “gate opener” should be familiar to anyone who accesses data or information via Google search: OAuth 2.0, the “industry-standard authorization protocol that allows third-party applications to access user data on a server (like Google or Facebook) without giving them the user's password.”³⁴ With standardized data formats, a secure authorization platform and access management (i.e., different access levels for different parties), DER Aggregation Resources – at least from a data-flow perspective – could be accelerated.

At a high level, the “best practices” framework³⁵ would have these steps with the listed attributes:

1. **Third party (e.g., DER Aggregator) registers with EDC**
 - a. Efficient registration process
 - b. Roles-based access management

³³ Presentation of Josh Keeling, UtilityAPI, *Keystone Energy Efficiency Alliance Webinar*, May 20, 2026.

³⁴ <https://oauth.net/2/>.

³⁵ Keeling, May 20, 2026.

- c. Data-sharing via API (Application Programming Interface) or dashboard
- d. Appropriate cybersecurity protections
- e. Process for removal if misuse/breach

2. EDC customer authenticates and authorizes

- a. Electronic, 3rd party-initiated process
- b. OTP (“onetime password”) authentication, not multiple logins
- c. Plain-language description of data
- d. Contemporaneous sharing
- e. Customer can see and revoke access

3. Green Button³⁶ standard supports exchange

- a. Available data meets core use cases
- b. OAuth 2.0 security and privacy
- c. Certification by Green Button Alliance

³⁶ Green Button Alliance (<https://www.greenbuttonalliance.org/>), a non-profit organization that advances the development of energy-data standards, and supports the delivery of utility-provided, standards-based, data-exchange implementation. In N.J.A.C. 14:5, Electric Service, pursuant to N.J.S.A. 48:2-12, 48:2-13, 48:2-16, 48:2-25, and 48:3-96, the New Jersey BPU proposes new language to establish the rights and rules regarding the collection, use and sharing of data collected by AMI (Advanced Metering Infrastructure) meters, establishes the Green Button Data Standard and differentiates between validated (utility side of the retail meter) and non-validated (customer side) data.

Recommendation #7: Incorporate measures to maximize DER aggregation contributions to PJM markets while still preventing double-counting

Aggregations that consist entirely of controllable load, such as connected “smart” thermostats (e.g., Nest and Ecobee) or paired with behind-the-meter generation used to reduce load, in principle qualify as Component DERs³⁷ if an aggregator could remotely specify setpoints for controllable thermostats or water heaters in the aggregation. A group of thermostats or water heaters raising or lowering their temperature setting by a few degrees can act as a single, dispatchable resource that meets size requirements to sell services in wholesale energy markets, assuming no double compensation for the same services and compliance with metering requirements. Conceptually, aggregating smart thermostats in this manner is similar to long-standing load management programs such as air conditioning cycling³⁸ and electric water heater³⁹ cycling, which were programs that “aggregated” retail customers who opted in.

The PA PUC should make clear that load-management devices that are behind the retail meter, do not participate in the same markets simultaneously and that meet metering and telemetry requirements that make them dispatchable will be eligible to participate in DER aggregations. This could be done by clarifying in the final regulation that particular DERs that are participating in net metering may not be aggregated - rather than banning a customer on a net

³⁷ In Order 2222, FERC defined demand response as “a reduction in the consumption of electric energy by customers from their expected consumption in response to an increase in the price of electric energy or to incentive payments designed to induce lower consumption of electric energy . . . only those reductions that meet the definition of demand response in the Commission’s regulations and are used to reduce customer load from a validly established baseline pursuant to Order Nos. 745 and 745-A must be compensated consistent with those orders.”

³⁸ See, for example, Atlantic City Electric’s Energy Wise Program, <https://homeenergysavings.atlanticcityelectric.com/residential/energy-wise-rewards/tcs>.

³⁹ Customers who enrolled in PECO Energy’s Rate OP (Off-Peak) allowed PECO to control their water heaters to shift usage into off-peak hours. Rate OP was discontinued in 2012.

metering tariff entirely from DER aggregation even if they may have non-net metered DERs that could contribute usefully to PJM markets through aggregation.

The PA PUC's broader aim should be to prevent actual double compensation rather than hypothetical double compensation. The distinction matters in practice. A customer should be able to register one DER for the provision of both retail and wholesale energy services, then decide which market to serve for any given period. However, a clear limit should be that the resource may never sell the same service into both markets at the same time. Such a framework may be technically demanding to implement fully, but allowing switching between retail and wholesale service provision on the tempo of metering periods should be feasible (a similar switching tempo is accomplished with retail choice).

The payoff in developing such systems is that DER aggregations could be used to their full technical potential, advancing affordability and reliability alike. Both of these are always important objectives, but they are particularly urgent now. Where such an approach cannot be achieved through revisions to the Proposed Regulation, the PA PUC should consider it for future regulatory action.

Please see the below recommended language for the Final Regulation.

Recommended Changes*
<p>§ 57.263. General provisions.</p> <p>(a) EDCs with 100,000 or more customers shall allow DER Aggregation Resource participation within their service territories under the following conditions:</p> <p>(1) A DER operator that receives compensation for a DER providing a service under the EDC's net metering tariff or any other retail program is precluded from receiving compensation for that DER providing the same service during the same time period as a Component DER that is part of a DER Aggregation Resource in the PJM capacity and energy markets.</p>

(2) The Component DER was approved by the EDC as part of a DER Aggregation Resource of a DERA to participate in the energy, capacity, and/or ancillary services markets of PJM through the PJM DER Aggregator Participation Model.

(b) EDCs with less than 100,000 customers, may allow DER Aggregation Resource participation within their service territories upon Commission approval.

(c) An EDC allowing DER Aggregation Resource participation within their service territory shall file a tariff with the Commission that provides for DER Aggregation Resource participation consistent with this chapter.

* Please note I also recommend other changes to this subsection relating to other issues but for clarity I am only presenting here the changes relevant to the issue I am discussing in this section of my report.

Recommendation #8: Incorporate reporting requirements

The Commission annually publishes the *Rate Comparison Report*⁴⁰, a widely used document in retail choice markets that provides historic disaggregated retail rates for each Pennsylvania EDC rate class. Market participants use the data to track EDC billing determinants beginning in 2006 to determine historic growth rates, proportionality trends, cost allocation and EDC comparisons. The report generally is viewed as an invaluable (if not essential) market support.

The rate report is one of a half-dozen Commission publications associated with retail choice markets for which the EDCs are required to provide data and information. Markets need such information to develop and become more efficient, and the Commission can play a similar role in helping to support the expansion of DERs while protecting consumers.

The Commission should require the EDCs to provide timely reports about three broad areas: 1) the interconnection process; 2) the state of the market; and 3) transactional information:

1. **Interconnection process** reporting should include, at a minimum, the following for

Levels 1, 2, and 3:

- Number of applications for Component DER review
- Percentage of approved Component DER applications
- Average time to complete review of a Component DER application
- Percentage of DER Aggregation Resource reviews completed within required timelines
- Average cost of distribution network upgrades, by upgrade type or category
- Number of applications for PA-recognized Environmental Justice areas

(Note: interconnection process reporting informs the market and is required to regulate EDC affiliate participation – see Recommendation 9, *infra*)

⁴⁰ <https://www.puc.pa.gov/filing-resources/reports/rate-comparison-reports/>. The report is required pursuant to Section 308.1(b) to the Public Utility Code, 66 Pa. C.S. § 308

2. **The state of the market** should include, at a minimum, the following, by census tract:

- Number of approved DEA Aggregations
- Number of rejected Aggregations
- Reasons for rejection
- For approved Aggregations
 - Geographic (county and census tract) and electrical location
 - EDC service territory
 - Installed capacity
 - Primary function: load reduction or energy export
 - Installed technologies
 - Average interconnection time by EDC by level or Aggregation size
 - Aggregator name, business address and phone number
 - Number of Component DERs/Aggregation

3. **Transactional information** should include, at a minimum:

- Aggregator fees (fixed and variable)
- Deal term lengths
- Aggregation valuation estimates by primary function type

Recommendation #9: Incorporate competition protection policies

DER Aggregation Resources represent a new market: sales into wholesale energy and capacity markets (whether indirectly through load reduction or directly in PJM capacity auctions) by individual DERs that have been organized into a single entity. New markets need flexibility to expand as well as rules that don't inhibit open entry and competition – as long as market activity is regulated to protect consumers.

Accordingly, I recommend the Proposed Regulation incorporate specific competition protection policies applicable to EDCs and EDC affiliates. The most stringent such policies should apply to EDCs, who possess the most capacity to interfere with competition, given their gatekeeping role with regard to the distribution grid. All EDCs should be required to take active steps to foster a competitive market for DER aggregation in their service territories. Additionally, EDCs that act as DER aggregators must be required to (1) prioritize for integration into aggregations CDERs located in any areas that are not being effectively reached by other DER aggregators; and (2) apply all profits from acting as a DER aggregator to reducing the cost of service for their customers.

EDCs must also take care to be scrupulously fair about not privileging any affiliated entities engaged in DER aggregation over third-party DER aggregators. This must mean showing no favoritism with interconnection approvals and sharing with third-party DER aggregators all material information shared with any affiliated DER aggregator.

The approach to EDC affiliates engaging as DER aggregators would be akin to how EDC affiliates are permitted to compete in the retail choice market in Pennsylvania⁴¹ -- with regulations that prohibit “any preference or advantage” to affiliates over non-affiliated entities.

⁴¹ 52 Pa. Code § 54.122

Here, however, it is worth noting that given the centrality of distribution grid interconnection for DERs and the EDC monopoly control over the distribution grid, the risk of anti-competitive activity is higher than in the realm of retail energy supply. With regard to both EDCs and EDC affiliates acting as DER aggregators, these protections should be backed by a willingness to impose substantial financial penalties upon a finding of noncompliance.

The PA PUC should also commit, in its order adopting the final regulation, to conducting a market development review two years after the final regulation is issued to evaluate whether EDCs have adequately helped to foster a competitive market and have avoided engaging in anti-competitive behavior. This investigation should incorporate, but not be limited to, consideration of the reporting described in Recommendation 8, *supra*. If such an investigation reveals problems, the PA PUC should take remedial measures, including prohibiting EDCs and EDC affiliates from acting as DER aggregators if warranted.

If stringent competition protections are employed, EDC/EDC affiliate involvement in DER aggregation could work. For example, at the beginning of retail choice in 1998, PECO Energy created a retail affiliate⁴² that purchased energy in the wholesale market, including from PECO's wholesale power marketing division, at prevailing prices and with no preference or advantage over other purchasers. In other words, the regulations were (and are) effective.

With DER Aggregation Resources, the primary concern about preference or advantage is with the interconnection process. Recommendation 8, *supra*, listed the areas of reporting that EDCs should be required to periodically file with the Commission. The data and information should help to show whether EDC affiliates, if any, were not given preferential treatment over other market participants.

⁴² Horizon Energy, now known as Constellation Energy

A historical perspective is helpful. Parties have objected to EDC and EDC affiliate participation in matters relating to DERs in the past on the grounds that such participation may inhibit competition. In fact, when PECO Energy on May 18, 2016, proposed to develop, operate and own a pilot microgrid project in Concord Township, Delaware County, PA⁴³, the Retail Energy Supply Association (“RESA”) and the Office of Consumer Advocate, among others, questioned whether the proposal was consistent with the Public Utility Code with respect to the legal and functional separation of power delivery from power generation, and how the proposal, would, as RESA asked, “affect the ability of suppliers to sell electric generation products and services to retail customers in PECO’s service territory?”⁴⁴ The objections were such that PECO withdrew its petition about five months after it was filed. The concerns about harmful effects on competition are warranted. This is why the PA PUC should use its available regulatory tools to protect competition in the event that, in the DER aggregation context, EDCs or their affiliates seek to act as DER aggregators. The retail choice market has survived for 28 years in part because of the regulation cited above; the DER Aggregation Resource market, carefully regulated, should follow the same path.

⁴³ Docket No. P-2016-2546452 and Docket No. A-2016-2546450.

⁴⁴ <https://www.puc.pa.gov/pdocs/1451727.pdf>.

Recommendation #10: Potential corrections

Section (b) of § 57.265 refers to “DER Component dispatch override procedures.” “DER Component” is not a defined term in the Proposed Regulation. Should “DER Component” be changed to “Component DER” to be consistent with § 57.262?

Additionally, as I note above in connection with Recommendation #7, where the Proposed Regulation contains the text “DER Aggregator Resource” in § 57.263, it appears that “DER Aggregation Resource” is intended.

III. Conclusion

For the reasons discussed above, I respectfully urge the PA PUC to adopt the recommendations I have outlined herein.

June 10, 2026

/s/ Michael Freeman _____
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