May 28, 2024

***Electronically filed***

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

**Re: Docket No. L-2023-3044115 Pennsylvania Public Utility Commission, Advanced Notice of Proposed Rulemaking on Distributed Energy Resources Participation in Wholesale Markets**

Dear Secretary Chiavetta:

We the undersigned environmental, civic, faith based, community based organizations and local governments[1] respectfully submit these comments for filing in the above referenced proceeding pursuant to the Pennsylvania Public Utility Commission ("Commission") Order initiating the above referenced Advance Notice of Proposed Rulemaking ("ANOPR"), issued February 22, 2024.

# I. Introduction

These comments were written by a number of clean energy organizations that operate in Pennsylvania. We draw from comments submitted by the Coalition Advocate for DER

[1] These comments reflect the opinions of our coalition, but not necessarily the opinion of any single organization or member.

Regulation Efficiency ("CADRE")[2] in response to the New Jersey Board of Public Utilities in the Matter of New Jersey's Distributed Energy Resource ("DER") Participation in Wholesale Electricity Markets[3]. We support the comments of Solar United Neighbors, Natural Resources Defense Council, and the City of Philadelphia/Philadelphia Energy Authority.

We commend the Commission for issuing this Order to proactively address the question of DER Aggregations in the PJM Wholesale Market, pursuant to the Federal Energy Regulatory Commission ("FERC") Order No. 2222 issued in September 2020.[4] We affirm the tremendous potential value of coordinating and utilizing DERs, including energy efficiency and solar plus storage resources already in place across Pennsylvania as well as anticipating and coordinating the rapid increase in these resources that we are now seeing and that will accelerate in coming years with the implementation of the Inflation Reduction Act ("IRA") and the Infrastructure Investment and Jobs Act ("IIJA") and other public policies. Harnessing, coordinating, and deploying these DERs as well as DER Aggregators ("DERAs") can improve resilience, enhance reliability, and relieve pressure on both the transmission and distribution grids, all while putting downward pressure on rates for all Pennsylvanians.

In order to harness this important resource for the benefit of all Pennsylvanians, the Commission will need to update and align its practices, policies and regulations in a number of areas including data transfer, exchange and access, customer education and engagement, cybersecurity, interconnection and battery to grid flows. This is a very important crossroads

[2] Comments of the Coalition Advocating DER Regulation Efficiency in response to the New Jersey Board of Public Utilities Request For Information, Docket EO24020116, April 22, 2024, "Comments of CADRE".
[3] New Jersey Board of Public Utilities, Notice, In the Matter of New Jersey's Distributed Energy Resource Participation in Regional Wholesale Electricity Markets, Docket EO24020116, March 7, 2024.
[4] Federal Energy Regulatory Commission, Order No. 2222, Final Rulemaking, Participation of Distributed Energy Resource Aggregations in Markets Operated by Regional Transmission Organizations and Independent System Operators, Docket No. RM18-9-000, September 17, 2020, "Order No. 2222".

moment for Pennsylvania, at which alignment of both policy and programs is not only possible, but necessary to maximize the benefits of DERs. The expansion of the Alternative Energy Portfolio Standards Act through the newly proposed Pennsylvania Reliable Energy Sustainability Standard, with its inclusion of DERs in Tier II, presents the opportunity for these resources to play a major role in helping the Commonwealth meet its clean energy goals. Building the market for DERs to qualify in Tier II is vitally important.

Pennsylvania has significant experience in providing energy efficiency programs at scale, statewide, through Act 129, the Weatherization Assistance Program and other low income programs. Certain regions of the state have extensive experience providing distributed solar at scale through Solarize programs and others. Energy efficiency and solar programs are now rapidly expanding as a result of the passage of IRA and IIJA. These programs can be aligned with the Commission's DERs regulations in order to maximize ratepayer and system benefit.

## A. Need to Identify and Adopt Best Practices

At least a dozen states have already adopted DERs and DERA programs, Virtual Power Plants ("VPPs"), and other non-wires alternatives, either through legislation or regulation and there is a growing body of experience from which Pennsylvania can learn. A set of best practices is emerging nationally. We strongly recommend that the Commission identify and adopt best practices in this field in order to maximize benefits to ratepayers while minimizing costs. The

states include Texas (80 MW Pilot solar and Storage), New York, Virginia, North Carolina, Maryland (VPP law), Massachusetts, Minnesota, California and others.[5]

Technical assistance from the U.S. Department of Energy and several of its energy innovation laboratories is also available to assist the Commission in planning its approach.

## B. Structures and programs

### 1. Coordination among Departments of State Government

It is essential that all the departments and agents of state government that are playing a role in the implementation of the IRA and IIJA – *i.e.,* the Pennsylvania Energy Development Authority, the Pennsylvania Housing Finance Agency, the Pennsylvania Department of Environmental Protection, the Pennsylvania Department of Community and Economic Development, the Commission, and the Pennsylvania electric utilities – closely coordinate the efficiency and operational standards of appliances and other technologies they will require and incentivize in the programs they are administering. Standardization will enable the utilities and aggregators to ensure that these technologies can in fact function as DERs, their value as DERs can be maximized, and administrative costs can be minimized.

### 2. Role of Act 129 in Quantifying and Incorporating DERs

Through PA Act 129 many DERs have already been implemented across PA. A number of these (*e.g.,* programmable NEST thermostats) can easily be tapped and coordinated to produce

[5] *See* DSIRE Insight, What are States Doing to Make Virtual Power Plants a Reality?, April 26, 2024 *available at* https://www.dsireinsight.com/blog/2024/4/26/making-virtual-power-plants-a-reality.

significant benefit to reduce peak load. To a great extent, electric utilities already know which customers have installed these devices. As the market for heat pumps, heat pump water heaters and other decarbonization technologies rapidly develops and more and more customers install these devices and appliances, standardization and protocols can be developed and implemented to maximize the benefits such technologies can provide in carbon reduction, energy conservation, demand reduction, enhanced resilience and improved reliability.

Act 129 needs to be revised and modernized to promote DER adoption and decarbonization. This process needs to be consistent with and coordinated closely with the standards utilized in the implementation of the IRA's Home Efficiency Rebates and Home Electrification and Appliance Rebates programs. Through these federal programs thousands of additional high efficiency electric heating and water heating appliances will be installed in the next few years, both in single-family and multi-family homes, and across economic strata as well.

## C. Anticipation of Rapid Technological Change, Adoption Rates

The United States is transforming from a fossil fuel based energy economy to a clean energy economy. Decarbonization and electrification of transportation, heating, water heating, and other end uses is now accelerating and will continue to do so for the foreseeable future. The Commission must anticipate rapid technological change, increasing levels of efficiency and electrification, and will need to develop a DER policy and program that builds in on-going evaluation, opportunity for revision, and constant integration of new technologies and systems.

An example of this is the rapid adoption of electric vehicles ("EVs"). EVs were 8% of the new cars sold in the U.S. last year, providing significant potential to harness the energy stored in

every one of these vehicles.[6] Commercial fleets, such as school buses, Amazon, Southeastern Pennsylvania Transportation Authority, and the Postal Service are rapidly transitioning to EVs as well, providing new opportunities for resilience planning. The infrastructure upgrades required to keep up with a rapidly growing electrified transportation sector exemplifies the need for swift, forward-looking policy adoption by the Commission.

After many years of very stable electricity usage in Pennsylvania and across the nation, average customer usage and system wide load growth is now on the rise. The nationwide power demand is expected to grow 4.7% over the next five years.[7]

Meeting the additional demand for electricity with new generation will be far more costly than meeting it through energy efficiency and distributed energy resources. Given the threat of climate change, it is essential that load growth be met through carbon free energy resources, ideally a combination of new renewable energy, energy efficiency and DERs.

# II. Commission Questions

## A. Interconnection

*The PUC seeks comment on whether its existing interconnection regulations for customer-generators, 52 Pa. Code §§ 75.31—40, can be adapted to address*

[6] *See* Cox Automotive and Kelley Blue Book, A Record 1.2 Million EVs Were Sold in the U.S. in 2023, According to Estimates from Kelley Blue Book, January 9, 2024, *available at* https://www.coxautoinc.com/market-insights/q4-2023-ev-sales/.

[7] See GridStrategies, The Era of Flat Power Demand is Over, slide 3, December 2023, *available at* https://gridstrategiesllc.com/wp-content/uploads/2023/12/National-Load-Growth-Report-2023.pdf.

*interconnection of a Component DER participating in a DER Aggregation Resource with EDC distribution facilities, consistent with Order 2222 and PJM's DAPM, and, if so, the specific changes to the PUC's interconnection regulations that would facilitate this adaption.*

The Commission should provide guidance on online applications. All Electric Distribution Companies ("EDCs") accepting applications for interconnection online should be required to use a single application portal in order to reduce confusion among DER developers, and so that the application is consistent across as many EDC territories as possible. The Commission should mandate that EDCs implement automated platforms for interconnection requests. These platforms should feature integrated application error detection, e-signature capabilities, electronic payment options, online scheduling for inspections (or remote inspections), real-time application status updates, and automated notice when the DER owner has received permission to operate ("PTO").

The Commission should also seek input on the interconnection processes from the EDCs and other stakeholders on further streamlining the interconnection processes, review timelines, and response times. From this stakeholder process, the Commission should publish guidance and compel the EDCs to adhere to the guidance. The Commission should enforce the timelines in these regulations to provide consistency and clarity for EDCs, DER developers, and DER owners.

The Commission should require PTO timelines be capped. Our recommendation is for a cap of 10 days after the Certificate of Completion date of the Part 2 interconnection application. If the EDC does not respond within this period, the applicant seeking interconnection shall be

deemed to have PTO. EDCs should be required to pay fines, at rates set by the Commission, to the Commission for failing to meet interconnection timeline requirements. These fines may not be recovered from ratepayers, and they could be distributed by the Commission to affected customers or to support other need-based customers.

*The PUC seeks comment on whether its existing interconnection cost allocation regulations for customer-generators, 52 Pa. Code § 75.36(8), 75.38(e) and 75.39(e)(4) (relating to additional general requirements, level 2 interconnection review, level 3 interconnection review), can be adapted to address interconnection cost allocation among Component DERs, DERAs and EDCs, consistent with Order 2222 and PJM's DAPM, and, if so, the specific changes to the PUC's interconnection regulations that would facilitate this adaptation.*

There is no consistent, standard practice for EDCs when they interconnect DERs to the grid. This includes the timelines and cost allocation processes. Of primary concern is the "cost-causer-pays" principle at play, in which the first DER adopter is wholly responsible for interconnection costs that can be on the order of thousands to hundreds of thousands of dollars. DER adopters next in line in that area of the network pay only the standard interconnection cost and have the added benefit of connecting to a recently upgraded transmission system. DERs provide numerous benefits to the grid from which all EDC customers benefit.[8] In order to improve equity in the DER adoption process, the network upgrade costs should be socialized among all customers using and benefiting from the grid.

[8] *See* International Energy Agency, Unlocking the Potential of Distributed Energy Resources, IEA, Paris, 2022 *available at* https://www.iea.org/reports/unlocking-the-potential-of-distributed-energy-resources.

We recommend that the Commission lead a robust stakeholder process that includes EDCs, DER developers, DER advocacy organizations, and DER owners in order to develop a model for equitable interconnection cost allocation and timelines. We would like to put forward three models for consideration: (1) rate basing the cost of interconnection, (2) the fixed fee model, or (3) the batch processing model.[9]

*How will DERA market participation impact retail rates?*

DER aggregation can provide a number of benefits to the grid and to EDCs. DERAs provide ancillary services such as mitigating variable generation output throughout the day.[10] DERAs can also allow for load shifting (*i.e.*, real-time demand-side management) which in turn delays or halts the building of additional grid infrastructure like peaker plants.

There may be upfront costs associated with studying and implementing equitable DERA policies. However, the result of the policies recommended by the Commission should and is likely to result in additional benefits to the EDCs and all customers, based on data from six New England states.[11] In 2014-2019, distributed solar was responsible for generating 8,600 GWh of electricity, resulting in a reduction of wholesale energy market costs of $1.1 billion. 70% of that total is estimated to be an effect of price reduction due to decreased demand, with the rest coming from load reduction benefits. It is likely then that EDCs will meet their goals under Act 129. The net result should be cost-savings from DERA policies.

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[9] *See* Comments of CADRE, p. 14 ¶ 2-4.

[10] IRENA, Innovation landscape brief: Aggregators, International Renewable Energy Agency, Abu Dhabi, 2019.

[11] *See* Synapse Energy Economics, Solar Savings in New England, Montpelier, VT, 2020 *available at* https://votesolar.org/local-solar-saved-new-englanders-1-1-billion/, "New England Report".

*What cost recovery guidance, if any, is needed by EDCs for investments that may support both transmission and distribution?*

The participation of DERAs in the energy market is likely to result in cost-savings for EDCs. We therefore recommend that the EDCs report and the Commission track costs and cost-savings associated with DERA policies. These costs and cost-savings should be made publicly available in the interest of transparency.

*What cost recovery mechanisms should be used (upfront charges, usage charges, rates)?*

DERs could improve the reliability and resilience of the grid, helping to reduce costs for EDCs. We recommend that the Commission consider the option of cost recovery in base rates, commensurate with the costs and cost-savings from DERA policies as reported by the EDCs.

## B. Metering, Net Metering and Virtual Meter Aggregation

*The PUC seeks comment on whether its existing regulations on compensation for net metering customer-generators, 52 Pa. Code § 75.13, could or should be adapted to incorporate appropriate restrictions on double counting of services provided by a Component DER in wholesale and retail markets, on duplicative compensation for the same service, consistent with Order 2222 and PJM's DAPM, or on both, and, if so, what specific changes to the PUC's regulations would or should facilitate this adaption.*

FERC has not issued final rules on all open net metering ("NEM") questions, but it has ruled that net metered customers may not participate in DERAs in PJM.[12] We agree with FERC's definition of "double compensation," such that customers can participate in wholesale and retail programs. The Commission should further define "double compensation" using the same framework as FERC.

As currently proposed, PJM's rules on "double compensation" prohibit a net metered customer from being credited at full retail rate for excess energy generation and participating in energy or capacity markets.[13] This results in demand response technologies being restricted from participating in capacity markets, and therefore being disincentivized, despite the devices themselves not being net metered. PJM also gives EDCs the ability to allow a NEM customer to register with a DERA. In order to ensure demand response assets are made available to benefit the grid, the Commission should require device level metering data from DERAs: data which is available in inverters, battery systems, EVs, and other devices. These requirements are already used in inverters in PPL Electric Utilities' DER Management System.[14]

It is necessary that the Commission be forward thinking about device level metering standards. Many devices that are capable of demand management are paired with net metered resources. The former provide additional grid services and benefits wholly separate from the services and benefits of the latter. If the Commission adheres to PJM's definition of "double

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[12] Order No. 2222, ¶ 136.

[13] Order No. 2222 Compliance Filing of PJM Interconnection, L.L.C. and Motion for Extended Comment Period, Docket No. ER22-962, p. 4, February 1, 2022.

[14] *See* PPL Electric Utilities Frequently Asked Questions: DER Management/Smart Inverters, 2021 *available at* https://www.pplelectric.com/utility/about-us/electric-rates-and-rules/customer-owned-generation/frequently-asked-questions#der-mgmt, "PPL FAQs."

compensation," then demand response assets will not be enabled to significantly contribute to the grid.

*Assuming the PUC does have requisite authority, should the PUC permit net metering customers to also participate in DERAs at the same time?*

The Commission should allow net metered customers to participate in DERAs at the same time. As expanded on above, many NEM customers also own demand response technologies, such as battery storage, EVs, and other technologies. The net metering of a DER should not preclude the DER owner from participating in DERAs at the same time. Additional benefits and services to the grid may be acquired from those demand response assets that would otherwise be underutilized and undervalued.

## C. Cybersecurity

*The PUC seeks comments on whether it should impose cybersecurity standards or requirements on Component DERs, DERAs or EDCs, consistent with Order 2222 and PJM's DAPM, and any specific changes to the PUC's policies and regulations that would facilitate appropriate levels of cybersecurity in the implementation of Order 2222.*

The Commission should impose cybersecurity standards on Component DERs, as well as DERAs and EDCs. As an increasing number of DERs are being interconnected, the reliability and security of the grid must be considered.

The Institute of Electrical and Electronics Engineers, Inc. ("IEEE") Standard 1547.3 (2023) is the Guide for Cybersecurity of Distributed Energy Resources Interconnected Electric Power Systems. As set forth in 52 Pa. Code § 75.22, the IEEE Standard 1547 (2003) is already in use as the standard for interconnection of DERs to an electric power system. The Commission should amend 52 Pa. Code § 75.35 to adopt the principles set forth by IEEE Standard 1547.3 (2023) in order to ensure appropriate levels of cybersecurity for DERs, DERAs, and all EDCs.

Underwriters Laboratories ("UL") 2941, the Outline of Investigation ("OOI") for Cybersecurity of Distributed Energy and Inverter-Based Resources issues further standards for DER technologies. Per 52 Pa. Code § 75.22, UL Standard 1741 is adopted for "Inverters, Converters and Controllers for use in Independent Power Systems." UL Solutions and the National Renewable Energy Laboratory are implementing the OOI to test inverter-based resources and DERs for inclusion of cybersecurity protections. Products achieving the standards of UL 2941 will be able to append UL 2941 to the UL 1741 certification. The Commission should amend 52 Pa. Code § 75.22 to recommend installation and interconnection of UL 1741 and UL 2941 certified equipment in DERs where reasonably implemented.

To ensure cyber security, DERs, DERAs, and EDCs should evaluate their security parameters through the Distributed Energy Resource Cybersecurity Framework ("DER-CF") from the National Renewable Energy Laboratory ("NREL"). The DER-CF is a free tool that can assess cyber security and make recommendations to improve security of facilities.[15] With this tool an annual review and report should be shared on request in order to ensure transparency.

[15] *See* NREL, Distributed Energy Resource Cybersecurity Framework *available at* https://dercf.nrel.gov/.

## D. Education

Like many states, the Commonwealth has experienced numerous on-going problems with the practices of third-party energy providers. These have been characterized as misleading, complex, and sometimes predatory, leading to community mistrust that may unfortunately spill over into the introduction of DERAs. Therefore, it is important that a robust, coordinated, community-led, and transparent outreach and engagement strategy be conducted, and that this strategy emphasize equity by including underserved market segments.

We recommend that trusted community institutions and public agencies lead community outreach and engagement through intersectoral collaboration, with the Commission and EDCs playing a supportive role.

The Commission should review the five recommendations for community engagement provided by NREL's Joint Institute for Strategic Energy Analysis. Paramount to community-led outreach and engagement is meeting with community institutions that would lead the outreach, and establish guiding principles and terms that will direct the process of community outreach and engagement. As part of this consensus-based planning process, we recommend presenting the Jemez Principles as a possible framework for collaborations, pending the agreement of community-based institutions involved in outreach. We recommend trusted state agencies be involved in developing community outreach strategies, including the Office of the Consumer Advocate.

## E. Billing Issues

*The PUC seeks comment on whether and how it could make the billing relationships between EDC customers, DERAs and EDCs transparent to the customer, consistent with Order 2222 and PJM's DAPM, and whether and what specific changes to the PUC's policies and regulations could facilitate such transparency.*

This is an area that is fundamental to harnessing the power of DERs. The Commission needs to create clear standards for customer access to data. Several utilities have recently moved to new billing software, a process which has been fraught with error and confusion. Recent problems with the accuracy of billing data point to the weakness of the state's current standards and processes.

EDCs will have different starting points with relevant data access and monitoring, and thus will require flexibility in ramping up new monitoring and reporting processes. The Advanced Energy Economy and GridLab recommend a "crawl, walk, run" framework to assess control, monitoring, and reporting at different phases of implementation so investments are scrutinized while "least risk" investments are made first.[16] We believe this model would help ramp up DERA data collection and monitoring such that both day-ahead and real-time data can be available for all EDCs.

User interface with utility data is critically important to build customer understanding, confidence and participation levels in DER programs. Again, best practices will be helpful.

[16] *See* Advanced Energy Economy and GridLab, FERC Order 2222 Implementation: Preparing the Distribution System for DER Participation in Wholesale Markets, *slide 41*, January 2022 *available at* https://gridlab.org/wp-content/uploads/2022/01/AEE-GridLab-FERC-O.2222-Campaign-Final-Report.pdf.

Pennsylvania's utilities vary widely in their use of free national tools such as Portfolio Manager and Green Button. These should be required of all electric utilities to enable all customers to have access to their data and become more active managers of their energy usage. The potential of DERs cannot be realized unless customers have confidence in and access to their own usage data and actually understand it. This data should be provided transparently but with context. Any early-stage data collected and reported should be used to help facilitate a more streamlined and affordable transition for aggregated DERs to be able to participate in the PJM market. Any efforts by EDCs or other market actors to use this data out of context to slow down or prevent DERA participation should be avoided.

DERAs need real time data access, and in some cases may also need to use metering devices to receive real-time data feeds from the premise and premise-level devices. It will be necessary to communicate energy market results to participating customers in a user-friendly and customer-specific manner. These are technologies that are commonly available, and that the Commission can compel the EDCs to adopt.

The customer/aggregator relationship requires timely, accurate, and clear communication. An aggregator's ability to offer into the wholesale markets and settle with PJM will depend on clear and accurate projections of energy saved or generated or access to customer energy use data. DERAs will rely on data from devices and pulse meters that share EDC meter data with the aggregator in real time. Some devices can communicate their state of charge, availability, and current usage in real-time. DERAs of smaller commercial and residential customers will often rely on meter data coming through the EDC. Without this data, aggregators of certain DERs cannot perform measurement and verification and settle with PJM.

The Commission should ensure that the EDCs are equipped to provide access to meter

data to customers and their representatives, including aggregators, in real-time through a centralized, online platform. Housing this data in a readily accessible repository will facilitate enrollment of DERs into aggregations and increase customer revenue streams from wholesale markets. Consequently, this will drive accelerated deployment of other resources such as demand response and storage needed to stabilize the grid. In addition, retrieval of this data should be streamlined to allow aggregators to efficiently pull data for hundreds or more customers, as opposed to current processes that require aggregators to pull data one account at a time.

Device level metering should be incorporated into the EDCs' metering and data management programs. Device level metering, to the extent it exists, can be communicated in near real-time to the EDC and to the aggregator. The Commission should ensure that EDCs can appropriately account for component DER device-level metering. Alternatively, the Commission could approve DERAs to provide billing and settlement information based on device-level metering and other high confidence techniques.

A best practice that Pennsylvania should follow is requiring EDCs to make public hosting capacity analyses; these data should be available without prerequisite interconnection upgrades, and updated daily. Once an interconnection is approved (either historically or in the future), there should be no incremental testing or analyses from the EDC to evaluate the resource's fitness for participation in an aggregation. Existing EDC interconnection applications and agreements are sufficiently robust as to apply to resources that later join a DER aggregation participating directly in a wholesale market. Interconnection agreements that contain no limitations on system exports signify that the utility has determined that there is sufficient hosting capacity to allow the resource to interconnect with no such restriction.

Similarly, if a DER interconnection agreement specifies any export limits, the DER should be required to always adhere to the agreement, whether or not it is participating in an aggregation. DERs should not be required to reapply for interconnection to participate in an aggregation – nor should an aggregation of DERs be reassessed for interconnection as a single resource. Either assessment would be essentially redundant to the review that already occurred when the DER initially interconnected. Aggregations will be dynamic; they will change from year to year.

Requiring a supplemental review for aggregated DERs would be unnecessarily burdensome to both DER owners, DERAs, the EDCs and likely, the Commission. It would undoubtedly serve as a barrier to wholesale market participation. If the EDCs have concerns about how aggregated DERs might affect grid voltage, smart inverters are capable of autonomously assisting in voltage regulation in a way that can mitigate such issues.[17]

We recommend the Commission form a working group of multiple stakeholders, including DER developers and consumer advocates, tasked with developing a billing protocol that would be required by all EDCs to incorporate. Recent experience with two utilities and their new billing systems exposed significant challenges around transparency and accountability, demonstrating the need for cross-sectoral oversight around billing processes. This working group will examine the needs and demands of DERA integration into consolidated billing processes, including but not limited to software and hardware requirements for interfacing DERAs and PJM, cybersecurity, customer management and payment coordination, and incorporation

[17] PPL FAQs, ¶ 6. "Some of these features include adjustments for frequency, voltage, and power factor. An important feature of a smart inverter is the capability to communicate with the utility company to monitor inverter output and power grid conditions. Additionally, smart inverters approved by PPL allow us, under the PUC-approved pilot program, to make adjustments to the inverters' settings, thereby improving overall power quality and grid reliability."

between DERA management and grid forecasting analytical tools. Importantly, this working group should also include consumer advocates who can ensure robust consumer protections are in place. It will be vital to ensure customers, particularly low-income and energy burdened customers, are able to opt-out of DERA participation if it includes unanticipated or excessive charges.

## F. Equity Concerns

*The PUC seeks comment on how to identify and address potential equity concerns associated with the expected proliferations of DERAs in Pennsylvania in the coming years.*

It is imperative that the transition to a modernized energy system that accommodates DERAs equitably distributes costs and benefits of such a transition. Communities and households historically left out of the traditional energy economy that also stand to benefit the most from a modern and flexible grid must be prioritized as active participants and beneficiaries of the new energy economy.

The allocation of DERA-related costs onto EDC customer classes is a valid concern that can be meaningfully addressed through an accurate and transparent valuation of DERs and their system-wide cost saving potential. Numerous robust studies have shown how DERs provide meaningful savings to all EDC customers, and these savings could only be further entrenched through equity-focused aggregation structures.

In ISO New England ("ISO NE") from 2014 to 2019, DERs contributed to $1.06 billion in savings for all customers.[18] Of these savings, $743 million were due to wholesale price suppression while $317 million due to reduced demand. Such savings would only go further under DERA programs, which would have more coordination among distributed resources through aggregation, providing for enhanced and equity-focused grid services. DERAs can leverage private capital for grid upgrades, rather than solely ratebasing these costs. Furthermore, DERAs can reduce demand for energy procurements from expensive and polluting peaker plants through peak shaving. DERAs can also provide cost savings through ancillary environmental and economic benefits. For example, DERAs provide added fuel diversity to the grid, which can lead to reduced emissions from fossil fuel infrastructure and, by extension, vital health-related savings and reduced excess deaths from environmental pollutants.

## 1. Low-income participation in DERAs

Low-income participation is paramount to expanding the DERA market broadly enough to have positive improvements for the grid and cost saving implications for all customers. Furthermore, historic barriers to low-income participation must be proactively addressed in order to remedy the harm done to frontline communities impacted by the traditional energy economy. Some of the cost-based barriers include "lack of capital, loan challenges, lack of affordable home ownership, and need for additional [building and hosting capacity] upgrades."[19] It is also important that all participants, but especially low-income participants, in a DERA project are

[18] New England Report.

[19] *See* NREL, Virtual Power Plants and Energy Justice, October 2023, *available at* https://www.nrel.gov/docs/fy24osti/86607.pdf p. vii, ¶ 6.

given opportunities to voluntarily opt-out. Additionally, standards must be established to ensure households still have access to thermostats and other essential energy resources during hot and cold days, and this access is not modulated or overridden by a DERA administrator at the behest of wholesale market price signals during these times.

To address cost-based barriers to DERA participation, we recommend that the Commission establish a working group tasked with providing the Commission with recommendations on expanding statewide access to DERs and DERAs while maintaining energy affordability. Additionally this working group should examine and address equity issues that arise as these markets grow in the state. The working group should meet at least once annually and publish the recommendations of the group for the public to access.

## H. Distribution Level Benefits

*The PUC seeks comment on whether and how it should account for the distribution level benefits of DERAs.*

As discussed in the ISO NE study cited in the question on equity, DERs have the potential to provide savings to all customers, especially through wholesale market price suppression and reduced demand during peak periods. From 2014 to 2019, New England EDCs and ratepayers saved $1.1 billion in wholesale electricity costs due to DERs. This primarily happened through two means. First, during peak periods such as hot days, locally produced energy from DERs contributed a sizable percentage of the region's peak demand. Secondly, because of this local production, there was a decreased demand for wholesale electricity during

peak periods, thus deflating wholesale electricity prices. Thus, EDCs did not have to purchase as much peak electricity, and the electricity they did purchase was at a lower cost due to robust distributed local generation. The ISO NE case demonstrates the value DERs can bring to reduce economic and physical stresses to the distribution system. These values must be captured in EDC valuations, ensuring that cost savings translate into savings for ratepayers. Therefore, we recommend forming an intersectoral working group, which includes leadership from consumer advocates, mandated with providing the Commission with recommendations as to how distribution-level benefits of DERAs can be integrated into EDC valuations and ratepayer savings.

New York boasts robust initiatives that capitalize on VPPs engaged in the New York ISO ("NYISO") market to deliver additional local advantages. The Commercial System Relief Program ("CSRP") aims to prolong the lifespan of distribution infrastructure or delay upgrades. Meanwhile, the Distribution Load Relief Program ("DLRP") tackles distribution system emergencies not addressed by NYISO dispatches.

DLRP offers localized network-level assistance by relieving load when the local grid faces a significant outage risk or when electric distribution equipment approaches emergency ratings. This program operates with shorter event notices: 2 hours for contingency events and less than 2 hours for immediate events.

In contrast, CSRP aims to postpone local grid investments. Typically, CSRP provides longer event notices, usually 21 hours. This longer notice period is because the program seeks to reduce peak demand at the network level by engaging customers during their assigned call windows. Additionally, voluntary participation for unplanned events allows for participation with less than 21 hours of notice.

# III. Additional Recommendations to the Commission

## A. Engage Experts

The Commission is taking a critical step to modernize Pennsylvania's grid. Harnessing the potential of DERs to provide additional generation, reduce peak load, improve resilience, increase reliability, and put downward pressure on rates will require a comprehensive plan. We recommend that the Commission engage an expert who can bring the lessons learned from other states' experience to develop a plan for Pennsylvania that maximizes the potential of the thousands of DERs already in place and develops standards and guidelines applicable for all the DERs that will go into place in the next year or two through implementation of the IRA, and IIJA programs and market transformation.

## B. Expanding Act 129 statewide

Act 129 needs to be revised and modernized to promote DERs and decarbonization. The Commission should direct the Statewide Evaluator to assess key high efficiency electric appliances and simple DERs controls (*e.g.,* temperature setbacks, increases to reduce peak loads) to add these and others to the Technical Reference Manual at the earliest opportunity. Appliances of interest may include digital thermostats, electric heat pumps, and heat pump water heaters. Fuel switching from fossil fuels to clean energy needs to be permitted and encouraged through Act 129.

## C. Stakeholder Process

We recommend that the Commission lead a robust stakeholder process that includes EDCs, DER developers, DER advocacy organizations, and DER owners in order to develop a model for equitable interconnection, cost allocation and timelines.

Another stakeholder group should be convened to help develop a customer education plan, to improve the customer billing information and customer access to billing data.

# IV. Conclusion

We the undersigned appreciate your consideration of these comments. We look forward to working with the Commission and other stakeholders in the future as DER aggregation and VPP programs continue to be developed in Pennsylvania.

Respectfully submitted,

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