BEFORE THE PENNSYLVANIA
PUBLIC UTILITY COMMISSION

IN THE MATTER OF	)	
	)	
ADVANCE NOTICE OF PROPOSED RULEMAKING	)	**Docket No. L-2023-3044115**
	)	

COMMENTS OF COLLABORATIVE UTILITY SOLUTIONS

COMES NOW Collaborative Utility Solutions, and, in response to the Advance Notice of Proposed Rulemaking (ANOPR) published in the *Pennsylvania Bulletin* on March 30, 2024,[1] hereby submits the following Comments.

INTRODUCTION

Collaborative Utility Solutions ("CUS") is a 501(c)(6) non-profit entity that was formed to provide a collaborative Distributed Energy Resource (DER) Registry to the utility industry to save significant time and money in the administrative process of enabling DERs to participate in both retail and wholesale market programs. Adoption of the DER Registry will be critical to success in the integration of FERC Order No. 2222 across multiple jurisdictions at the lowest possible cost to ratepayers and market participants.

There are two foundational barriers that must be overcome for the electric industry to integrate DERs efficiently and effectively into grid and market operations: lack of information and lack of collaboration. At present, there is no single system that enables the appropriate stakeholders in the energy value chain visibility into the appropriate set of information to know where DERs are, what they are, what they can do, or who owns them. While a distribution utility interconnection process may expose this information to the utility and consumer, it does not

[1] https://www.pacodeandbulletin.gov/Display/pabull?file=/secure/pabulletin/data/vol54/54-13/427.html

provide this information to independent system operators (ISOs), aggregators, regulators, or other stakeholders. Consumers are purchasing DERs, providers are installing them, distribution utilities are interconnecting them, and then grid operators are forced to deal with resources they cannot control, monitor, or even know where they are and yet they are expected to continue to reliably operate the grid. In short, no one in the energy value chain is operating with a "single point of truth" for a DER. This shortcoming severely limits the electric grid operators' (both Distribution and ISO/Transmission) ability to effectively integrate DERs.

Second, collaboration in the electric industry faces daunting obstacles. The industry has fractured into completely different market structures. It has further fractured utility operations into separated generation, transmission, and distribution entities, thereby creating "silos" of operation that suboptimize decisions based on their structure rather than the overall needs of our national electric system. We must have more effective collaboration in our industry to effectively integrate DERs into the grid and markets and lower the cost of this significant effort for the entire industry. To address these key problems that could stymie efficient and cost-effective integration of DERs pursuant to FERC Order No. 2222, CUS was created, and our initial focus is to provide a Distributed Energy Resource (DER) Registry for the industry to enable DERs more efficiently and effectively to support and interact with the grid and markets. See our website for an overview of the DER Registry.[2]

Australia, the country with the highest penetration of DERs in the world, found that a central registry for DER information was essential for secure data sharing between the energy stakeholders to simplify the administrative process of registering DERs into programs. The U.S. is now seeing a significant and steadily increasing penetration of DERs on the grid and will face

[2] https://cusln.org/resources.

significant challenges for 3000+ utilities and the customers, aggregators, competitive retail suppliers, scheduling coordinators, transmission providers, ISOs, and potentially others to coordinate the registration and approval of a DER or DER Aggregation ("DERA"). The implementation of FERC Order No. 2222 will impact every aspect of the utility business and the core systems used by the industry, including the CIS, GIS, OMS, ADMS, EMS, planning systems, and potentially many more. The DER Registry has been designed using the International Electrotechnical Commission (IEC) Common Information Model (CIM) to allow each of these systems to be able to exchange data with the Registry via this protocol to reduce every utility's cost of implementing FERC Order 2222.

Because this ANOPR considers a variety of issues that the DER Registry is specifically designed to address, CUS is filing these comments to provide more information on the capability of the DER Registry in relation to these questions. Throughout these comments, we use the all-inclusive term DER under the FERC definition and our comments are centered on providing a solution for all DERs equally. Any eligible DER under the FERC definition should be eligible to participate in a DERA.

Further, CUS encourages the Commission to review the LBNL report created for the state of Missouri.[3] As discussed therein, there will be an evolution to the process of integrating DERs as each state interacts with their utilities and their ISOs. There is an opportunity for a phased approach ("crawl, walk, run") that allows for a simpler approach in the beginning but recognizes that additional requirements may be necessary in the future. As described in the LBNL report on phased implementation, it is possible to start with a specific recommendation and recognize this

[3] Sydney P. Forrester, Cole Triedman, Sam Kozel, Cameron Brooks, Peter Cappers, *Regulation of Third-Party Aggregation in the MISO and SPP Footprints* (LBNL Report), April 2023 (available at https://emp.lbl.gov/publications/third-party-aggregation-rulemaking).

will be reviewed, and potentially modified, moving forward. FERC Order No. 2222 affords the electricity industry a tremendous opportunity for stakeholder collaboration through a phased implementation to achieve the reliability and resilience benefits that DERs and DER aggregations can bring to the grid, while delivering cost savings to customers.

RESPONSES TO TOPICS IDENTIFIED IN THE ANOPR

A. Changes to Distribution DER Interconnection Rules

The PUC seeks comment on whether its existing interconnection regulations for customer-generators, 52 Pa. Code §§ 75.31—40, can be adapted to address 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 PUC also seeks comment on the following sub-topics raised by stakeholders:

- **How will Component DERs previously not subjected to interconnection (energy efficiency and demand response resources) be integrated into an aggregation?**
- **In consideration of future technology advancement through distributed energy resource management systems (DERMS) and other technologies that may allow for utility direct control and overrides, should approval of interconnection requests extend to consideration of an option for firm and non-firm approval categories to reduce the need for system upgrades?**
- **Under what conditions will direct control vs. monitoring be required?**
- **How should the DER aggregation review process differ for different use cases, market services, DER compositions or grid conditions?**
- **How should load assumptions be adjusted to accommodate the use of load-modifying resources?**
- **What data will DERAs need to provide to EDCs and to what extent can this leverage existing PJM registration data requirements? How should these data be documented?**
- **Where should automation versus manual coordination and communication between EDCs, the DERA and PJM be required? How should the PUC ensure that the EDC DER registration approval process is efficient to consistently meet PJM's 60-day timeline and avoid potential "over-registration"?**
- **How should the PUC clarify and harmonize the relationship between DER interconnection under PUC regulations with DER interconnection under to PJM's small generator interconnection rules, if needed?**

Modifying the PUC's rules to include adoption of the DER Registry would facilitate expeditious and cost effective implementation of FERC Order No. 2222. Additionally, the DER

Registry will facilitate the inclusion of the full range of DERs allowed under FERC Order No. 2222, avoiding issues such as potential "over-registration," while accommodating a variety of potential implementations as contemplated by the nature of the many sub-issues in this question.

Having each EDC forge its own unique implementation path, such as through creating separate DER information databases, would be a highly inefficient and costly way to address the problem of data-sharing among the numerous stakeholders who need a "single source of truth" data set for DER management under FERC Order No. 2222, and could result in wasted effort and substantial implementation delays. ISOs such as PJM will need access to data regarding DERs for a variety of purposes to support wholesale market products and settlement, while EDCs and DER providers will also need access to DER data. As such, the collaborative approach as proposed by CUS could save all utilities, states, and ISOs billions of dollars. As noted in the ANOPR, FERC has ordered that PJM coordinate with utilities and RERRAs to establish protocols for sharing metering and telemetry data in a manner that minimizes costs and address privacy and cybersecurity;[4] PUC adoption of the DER Registry will help meet that requirement, particularly if other PJM states also adopt the DER Registry.

For the U.S., and for ISOs that cover multiple states such as PJM, an approach that allows each utility to host its own DER registry and have its own authority over DER data is likely to result in hundreds of conflicting systems that require ISOs to create hundreds of communications points that will not be able to operate in a cohesive manner. The U.S. has already trodden this path with the creation of multiple approaches to managing Renewable Energy Credits (RECs). Over time, states combined efforts and we are now down to ten REC registries, with several

[4] FERC Order No. 2222, ¶ 270.

conflicting registries operating in single states and single ISOs. This hodgepodge approach undermines the ability of market participants to trade RECs efficiently. But in the case of DER data and the administration of DEARs and DERAs, such balkanization is a recipe for failure.

Further, it is critical for the efficient and cost-effective implementation of FERC Order No. 2222 that CIM data structures be used to for data management and sharing among relevant stakeholders. Implementation of FERC Order No. 2222 will impact every aspect of the utility business and the core systems used by the industry, including the CIS, GIS, OMS, ADMS, EMS, planning systems, and potentially many more. The CUS DER Registry has been designed using the CIM to allow each of these systems to be able to exchange data with the Registry via this protocol to reduce every utility's cost of implementing FERC Order No. 2222. CUS recommends that the PA PUC consider an even broader recommendation for any utility system to utilize CIM data exchange to eliminate all further software interface costs and, instead, have fully implemented data layer exchange through known CIM structures. A data-centric approach that is compatible with CIM principles will ensure the most cost effective and efficient implementation for DER data collection and sharing that will support grid reliability as well as any other digital systems in the utility enterprise and serve to continue to reduce IT costs for utilities while supporting more effective, secure and efficient data interchange.

Approximately 30 years ago, the electric industry began utilizing software-based Energy Management Systems (EMS). The industry was struggling with custom interfaces to every generator/turbine manufacturer and even specific machines for each manufacturer. EPRI took up this challenge and determined that the electric industry needed a CIM with which all generators must comply to ease implementation and operational coordination of the generators with the electric industry's new systems. CIM was developed as an open standard for representing power

system components and has been adopted by the major EMS vendors. Over the past 30 years, the CIM initiative was moved to the International Electrotechnical Commission (IEC) and has grown to serve generation, transmission, distribution, retail, and market structures. As Yogi Berra said, "It's like déjà vu all over again." Here we are 30 years later solving the exact same problem of a CIM for generators, but this time it is for millions of facilities rather than a few thousand – making CIM concepts even more important today.

In addition to a CIM, it is critical to incorporate a comprehensive and holistic data collection and secure sharing strategy. The following diagram illustrates this need for multiple entities to access a common source of DER data:

Starting at the top of the chart, DER data is created for the first time in the permitting process. Proceeding clockwise, a portion of this data is then needed in the interconnection process. Utilities and ISOs use the submitted data for planning and modeling in their systems to approve or reject the interconnection request. If approved, Geographic Information Systems (GIS) systems need the DER data to show where these resources are both geographically and

electrically on their system. Once a utility and/or the ISO establishes a DER program or market, an aggregator (utility or competitive entity) needs the data to create their aggregations and submit them for review and approval to a retail program or wholesale market. At this point, each retail program or market will have established rules for the appropriate stakeholders to review and approve the aggregation. This process will include the DER owner, aggregator, DSO, competitive retail supplier, scheduling coordinator, Transmission System Operator (TSO), and ISO, all with appropriate regulatory oversight. All of these stakeholders will need access to appropriate portions of the DER data. Customers that agree to participate in a retail program or market will need to assign the DER to an aggregator to allow an aggregator to create aggregations and then allow all appropriate stakeholders to review and approve the aggregation. Once approved, the EMS operational and market systems will require access to DER, Distributed Energy Aggregated Resource (DEAR) and DERA data. Utilities will need to be able to present planned and unplanned outages on their system via a "distribution oasis" like currently exists for the transmission system as the distribution system will now have market resources embedded within it. And along the way, people will move in and out of houses with DERs installed on them, people will add batteries to their solar arrays, people will add and sell (delete) EVs, people will want to change aggregators or programs, new programs and market products will be created, grid operators will reconfigure their networks or market zones/nodes/regions, aggregators will go out of business, utilities will change names, and so on. Operational systems will need to verify performance. Settlement systems will need access to the DER data for billing and payment. And, finally, regulatory and government agencies will require reporting on all of this. Attempting to consider any aspect of this process in isolation has proven very problematic and costly.

If a data-centric approach is utilized to define the necessary data elements for each step in this process and these data elements are appropriately "mapped" to CIM data structures, then existing industry systems for CIS, GIS, ADMS, EMS, planning and modeling, etc., will be able to effectively share the data through a secure data API based on the CIM data structures of the existing industry systems, thereby eliminating costly software interfaces. This approach allows DER data to conform to existing systems in the electric industry rather than modifying potentially hundreds of industry systems to utilize DER data. With this thought process in mind, CUS has interacted with many different stakeholders over the past few years to address these defined needs by building the non-profit collaborative DER Registry platform. The DER Registry is intended to facilitate a collaborative, secure approach to sharing DER data as well as a collaborative approach to the continued development of the DER Registry itself.

B. Changes To Metering Requirements

The PUC seeks comment on whether its existing metering regulations for customer-generators, 52 Pa. Code § 75.14 (relating to meters and metering), can be adapted to facilitate provision of metering and telemetry data by DERAs to public utilities, consistent with Order 2222 and PJM's DAPM, and if so, whether and what specific changes to the PUC's interconnection regulations that facilitate this adaption. The PUC also seeks comment on the following sub-topics raised by stakeholders:

- **How should interconnection regulations evolve to ensure alignment between EDC and PJM telemetry and metering to facilitate consistency and avoid extensive telemetry differences between DERA requirements and retail DERs?**
- **Should the PUC facilitate device-level metering and if so, how?**

As noted in the ANOPR, FERC ordered that, to the extent that PJM proposes that metering and telemetry data come from or flow through distribution utilities, PJM must coordinate with distribution utilities and the PUC to establish protocols for sharing this data, and that such protocols minimize costs and other burdens and address privacy and

cybersecurity concerns.[5] We note that FERC Order No. 2222 represents a significant opportunity for regulators and utilities to collaborate to control ever-escalating information technology (IT) costs, not only for DERs but for other collaborative solutions, such as a statewide common meter authority, communication systems for utility (gas, water, electric) AMI, etc. To date, the electric industry has specifically chosen to have isolated and specific systems instead of collaborating, and those choices have significantly increased costs for consumers. The measurement and settlement process for DERs will be the next hurdle in FERC Order No. 2222 implementation, and regulators have the opportunity to examine what the Ontario ISO did to dramatically eliminate costs and simplify settlement as a tangible example of collaboration for this function across multiple utilities. Per the diagram below,[6] the province of Ontario has implemented a solution for meter data management that requires the utilities to create/operate/maintain the meter infrastructure, but all utility head end systems push their data to a centralized data repository. This repository has consistent structures and policies, like evaluation, measurement, and verification (EM&V) for all utility data. This repository is then utilized for everything from real-time operations and billing to premise validation for consideration for a program. It has created significant efficiencies for meter data management

[5] FERC Order No. 2222, ¶ 270.
[6] Doug Thomas, Ontario's Changing Electricity System & The Role of Data (June 22, 2016), full presentation available at https://conferences.sigcomm.org/eenergy/2016/DougThomasKeynote.pdf.

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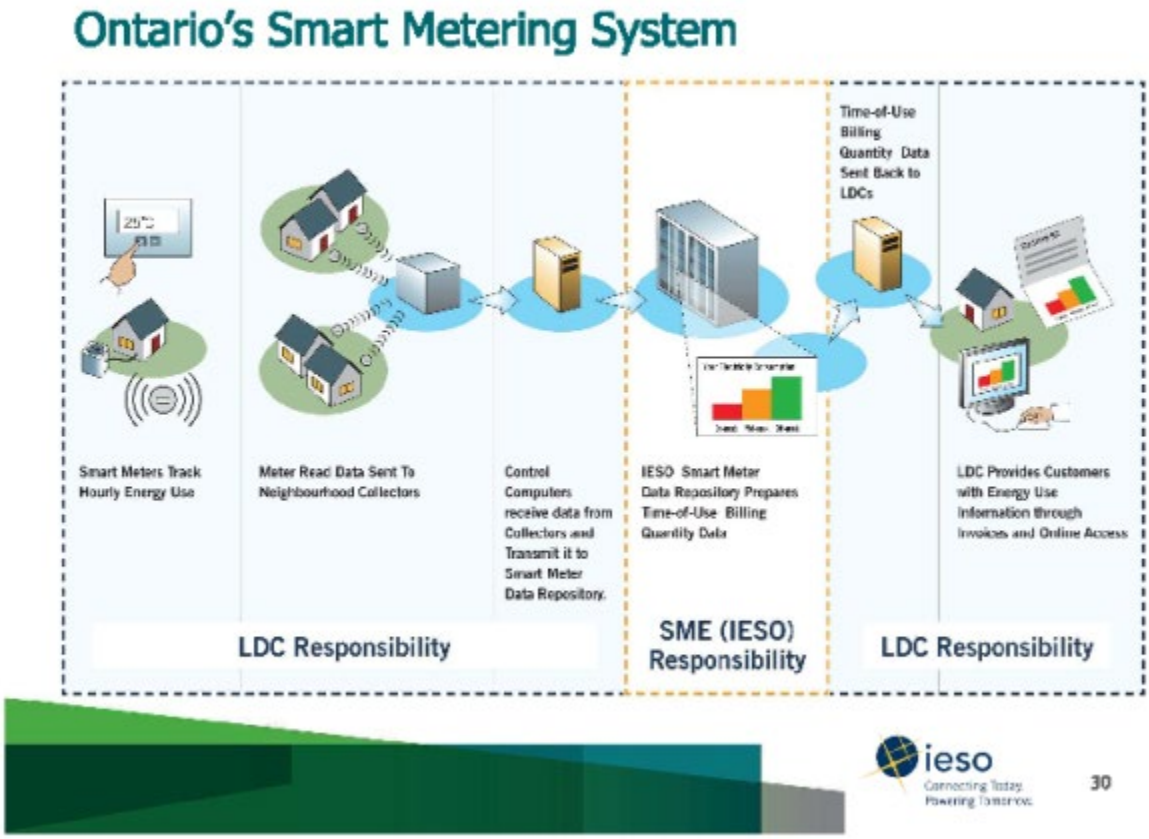


With deregulation, the electric industry fragmented and moved away from collaborative solutions, and FERC Order No. 2222 is an opportunity to make better, more collaborative decisions state by state and ISO by ISO to create policy and systems to enable these DERs for our grid and markets. Ontario provides a clear example of how each state could have their utilities collaborate in a way that dramatic savings are achieved, and the IT burden of the data, data management, hardware, software, sharing, etc. are aggregated to a single system for each state that has a CIM-based interface to all systems. It is possible, it has been done and has been operating for over a decade. However, it is not business as usual, and it requires regulatory

leadership to set the policy to save their constituents money. It will not be easy, and it would not happen overnight, but again, it is possible, it has been done and it is dramatically more cost effective and is almost becoming a requirement to effectively enable and settle millions of DERs.

C. Cost Allocation Issues For Facilities Allowing The Interconnection Of DERs

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 adaption. The PUC also seeks comment on the following sub-topics raised by stakeholders:

- **How will DERA market participation impact retail rates?**
- **What cost recovery guidance, if any, is needed by EDCs for investments that may support both transmission and distribution?**
- **How should EDCs distinguish cost allocation between grid modernization, general DER costs, and DERA-specific costs?**
- **What cost recovery mechanisms should be used (upfront charges, usage charges, rates)?**
- **What is the interplay between the direct procurements aspects of EDCs' default service plans and an EDC's costs to administer DERA participation in wholesale markets, if any?**

We note again here that adoption of the DER Registry would allow for substantial cost savings shared among the EDCs and DERAs through economics of scale and scope, providing the lowest cost implementation to the benefit of retail customers in Pennsylvania.

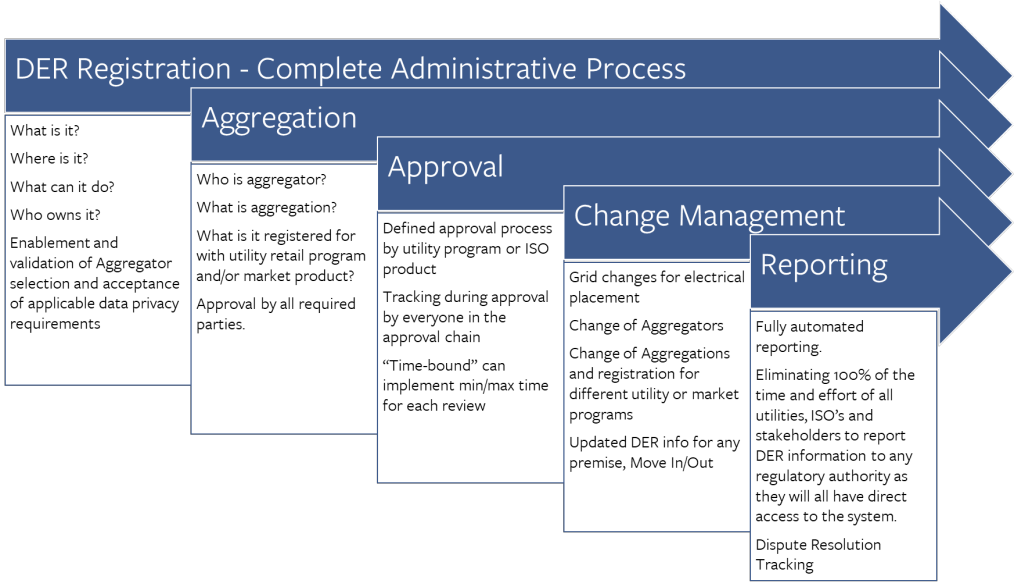
D. Adjudication Of Disputes Regarding The Registration Of DERs

The PUC seeks comment on whether its existing application process for net metering customer-generators, 52 Pa. Code § 75.17, or its existing dispute resolution regulations, 52 Pa. Code Chapters 1 (relating to rules of administrative practice and procedure), 3 (relating to special provisions) and 5 (relating to formal proceedings), or both, can or should be adapted to facilitate adjudication of disputes about DERA registration of its Component DERs with PJM, consistent with Order 2222 and PJM's DAPM, and if so, the specific changes to the PUC's regulations that would facilitate this adaption.

Adoption of the DER Registry would facilitate better dispute resolution processes between DERAs and utilities by ensuring that everyone who needs access to the relevant information will have that access. As has been proven in Australia, Ireland, Germany, California and New York, DERs are new and different from how the electric industry has conducted its business for the past 150+ years. Proactive regulatory leadership is required to help guide industry policy for the effective and efficient incorporation of DERs. Systems that are not transparent and open to the regulatory community will stifle innovation and slow DER adoption. However, the CUS DER Registry is specifically designed to recognize that different RERRAs may have different views on who should be allowed to access the various data elements in the Registry. Therefore, the DER Registry has been designed to allow each regulatory authority to specify which stakeholder can access any individual data element in the Registry. Per the graphic below, the regulatory authority can specify, for ***every*** data element in the Registry, who should be allowed to view that piece of data. CUS understands that each state or ISO's legal governance of an aggregator participating in a retail or market program may be an unresolved issue. However, based on our work with aggregators over the past several years, we also believe that the majority of aggregators would voluntarily support these data privacy rules, if required, to allow them to expand their portfolios. The DER Registry makes any required privacy rule or process much simpler for everyone to adopt by securely managing and sharing only necessary data with each appropriate stakeholder according to the rules of each specific RERRA, utility and ISO.

WHO HAS ACCESS TO THE DATA? (Each Regulatory Authority to define)										DER RESOURCE RECORD CREATION		
										*REQUIRED DATA		DER Registry
Sched Coord	Comp Retail Supplier	Equip Mfg	Aggregator	Regulatory Authority	ISO/RTO	TSO	DSO	Owner Agent	DER Owner	Entered by:		Field Description
										DER OWNER INFO		
	X		X	X			X	X	X	DER Owner*		First Name (As it appears on utility bill)
	X		X	X			X	X	X	DER Owner*		Last Name (As it appears on utility bill)
	X		X	X			X	X	X	DER Owner*		Address 1 (As it appears on utility bill)
	X		X	X			X	X	X	DER Owner*		Address 2 (As it appears on utility bill)
	X		X	X			X	X	X	DER Owner*		City
	X	X	X	X			X	X	X	DER Owner*		State
	X	X	X	X			X	X	X	DER Owner*		Zip
	X		X	X			X	X	X	DER Owner*		Phone Number (premise)
										DER Owner*		Phone Number (mobile)
	X		X	X			X	X	X	DER Owner*		Email
X	X		X	X	X	X	X	X	X	ESRI*		GPS Coordinates
	X		X	X			X		X	DER Owner*		Utility Account Number
X	X	X	X	X	X	X	X	X	X	DER Owner*	pick list	Distribution Utility Service Provider
X	X		X	X	X		X	X	X	DER Owner*	Y/N	Do you have a Competitive Retail Supplier (CRS)?
X	X		X	X	X		X	X	X	DER Owner*	pick list	Pick your CRS
X	X		X	X	X		X	X	X	DER Owner*	Y/N	Do you have an Aggregator?
X	X		X	X	X		X	X	X	DER Owner*	pick list	Pick your Aggregator
				X				X	X	DER Owner*	Y/N	Allow Agent to enter DER Info?
	X			X				X	X	DER Owner*	pick list	Pick your Agent
				X				X	X	DER Owner*	Y/N	Want info from equip mfg?
										DER Owner*	Y/N	Do you have a different aggregator for Demand Response?
										DER Owner*	pick list	Pick your DR Aggregator
X	X		X	X	X		X	X	X	Registry		Premise Unique ID
X	X		X	X	X		X	X	X	Registry		Aggregate DER Unique ID for premise
X	X	X	X	X	X	X	X	X	X	Registry		Date entered into registry
										SOLAR INFO		
X	X	X	X	X	X	X	X	X	X	Registry		Date Entered into Registry
X	X		X	X	X	X	X	X	X	Registry		Solar Unique Identifier
	X	X	X	X			X	X	X	DER Owner or Agent	pick list	Panel Manufacturer Name
	X	X	X	X			X	X	X	DER Owner or Agent	pick list	Panel Model Number
	X	X	X	X			X	X	X	DER Owner or Agent	pick list	Nameplate Capacity of Panel
	X	X	X	X			X	X	X	DER Owner or Agent		Number of Panels

As shown in the following figure, this structure allows the DER Registry to securely provide the necessary information to stakeholders and effectively facilitate the entire administrative process to register a DER and DEAR, interact effectively with the DERA, and efficiently bring DERs to the grid and market, automatically provide any required reporting, and effectively manage any changes along the way.



Specifically for dispute resolution, the DER Registry can allow a dispute to be entered by any party, routed to appropriate groups per regulatory requirements, and tracked through the entire process to resolution.

E. Management Of Distribution Utility Overrides Of DERs To Maintain Reliability, And Disputes Arising Therefrom

The PUC seeks comment on whether and how its regulations can or should be augmented to address EDC overrides of DER Aggregation Resource or Component DER operation, consistent with Order 2222 and PJM's DAPM, and, if so, the specific changes to the PUC's regulations that would address overrides. The PUC also seeks comment on the following sub-topics raised by EDC stakeholders:

- **How should the distribution override process align with market bidding windows?**
- **What EDC "real-time" update and override requirements should be addressed in DERA agreements to ensure the reliability and safety of the grid?**

As noted in the ANOPR, EDCs, LSEs, customers and DERAs all need access to information regarding overrides, and that reporting requirements may need to be established

and automated.[7] Further, disputes regarding EDC overrides would be adjudicated by the PA PUC.[8] Adoption of the DER Registry would facilitate all of this functionality, reducing IT and human resources costs for all relevant stakeholders. See also our response to §D regarding dispute resolution.

F. Protection Of DER Owners From Unfair Trade Practices Or Excessive Risk In The Wholesale Markets

The PUC seeks comment on whether the UTPCPL applies to the DERA-Component DER relationship and whether and how the PUC's EGS regulations can or should be adapted to address consumer protection in the DERA-Component DER relationship, consistent with Order 2222 and PJM's DAPM, and if so, what specific changes to the PUC's regulations would address these matters.

Adoption of the DER Registry would facilitate tracking of interconnection agreements, documentation of written consent for Component DERs included in DER Aggregation Resources, and maintenance of other relevant information such as account numbers and EDC electrical location information for the Component DERs. Although CUS does not take a position on legal application of the UTPCPL or whether EGS regulations should be adapted to address consumer protections in the DERA-Component DER relationship, we note that the DER Registry is flexible enough to accommodate a variety of requirements that might be imposed by state authorities and facilitate monitoring and compliance with those requirements.

G. Prevention Of Double Compensation Or Double Counting Between Retail And Wholesale Market Participation, Including Rules Governing DER Owners' Ability To Switch Between Retail And Wholesale Market Participation

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

[7] ANOPR at 30.
[8] *Id.*

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. Consistent with the concerns raised by EDCs, the PUC also seeks comments on the following sub-topics:

- **Does the PUC have authority to decide whether to permit net metering customers to participate in DERAs, noting FERC's statement that "under a [RERRA]'s jurisdiction over its retail programs, such a [RERRA] is able to condition a distributed energy resource's participation in a retail distributed energy resource program on that resource not also participating in the RTO/ISO markets"?**
- **Assuming the PUC does have requisite authority, should the PUC permit net metering customers to also participate in DERAs at the same time?**
- **Assuming the PUC does have requisite authority, should the PUC develop rules for when and how often a retail customer may switch between met [sic] metering and DERA participation?**

CUS supports providing Component DERs with the maximum possible optionality and flexibility to participate in both retail and wholesale programs, without double compensation. This implementation promotes greater competition and the best potential for customer savings and optimizing value of Component DERs. The DER Registry, which serves as the "single source of truth" for DER data, ensures that all relevant stakeholders have access to the relevant data to ensure this flexibility and optionality while prohibiting double counting. The DER Registry is specifically designed to allow dual participation without dual compensation in both retail and market programs according to the specific rules of each state/ISO.

H. Any Necessary Electronic Data Exchange Revisions

The PUC seeks comment on whether it should encourage or impose EDI and/or other data exchange protocols between and among EDCs, EGSs, DERAs and Component DERs to facilitate implementation of Order 2222, and, if so, what, if any, specific changes to the PUC's policies and regulations would or should facilitate this adaption. The PUC also seeks comment on the following sub-topics raised by stakeholders:

- **What DERA cybersecurity items require further evaluation?**

- **What role will advanced metering infrastructure (AMI) data play in operational coordination?**
- **How should the PUC ensure that processes are in place for efficient data exchange among and between Component DERs, DERAs and EDCs for customer authorizations?**

CUS urges the PA PUC to require adoption of the DER Registry to facilitate implementation of FERC Order No. 2222. As described throughout these comments, the DER registry will allow for efficient, cost-effective, and secure access to the relevant DER data for the stakeholders who need access, serving as the "single source of truth" for that data.

I. Small Utility Opt-in Procedures

The PUC seeks comment on procedures for small utilities to "opt-in" to Order 2222, and permit their retail customers to participate in DERAs, consistent with Order 2222 and PJM's DAPM, and any specific changes to the PUC's policies and regulations that would facilitate the opt-in process.

The DER Registry provides a cost-effective means for small utilities to opt-in and allow their customers to participate in DER aggregations, and therefore CUS recommends that the PA PUC adopt the DER Registry in its rules for these customers as well. In short, the DER Registry reduces barriers to entry for these small utilities and their customers. The more parties that use the DER Registry, the lower its costs are to its users.

J. Potential PUC Oversight Of DERAs

The PUC seeks comment on whether the PUC may assert jurisdiction to regulate DERAs, and, if so, what requirements should the PUC impose on DERAs, consistent with Order 2222 and PJM's DAPM, and what specific changes to the PUC's policies and regulations would facilitate the PUC's exercise of authority over DERAs.

Each state is going to have to define their governance policy for DERAs. This structure and set of requirements will be different through each state's evolution through "crawl, walk,

run." Most importantly in the short-term is the performance of the DEAR, not necessarily the DERA. Like a nuclear plant, we watch and monitor its performance as the primary metric and whoever operates it is governed and monitored by appropriate regulatory and business agencies. As demand response aggregators have been operating across the U.S. for some time, it does provide some guidance, and DOE has proactively worked with other countries around the world to define a standard DERA code of conduct and even standard contractual interaction documents to help the industry move forward. We encourage the PA PUC to make full use of this proactive effort that DOE has led. Ultimately, the DER Registry can facilitate DERA performance monitoring, tracking, and reporting by acting as the "single source of truth" for DER data.

K. Cybersecurity Considerations

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.

CUS recommends adoption of the DER Registry as a standard for maintaining data on DERs and aggregations. CUS strongly encourages imposing strict cybersecurity standards that protect both information and system function and integrity. Practices that include a well-defined (and implemented) Security Development Lifecycle (SDL), Zero Trust architecture and governance, and active security monitoring leveraging intelligent threat detection are vital to minimizing risks. These standards should include mitigation and recovery for worst case scenarios. CUS is prepared to provide a full security architecture overview as implemented in the DER Registry that addresses system and system governance, data and data governance, as well as identity and authorization management, designed to leverage current and evolving security best practices.

L. Distribution Level Benefits

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

While FERC, PJM, and many stakeholders are focused on the wholesale market interactions related to DER integration, potentially the highest value and best use of DERs is to support distribution operations at the specific feeder for substation level through peak load management, post solar peak mitigation, power factor correction, phase balancing and many more concepts that improve not only local grid performance but bulk system performance as well. Correcting power factor and phase balance can reduce technical losses by 40%-60%. For a single 'standard 10MVA distribution feeder,' this would represent 1,400,000 to 2,600,000 kWh annually saved. DERs have the ability to dramatically improve the overall operation of the grid, but only if they are collaboratively utilized and the grid operators have visibility, knowledge and dispatch capability of these resources. CUS supports state policies to ensure these distribution level benefits, which the DER Registry can help facilitate, are not ignored in favor of just wholesale products so that the state's consumers can access those savings.

M. EDCs Acting As DERAs

The PUC seeks comment on whether and how it should mitigate conflicts of interest that may arise from an EDCs participating in wholesale markets as a DERA, consistent with Order 2222 and PJM's DAPM, and whether and what specific changes to the PUC's policies and regulations could facilitate such mitigation.

CUS is not familiar enough with PA PUC's policies to offer direct feedback on existing structures. However, in general, adoption of the DER Registry would facilitate PUC monitoring of EDCs and mitigating potential conflicts of interest by ensuring fair and equal access to all DER data. Any specific EDC cannot 'hoard' data and keep it from a registered aggregator. This levels the playing field for all parties by having a single source of truth for

the DER data and the PA PUC has control of who has access to the data within their state. The only possible way to ensure all players have equal standing is the same access to the necessary data to participate. However, CUS will state again that there are dramatic value propositions that DERs offer the distribution utility and its operations. As such, we encourage the PA PUC to allow the distribution utility the same fair access to be an aggregator for the benefit of the broader distribution utility system and all customers attached to it versus just allowing parties access to DERs for wholesale aggregations.

N. 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.

Adoption of the DER Registry would facilitate greater transparency for customers and stakeholders as it has the ability to both track any known relationships and can enforce policy that the PA PUC requires. For instance, if a DER is registered with a DERA and wishes to change to new DERA, the switching policies can be coded and enforced in the Registry. The end use customer can 'switch aggregators' and they would be informed by the system that they are required to continue their participation with their current aggregator until "X" date. The system would then ask if they would like to continue switching and allow the system to transfer their account to their new selected aggregator on that date in the future. The DER registry can ensure no negative marketing tactics are possible and all relationships from DER to DERA to EDC and ISO are fully transparent and tracked. This includes the ability to have dual registrations (in both an EDC program and ISO market product) according to the rules

of PA PUC and PJM. All of this functionality in the Registry ensures complete transparency for all stakeholders in this process.

O. 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.

All customers should benefit from integration of DERs into retail and wholesale markets; indeed the goal of FERC Order No. 2222 is to remove barriers to DER participation in wholesale markets and enhance wholesale competition, which ensures that PJM markets produce just and reasonable rates.[9] Customers can also benefit from improved distribution system operation as each state creates effective retail DER programs, such as peak load management, post solar peak mitigation, power factor correction, and phase balancing, if those benefits are accounted for as contemplated by §L of the ANOPR. To implement FERC Order No. 2222, ISOs such as PJM will need access to meter data for a variety of purposes to support wholesale market products and settlement, while utilities and DER providers will also need access to DER data. As such, the collaborative approach as proposed by CUS to use the DER Registry for necessary data sharing capabilities could save all utilities, states, and ISOs billions of dollars. These savings ultimately inure to the benefit of end use customers in Pennsylvania. Forging a different path that requires utilities to each "reinvent the wheel" is inefficient and will impose unnecessary costs on retail customers in Pennsylvania.

[9] FERC Order 2222, ¶ 3.

CONCLUSION

CUS appreciates the opportunity to provide these comments and looks forward to continuing to work with the PA PUC and all stakeholders in addressing implementation of FERC Order No. 2222 in Pennsylvania. As implementation discussions continue, there are three overarching issues CUS would like to highlight. First, FERC Order No. 2222 is viewed by some stakeholders as a burden instead of an opportunity. Second, there is a lack of focus on the benefits that DERs can provide to the EDCs where they are installed. Third, the entire process for incorporating DERs is not being effectively considered in these discussions.

First, CUS encourages all stakeholders to view FERC Order No. 2222 as an opportunity for collaboration. Rather than 3000+ utilities, RERRAs and ISOs developing policy, procedures and systems independently, there is an opportunity to collaborate to more effectively present DERs to the grid and market at a much lower cost. Collaboration in the electric industry is not always possible, but FERC Order 2222 presents a significant opportunity that should be embraced broadly in a collaborative manner to save electric customers billions of dollars of cost and dramatically simplify the process for their participation.

Second, the benefits that DERs can provide to EDCs can surpass the benefit and value of only participating in ISO market programs. States should be coordinating with their utilities to understand these benefits and consider the policies required to allow dual registration in a utility program and market product to ensure DERs are effectively utilized for their highest value to distribution grid or electricity market each day. This can be achieved without allowing duplicative compensation.

Third, as conversations regarding FERC Order 2222 have continued over time, we have reached further into the full process. The base rules were initially considered, then

administration and now some states are beginning to discuss operational considerations. Few, if any, have carried the conversation to all of the meter data sharing, settlement and payment considerations. Again, CUS points to the Ontario example as a best practice in this regard and encourages additional discussion now to help put each state on a path for significant savings over time through improved processes and lower system costs of a collaborative common meter authority. It will significantly reduce the ISO burden of interface to hundreds of meter systems and improve the overall cost structure of each state's utilities.

Respectfully submitted,

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ATTORNEY FOR COLLABORATIVE UTILITY SOLUTIONS

BEFORE THE PENNSYLVANIA
PUBLIC UTILITY COMMISSION

IN THE MATTER OF	)	
	)	
ADVANCE NOTICE OF PROPOSED RULEMAKING	)	**Docket No. L-2023-3044115**
	)	

CERTIFICATE OF SERVICE

I hereby certify that I have this day served a true copy of the foregoing document upon the parties, listed below, in accordance with the requirements of §1.54 (relating to service by a party).

Word®-compatible copies have been circulated to the contact persons for this matter via electronic mail in accordance with the Commission's Order posted on February 22, 2024, in this proceeding.

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