BEFORE THE BOARD OF PUBLIC UTILITIES
OF THE STATE OF NEW JERSEY

IN THE MATTER OF NEW JERSEY'S DISTRIBUTED ENERGY RESOURCE PARTICIPATION IN REGIONAL WHOLESALE ELECTRICITY MARKETS	))))	**Docket No. EO24020116**

COLLABORATIVE UTILITY SOLUTIONS RESPONSE TO STAFF'S REQUEST FOR INFORMATION REGARDING FERC ORDER 2222 IMPLEMENTATION AND DER PARTICIPATION IN WHOLESALE MARKETS

COMES NOW Collaborative Utility Solutions, and, in response to the March 7, 2024, Request for Information (RFI) issued by the Staff of the New Jersey Board of Public Utilities ("NJBPU" or "Board"), 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 both 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 Distributed Energy Resources (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 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 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.[1]

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 significant challenges for 3000+ utilities and the customers, aggregators, competitive retail

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

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 No. 2222. Because this RFI 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.

As CUS is not a New Jersey Electric Distribution Company (EDC), we do not respond to questions 1-12 directed specifically to those entities. CUS responds to Questions 13-20, directed more broadly to NJ Stakeholders.

RESPONSES TO QUESTIONS FOR ALL NEW JERSEY STAKEHOLDERS

13. Do you have any comments or concerns about the classification of certain resources and their operating profiles as eligible for DERAs? Please state any associated control and/or compensation concerns.

In 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.[2] There will be an evolution to this 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 will be reviewed, and potentially modified, moving forward.

14. Do you believe that it is technically feasible to implement Order No. 2222 requirements by PJM's originally proposed 2026 implementation deadline? If not, please explain in detail why not. Are there any actions that PJM or NJBPU could take to make the implementation more efficient and timely?

CUS cannot speak to the ability of PJM and its stakeholders and processes and their technical ability to meet a 2026 implementation. However, if a collaborative approach to "crawl, walk, run" can be agreed upon to recognize that where you start is not where you will end, we believe that it would be possible to meet this timeline. However, unlike many new concepts or ideas that legislation or regulation created, cost-effectively implementing FERC Order No. 2222 by 2026 will require strong policy leadership by state regulators to guide stakeholders to collaborate, identify and implement best practices, including securely sharing appropriate information to facilitate DER-related processes. Adoption of the DER Registry would facilitate expeditious and cost effective implementation of FERC Order No. 2222.

Having each utility forge its own unique path, such as through creating separate utility DER information databases, would be a highly inefficient and costly way to address the problem

[2] 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).

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 beyond 2026. 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 could save all utilities, states, and ISOs billions of dollars.

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 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 NJBPU 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, 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

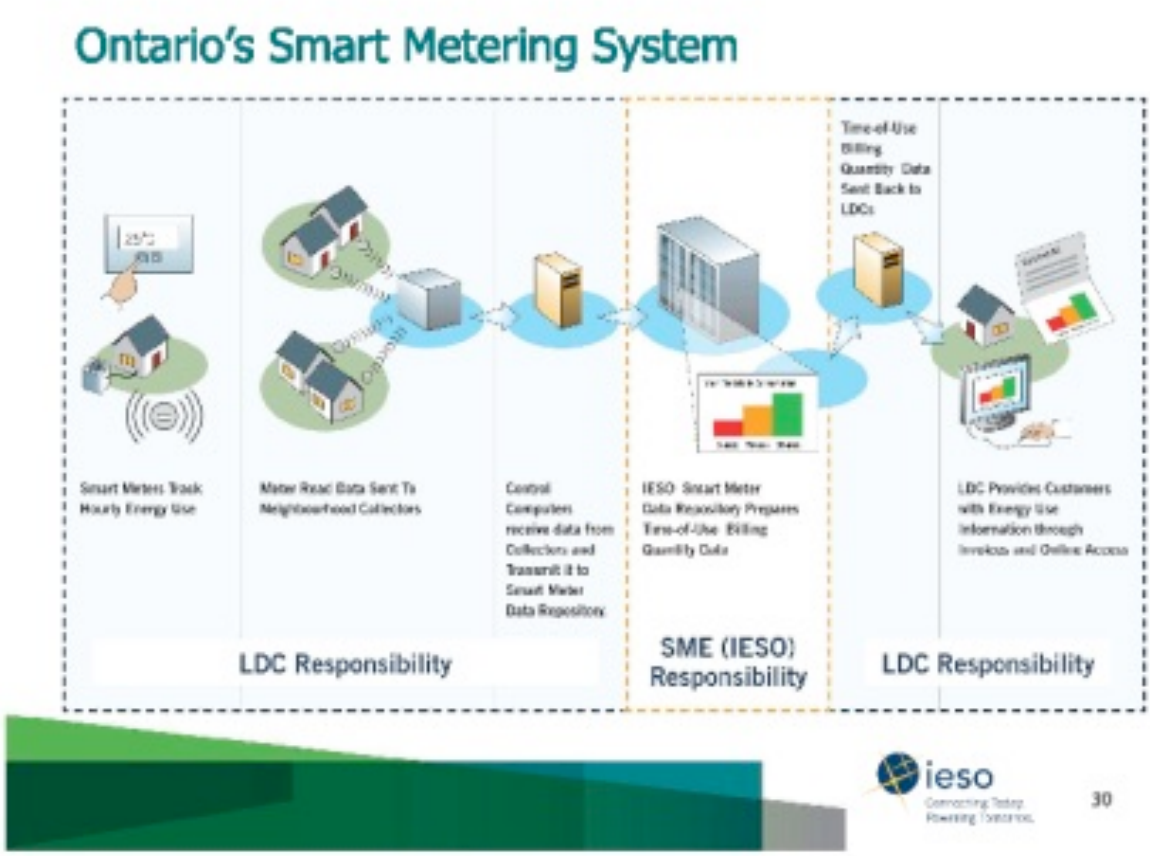
stakeholders to review and approve the aggregation. Once approved, the EMS operational and market systems will require access to DER, Distributed Energy Aggregated Resource (DEAR) and DERA data. Utilities will need to be able to present planned and unplanned outages on their system via a "distribution 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.

It is worth noting 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,[3] 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 and use.

[3] 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.



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 requires regulatory leadership to set the policy to save their constituents money. It will not be easy, and it would not

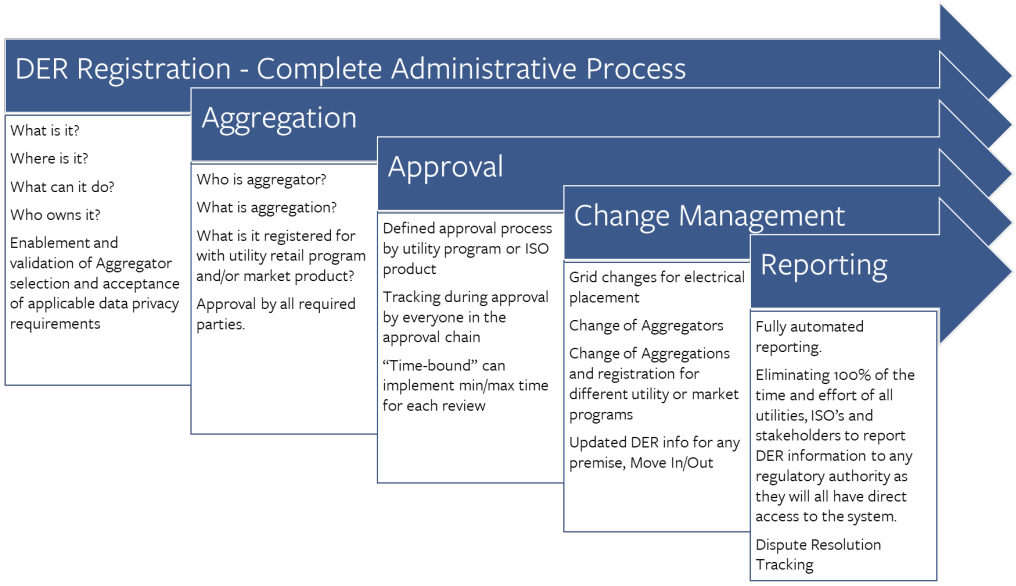
happen overnight, but again, it is possible, it has been done and it is dramatically more cost effective and is almost becoming a requirement to effectively enable and settle millions of DERs.

15. Do you have any comments or questions about dispute resolution processes between DERAs and utilities?

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.



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

16. How should DER Aggregator performance be monitored/tracked/reported to the public?

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, and we encourage NJBPU to make full use of this proactive effort that DOE has led. And, ultimately, the DER Registry can also facilitate DERA performance monitoring, tracking, and reporting by acting as the "single source of truth" for DER data.

17. Should each EDC be required to formally establish pilot programs demonstrating their procedures and performance for DERA integration? Should these pilots be identical/consistent/unique across EDCs?

CUS strongly recommends adopting consistent procedures and standards across EDCs to the extent possible. As we've commented previously, collaborative processes with shared (and secure) information will be critical to successful implementation of FERC Order No. 2222. "Reinventing the wheel" by having each utility doing unique pilots will make it much harder for DERAs to participate, will cost ratepayers more, and will be more difficult for the NJBPU to monitor.

Over time, each utility interacting with its customers and coordinating with the NJBPU may have a specific or divergent program based on a local need. However, in the short-term, the physics of how electric grids operate do not vary by utility, and identical programs simply drive efficiencies, speed and comparability/shared learning. "Crawl, Walk, Run." Start with identical structures, share information, collaborate on success/failure/change, and move forward.

Most importantly, the NJBPU needs to preserve the opportunities for distribution utility programs. While everyone is very focused on the wholesale market interactions in this process, 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. The DER Registry is constructed to

allow dual participation without dual compensation in both retail and market programs according to the specific rules of each state/ISO.

18. As part of NJBPU's efforts to help implement Order No. 2222 how much technical support from the NJBPU, separate from NJBPU's current Grid Modernization Forum working groups, is desired? Would a statewide stakeholder engagement process, working group, technical conference, or public platform for stakeholder engagement be beneficial?

Collaboration, information sharing, and transparency are essential for the successful implementation of FERC Order No. 2222. Structured forums enhance collaboration, and appropriate systems need to be transparent and share data/performance to support these processes.

19. Are there any specific questions that you have for NJBPU that has not been addressed yet in the FERC Order, PJM's Compliance Filings, or NJBPU's Order No. 2222 outreach efforts?

These are not specific questions, but rather concerns to be considered as implementation discussions continue. There are three overarching issues CUS would like to highlight. First, FERC Order No. 2222 is being 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 DSOs 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 No. 2222 presents a significant opportunity that should be

embraced broadly in a collaborative manner to save individual utilities or a single state's electric customers millions of dollars, or if implemented more broadly across an ISO or multiple states, billions of dollars of cost savings will be realized while dramatically simplifying the process for customer participation.

Second, the benefits that DERs can provide to DSOs can surpass the benefit and value of only participating in 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 No. 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 described above 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 systems and improve the overall cost structure of each state's utilities.

20. Which of the following categories best describes the stakeholder perspective your comments provide?

1. **DER Aggregator**
2. **Government Agency**
3. **Concerned Citizen/Building Owner**
4. **Academic Institution**

5. **Commercial DER Developer**
6. **Energy Asset Investor/Owner**

CUS does not fit into any of these six categories. CUS is a 501(c)(6) non-profit entity formed to address key needs common to the electric industry in a manner that will save the entire industry significant costs while rapidly advancing the enablement of DERs for grid and market purposes. CUS's goal is to develop and support those industry processes and systems that can be the same from utility to utility or market to market and, therefore, implemented at a dramatically reduced cost to create a much more efficient shared ecosystem of use by all the stakeholders in the energy value chain. With more than 3,000 utilities in the U.S. being regulated by FERC, NERC, state utility commissions, municipal governments, electric cooperative boards, etc., many would say that every solution for every utility must be specific for that utility. While this may be true for many things, it's not true for everything, and it is not true for DERs. CUS was created to partner with electric industry stakeholders and find the opportunities to collaborate and provide effective tools that can be used by everyone. As a non-profit entity, we exist solely for the purpose of supporting our members to bring these common solutions to the electric industry. The board of CUS has been designed to allow a voice from each stakeholder industry group on the board, and the member user group is in control of changes/improvements to the Registry with approval from the board. And unlike a traditional competitive software vendor, these changes are included in their membership fees and are not incremental charges. This structure allows the DER Registry to become less expensive over time instead of more expensive as we have more members utilizing the Registry, and also allows all stakeholders in the industry to be represented and provide a leadership role in continual improvements to the Registry over time.

CONCLUSION

CUS appreciates the opportunity to provide these comments and looks forward to supporting the work of the NJBPU and all stakeholders in addressing these issues.

Respectfully submitted,

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