

April 22, 2024

Sherri L. Golden
Secretary of the Board
44 South Clinton Ave., 1st Floor
PO Box 350 Trenton,
New Jersey 08625-0350

Via email: board.secretary@bpu.nj.gov

Re: Response to Request for Information in the matter of New Jersey’s distributed energy resource participation in regional wholesale electricity markets, Docket No. EO24020116

Dear Secretary Golden:

The New Jersey Board of Public Utilities (“NJBP”) has issued a Request for Information from utilities and other stakeholders related to the implementation of Federal Energy Regulatory Commission (“FERC”) Order No. 2222, issued September 17, 2020, which requires Regional Transmission Operators to remove barriers to the participation of Distributed Energy Resources (“DERs”) in wholesale electricity markets. NJBP wishes to study the potential for state rules and regulations regarding Order No. 2222.

Recurve is an industry leader in meter-based demand flexibility. Recurve tracks changes in energy consumption resulting from program interventions for both individual buildings and in aggregate to support resource planning and facilitate performance-based transactions. We encourage and support market-based solutions for decarbonization. Recurve’s software platforms are grounded in open-source methods and code. Open-source measurement and verification methods, software, and collaboration are key to developing the foundational weights and measures required to scale demand flexibility as a reliable energy resource.

Recurve thanks the Commission for this opportunity to offer comments to help inform the implementation in New Jersey of wholesale market rules related to FERC Order 2222. If you have any questions about these comments, please contact me with the information provided in my signature block.

Respectfully submitted,



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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.

We recommend that the NJBPU adopt a broad and technologically neutral definition of DERAs. Similarly, compensation should be consistent across all technologies based on what services DERAs can provide to the grid. Grid services¹ should be classified rather than DERAs, so that any component of a DERA that can provide any given grid service should be eligible to do so. As stated in further detail below, all grid services should be rigorously measured on an hourly basis.

Some components of DERAs will be capable of being dispatched which may require a Distributed Energy Resources Management System, or a DERMS platform. Other DERs, like energy efficiency, will not require a DERMS platform. Energy efficiency can be measured on an hourly basis after the fact and then provided the same compensation for grid services that it is capable of providing for the same rate of compensation during the same hour as is provided to DERA components that do require a DERMS platform. Resources delivered using a DERMS will also benefit from embedded analytical infrastructure to validate and deliver incremental impact to the grid.

DERAs should be permitted to aggregate across price zones provided that the DERA demonstrates which DERs are in each price zone so that compensation is consistent in each price zone.

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?

The NJBPU should stick to the current deadline while monitoring progress regarding compliance and require that load-serving entities state specifically the technical challenges that they are experiencing prior to extending the existing deadline.

¹ Grid services include energy, capacity, and the various ancillary services.

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

The NJPBU should be vigilant in ensuring that large existing entities are not permitted to use delay and dispute resolution processes to limit the entry of smaller and new participants into the market and thereby limit innovation.

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

As discussed in detail below, we recommend that the NJBPU should first identify each category of grid benefits that DER can provide and define how to measure each of these services on an hourly basis. Next, the NJBPU should determine an hourly value for these grid services. The compensation for existing providers of these services should be referenced when establishing their value. Finally, the NJBPU should establish a pathway for procuring distributed resource aggregations using an open-market model so that aggregations of DERs can provide those services for the established price or in combination with other day-ahead or marginal pricing schemes.

Setting goals and communicating impacts in relation to the "total system benefits" is a useful construct for assessing the performance of DER aggregations. This is anchored in having a monetized value for the multiple benefits that may be derived from distributed energy resource aggregations. This construct was outlined by Mohit Chhabra of the National Resources Defense Council in the Electricity Journal article entitled *One metric to rule them all: A common metric to comprehensively value all distributed energy resources*.² It offers a useful strategy for valuing, tracking, and reporting DER performance, especially for long-term capacity and carbon value.

Chhabra observes that utility-funded DER programs are typically planned and implemented on a per-DER basis and are compensated for energy value only. Energy efficiency, demand response, and other greenhouse gas reduction programs and strategies are designed in separate proceedings and have separate metrics and budgets. This fragmented DER valuation and procurement creates inefficiencies by artificially siloing DERs, thereby prohibiting optimal deployment.

Also, fragmented DER procurement, each with its own methods of measurement and valuation, prevents multiple DERs from competing to provide value and ignores the

² The Electricity Journal, 35 (2022) 107192, Mohit Chhabra, *One metric to rule them all: A common metric to comprehensively value all distributed energy resources*. <https://www.sciencedirect.com/science/article/abs/pii/S104061902200118X> The Electricity Journal has a paywall. Permission to file a copy of the full article has been requested. With the Commission and Electricity Journal's permission a copy of the article will be filed as a supplement to these comments.

interactive effects between multiple DERs. This is precisely the kind of “cross-section interaction, some competitive and some synergistic” identified by the Commission.

Finally, Chhabra observes that as renewable penetration on the grid increases, the value of DERs becomes increasingly time-dependent. To avoid energy, capacity, transmission & distribution investment, the time in which savings occur has a significant impact on the value of the savings achieved. “Traditional energy metrics, like annual savings for energy efficiency measures, don’t capture this temporal variation.”³ In addition, the value of just responding to the short-term peak load reduction may not be enough to scale demand response capabilities.

To solve both the problem of siloing and of time valuation, Chhabra offers the total system benefits (TSB) metric. “The TSB is calculated by multiplying the DER load-shape by the hourly avoided costs through the DER’s effective life. For dispatchable demand response initiatives, the lifetime equals the number of demand response events being analyzed. To the extent that the avoided cost calculator accounts for the various benefits of energy savings and how they vary over time...the TSB will capture the complete value stack of DER.”⁴ The combined benefit of each DER should be aligned with rigorously measured changes in energy consumption patterns on an hourly basis.⁵

Given that New Jersey has invested in advanced metering infrastructure, it is well-positioned to implement this model and synergize DERs. Using the total system benefits metric and the market access model for procuring DERs described below will maximize the value of the AMI investment to New Jersey energy consumers and better align demand flexibility with integrated resource planning and clean energy investments.

The benefits, aligned with measured changes in energy consumption, are totaled for each hour and can be used to represent a technology and fuel-agnostic price through a market access model. A market access model is designed as an open solicitation for aggregators to identify and provide the designated benefits to customers and the grid in exchange for the Commission approved valuation.⁶

³ Chhabra at page 1.

⁴ See illustration on page 3.

⁵ A technical guide on implementing a Total System Benefit metric was developed by the California Public Utilities Commission: Total System Benefit Technical Guidance, Version 1.1, August 16, 2021; California Public Utilities Commission:

<https://pda.energydataweb.com/api/view/2530/DRAFT%20TSB%20Tech%20Guidance%20081621.pdf>

⁶ Market Access Program model, regulatory background, program designs, and results. from the California Public Utilities Commission webpage

<https://www.cpuc.ca.gov/industries-and-topics/electrical-energy/demand-side-management/energy-efficiency/market-access-program>

[Creating a Market Access Model to Unleash Solutions Providers and Scale Demand Flexibility](#), C. Best, R. Boehnke, M. Keasey, ACEEE Summer Study Proceedings 2022

This innovation in program design provides several advantages. First, it is cost effective by design. Payments are capped at or just below the designated value of the benefits, meaning that ratepayers would no longer take the risk of non-performance of programs, and aggregators would assume that risk. Second, it allows market actors to opt into the program with low barriers to entry to accelerate their existing business models and customer reach. As customer behavior changes load shapes and as avoided costs change, the Commission can adjust the compensation offered at regularly defined intervals, and market actors can respond with innovative customer solutions. Third, the market access model can synergize funding from multiple sources to drive investment. Public or private funds can be co-mingled to drive down overall costs on a project-by-project basis, and performance payments can drive overall shared outcomes and objectives like GHG and avoided costs.

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?

The NJBPU should permit EDCs to design unique programs and procedures to measure performance for a defined period of 3 years in order to develop best practices. After that time, the NJBPU should consider whether consistent programs and procedures would be in the public interest. This approach creates an opportunity for innovation for the EDCs while maintaining the possibility of standardization should the Commission believe that it is in the public interest.

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?

Recurve has no comment on the appropriate level of stakeholder engagement except to say that any engagement or working group process should have strict expected outcomes to drive the work forward and avoid stagnation.

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?

The NJBPU should ensure that the data access framework adopted by the NJBPU allows for the secure use of anonymized AMI data of non-participating customers to compare customers who participate in demand-side programs. Using non-participating customers as a

baseline would allow for more accurately measuring the hourly quantity of grid services provided by the participating customers.

Recurve has found that the optimal way to measure and verify energy savings is to create a weather-normalized comparison group of non-participants and then compare the energy savings of program participants with the energy usage of the non-participant control group. The hour in which energy is saved can be tracked when utilities have deployed advanced meter infrastructure ("AMI"), so that program compensation can be aligned with the value of energy on the grid at the time the savings were achieved. Most New Jersey utilities have AMI, so hourly measurement and compensation can be implemented.

Each DER resource should be tracked individually and as part of an aggregated portfolio to assure program performance and enable data-driven program improvement. This also enables the program to pay for benefits only as they actually occur rather than using a model to project benefits and committing to pay up-front for projected benefits.

Using data-driven automated measurement and verification also provides other benefits to optimize the program. Data can be analyzed to determine what type of efficiency project in what households would produce the highest energy savings program benefits. Hourly measurement can assist in reducing consumption at peak periods to drive program benefits. The ability to standardize and combine complex data sets will enable an automated methodology for the determination of qualification for additional program benefits for projects in disadvantaged communities and low-income households.

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

Recurve is a software analytics provider that enables settlement for DER aggregators, so it does not fit within any of the identified categories.