

September 12, 2023

Sherri L. Golden, Secretary of the Board
State of New Jersey Board of Public Utilities
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Subject: Icetek Response to Request for Information on the New Jersey Energy Storage Incentive Program (SIP)

Secretary Golden,

The Staff of the New Jersey Board of Public Utilities (Staff) have requested public comment on the August 8, 2023 Request for Information (RFI) regarding the draft New Jersey Energy Storage Incentive Program (SIP). We greatly appreciate Staff's thoughtful and dutiful efforts in developing the straw proposal and the opportunity to provide input to your ongoing deliberations regarding the SIP. We support New Jersey's dedication to moving towards an electric grid with the lowest possible carbon emissions as quickly as possible, while maintaining a reliable grid that is affordable for all electric customers. Electric and thermal storage systems will play a key role in the state's ability to absorb and redeploy renewable, carbon-free energy that must rapidly become the dominant source of energy for our economy. Input from interested stakeholders will be key to designing a program that can achieve the considerable and important goals of the program.

Since 2001, Icetek Energy Services (Icetek) has been optimizing distributed resource assets of various technologies for large customers in New Jersey and throughout the Mid-Atlantic and Northeast, both for economic and CO2 reduction goals. Headquartered in Pennsylvania with an office in Cambridge and a data center in Philadelphia, Icetek's homegrown analytic applications are used to dispatch over 200 MW of distributed resources throughout the Mid-Atlantic and Northeast, including several prominent universities, hospitals and manufacturing sites in New Jersey. Through our connection to our customers and our commitment to helping them meet their economic and environmental goals, Icetek intelligently automates dispatch, market bidding, plant efficiency and greenhouse gas reporting.

In concert with our comments submitted in December 2022, Icetek is writing to express our continued support for the initiatives and aggressive goals of the SIP. In particular, Icetek strongly supports (a) the goal of 2,000 MW of storage statewide by 2030; (b) the recognition of the need for and the distinct benefits associated with both Grid Supply and Distributed storage; (c) the requirement for owner/operators and program administrators to utilize storage projects to reduce CO2 emissions, and (d) the intentional coordination with PJM Markets and the regional grid where possible to facilitate shared metrics of performance evaluation, planning status, and asset utilization. We offer comments on several of the questions proffered in the RFI and the proposed structure of the SIP based upon our unique perspective serving sophisticated commercial and industrial customers in New Jersey and through the Mid-Atlantic and Northeast.

Question 1.3 For Grid Supply resources’ Performance-based Incentives, should responding to a market signal be compulsory or voluntary?

As we explain further below, there are certain types of storage systems that should be allowed to choose to be in the Grid Supply category even though they are located at large customer sites. We would encourage all storage resources to register with PJM and participate in at least some portion of the suite of wholesale markets because visibility and awareness by PJM will be a key component of recognizing the full value of storage resources. If PJM does not know of a storage resource then it will likely be ignored, causing over-commitment of other – perhaps fossil-fired – resources that induce greater CO2 emissions and transmission planning studies that overestimate the need to serve peak loads, inducing undue costs upon ratepayers.

Our experience indicates that large customers are subject to several different objectives at any one time: on-site thermal and electrical needs, economic realities, and organizational environmental goals. Active participation in PJM wholesale markets during every hour of every year may not be the best balance of their objectives. We recommend that SIP incentive levels be set with the assumption that each storage resource will pursue wholesale market revenues, but that the program design stop short of compulsory participation.

Question 2.1 How should capacity blocks be structured and proportioned, both within each component of the NJ SIP (Grid Supply and Distributed) and relative to each other?

Numerous commenters have encouraged changes to the proposed block structure, and we agree. We have seen targeted blocks fill up very quickly in other jurisdictions and would prefer to see adjustments to this aspect of the initial proposal. We encourage Staff to start with larger blocks that can capture more of the potential storage sites available, and also allow rolling enrollment in each block instead of time-delimited amounts that would likely leave unrealized potential in the installment of operating storage systems. The more quickly that these systems are installed and operational, the faster New Jersey ratepayers will see a return on their expenditure in the form of lower costs for energy and for transmission infrastructure. We agree with Rate Counsel’s comments that widespread, successful storage systems could also avoid unnecessary future investments in distribution-level capacity and resiliency expenditures that would otherwise be borne by New Jersey ratepayers.¹

As we indicated in our December comments, we believe that the initial block sizes that have been proposed could easily be filled with only a few projects, leaving many other projects that are ready to proceed waiting. These delays dampen interest from the market and harm the important goals of the SIP.

Several commenters (Rate Counsel, Generac, CPower, etc..) have noted this and proposed different structural changes to the original draft to address Grid Supply and Distributed blocks. We again urge Staff to consider an option that would allow customer-sited (behind-the-meter) storage systems to opt to participate in the Grid Supply category. Many large customers have long been very sophisticated energy users who own and operate various behind-the-meter technologies to manage multiple goals, including thermal requirements, energy costs, and air emission restrictions and goals. In addition, with our assistance, these customers have also been participating in RTO markets while meeting their on-site needs. Thus, even though they are technically “Distributed” resources, they are supplying grid services.

¹ State of New Jersey Division of Rate Counsel comments of December 14, 2022. Page 9.

These customers are already fully prepared to operate an on-site storage system that can respond to a real-time CO₂ emission rate signal that will provide them with an incentive to consume more electricity when the grid is cleaner and displace carbon-intensive resources at times when they would otherwise emit large amounts of CO₂. As such, these storage systems should have the option to participate in the Grid Supply category because they can supply grid services. This option should include all associated payment structures and obligations applicable to any Grid Supply storage system. We find that this will encourage these customers to respond in real-time in a way that maximizes their incentive and their ability to help New Jersey achieve the CO₂ emission reduction goals of the program.

This option may be particularly important to the Grid Supply category blocks depending upon the ultimate design of the project maturity requirements and their links to the PJM interconnection queue process.

We support the proposed structure for Distributed storage resources wherein they would be called upon by their EDC during certain performance hours. However, through our experience with similar programs in other regions we have found that this approach would not create the same level of incentive for carbon reduction as the Grid Supply category does with an hourly marginal emission rate signal. Fixed, known hours of performance are perfectly suitable for some types of storage resources and should be included, but the real-time carbon intensity of the grid does not always closely match the hours of highest average seasonal demand levels, especially with an influx of carbon-free resources such as solar photovoltaic and wind. With a primary goal of carbon reduction, we encourage Staff to consider allowing those customer-sited systems that can meet the obligations of the Grid Supply category to have the ability to opt in.

Question 3.5 The Straw proposes the use of the PJM Marginal Emission Rate (“MER”) signal as a basis for Performance-based Incentives for Grid Supply energy storage systems. Is or will the PJM MER be sufficiently developed to use to calculate NJ SIP Performance-based Incentives?

The Board should expect that any source of CO₂ emission rate data will improve rapidly in the near future. Icetek is entirely comfortable using the PJM MER signal as the basis for Performance-based Incentives for Grid Supply energy storage systems, including those customer-based systems that opt into the Grid Supply category. The Board should leave itself the flexibility to alter the emission rate signal in the future if a feasible, more accurate, more granular, and/or more reliable signal becomes available. Any storage system operator should be fully capable of switching from one emission rate signal to another in a reasonable timeframe as long as that data is reliably available.

Question 3.6 Is there a different methodology that can be used to determine Performance-based Incentives, such as a Peak Demand Reduction program?

Icetek could easily accommodate another methodology but supports the Board’s goal of using the SIP to reduce total CO₂ emissions. To the extent that another methodology is a reliable substitute, we see no problem, but would want to maintain the primary goal of CO₂ reduction.

To that end we support Staff’s proposal of a graduated payment system wherein greater CO₂ reduction results in higher Performance-based Incentives. We further support your suggestion of a target level of reduction that suffers reduced incentives if the project falls short, but also encourages over-performance

with a symmetrical increase in incentives for CO₂ reductions above the target level. While targeting peak demand reduction will certainly have numerous benefits, including near-term energy cost reduction that should result in, for example, lower BGS prices, and deferral of otherwise unnecessary new transmission projects, CO₂ reduction should remain the primary goal.

We have helped prominent university and healthcare customers meet their CO₂ reduction goals through the intelligent dispatch of their energy assets. This includes the development of proprietary algorithms to forecast periods of time of relatively high or low carbon intensity on the grid, then dynamically dispatching assets to minimize CO₂ emissions, based on real-time carbon. Based on our experience, customer-based storage asset owners would provide consistent reductions if presented with an incentive structure with this aim.

We want to emphasize that this is not theoretical; we have large customers who own distributed assets that are responding to a real-time carbon emission rate signal today, and we are tracking the carbon accounting against site goals.

We encourage Staff to consider a graduated structure that symmetrically rewards CO₂ reductions, such as an annual target of 100 pounds/kWh of CO₂ abatement and 10 pounds/kWh as the minimum. An example structure might be:

- A resource that provides 10 pounds per kWh of storage installed would receive 20% of the performance incentive.
- A resource that provides 50 pounds per kWh of storage installed would receive 100% of the performance incentive.
- A resource that provides more than 50 and up to 100 pounds or more per kWh of storage installed would receive between 100% - 200% of the performance incentive based on actual pounds of CO₂ abatement per kWh.

Our illustrative structure assumes that the benchmark is a cumulative total of reductions over a year rather than an ongoing rate. In addition, we propose that the benchmarks associated with performance in CO₂ abatement are reviewed and amended periodically as the carbon complexion of the grid evolves.

Question 3.11 How should incentives be structured for thermal storage systems?

Incentives for thermal storage should mirror those for energy storage, with an obligation to report the correlation between thermal demand and electric demand. For example, thermal storage incorporated into a central chilled water or hot water thermal loop would qualify for the SIP to the extent that the release of energy directly resulted in a reduction of power being imported from the grid. There are commercially available technologies, such as stratified chilled water or ice storage processes, which are charged by increasing electricity consumption at the site, and, when the thermal energy is released to the chilled water loop, the chillers in real-time draw less power from the grid. These thermal storage technologies could play an increasingly important role in state storage goals as this proven technology need not require precious metals or materials nor do these systems place the same level of burden on regional or state interconnection processes.

Question 3.12 Under what circumstances, if any, should Distributed resources be able to opt in to Grid

Supply Performance-based Incentives?

As explained more fully above, we believe that any customer-based resource should be allowed to opt into the Grid Supply performance-based incentives if that storage system is able to meet the requirements of that category: adherence to the PJM MER signal, or another signal that may be adopted by the Board.

It is also important to note that some of these Distributed Resources can be relatively large (i.e., >5 MW). Therefore they should be more than capable of providing benefits to the grid while adhering to the requirements of the Grid Supply incentives. It would also have the added benefit of not swamping the Distributed tranche of incentives with just one or two projects.

Question 3.16 How can BPU structure NJ SIP Performance-based Incentives to both promote value stacking and prevent double compensation?

We agree strongly with Staff's recommendations to allow storage system owners to stack values from a number of separate programs and PJM wholesale markets, as availability and eligibility permit. Allowing revenue streams from multiple sources creates full incentives for achieving the goals of the SIP at the lowest possible cost to New Jersey customers, who will ultimately pay for the SIP incentives and reap the numerous economic and environmental benefits created by the deployment of additional storage. In addition, encouraging SIP participants to seek out their own suite of revenue streams places the risk of success precisely in the right place: in the hands of the sophisticated entities who have the experience and financial backing to invest in successful storage systems. New Jersey ratepayers should suffer a minimal portion of this risk.

We support comments by CPower² indicating that participation in PJM wholesale markets or any other revenue stream should, however, not be a requirement for SIP resources. In our experience, each customer faces a unique situation that balances numerous on-site needs, and the rules controlling the entire suite of PJM wholesale markets are constantly changing. We would be hard-pressed to predict today how those market rules will evolve during the term of the SIP. The incentive levels provided by SIP should reflect an expectation that storage systems will participate in PJM markets, as there are compounding benefits to New Jersey when PJM operators and system planners are well aware of the storage systems available to them, and how they will react to market signals. It is our position, however, that participation should not be mandatory.

Finally, we encourage staff to investigate closely any accusations of "double compensation". This term is often used quite coarsely as a sweeping denigration of any demand-side resource. Closer scrutiny reveals that there is no amount of compensation that is ever doubled. Instead, end-use customers and their chosen aggregators work in tandem to marry retail savings with state program and wholesale market revenues, respectively, to create a sufficient total package to warrant the capital expenditure necessary to install and operate these systems successfully. Wholesale prices that are intended to reflect the value of energy far exceed retail supply rates during key program hours, and still ignore numerous other co-benefits associated with load reductions. Benefits accrue to different parties, including non-participant ratepayers who have chosen not to – or are unable to - make such an investment.

² CPower comments of December 12, 2022. Page 2.

Question 5.7 How should energy storage systems be metered and measured? Can an inverter serve this function? What role should advanced metering infrastructure (“AMI”) play in the NJ SIP?

We support the comments by Generac³ on the use of inverters for metering purposes. In their Exhibit A they cite several examples of existing programs or wholesale markets in other jurisdictions that allow the use of inverters for the metering function provided they meet the specified accuracy requirements. We encourage staff to accept a similar position for the SIP.

Thank you again for the opportunity to participate and provide feedback.

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³ Generac comments of December 12, 2022. Pages 14-16.