December 12, 2022

State of New Jersey
Board of Public Utilities
https://www.nj.gov/bpu/
44 S. Clinton Ave.
Trenton, NJ 08625

**Subject: Icetec Comments on the New Jersey Energy Storage Incentive Program (SIP)**

To Whom it May Concern,

The New Jersey Board of Public Utilities (BPU) is requesting public comment on the September 30, 2022 Draft New Jersey Energy Storage Incentive Program (SIP) Regulations[1]:

Since 2001, Icetec Energy Services (Icetec) has been optimizing distributed generation assets, both from an economic as well as CO2 reduction perspective. Headquartered in Pennsylvania with an office in Cambridge and a data center in Philadelphia, Icetec has been providing services in multiple markets since 2001, and since 2009 in New England. Icetec'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. Utilizing a big data infrastructure, Icetec intelligently automates the plant dispatch, market bidding and settlement process, plant efficiency and greenhouse gas reporting.

Icetec is writing to express broad support for the diverse initiatives and aggressive goals undertaken, in particular, Icetec strongly supports (a) the goal of 2,000 MW statewide by 2030; (b) the recognition of the need for, and, the distinct benefits associated with both grid tied storage and distributed storage; (c) the requirement for owner/operators and program administrators as applicable to operate or utilize storage projects respectively as a Carbon reducing power generation technology and (d) the intentional coordination with PJM Markets and Regional Grid where possible to facilitate shared metrics of performance evaluation, planning status, and asset utilization. In addition, we offer the enclosed comments on proposed design, structure and execution based on our unique perspective serving sophisticated commercial and industrial loads in the Northeast.

[1] https://www.google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd=&ved=2ahUKEwixoJCQ-uj7AhWoF1kFHR9jAGMQFnoECBIQAQ&url=https%3A%2F%2Fnj.gov%2Fbpu%2Fpdf%2Fpublicnotice%2FNotice_StakeholderMeetings_NewJerseyEnergyStorageProgram.pdf&usg=AOvVaw0p7_K3enCguu6IqBdCmmad

**Comment #1 – Behind the Meter resources also provide grid services and can respond to carbon signals**
The straw proposal defines two modes of program participation:

(1) Grid Supply resources are located in front of the meter, presumably participating in PJM energy, capacity and ancillary services markets. These resources are charged with capable of responding to carbon sensitive dispatch in parallel with energy price dispatch and are provided an incentive in the Program to do so.
(2) Distributed resources are interconnected on the distribution system behind a customer meter. While these resources may provide certain resiliency, cost reduction or other site-specific benefits directly to a utility customer, the assumed Program activity is responding to events in a utility program targeting peak and high carbon periods.

Our perspective is that there is an active resource class that has characteristics of both Grid Supply and Distributed Resources. In particular, there are complex Commercial, Industrial or University sites that are interconnecting assets behind the meter but are providing energy and ancillary services to PJM, capable of responding directly to PJM dispatch or Frequency Regulation signals in addition to New Jersey Program Requirements. These sites tend to be larger (anywhere from 2 MW-20 MW), have the capability to track CO2 emissions and participate in PJM markets, and also tend to have more electrical distribution hardware necessary for resiliency benefits (i.e. islanding switchgears, critical load circuits) has significant implications for the program design.

SIP's proposed modes of participation (i.e., either Grid Supply or Distributed Generation) doesn't fit these larger, more complex behind the meter sites for a number of reasons, including:

1. The size of the distributed resource procurement quantity is too small as two or five projects in any year would quickly exhaust the block.
2. Even though these sites are behind the meter, they still provide grid services, including energy and ancillary services.
3. The Program should provide appropriate incentives for this class of resource to respond to marginal carbon signals consistent with grid supply resources.

We therefore recommend that behind the meter resources that provide grid services and can respond to carbon have the option of opting into either the Grid Supply or the Distributed storage resources, for both the Fixed and Performance-based incentives. In other words, if there were a 5 MW / 20 MWH project that would likely exhaust the Distributed block, it could opt into the Grid Supply block for the Fixed Incentive, and that resource could then opt into either the Grid Supply or Distributed Performance-based incentives.

**Comment #2 - Carbon Sensitive Distributed Asset Dispatch**
In the past five years, Icetec has shifted research and development in distributed resource dispatch towards optimizing for carbon. Specifically, 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 propriety algorithms to forecast periods of time of relatively high or low carbon intensity on the grid, then dispatching flexible assets to minimize CO2 emissions based on real-time carbon.

We strongly support the requirement for grid supply resources to provide a carbon reduction through energy storage operations. We also recommend that the Board consider extending these requirements to larger, more complex distributed assets. Based on our experience, distributed storage asset owners would provide directionally consistent reductions if properly incentivized. This is not theoretical; we have large distributed customers who own distributed assets that are responding to a real-time carbon signal today, and we are tracking the carbon accounting against site goals. This is very similar to what is being considered in the SIP Straw Proposal.

To address this issue and as a partial remedy to the limiting block size of distributed resources, as discussed above, we propose that distributed storage resources with the appropriate infrastructure be eligible to opt-in to the Grid Supply Program and also be subject to the carbon abatement requirements for the performance-based incentives.

For this class of resources, we believe it is appropriate to track availability metrics using a methodology like the Equivalent Forced Outage Rate (EFORd) utilized by PJM; however, this methodology must be adapted to reflect the absence of PJM infrastructure in determining this metric. A simplified version may be appropriate for distributed resources that reflects hourly state of charge, market status (energy, frequency response, reserves, none), availability, and, that differentiates planned, scheduled outages from unplanned or forced outages.

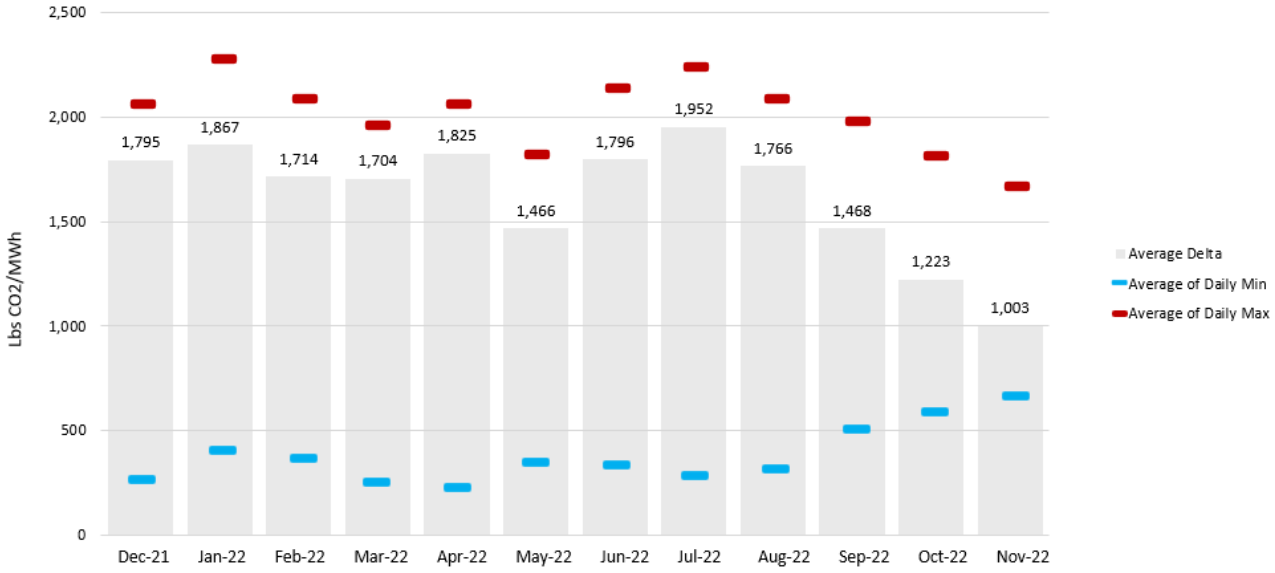
**Comment #3 - Symmetrical Grid Supply Performance Payments**

Further, we believe the performance payment realized through successful carbon mitigation should be, as much as possible, linear and proportional to performance, giving market-based incentives for the best carbon dispatch approaches. We oppose limiting carbon mitigation to scheduled or prescribed windows because grid marginal carbon rates are highly variant and evolving. We expect differential of marginal carbon in daily period to shift from summer to winter to shoulder season based on real-time and still developing fundamentals. We can easily envision a scenario where prescribed windows, if followed, leave opportunity for additional carbon mitigation unrealized if the schedule is not updated frequently and sporadically.

Finally, we note the straw proposal describes capturing performance “up to 200%”, with an initial benchmark of 10 pounds of CO2-e abated per kWh of storage capacity. Our assumption is this benchmark is a cumulative total of reductions over the year rather than an ongoing rate. If this is the case, our initial review of available marginal emissions for the state of New Jersey indicates that benchmark could be easily achieved in a month of operations. This assumes that the benchmark will be compared to marginal emissions. The Graph below shows the average daily min and daily max marginal Carbon rate by month using the PJM published New Jersey state aggregate marginal data for the last rolling 12-month period.

The red markers show the average daily maximum by month, the blue markers show the average daily minimum by month, and the grey bar shows the average monthly delta. Our review of the hourly data suggests an average daily difference between min and max for the state at roughly 1,600 lbs/MWh. In some months, this average daily difference is as high as 1,900 lbs/MWh.

**Graph 1: Daily Minimums and Maximums of NJ Hourly Marginal Carbon Rate, Averaged by Month**




We would propose setting this target as the minimum performance, upon which additional carbon abatement is recognized and additional incentive build upon, and expanding the basis of compensation for over performance. For example, with an annual target of 100 pounds of CO2-e abatement, and 10 pounds as the minimum:

- 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-e abatement..

Again, this assumes that the benchmark is a cumulative total of reductions over the year rather than an ongoing rate. In addition, we propose that the benchmarks associated with performance in CO2-e abatement are reviewed and amended periodically as the carbon complexion of the grid changes over time.

**Comment #4 – Procurement Block Sizes**

As stated above, Icetec believes it is crucial that larger procurement targets are established for both grid scale and distributed resources for this program to drive private investment into storage projects in the state and to build industry around this class of technology. In support of that goal, and in consideration of the more recent developments of the Inflation Reduction Act (IRA), Icetec could support lower Fixed Incentive – or the ability to opt-into Grid Supply, which has a lower Fixed Incentive – if it allowed for more eligible MW and projects. We prefer this approach administratively over rationing a prescribed number of MW across all eligible projects because the latter results in considerable uncertainty and potentially floods the queue with projects that may not receive enough incentive to move forward.

Similarly, we believe sophisticated C&I customers with some investments in energy systems and infrastructure are well poised to provide a substantial portion of the distributed resource target, and, that

these resources are unique in their potential to benefit multiple stakeholders: cost reduction and resiliency to end users, ancillary services to the grid, carbon mitigation to the local grid and potentially resiliency benefits to industry or members of the community. For these reasons, we would advocate a 2:3 ratio of Distributed Resource to Grid Supply (40%/60%) respectively instead of the 1:3.

Again, it is our interpretation that the Distributed storage category could fill up quickly based on larger sized behind the meter projects. Rather than making the blocks focused on a target year and closing the block each year after a block fills, another option is to create a rolling target. In this manner if a block fills, sites could automatically proceed to the next declining block and not be constrained by a particular year. This would be similar to how the SMART program in Massachusetts was designed. Similar to how it's currently proposed, if a capacity size spanned two blocks they could be compensated based on a weighted average incentive.

**Comment #5 – Thermal Energy Storage**

The straw proposal acknowledges several processes, including chemical or thermal, that may be used to store energy for later release "directly to an energy system" if applicable. Icetec seeks to clarify and otherwise advocate that thermal storage incorporated into a central chilled water or hot water thermal loop qualifies for the Storage Incentive Program to the extent that the release of energy directly resulted in less electrons 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. Icetec believes 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 the regional or state interconnection processes.

**Closing Comments**

In summary, we advocate for the following changes, in some form:

1. Update the program structure to account for the numerous complex projects that are behind the customer's retail meter and provide grid services. This could be accomplished by allowing Distributed storage projects to Opt-In to Grid Supply and be compensated for carbon reductions.

2. Increase the procurement block size ratio between Distributed Storage and Grid Supply, for example, to 2:3 rather than 1:3.

3. Update the block structure to a rolling basis rather than a target year, to allow continual participation in the program as block sizes fill.

4. Clarify eligibility of thermal storage.

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

John Webster
Icetec Energy Services
jwebster@icetecenergyservices.com
https://icetec.com/