ZENOBĒ

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September 11, 2023

Sherri L. Golden, Secretary of the Board
State of New Jersey Board of Public Utilities
44 South Clinton Ave., 1st Floor
PO Box 305
Trenton, NJ 08625

RE: Docket No. QO22080540; In the Matter of the New Jersey Energy Storage Incentive Program

Dear Secretary Golden,

Zenobē welcomes the opportunity to provide feedback on the New Jersey Energy Storage Incentive Program straw. As a specialist in Grid Supply energy storage, with a build-operate-own business model, Zenobē appreciates the breadth of challenges in developing, designing and optimizing energy storage.

Zenobē has a leading operational and pipeline portfolio of Grid Supply energy storage in the UK and is now expanding into North America, with a keen interest in New Jersey.

Company Background

Zenobē is an EV fleet and grid-scale battery storage specialist, headquartered in the UK. The company began operations in 2017 with three founders and has over the past six years increased its staff to >230 Full-time Employees with a wide range of leading skills including electrical engineering, software development, computer sciences and financing. It now operates in Europe and Australasia and is expanding into North America.

Zenobē has 430MW of battery storage in operation or under construction with another 1.2GW of projects in advanced development in the UK which equates to ~20% market share forecast by 2026. It has around 25% market share of the UK EV bus sector and c.1000 electric vehicles supported globally. The company is the largest owner and operator of EV buses in the UK, Australia and New Zealand.

Zenobē's services are supported by market leading financing capability. This has included securing financing of grid-scale batteries completed in February 2023 which raised c.$800 million of debt (denominated in GBP Sterling) for the construction of Zenobē's grid-scale battery storage assets in Scotland, UK.

In September 2023, Zenobē secured an investment of c.$750 million from KKR, a leading global investment firm and a further c.$340 million of equity was invested by existing shareholder Infracapital to fuel Zenobē's EV Fleet and Network Infrastructure businesses in the UK, Europe, North America, Australia and New Zealand.

Sincerely,

Amit Barnir
VP US, Network Infrastructure at Zenobē

Response to RFI questions

<u>1.0 Utility Ownership/Dispatch Control</u>

1.1 What are the advantages and disadvantages of utility control versus non-utility control of energy storage systems?

The advantage of Utility control is that is can be more effective and cost efficient for the Utility to aggregate Distributed Resources for participation in ancillary markets. However, this advantage is not comparable for Grid Supply, where there is a strong advantage of Non-utility control as it allows for a resource owner/operator to have control over revenue stacking (which involves risk-reward decisions) and maximizing the utilization of the resource across multiple markets. In other markets, we have seen Utility ownership and control of Grid Supply resources leading to single-use resources with low utilization, which does not take advantage of the full capability of Grid Supply resources.

1.2 For Distributed resource Performance-based Incentives, should responding to a utility signal be compulsory or voluntary?

No comment

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

For Grid Supply, making Performance-based Incentives compulsory to respond to could limit the attractiveness of the program. Owners of Grid Supply resources will be concerned of potential discrepancies between the value of responding to Performance-based Incentives, and the value achievable from following market prices that would involve a different storage dispatch profile. Therefore, Performance-based Incentives for Grid Supply should be voluntary to maximise the option value for storage assets and the attractiveness of the program. If voluntary is chosen, then the extent to which Grid Supply resources will follow Performance-based Incentives will be determined by the attractiveness of these incentives.

2.0 Installed Storage Targets, Deployment Timelines and Capacity Blocks

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?

Grid Supply resources can be built significantly quicker and with substantial economies of scale compared to Distributed resources. Therefore, we support the heavy weighting of MWs for Grid-supply vs Distributed resources. However, the straw proposes relatively small capacity blocks, particularly in early years, which will likely lead to many <50MW (4hr) Grid Supply projects. This approach will lead to higher costs as <50MW (4hr) projects will not be able to achieve significant project economies of scale. Therefore, a structure that allows for larger, but fewer, projects should be considered.

2.2 Should the proposed first-come, first-served application process be changed to a “First-Ready, First-Served” process?

Yes. First-ready, first-served should be the adopted principle in order to stop unnecessary delays from companies that are not able to deliver on their projects.

2.3 How should the program be designed to avoid or minimize interconnection delays? Should the interconnection process be modified for accommodating energy storage and if so, how?

The program should allow for participation from Grid Supply resource at either state-level or PJM interconnections. This hedges the risk of interconnection queue delays that may arise at either level of the network.

3.0 Incentive Structure

3.1 Incentives are meant to cover a portion of the fully installed cost of an energy storage system. What is the fully installed unit cost (in $/kWh) for energy storage systems at present, and estimated to be each year through 2030? How do New Jersey-specific costs vary from these estimates? Please provide links to your references.

Given the recent volatility in battery storage pricing, it is challenging for a developer to provide a forecast of future capex pricing. In addition, land and connection costs contribute to total fully installed unit costs of a projects and vary significantly across different areas on the network.

3.2 What are the best public data sets for energy storage costs?

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See Capex and Opex assumptions in the latest Lazard LCOS report https://www.lazard.com/media/42dnsswd/lazards-levelized-cost-of-storage-version-70-vf.pdf

3.3 Should Fixed Incentives be assignable to an aggregator?[2] Why or why not?

Aggregators should only be allowed to be assigned to Distributed resources. The contract should be transferable given the small kW sizes and economies of scale available from aggregation.

3.4 Should a Distributed energy storage resource that can provide grid services have the ability to opt in to either the Grid Supply or the Distributed storage program, for both the Fixed and Performance-based incentives?

No, and distributed assets should stay exclusively in the Distributed program. This will prevent potential gaming and allow clear signals to projects seeking allocations in both programs.

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?

We do not believe the PJM MER, in its current form, should be the basis for Performance-based Incentives since it does not accurately reflect real-time emissions but rather an inference of them through annual-average emission rates for different generation resources. Therefore, the PJM MER is likely to underestimate the carbon emissions from fast-ramping fossil generation. As PJM has noted, "PJM does not support the use of this information by any party to demonstrate compliance with regulatory mandates in any jurisdiction", we therefore do not believe this metric should be considered robust enough for directly incentivizing Grid Supply operational dispatch. If the principle of marginal emissions abatement is to be pursued, then a more sophisticated metric that accurately reflects real-time emissions should be created and utilised.

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

A Peak Demand reduction program faces the risk of underutilization of energy storage assets. Battery storge is most useful when it can be optimised across a daily profile (whether that is electricity price or CO2 rate). This means that it can respond to multiple system needs. A peak demand reduction program also risks incentivising only one type of behaviour (peak reduction), as opposed to following price or CO2 signals.

We support the aim of designing Performance-based Incentives to maximize fossil fuel displacement and emissions savings. To achieve this, the methodology needs to take advantage of the fast-response capability of energy storage, to avoid fast-ramping fossil generation, and maximise the utilization of Grid Supply resources, in order to maximize cost savings and the emissions payback on embedded emission. As per our previous answer to 3.5, the PJM MER is likely to underestimate the carbon emissions from fast-ramping fossil generation. Higher LMP wholesale prices, when energy storage will be incentivized to export, will be very tightly correlated with periods of fast-ramping fossil generation. Therefore, it should be further analysed whether LMP prices, in combination with incentivizing utilization, are a suitable basis for Performance-based Incentives.

3.7 If a Peak Demand Reduction program were to be developed, how should it be structured? What other states have similar programs that New Jersey should use as a benchmark?

The Massachusetts Clean Peak Energy Standard is a useful case study to consider. This program has failed to foster confidence and rapid development of Grid Supply resources to reduce peak demand. This is mainly due to the restrictive charging windows that discouraged stacking with other markets, specifically ISO-NE ancillary markets.

3.8 What degree/percentage of Peak Demand should be targeted for reduction? What effect would such a program have on GHG emissions?

No comment

3.9 The Straw proposed that each EDC establish its own level of Performance-based Incentives. Should EDCs establish EDC-specific performance incentives, or should the incentive be standardized and common to all EDCs?

A Standardized Performance-based Incentive structure across EDCs is important for multiple reasons. Firstly, simplicity and reducing administrative burden. Secondly, it reduces the risk for poor or inconsistent incentive design. Advantages of EDC's establishing their own Performance-based Incentives, for example tailoring incentives for different locational dynamics, should be overcome by better MER design that properly reflects real-time carbon abatement value.

3.10 Should energy storage owners be permitted to opt in, or be subject to utility control, in order to be eligible for Distributed performance incentives?

No, that is the role of aggregators who can provide the most value given the ability to participate in wholesale markets and therefore stack additional services that the utilities would not be able to otherwise provide.

3.11 How should incentives be structured for thermal storage systems?

Thermal storage for Grid-supply should compete with other storage technologies and should not receive a carve-out in this program.

3.12 Under what circumstances, if any, should Distributed resources be able to opt in to Grid Supply Performance-based Incentives?

No, and distributed assets should stay exclusively in the Distributed program for the same reasons provided in 3.4.

3.13 Large projects and long duration projects have the potential to qualify for significant incentives. Should incentive caps be applied in this program? If so, how (for example, by customer, project, developer, duration or meter), or other method?

Fixed incentive should be capped per kWh. For example, if a 100hr storage technology was provided a fixed incentive based on kWh, then this asset would be significantly less useful in reducing CO2 emissions over a daily profile then 2hr storage asset. This type of long-duration technology should be included in a separate program that is better designed for long-duration operability. Fixed incentives should not be capped per kW, as that will only disincentivize larger projects that have the highest potential for economies of scale. Performance-based Incentives should not be capped as this would be self-defeating on achieving the aim of the program to reduce emissions.

3.14 Should a cap be set such that the sum of federal and state incentives does not exceed a certain amount? If so, please provide details.

No. There are so many moving pieces in storage projects (capex, connection costs, revenue forecasts) that introducing a cap based on the sum of federal (ITC) and state incentives would be very hard to set at a suitable level. In addition, a cap would risk adding unnecessary uncertainty to project returns. However, a balance does need to be struck such that the NJ SIP fosters competition and does not overcompensate energy storage projects, in order to help reduce ratepayer cost.

3.15 What provisions should be included in the program for monitoring, reporting and evaluation in order for deployed projects to maintain eligibility for incentives that are paid over time?

If participating in PJM wholesale market, the same metered settlements provided to PJM should be used for calculating Performance-based Incentives and program compliance. This will ensure consistency among all settlements. In the absence of that, inverter readings should suffice as reporting accuracy is within acceptable limits for settlement-grade purposes and currently being used in other states' programs. What is critical is not to create a brand new reporting structure, but rather to use existing data that all ESS should be relatively expected to have available.

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

Make the performance-based Incentive voluntary in order to allow an energy storage resources to maximise the revenue stack

<u>4.0 Overburdened Community Incentives</u>

4.1 Staff is considering establishing both an adder and a capacity block for OBCs. What size should the capacity blocks be over time as a percentage of the overall Distributed segment? How much should the adder be in 1) $/kWh or 2) as a percentage of the base incentive?

Incentives for OBCs should be in addition to any Grid Supply & Distributed incentives currently planned. Given the outsized benefit that energy storage placement in OBCs can provide, the additional program cost will be greatly outweighed by the environmental benefit to OBCs.

4.2 How can BPU assure that the incentive structure chosen will in fact provide benefits to OBCs?

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Simply siting energy storage in an OBC will displace and retire existing fossil-fuel generation that has traditionally been located in those areas. An additional incentive to site energy storage in OBCs should not be overcomplicated but instead should be direct enough that siting in OBCs represents an easy decision.

5.0 Other Questions

5.1 What actions, if any, should BPU take to improve access to the energy storage value stack as part of implementing the NJ SIP?

See answer to 3.16

5.2 How will Federal Energy Regulatory Commission ("FERC") Order 2222 affect New Jersey's energy storage market? What changes should the Board make to the NJ SIP to take advantage of PJM's pending implementation of FERC Order 2222?

If Performance-based Incentives in the NJ SIP are compulsory then this could be in contradiction with FERC 2222. This is because it could potentially limit the ability of energy storage to choose to participate in wider markets. Even the smallest chance of this occurring could have large consequences and open the program up to continued legal challenges that could be both costly and extremely time consuming.

5.3 Are modifications to the NJ SIP needed to maximize the ability of energy storage developers to access federal investment tax credits or other federal incentives?

In the NJ Straw Proposal Overview, this statement (slide 31) is also unclear if this statement is saying that grid supply will be discouraged in OBC or if it means that there will not be additional incentives for grid supply to be located in OBC: "This Straw does NOT envision encouragement of Grid Supply storage projects in Overburdened Communities, nor does it envision incentives to Transmission connected resources". We firmly believe both OBC and Transmission connected resources should play a considerable role in this program.

5.4 What provisions, if any, should be established for interconnection of zero-export energy storage facilities (that is, energy storage facilities that do not inject power back into the grid and only supply power to on-site load)?

This type of asset should not be included in the program unless there is a mechanism that incentivises the on-site usage at times of high CO_2 rate. If this mechanism is too complicated or cannot be monitored then this type of asset should be excluded.

5.5 What specific best practices regarding rates and tariffs from other states should be incorporated?

The limitation of demand charges should be heavily considered as one-way (or charging only) measurements will impose significant costs on ESS and in many cases negate all other revenues and incentives. This has be commonly seen in other states, specifically NY, CT, MA and ME that has all started proceedings to address demand charges being imposed on ESS. We strongly urge NJ to address this issue at the onset as it can lead to significant unintended roadblocks that can take years to resolve retroactively.

5.6 Should energy storage be utilized and compensated in the Triennium 2 Energy Efficiency/Demand Response proceeding as an allowable Demand Response resource? If so, what changes, if any, should be made to the NJ SIP design to avoid potentially providing double compensation for the same service?

No comment

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?

Please see response to 3.15. We believe metering should be consistent with submissions being made to other programs/markets but ultimately inverter measurement accuracy has reached settlement-grade standards and should be used, especially for ESS that is only participating in the SIP and no other programs.

5.8 Please provide any other comments on the NJ SIP

In the NJ Straw Proposal Overview, this statement (slide 31) is also unclear if this statement is saying that grid supply will be discouraged in OBC or if it means that there will not be additional incentives for grid supply to be located in OBC: "This Straw does NOT envision encouragement of Grid Supply storage projects in Overburdened Communities, nor does it envision incentives to Transmission connected resources". We firmly believe both OBC and Transmission connected resources should play a considerable role in this program.

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