



PowerFlex  
805 3rd Avenue, 20th Floor  
New York, New York 10022  
[www.powerflex.com](http://www.powerflex.com)

December 12, 2022

Carmen D. Diaz  
Acting Secretary of the Board  
44 South Clinton Ave., 1st Floor  
PO Box 350  
Trenton, NJ 08625-0350

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

Dear Ms. Diaz,

Thank you and the Board of Public Utilities (“Board”) for the opportunity to participate in workshops and comment on the proposed New Jersey Energy Storage Incentive Program (“NJ SIP”). As a leading installer and operator of solar resources in New Jersey, and a national provider of battery energy storage systems (“BESS”), PowerFlex is pleased to see the Board create a new storage market in New Jersey. PowerFlex has participated in all the energy storage incentive programs referenced by the Board in the Straw Proposal, and our comments are based on our experience with these programs and expertise with the incentivized technologies. We understand that the Board strives to balance the interests of ratepayers and the renewable energy industry. While this is a highly complex objective, we are confident that the further expansion of renewable energy and storage in the state will ensure affordable, safe, and clean energy for years to come.

Accordingly, PowerFlex submits the following recommendations on the proposed SIP:

- Increase the capacity allocated to behind-the-meter storage to at least 50% of the 1,000 MW goal
- Eliminate intra-year declining blocks and set a fixed incentive amount per year
- Pay out Fixed Incentives within five years and accelerate payments for projects that cycle more frequently to achieve program goals

- Increase fixed incentive value for behind-the-meter storage systems to \$90/kWh/year for systems < 1 MW and \$50/kWh/year for systems > 1 MW with the previously mentioned payment structure
- Create Time-of-Use rates that encourage batteries to operate in ways that accomplish program goals and allow storage systems to value stack
- Cap behind-the-meter battery incentives at the customer's annual peak load
- Provide at least one six-month extension on top of the 18-month timeline for all projects, and allow two six-month extensions for projects facing extenuating circumstances
- Clarify that behind-the-meter storage paired with solar can participate in the SIP program for storage and the ADI program for solar
- Clarify that the performance-based incentive for distributed storage resources is based on a battery's *discharge* during a dispatch event, not whether it injects energy into the distribution system

PowerFlex provides detailed comments on each of the recommendations below.

## **Installed Storage Targets and Deployment Timeline**

As currently proposed, the Board plans to allocate seven times more capacity to grid supply storage than distributed storage in the NJ SIP from 2023–2030. In the first year alone, the Board proposed capacity blocks sized 3:1 in favor of grid supply storage over distributed.

Given that 1,000 MW of the state's 2,000 MW target will be procured as grid-supply resources through the Competitive Solar Incentive ("CSI") program, it is not clear to PowerFlex why SIP is also primarily a grid-scale program. Distributed storage is currently ineligible for any other incentive program, so the proposed capacity allocations will place behind-the-meter distributed storage at a distinct disadvantage compared to grid-scale storage.

Distributed battery storage can provide many unique benefits to the New Jersey grid and ratepayers, including improved grid and customer resiliency, customer management of load and utility charges, on-site renewable integration, and reduced local emissions, which is especially beneficial for NJ ratepayers in overburdened or environmental justice communities. Distributed storage helps prevent curtailment of renewable resources and

reduces or eliminates export to the grid at sites and/or on feeders where grid export is undesired or detrimental to the grid.

Additionally, distributed energy storage plays a key role in managing additional load introduced to the grid through mass electric vehicle (“EV”) adoption. EV charging infrastructure is primarily installed behind the customer meter and can result in both customer- and utility-side infrastructure upgrades to install, costing both customers and ratepayers. Conversely, load management strategies, including onsite energy storage dispatch, Adaptive Load Management for EV charging infrastructure, and others can reduce or eliminate the need for customer- and utility-side infrastructure upgrades. In California, for example, Pacific Gas & Electric has leveraged customer-sited load management strategies with EV chargers resulting in customers saving between \$30,000 - \$200,000 per site in avoided infrastructure upgrades.<sup>1</sup> Thus, behind-the-meter energy storage systems can provide significant customer and ratepayer savings and should therefore receive a larger portion of the proposed SIP incentives.

In summary, PowerFlex strongly encourages the Board to increase the NJ SIP allocations for distributed storage so that at least 50% of the 1,000 MW procurement target is met with distributed storage.

### **Fixed Incentive – Setting the Fixed Incentive and Sizing the Declining Blocks**

PowerFlex supports the Board’s plan to provide a fixed incentive for storage through a declining block program to cover a portion of installed capital costs. However, PowerFlex believes the proposed block structure is confusing and will inherently create market uncertainty.

The Board currently proposes dividing each energy year into three blocks of storage capacity, with the fixed incentive decreasing by \$2/kWh between each block. This structure creates three different incentive levels within each year, which encourages a high-risk development environment for would-be asset owners who are concerned by incentive variability within a year. Additionally, the annual program capacity is so low that one or two projects could easily fill an entire block of capacity, causing an immediate step down in value. A structure that declines multiple times within the same


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<sup>1</sup> Pacific Gas and Electric Vehicle Charge 2 Prepared Testimony, October 26, 2021, pages 2-9 – 2-10. Accessed December 8, 2022 at <https://docs.cpuc.ca.gov/PublishedDocs/SupDoc/A2110010/4240/417398449.pdf> . Note these numbers refer to sites that use “automated load management” (ALM) to dynamically manage EV charging, but the same results can be achieved by dynamically operating an onsite energy storage system.


calendar year may result in a “gold rush” at the beginning of each program year, with program attrition more likely for any projects that are pushed into later blocks.

Maintaining a stable incentive rate throughout at least one calendar year will provide storage asset owners the same market certainty and transparency that is currently provided in the solar market through the ADI program. In the Connecticut Energy Storage Program, incentive values are established and then locked in for two years. In the second year, the regulators review the values and publish the rates for the following two years. A scheduled cadence like this would reduce market uncertainty and will improve project uptake.

In summary, PowerFlex recommends that the Board does not divide the energy year into three declining incentive blocks but instead uses each annual allocation as an entire block. This structure would eliminate intra-year declines and allow the incentive to decline on an annual schedule. PowerFlex encourages the Board to consider the Connecticut storage program design which locks in incentive values for 2022–2024 before declining. The details of this are reproduced below for the Board’s consideration.

Commercial and Industrial End-Use Customer Upfront Declining Incentive Block Structure (2022-2024)			
	Effective Upfront Incentive (\$/kWh)		
	Small Commercial	Medium Commercial	Large Commercial
 Peak Demand	<200 kW	200 kW – 500 kW	>500 kW
Incentive for first 50 MW of Commercial Storage Projects	\$200	\$175	\$100

Commercial and Industrial End-Use Customer Annual Performance-Based Incentive (2022-2024)				
	Years 1-5		Years 6-10	
	Summer	Winter	Summer	Winter
 Season Incentive (\$/kW)	\$200	\$25	\$115	\$15

### Fixed Incentive – Payment Timing

A fixed incentive that adequately covers 30% of the total fully installed cost of the project should be paid upfront or over a period of three-to-five years, instead of over 10–15 years.

The proposed 10 –15-year duration of the Fixed Incentive reflects the technology’s useful life. However, the capital costs of battery storage are not realized over the asset’s useful life. Under the Investment Reduction Act passed in 2022, all storage systems claiming the Investment Tax Credit are eligible to be depreciated over five years, under Modified Accelerated Cost Recovery System (“MACRS”) rules. PowerFlex therefore

recommends that the **maximum** duration of the Fixed Incentive payout should be no more than five years. This duration would better reflect how energy storage system costs are realized by an asset owner.

In contrast, 10-15 years is an appropriate duration for a storage performance-based incentive because it encourages efficient operations for much of an asset's useful life. However, the Fixed Incentive was implemented to recoup *capital costs*, which are incurred in a project's initial years. As a result, PowerFlex recommends the Fixed and Performance-Based incentives have different term lengths.

PowerFlex further recommends that the ultimate timing of the Fixed Incentive payout be tied to battery cycles. This structure would create a *maximum duration* (five years) with flexibility for asset owners to front-load their incentive payments by actively charging and discharging the storage asset. In California, the Self Generation Incentive Program (SGIP) incentive is distributed based on how frequently an individual asset cycles in the early project years. High-cycling assets (about 1/day) can realize full SGIP incentive payout in about three years, while low-cycling assets can take the full five years.

One key consideration in implementing such a cycling requirement is that the storage asset may cycle unproductively in an attempt to game the payback timeline. In California, regulators have implemented a GHG signal and time-of-use retail electric rates to ensure SGIP storage cycling achieves program goals of GHG reductions and peak load reduction.

In summary, PowerFlex recommends the Fixed Incentive is changed by 1) reducing payout duration from 10-15 years to <5 years; and 2) changing payout timeline to reflect an asset's individual cycling profile in the early years of the project.

## **Fixed Incentive – Battery Pricing**

To determine the required value of the Fixed Incentive, the Board utilizes an NREL report that projects that utility-scale lithium-ion systems will have a total capital cost of \$200–\$300/kWh by 2025 and \$150–\$250/kWh by 2030. The price metric used by the NREL is an aggregation of several publications, and the scope of the presented costs is not made explicit. PowerFlex assumes this metric represents the total cost including equipment costs, installation, and BOP costs, in addition to operational expenses. The NREL report focuses on *utility scale* storage and does not have the same analysis available for distributed storage systems. There are two primary differences between these market segments that are worth mentioning:

1. Distributed storage developers rarely have access to Tier-1 grid-scale storage suppliers (i.e. BESS suppliers Fluence, Powin, Wartsila etc.), which limits the ability of distributed storage to realize the economies of scale found in grid-scale applications. Asset developers must work with smaller suppliers to source equipment at prices that can be significantly less competitive than the industry leaders. As a result, observed average costs for distributed storage *equipment only* are 20%–50% more expensive than the pricing reported by the NREL.
2. Development and installation costs have a much higher weighted impact on distributed storage projects than on large grid-scale installations. While installation and BOP might represent 10%–20 % of grid-scale storage project costs, those pieces can comprise up to 50% of costs for a distributed project.

PowerFlex currently experiences significantly higher capital costs for distributed storage systems in neighboring states. PowerFlex sees material price differences between the following storage asset size categories: 250 kW–500 kW; 500 kW–1,000 kW; 1,000–2,000 kW; and >2000 kW. For illustration, here is a sampling of 2022–2023 equipment-only quoted prices across two size categories:

- 250–1,000 kW: \$450–\$650/kWh (equipment only)
- 1,000–5,000 kW: \$250–\$350/kWh (equipment only)

50% can be added to the numbers above to account for installation and BOP costs.

In summary, PowerFlex encourages the Board to consider providing different Fixed Incentive values for storage systems based on size. We believe the proposed \$40/kWh/year will not adequately cover 30% of cost for distributed assets. Specifically, PowerFlex recommends the SIP pay \$90/kWh/yr for systems sized less than 1 MW and \$50/kWh/yr for systems sized greater than 1 MW paid out over five years.

### **Fixed Incentive – Performance Metrics**

PowerFlex recommends that distributed storage be exempt from a performance requirement for the Fixed Incentive, as the storage assets are already incentivized to remain operational to participate in the performance-based incentive, and to discharge behind the meter.

To be clear, PowerFlex still recommends the Fixed Incentive is paid out based on annual cycles. In this context, we understand cycling as a utilization metric, not a performance

metric. PowerFlex believes the installed assets will be sufficiently incentivized to perform through participation in other programs.

## **Revenue Stacking Outside of SIP – Time of Use Rates**

Energy storage systems need clear, strong price signals to determine when and how to operate. Storage systems can respond to multiple revenue streams to “stack” value and provide multiple services to the electrical system, sometimes more than one service at once.

However, there currently are few clear economic signals in New Jersey that communicate when and how distributed storage systems should operate. If distributed energy storage in New Jersey can realize revenue *only* through the performance-based incentive, an emergent concern for the asset owner will be what to do when there is no active call window. Front-of-the-meter assets are likely to participate in wholesale energy, capacity, and ancillary services markets, but behind-the-meter storage systems lack these types of price signals and market opportunities and will need to have clear price signals to operate in ways that achieve program goals.

Time-of-use (TOU) electricity rates are a well-developed market mechanism that can help the utilities manage ratepayers’ usage patterns and recover additional revenue for particularly “expensive” demand behavior. In California, regulators implemented rate design oriented specifically around energy storage and renewable assets.<sup>2</sup> Well-designed TOU electric rates like these offer passive incentives for asset owners, and enable distributed resources to improve grid operations incrementally.

Also, TOU rate structures can provide value for a much longer term than a performance or capital incentive without the need for additional revenue. Utilizing rate structures to incentivize certain usage behaviors allows the plan to be revenue-neutral to the status quo (whereas other incentives may need explicit “pay-fors”).

In summary, PowerFlex recommends the Board not restrict a storage asset’s eligibility in multiple markets and programs and should instead encourage revenue stacking whenever feasible. To this end, PowerFlex recommends the implementation of robust TOU rate structures for retail customers, in the spirit of “Option R” and “Option S” in California.

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<sup>2</sup> As an example, Option R in San Diego Gas and Electric territory and Option S in Pacific Gas and Electric territory.

## Storage Size Recommendations

PowerFlex recommends that the SIP cap incentives for behind-the-meter batteries at the customer's peak annual demand to foster more competition for annual capacity. Customers should have the option to apply for more capacity if the facility anticipates significant load growth, but customers must show how this load growth will be realized (i.e. EV charging stations are being installed). Capping the incentive at the customer's annual load will prevent installers from needlessly oversizing systems just to recoup a more incentive value.

## Commercial Operation Date Requirements

PowerFlex agrees with the Board that, on average, 18 months is a sufficient window to reach commercial operation from incentive award, but we believe some form of extension should be allowed. Over the past two years the storage industry has experienced significantly longer lead times due to the COVID-19 pandemic, supply chain difficulties, labor shortages, or other problems. Additionally, some projects may have unique challenges that require additional time to work through. PowerFlex recommends the Board allow at least one six-month extension to align with the ADI program and possible market disruptions, and two six-month extensions for sites that face extenuating circumstances, similar to the SGIP program. These projects should, of course, be required to provide documentation on their circumstances to receive the second extension.

## Clarifications

During the stakeholder sessions, members of the Board clarified the following:

- Behind-the-meter storage paired with solar can participate in the SIP program for storage and the ADI program for solar
- The performance-based incentive for distributed storage resources is based on a battery's *discharge* during a dispatch event, not whether it injects energy into the distribution system

PowerFlex requests that the Board incorporate these clarifications in writing into the next proposal.





PowerFlex appreciates the opportunity to provide comments on the SIP and looks forward to future engagement with the Board in developing this program.

Respectfully Submitted,

/s/ Jon Hart

Jon Hart

jonathan.hart@powerflex.com

Public Policy Manager

619-517-3723