



September 12, 2023

New Jersey Board of Public Utilities 44 South Clinton Avenue, 7th Floor P.O. Box 350 Trenton, NJ 08625-0350 Board.secretary@bpu.nj.gov Attn: Secretary Sherri L. Golden

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

Dear Secretary Golden,

Pursuant to the Board's Request for Information Notice of August 8, 2023, in the above-referenced docket, Energy Management, Inc. ("EMI") and Lotus Infrastructure Global Operations, LLC ("Lotus," formerly Starwood Energy Group Global, Inc.) (collectively, the "Companies") hereby jointly submit responsive comments regarding the Straw Proposal ("Straw Proposal" or "Straw") for the New Jersey Storage Incentive Program ("SIP"). Consistent with our prior Comments of December 12, 2022 (the "Prior Comments"), the responses set forth below urge that the Straw Proposal should be modified to (i) more rapidly implement meaningful volumes of storage to address the urgency of climate change, (ii) utilize economies of scale to allow New Jersey to meet its storage goals at the lowest cost, (iii) encourage the use of deactivated generation sites with existing transmission facilities and Capacity Interconnection Rights ("CIRs") that minimize cost, community impacts and permitting delays, and (iv) implement the SIP without utility ownership or operational control in a way that allows all market participants to operate efficiently and compete on a level playing field.

The Companies recently worked together to structure the transactions that led to the permanent shutdown of the last two coal-fired generation plants in New Jersey, the 219 MW Logan Generating Plant and the 240 MW Chambers Cogeneration Project. The Companies are now redeveloping those deactivated fossil sites, with the benefit of retained CIRs, to locate the first major grid-scale storage projects (876 MWh and 960 MWh, respectively) in the region. As set forth below, these redevelopment projects present a unique and immediate opportunity for New Jersey to make substantial steps towards its storage and climate goals and to become a leader in the developing storage industry.





Item 1: <u>Utility Ownership/Utility Dispatch Control</u>

§ 1.0. <u>Utility-owned storage should not participate in the SIP</u>. The Companies concur with the Straw's objective to "achieve the 2030 energy storage goal of 2,000 MW by 2030, as set forth in the [Clean Energy Act] in a manner that is consistent with New Jersey's competitive electricity markets" and "promote deployment of private capital by establishing a stable market structure that attracts low-cost capital," as well as Staff's recommendation that the SIP be driven by competition and at-risk private capital:

This Straw recommends that the Board adopt a storage business model that encourages <u>private ownership and operation</u> of energy storage devices, consistent with New Jersey's restructured competitive market structure. While ratepayers will support investment in storage resources, the commercial and operational risks will largely be borne by private investors.

Straw at 10-11. In a properly functioning competitive market, all participants operate on a level playing field, with comparable investor risk exposure and access to market information. In that regard franchised electric distribution companies have structural advantages (including insulation from shareholder risk if storage is to be included in rate base) and should not participate in the competitive SIP procurements.

The New Jersey Legislature addressed these concerns in deregulating the state's energy markets by (i) restricting utility pre-enactment involvement in competitive markets, noting concerns as to "strict separation and allocation of the utility's revenues, costs, assets, risks and functions between the electric public utility and its related competitive business segment" and (ii) disallowing post-enactment entry by electric utilities or their related business segments into additional competitive markets:

Any other provision of this act to the contrary notwithstanding, commencing on the effective date of this act, an electric public utility or a related competitive business segment of that electric public utility shall not offer any competitive service except those approved or pending approval as of July 1, 1998 pursuant to subsections a. and f. of this section.

<u>Electric Discount and Energy Competition Act</u>, N.J.S. 48:3-55(i), (h). The same concerns over cross-subsidies and competitive market disruption that preclude franchised utilities from the deregulated and competitive generation market apply with equal force to the newly formed competitive storage markets, which will plainly constitute a prohibited "competitive service." ¹

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The potential for utility ownership of storage as a "transmission only" asset, however, does not present the same environmental and economic efficiency benefits of active market-based participation in the competitive markets, including positive effects on system dispatch, and raises different issues outside the scope of the SIP that are properly being addressed elsewhere in other proceedings.





§ 1.1. <u>Utility ratepavers should not be put at risk for storage projects</u>. A fundamental policy question associated with storage ownership is who should bear the commercial and operational risks. The Companies believe that the Straw properly places that risk upon private investors, and not upon utility ratepayers. The private investors in storage development are in the business of evaluating and assuming the relatively high level of project risk in this early-stage market sector, including the risk of cost overruns, delays, and supply chain disruptions. Utility ratepayers, however, are not well positioned to be exposed to those risks, and the fundamental rationale for New Jersey's restructuring of the electricity market was to insulate ratepayers from project risk and shift that risk to private investors. And recent experience of utility projects resulting in abandonment and massive cost overruns demonstrates that developing complex and early-stage projects in competitive markets is, as an industry analyst recently stated, not within "the core competency" of today's utilities.²

§§ 1.1, 1.2, 1.3. <u>Utilities should not control dispatch</u>. Where, as the Straw notes, "the commercial and operational risks will largely be borne by private investors," it is critical that those same investors have the corresponding ability to control operation in order to manage those risks and optimize revenues in the competitive marketplace. In today's PJM markets, reliable and efficient system dispatch is determined by the market clearing process of the Independent System Operator (and not the utility) based upon the bid parameters submitted by each asset owner. Private storage owners develop strategies for optimized participation in the multiple PJM markets (energy, reserves and ancillary services), each in accordance with its own risk tolerance. It is essential that investors and lenders have confidence that projects will be allowed to operate in accordance with those business strategies within the optimized dispatch of the PJM system. Further, as discussed at Section 3 below, the "Performance-based incentives" of the Straw would be effective only to the extent that project owners retain control and discretion to cause the incentivized performance.

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See, e.g., "After Delays, Cost of Maine hydropower line soars, and Mass. Will likely pay for it" (New England Clean Energy Connect corridor has soared 50% from \$1 billion to over \$1.5 billion and is seeking to pass these costs onto ratepayers) <a href="https://www.bostonglobe.com/2023/07/27/business/after-delays-cost-maine-hydropower-line-soars-mass-will-likely-pay-it/?event=event12;" PSEG to Sell Its 25% Equity Stake in Ocean Wind I to Ørsted" ("[A]n energy analyst for Glenrock Associates, said it is not surprising PSEG opted to sell its minority stake in the project. "This isn't exactly a core competency of the company," he said, referring to an industry relatively new in the United States.") https://njbmagazine.com/njb-news-now/pseg-to-sell-its-25-equity-stake-in-ocean-wind-1-to-orsted/ (2023); "PPAs rejected for Avangrid, Orsted-Eversource offshore wind projects" https://www.utilitydive.com/news/avangrid-orsted-eversource-ppa-offshore-wind-development/688470/; "Georgia nuclear rebirth arrives 7 years late, \$17 B over cost" https://apnews.com/article/georgia-nuclear-power-plant-vogtle-rates-costs-75c7a413cda3935dd551be9115e88a64; "Consumer advocate challenges El Paso Electric as utility's newest power plant comes in \$37 million over budget" https://elpasomatters.org/2023/07/11/el-paso-electric-plant-to-cost-more-than-expected-increase-utility-bills/; "LE New Power Plant is Late and Over Budget" (utility project behind schedule and nearly \$30 million over the original \$145 million budget) <a href="https://www.lkldnow.com/les-new-power-plant-is-late-





Item 2: Installed Storage Targets, Deployment Timelines and Capacity Blocks

§§ 2.1, 2.2. There should be larger and earlier annual procurement blocks. Rather than starting with small targets that increase over time, the Straw Proposal should be revised to expedite and increase the scale of annual procurements in order to realize the urgently needed benefits of storage-to-grid energy. In proposing the annual SIP procurement amounts set forth in the Straw, Staff recognized the trade-off that scaling the program slowly by limiting volumes in early program years (*i.e.*, with only 30 MW of Grid Supply Procurement in year one) might lower long-term costs, but would delay the system and environmental benefits of accelerated storage implementation:

Staff weighs three main factors: (i) expected declines in the installed cost of storage over time (recognizing the disruption to this trend caused by recent supply chain issues); (ii) the <u>environmental</u>, <u>public health</u>, <u>and grid benefits of quickly scaling storage</u>; and (iii) the need to gain operational experience in New Jersey's storage program. (Straw at 12.)

The Straw Proposal would thus set the procurement timeline and blocks in a way that delays the benefits of storage in the hope that there might be lower costs in future years. In doing so, the Straw relied heavily upon the U.S. Department of Energy's National Renewable Energy Lab ("NREL") 2021 forecast of future battery costs (the "NREL Report"). However, as discussed in the Prior Comments at pages 3-6, updated market developments and analyses make the assumption of future price decreases highly questionable such that, while the public benefits of acting sooner are real and certain, the benefits of delayed implementation are speculative and dependent upon price declines that may never occur.

Updated sources similarly undermine the assumption that storage prices will decline over the term of the SIP program. The Financial Review on May 16, 2023 reported the following conclusions that, notwithstanding short-term volatility, global lithium demand will place long-term upward pressure on storage prices:

Now those inventories are winding back and at least one broker, Morgan Stanley, believes lithium markets have reached a turning point. Lithium is an important element to create renewable energy given its use in lithium-ion batteries, used to power EVs and to store energy generated from renewable sources such as solar and wind power. As more countries move towards clean energy, the demand for lithium is expected to keep on rising, which will push up its price, even as supply increases.³

 $[\]frac{3}{\text{https://www.afr.com/wealth/investing/lithium-prices-to-keep-rising-as-demand-outpaces-supply-}}{20230508\text{-p5d6m3}} \text{ (Financial Review, } 8/16/2023).}$





The Financial Review also cited the following similar market projection:

"I don't see lithium as a one-off flash in the pan. The demand for lithium carbonate, or battery-grade lithium, is increasing at a rapid rate because of the rate of EV production increases," says Shane Langham, a senior private wealth adviser with Sequoia Wealth and author of the *Charting Wisdom* technical analysis report. "That doesn't even touch on the big batteries used to support electricity grids or to store renewable electricity generated by solar or wind or the like. When the supply and demand equation is so lopsided, where demand is multiples the size of the supply, price can do only one thing, and that is rise," he says.

Morningstar's release of May 23, 2023 entitled "We Expect Lithium Prices to Remain Higher This Decade Than Market Valuations Imply" also forecasts long-term supply shortages and higher prices throughout the term of the SIP:

A temporary lull in demand from the expiration of China's electric vehicle subsidies led to slow growth to begin the year. We see strong demand growth in the coming years driven by rising EV sales, as demand grows more than 3 times 2022 levels to 2.5 million metric tons by 2030. As demand growth accelerates, we expect the supply deficit will remain in place. Most of the new supply required to meet demand will come from new, greenfield resources. Across all resources, many of these projects generally face delays, and we forecast enough supply will be delayed from managements' initial timelines to keep the lithium market undersupplied.⁴

The Columbia Center on Global Energy Policy in June of 2023 similarly forecasted global supply deficits and upwards storage price pressure through the end of the decade:

Benchmark is now expecting a 12.5 percent supply deficit by 2030 (Benchmark Minerals Intelligence 2023c). Even if prices decline for a short period of time, EV prices may follow suit, potentially raising demand and contributing to upward pressure on lithium prices by the end of the decade. The IEA's moderately ambitious climate scenario (the Sustainable Development Scenario, which would keep global warming below 2°C) estimates supply-demand gaps for lithium and copper during this decade.⁵

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^{4 &}lt;u>https://www.morningstar.com/stocks/we-expect-lithium-prices-remain-higher-during-this-decade-than-market-valuations-imply (May 2023).</u>

https://www.energypolicy.columbia.edu/publications/critical-mineral-supply-constraints-and-their-impact-on-energy-system-models/.





Thus, while it is difficult to forecast long-term pricing in volatile markets, the assumption that storage prices will decline over the term of the SIP is a highly questionable basis for delaying meaningful action, especially in light of New Jersey's recognition of the urgency of addressing the challenges of climate change. As cited in the Prior Comments, the New Jersey Energy Master Plan expressly recognizes the need for storage implementation to be "accelerated" through "rapid deployment":

[T]he <u>rapid</u> deployment of renewable energy generation and further development and installation of electric and thermal energy storage systems (Strategy 2) [Accelerate Deployment of Renewable Energy and Distributed Energy Resources] coupled with proper planning via Integrated Distribution Plans (IDP) (Strategy 5) and the programs and objectives listed above to reduce and manage load, will be critical factors in reaching 100% clean energy by 2050.⁶

More recently, the need to proceed promptly and in larger volume was further confirmed by Governor Murphy's Executive Order 315 of February of 2023 that accelerated New Jersey's target date for 100 percent clean energy to 2035, a full 15-year advance from the prior date:

It is the policy of the State to advance clean energy market mechanisms and other programs in order to provide for 100 percent of the electricity sold in the State to be derived from clean sources of electricity by January 1, 2035. In the 2024 EMP, the BPU shall make updates to the State's roadmap to 100 percent clean energy that are consistent with the policy set forth in Paragraph 1, and shall provide specific proposals to be implemented both in the short-term and longer-term to achieve this goal.⁷

BPU President Fiordaliso similarly stressed the importance of taking the timely actions needed to meet New Jersey's accelerated clean energy target date:

Governor Murphy's new goal of 100 percent clean energy by 2035 is an incredibly important and sensible policy initiative that solidifies New Jersey as a leader at the forefront of the battle to address the climate crisis as one of only two states plus the District of Columbia with a 100 percent clean energy goal in the 2030s," said BPU President Joseph L. Fiordaliso.⁸

The Companies therefore believe that the storage target procurements should be accelerated and that the annual storage procurement blocks should be increased to respond to the urgency for action identified in New Jersey's climate policies.

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State of New Jersey, <u>2019 New Jersey Energy Master Plan, Pathway to 2050</u>, at 13, 38, https://nj.gov/emp/docs/pdf/2020 NJBPU EMP.pdf.

https://nj.gov/infobank/eo/056murphy/pdf/EO-315.pdf.

https://www.nj.gov/governor/news/news/562023/20230215b.shtml.





§ 2.1. The SIP program structure and apportionment should focus on low-cost and expeditious projects. In light of updated market information and New Jersey's enhanced recognition of the urgency of accelerating efforts, we urge the Board to revise the Straw to expedite the program by opening each annual procurement to the full amount allocated to each segment of the SIP (*i.e.*, so that the full SIP allocations for Grid Supply and DER would be subject to award in the first annual procurement, with no block limitations), with unawarded volumes carried forward to subsequent annual procurements.

The Companies further suggest that compliance costs would be reduced by apportioning a greater share of New Jersey's 2,000 MW storage target to the SIP. The Straw indicates that the proposed 1,000 MW size of the SIP program was determined by subtracting Staff's assumed volume of 1,000 MW of the CSI program⁹ from New Jersey's target of 2,000 MW. By allocating 1,500 MW of New Jersey's target to the SIP program and 500 MW to the CSI program, the Board would lower costs by shifting procurement to larger-scale Grid Supply projects with economies of scale and substantially lower installed costs.

§ 2.1. <u>Declining Block Incentive Structures are not appropriate</u>. The Companies believe that procurements should not be based upon declining block pricing. While the Straw Proposal at page 16 indicates that declining block pricing is based largely upon the premise that "costs are generally expected to decline over the next decade," that expectation, as discussed above, is no longer a reliable premise for setting public policy and has the resulting effect of improperly distorting market-based competitive pricing.

§ 2.3. Minimize Transmission Delays through projects with CIRs associated with deactivated fossil plants. The most effective way to minimize transmission delay is procurement from Grid Supply projects with existing transmission rights including CIRs, especially projects located at the sites of deactivated fossil plants, 10 which present a unique opportunity for expedited development. Utilizing existing sites and transmission facilities would also minimize adverse locational effects and reduce costs to ratepayers. Staff concern (Straw at 28) over transmission delays is further validated by the shortage of suitable points of interconnection and the permitting challenges and often prohibitive costs of new interconnection facilities. Preferred procurement from deactivated fossil sites with would also address the Staff's objective to "eliminate projects that cannot reasonably be expected to reach commercial operation within three years of registering for a megawatt allotment." Straw Proposal at 27. In addition to interconnection issues, many

The Straw at page 13 indicates that "the size of future solar+storage [CSI] procurements have not yet been <u>established.</u>"

See, PJM Manual 14G, Section 4.4.1 <u>Transfer of CIRs from a deactivated unit</u>. Within the period of one year from deactivation, the PJM rules allow the transfer of the CIRs associated with deactivated generating units to new projects. That allowance provides New Jersey with a unique window of opportunity for the development of major storage facilities at recently retired locations in an expedited and least-cost manner, with minimal community impacts.





projects at new sites face serious permitting delays and challenges that prevent them from reaching commercial operation on time, if at all. The Board can have far greater confidence that projects located at deactivated sites will achieve commercial operation on schedule and contribute to the urgent goals of the SIP.

Item 3: Incentive Structure; Installed Cost of Storage

§§ 3.1, 3.2. Larger Grid Supply projects have the lowest installed cost. While the multiple variables involved make it difficult to give a single answer as to installed costs at any point in time, project size is a primary cost driver (as discussed in detail above and in the Prior Comments at pages 2-7) and the SIP would minimize the cost to ratepayers by making procurements primarily from larger Grid Supply projects that reduce costs through economies of scale. While some commenters have suggested limitations on project size, the SIP should realize the reduced costs through the economies of scale of larger Grid Supply projects. The relationship of project scale to cost was highlighted by a recent economic analysis of the World Bank Group indicating that the installed cost of distributed scale storage is more than twice as much as the cost of grid-scale storage:

Scale matters because it can impact both the choice of technology used and the LCoS. <u>Costs per kW typically increase for smaller scale energy storage</u>, but how costs scale to meet smaller loads depends on the technology. For example, Li-ion batteries and flow batteries are considered potential competitors at a utility scale. A Utility scale Li-ion battery system might have a CAPEX cost of between <u>\$400 and \$500/kWh</u> for 4 hours of storage, but the same technology at small residential scale may cost over \$1,000/kWh.

<u>Economic Analysis of Battery Energy Storage Systems</u>, World Bank Group (2020), at 31.¹¹ We also note in this regard the comments of the New Jersey Office of the Rate Counsel at the second stakeholder meeting in favor of meeting the target mandate through "larger scale lower cost projects":

Rate counsel recognizes that distributed storage has an important role to play, but we do stress that there's a balance [between] the benefits of distributed storage and the lower cost of meeting the legislative mandate with <u>larger scale</u>, <u>lower cost projects</u>. ¹²

The New Jersey Energy Storage Analysis (ESA) Final Report published by Rutgers University in 2019 (the "Rutgers Report") similarly referenced the NJRDC's earlier recognition that larger-scale storage projects would lower costs to ratepayers:

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https://documents1.worldbank.org/curated/en/222731592289791721/pdf/Economic-Analysis-of-Battery-Energy-Storage-Systems.pdf.

Comments of Sarah Steindel, New Jersey Asst. Deputy Rate Counsel, Stakeholder Meeting: Energy Storage Meeting 3, November 14, 2022, at 1:50:15 in the recording.





NJRDC. The FERC Order allows storage to be on the same playing field as traditional generation resources and potentially compete with resources like peaking plants. This could encourage larger utility-scale projects and lead to a decrease in cost.

Rutgers Report at Appendix 6.¹³ Thus, while storage costs may be volatile and difficult to predict at any point in time, the economies of scale of larger Grid Supply projects under any market assumption would result in substantially lower costs (50% lower than distributed resources according to the World Bank analysis).

§§ 3.1, 3.2. Procurement terms of 15 years would lower \$/kWh costs. The term of the procurement and amortization period also affects the installed cost of storage. While the Straw Proposal suggests contract lengths of "between 10 and 15 years," the Companies urge the Board to adopt the longer term of at least 15 years. As the Straw Proposal states, "Staff recognizes that projects are likely to require higher contract prices if the length of the contract is shorter, given that there is a shorter time over which to recover the capital costs of the project." Straw at 15. The Companies concur that longer contract terms will lower procurement costs in the capital-intensive storage market.

3.0: Summary on factors lowering installed \$/kWh costs:

We thus urge the Board to revise the Straw to minimize program costs through economies of scale, by:

- (i) Making SIP procurements primarily from larger Grid Supply projects;
- (ii) Rejecting proposals to limit SIP project size;
- (iii) Increasing the size of the SIP program from 1,000 MW to 1,500 MW;
- (iv) Allowing procurement contract terms of 15 years or more; and
- (v) Not utilizing declining block pricing.

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§§ 3.5-3.10. Performance Based Incentives. The Companies believe that Performance-based incentives could be effectively structured based upon either the PJM Marginal Emission Rate or Peak Demand Reduction, so long as the rules are clear and benchmarked to publicly posted and predictable market indicators. However, when compensation of project owners is tied to project performance, it is critical that those project owners, and not the utilities, control that performance. Multiple project management practices (such as maintenance and strategic participation in the various PJM markets that affect project state of state of charge at various points of time) will directly affect project performance measures under either of the proposed methods. Incentive structures are based upon the premise that the recipient of potential benefits

Notably, in addition to lowering costs, the Rutgers Report also indicated the environmental benefit of larger-scale storage projects noting that, under the current PJM system mix, small-scale lithium storage projects could lead to increases in critical emissions: "Under the current PJM generation mix, use of Li-ion batteries in small-scale standalone installations could result in slight <u>increases</u> to CO2 and other emissions." Rutgers Report at 139.





has discretion and control over the incentivized actions, which would not be the case if projects were subject to utility control.

§§ 3.13, 3.14. <u>SIP Incentives should not be capped</u>. Limiting or capping program benefits to certain projects would have the effect of distorting competition and raising the cost of compliance. Indeed, the implicit assumption of proposed caps is that those projects structured in response to multiple incentive programs will be able to offer pricing below their competitors. Storage in the scale mandated by New Jersey is an early-stage industry where multiple incentives may be necessary to attract the requisite private investment and it would be counterproductive at this time to restrict or limit that economic support. Each state and federal incentive was adopted because it was deemed necessary and appropriate to achieve public policy benefits and those benefits should not be nullified by imposing new eligibility caps or prohibitions. For example, as discussed in the next Section, state and federal programs provide special and additional incentives for Overburdened Communities and Energy Communities that should not be nullified through the capping of multiple benefits.

Item 4: Overburdened Community Incentives.

§§ 4.1, 4.2. <u>Utilizing deactivated fossil sites benefits those communities</u>. The public policy to prioritize deactivated generation sites was recognized by Congress in the recently adopted Inflation Reduction Act, which allows an additional 10% ITC for qualifying projects located in an "Energy Community," defined to include a census tract "where [a] coal-fired electric generating unit has been retired." I.R.C. § 45(b)(11) ("Special Rule For Qualified Facility Located In Energy Community"). Among other things, Congress recognized the public policy of incentivizing the development of projects in affected communities where job and property tax loss will be most felt by the transition away from and retirement of traditional energy generation sources. The same policy interests to benefit Energy Communities are equally applicable to the SIP and the adoption by the Board of a corresponding procurement priority would coordinate state and federal policy. Moreover, as discussed above, the additional 10% tax credit has the added benefit of reducing the cost of SIP compliance.

Item 5: Conclusion.

As set forth above, the Companies urge that the Straw Proposal be modified to (i) more rapidly implement meaningful volumes of storage, (ii) utilize economies of scale to allow New Jersey to meet its storage goals at the lowest possible cost, and (iii) encourage the use of deactivated generation sites with existing transmission facilities or CIRs that minimize cost, community impacts and delays, while (iv) maintaining provisions for private ownership and operation of energy storage projects consistent with participation New Jersey's restructured competitive market structures. The Companies commend Staff's efforts and believe the SIP can become a national model for expediting storage resources in order to enhance reliability and mitigate climate change.





Respectfully Submitted,

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