Docket No. QO22080540, IN THE MATTER OF THE NEW JERSEY ENERGY STORAGE INCENTIVE PROGRAM

September 19, 2023

Sherri L. Golden
Secretary of the Board
New Jersey Board of Public Utilities
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Submitted electronically to Docket No. QO22080540

Re: Docket No. QO22080540: Public Comments of Form Energy in response to New Jersey Energy Storage Incentive Program Straw Proposal

Dear Secretary Golden,

Form Energy, Inc. ("Form Energy") appreciates the opportunity to comment on the Board of Public Utilities' ("BPU" or "the Board") request for information ("RFI") pertaining to the development of the New Jersey storage incentive program ("SIP"). Energy storage technologies can provide a range of services that can benefit customers and help New Jersey achieve its greenhouse gas reduction goals while supporting critical grid reliability and resiliency needs.

Incentives like those proposed by the BPU staff in the Straw Proposal have the potential to accelerate the timeframe for storage technologies to deliver these public benefits. To improve the ability of diverse storage classes to access the SIP Program, Form Energy continues to encourage the BPU to establish storage incentive program procurement targets and incentive structures designed specifically for long-duration storage (10-24-hr duration) and multi-day storage (>24-hr storage), in addition to short-duration (<10 hr duration) targets. This program change will help build a more diverse storage portfolio in New Jersey, which several studies have identified can lower both electric system costs and greenhouse gas emissions.

About Form Energy

Form Energy, Inc. ("Form Energy") is a U.S. energy storage technology and manufacturing company that is commercializing a new class of multi-day energy storage systems that will enable a reliable and fully renewable electric grid year-round. Our first commercial product is an

iron-air battery capable of continuously discharging electricity for 100 hours at a total installed cost per unit of energy that is less than 1/10th of today's lithium-ion battery technology. Form's battery can achieve these low costs by using iron, one of the most abundant and cheapest minerals. Our iron-air battery is modular, safe, and can be sited anywhere on the grid. Form's first project will be a 1.5 MW, 150 MWh pilot project with utility Great River Energy in Minnesota. This pilot project will demonstrate the repeatable, scalable building block of our system, and how it can provide firm energy delivery to address grid reliability needs. We expect this project to go online in 2025, immediately followed by larger systems with partners across the country, totaling 5 GWh of announced projects online as soon as 2026.

Multi-day storage is a diverse resource class that includes iron-air batteries like Form's, as well as hydrogen energy storage, thermal storage, compressed air energy storage, and other novel technologies. In addition to being able to provide guaranteed firm energy delivery at rated capacity over consecutive days, multi-day storage can also provide other benefits and services to the grid, including: flexible, dispatchable capacity to provide hourly and sub-hourly load balancing; rapidly-deployable solutions to uneconomic grid congestion and renewable energy curtailment; resilience for critical loads; black start and other ancillary services; and a physical hedge to protect market participants and retail customers from price shocks.

Responses to Request for Information on Straw Proposal

Staff has specifically requested stakeholder feedback on over 30 questions. Given the wide range of issues addressed in the RFI, we have not fully commented on all topics, rather have included an overview of our recommendations to improve the proposal. We also look forward to addressing the revised straw proposal that Staff anticipates issuing after reviewing stakeholders' responses to the RFI questions.

1) **Create separate procurement targets and incentive structures for short-duration, long-duration, and multi-day energy storage**

As we did in our December 2022 comments, Form Energy recommends that the BPU create separate and equal procurement targets for short duration, long-duration, and multi-day energy storage resources. We encourage BPU staff to work with energy storage companies and storage trade organizations to further define these categories, and we provisionally propose that the BPU classify short-duration resources as those with durations <10 hours, long-duration storage as those with durations between 10 and 24-hrs, and multi-day storage as >24-hr duration storage resources. We anticipate these classifications will align both with distinct grid needs and with technology divisions designed to meet these needs. Specific goals to support long-duration and multi-day energy storage can help New Jersey build a market for multiple storage technology classes and avoid the promotion of one specific technology class over others.

Further, energy storage incentives should be designed to spur investment and based on the benefits that energy storage can deliver. Staff noted that the range of incentives for existing programs in states like California, New York, and Connecticut are in the range of $1,000 to $100 per kWh, depending on factors such as class of customer, time of use, and location. We encourage the BPU to set incentives appropriately to support the three different classes of storage resources: short-duration, long-duration, and multi-day storage. These resource classes have different cost profiles in terms of $/kW and $/kWh: short duration resources have lower $/kW capex cost; long and multi-day storage resources have lower $/kWh capex cost.

For developing cost profiles for long duration and multi-day storage technologies, we recommend using the Long Duration Energy Storage Council's report authored by McKinsey & Co. for energy storage costs.[1]

2) Utility ownership

While the primary focus of the SIP should be to support the development of competitive markets for developer and customer-owned storage, it may be appropriate to allow EDCs to own and/or directly contract for a limited amount of emerging energy storage resources, such as long-duration and multi-day storage. These resources face higher initial barriers to market than commercial lithium-ion-based short-duration energy storage resources, and they must achieve rapid initial deployment and expansion prior to 2030 to support New Jersey's clean energy goals. These resources can also provide a range of reliability services, including both energy services and transmission services, that can help lower overall system costs, a benefit that individual projects cannot directly capture via wholesale market revenues, but that EDCs could help capture for customers while wholesale market services evolve. Additionally, EDCs may have access to sites and points of interconnection that could be used to rapidly deploy and demonstrate emerging technologies to accelerate learnings.

3) Increase procurement quantities for initial program years, and accelerate procurement

Form Energy recommends that the BPU increase procurement quantities in the initial program years and seek to contract at least 200 MW of storage annually from 2023 through 2028. New Jersey's storage target seeks to "achieve" 2,000 MW of storage by 2030, which the BPU correctly interprets to mean that its programs should result in 2,000 MW being *installed* by 2030. As the BPU indicates in the straw proposal, storage projects may require three years from the time of executing a storage incentive until a commercial online date. Considering this time-lag, Form Energy recommends that the BPU accelerate the proposed annual procurements such that it contracts for a minimum 1,000 MW of grid supply and distributed storage by the 2027/2028 program year.

[1] Net-zero power: Long duration energy storage for a renewable grid, November 2021. Available at: https://www.mckinsey.com/~/media/mckinsey/business%20functions/sustainability/our%20insights/net%20zero%20power%20long%20duration%20energy%20storage%20for%20a%20renewable%20grid/net-Zero-power-long-duration-energy-storage-for-a-renewable-grid.pdf.

Form Energy accordingly recommends that the BPU create annual procurement quantities of at least 200 MW per year, from 2023/2024 through 2027/2028. This flat structure will provide for competition in the early years while providing increased market certainty necessary to attract project developers to make the financial investments necessary to build project pipelines in New Jersey.

4) Performance-based incentives

Existing wholesale markets provide incentives to economically dispatch energy storage in an least-cost manner. From a state policy perspective, what is most important at this stage in developing a market for energy storage is to cultivate a diverse portfolio of energy storage resources – short, long, and multi-day storage resources – which, together with rapidly increasing penetrations of renewables, are capable of completely replacing needs for fossil-fueled resources in the long-run.

New Jersey should focus on helping these resources close the gap between technology costs and existing market revenues, allowing resources to decide how to respond to day ahead and real-time market signals. Overly prescriptive, complex programs may have unintended consequences and risk further delay in launching the incentive program and deploying energy storage at scale. Where possible, New Jersey should prioritize simplicity and providing the stable program design necessary to incentivize private investment needed to rapidly scale storage deployment in the state by 2030.

We appreciate New Jersey's leadership in supporting the energy storage industry and advancing progress towards a clean energy future, and we look forward to continuing to support BPU staff in developing this impactful incentive program.

Sincerely,

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