

Energy Storage Market Acceleration Incentives

Implementation Plan

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CONTENTS

1	INTRODUCTION	1
1.1	Background	2
2	Retail Storage Incentives	3
2.1	Customer and Project Eligibility	4
2.2	Incentive levels.....	5
2.3	Flexibility to Adapt to Market Conditions	6
2.4	Participating Contractors	6
2.5	Quality Assurance	7
2.6	Measurement and Verification	8
2.7	Payment.....	8
2.8	Low to Moderate Income (LMI) Customer Access	8
3.	Bulk Storage Incentives.....	9
3.1	Project Eligibility	9
3.2	Incentive levels.....	11
3.3	Flexibility to Adapt to Market Conditions	12
3.4	Project Submission.....	12
3.5	Quality Assurance	13
3.6	Measurement and Verification	14
3.7	Payment.....	14
3.8	Coordination with Utility Bulk Storage Dispatch Rights Requests for Proposals	14
4.	BUDGET	15
5.	PERFORMANCE METRICS AND EVALUATION	16

Energy Storage Market Acceleration Incentives Implementation Plan

1 INTRODUCTION

This Implementation Plan (the “Plan”) sets forth the program goals and implementation strategies for the Energy Storage Market Acceleration Bridge Incentive Program authorized by the New York Public Service Commission (PSC) under the Order Establishing Energy Storage Goal and Deployment Policy, issued December 13, 2018 (the “Storage Order”) in Case 18-E-0130, *In the Matter of Energy Storage Deployment Program*. This Plan is submitted pursuant to the Storage Order and describes initiatives that will leverage market acceleration incentive funds to valuably and cost-effectively achieve approximately two-thirds of the State’s goal of 1,500 MW of energy storage by 2025. As a result, and in furtherance of the goals of the Storage Order, market segments are expected to become sustainable without incentives as costs decline and revenue opportunities expand.

This Plan is organized into two primary initiatives: retail storage market acceleration incentives and bulk storage market acceleration incentives. A proposed “Retail Storage Incentive” will target projects: (1) up to five megawatts (MW) of alternating current (AC) power; (2) whose value is monetized under an Investor Owned Utility (IOU) tariff in the form of bill savings or credits, including delivery charges or the Value of Distributed Energy Resources (VDER or Value Stack) tariffs; and (3) that are either interconnected (a) behind a customer’s electric meter, or (b) directly into the distribution system. This Plan seeks to allocate \$130 million in funding to accelerate these retail storage use cases in a MWh block design that declines as deployment increases. In addition, a proposed “Bulk Storage Incentive” will support projects: (1) above five MW of AC power; (2) that are interconnected directly into the transmission, sub-transmission or distribution systems; and (3) that primarily provide wholesale market energy, ancillary services and/or capacity services. This Plan seeks to allocate \$150 million of funds to accelerate this market segment. Program design for the two initiatives is described in this Plan. Specific program requirements and the application process are contained in the accompanying Program Manual which will be updated as needed and maintained at <http://www.nyscrda.ny.gov/energy-storage>.

Within the \$350 million authorized for bridge incentives in the Storage Order, \$70 million is not currently allocated to either of the two proposed initiatives in this Plan. Instead, NYSERDA will request DPS approval to allocate these funds for opportunities that have the greatest potential to build a self-sustaining storage market. NYSERDA will seek DPS approval to allocate these funds with sufficient notice to industry. In addition to the \$350 million in authorized funds in the Storage Order, the NYSERDA Board of Directors has approved approximately \$53 million in Regional Greenhouse Gas Initiative (RGGI) funds for retail and bulk storage deployment incentives on Long Island. Program design on Long Island will be consistent with the design parameters outlined in this Plan to enable statewide application. The NYSERDA retail and bulk incentive programs will be officially launched and ready to accept project applications, inclusive of live dashboards, in the second quarter of 2019.

These incentive programs will be implemented alongside NYSERDA’s energy storage soft cost reduction initiative to further reduce the non-hardware costs of energy storage installations. Soft costs include customer or site acquisition, permitting and siting, design and engineering costs, interconnection and financing costs. Activities in this initiative include consumer education on energy storage systems, contracting models, project technical and economic feasibility modeling, assisting developers with understanding New York market design, providing resources on utility tariffs and bill calculations, and permitting and interconnection guidance. Fact sheets, guides, webinars, and workshops will be widely used to share best practices. These soft cost reduction activities are described in the [Reducing Barriers to Distributed Energy Storage Investment Plan](#), which is funded through the Clean Energy Fund (CEF).

Energy Storage Market Acceleration Incentives Implementation Plan

1.1 Background

In January 2018, Governor Andrew M. Cuomo announced a target to install 1,500 MW of energy storage in New York by 2025. In doing so, he directed the New York Department of Public Service (DPS) and the New York State Energy Research and Development Authority (NYSERDA), in conjunction with stakeholders, to recommend actions to achieve this target and a 2030 storage goal under Public Service Law §74. This law directed the PSC to establish a statewide energy storage goal for 2030 and an associated deployment policy. The Energy Storage Roadmap, developed by DPS and NYSEDA, with substantial input from stakeholders, was released on June 21, 2018, and set forth recommendations to build a sustainable, market-driven energy storage sector reflecting the principles underpinning the PSC's Reforming the Energy Vision (REV) initiative:

- Improve the overall efficiency of the electric system by stimulating third-party investment alongside public and utility investments.
- Reveal and reward electric system value that is frequently granular in time and location.
- Spur the pace of cost reductions by supporting markets at scale and promoting competition.
- Remove impediments to new technologies, especially those relating to soft costs and project bankability.
- Address barriers to projects serving low to moderate income (LMI) customers.

Following additional stakeholder input including three technical conferences, hearings, and written comments, the PSC issued an order on December 13, 2018, establishing a 2030 storage goal of 3,000 MW and an intermediate target of 1,500 MW by 2025. The Storage Order also established a suite of deployment policies and actions to help achieve these targets and to build a self-sustaining market, including authorizing NYSEDA to use allocated funds to support, implement and administer eligible storage incentive programs between 2019 and 2025.

This Plan describes the proposed use of \$310 million in incentive funds authorized in the Storage Order, and related program implementation costs. These funds are in addition to \$40 million previously approved for storage paired with solar photovoltaic (PV) systems under the CEF, and approximately \$53 million in RGGI funds authorized by NYSEDA's Board of Directors to support work on Long Island.

NYSERDA conducted additional discussions with vendors and potential customers since the Storage Order was issued. This Plan reflects this input, in addition to further engagement with DPS, IOUs, Long Island Power Authority (LIPA) and other stakeholders. NYSEDA will continue to engage with stakeholders throughout program implementation and will propose modifications to this Plan as needed.

As these incentive programs are implemented, ongoing planning and coordination with stakeholders will allow for recalibrations if needed and will address the following areas: (a) effective planning and communication with markets including meeting the financing needs of the storage industry and customers; (b) consumer education needs; (c) reducing soft costs associated with customer or site identification, permitting and siting, interconnection, design and engineering, and revenue risk that results in a higher financing cost; (d) identifying and developing opportunities for effective integration with the grid that are consistent with the REV initiative; and (e) systematic identification and breaking down of barriers to storage deployments.

In the program design proposed below, existing tariffs and market signals will be leveraged to the extent possible to encourage desired grid benefits, reduce peak demand, increase grid flexibility and resiliency,

Energy Storage Market Acceleration Incentives Implementation Plan

and time-shift cleaner generation to displace higher emitting generation sources. NYSERDA aims for this incentive design to provide sufficient long-term confidence so that developers are able to invest in establishing or growing their New York operations. These incentives are designed to serve as a path to a self-sustaining market enabled by reductions in storage costs and expanded market opportunities.

2 RETAIL STORAGE INCENTIVES

The proposed Retail Storage Incentive Program will support customer and distribution-sited storage projects up to 5 MW of AC, and whose value is monetized under an IOU tariff either in the form of bill savings or credits. These projects will likely use their storage assets to do the following: shift a customer's electric demand to off-peak periods; time shift solar PV generation to more valuable times; and charge off-peak to discharge during peaks to relieve grid constraints. This incentive will be deployed in declining blocks and will be supported through Commission authorized funds in the Storage Order. Program design is intended to be similar for Long Island projects, which will be described in the [Program Manual](#) and supported by RGGI funds made available separate from those in the Storage Order. The retail incentive programs will be officially launched and ready to accept project applications and display dashboards showing committed and remaining funds per block in the second quarter of 2019.

This block incentive design has a number of benefits, including providing certainty and transparency regarding incentive levels; providing a clear signal that New York intends to ramp down and eliminate up-front incentives in a reasonable timeframe as storage costs decline and market opportunities expand; and allowing for adjustments sooner in regions or market segments that reach self-sustainability. Incentive levels will be set to address projects that offer the best economics and potential for replication, including those seeking to shift peak usage and maximize value under the VDER Value Stack tariff.

Incentives will be offered on a first come, first served basis, and calculated based on the usable installed energy storage capacity in kilowatt hours (kWh) measured in AC power. This capacity will be verified through NYSERDA's Quality Assurance inspection process. Incentives will be awarded to approved applications based on the block in effect at the time of application submission. As each block is fully subscribed, the incentive level will step down in subsequent blocks. The NYSERDA [Energy Storage web site](#) will include a dashboard with the incentive levels for each block, MW/MWh committed, and the remaining block sizes. Through this dashboard, the market can monitor block status, current incentive levels, and have real time access to information regarding likely timing for incentive changes.

The total budget committed under each block may differ from the original allocation due to cancellations, project budgetary allocation, or project adjustments after the block is closed. If a project cancels or is terminated and the current block at which it applied is still open, these funds will be placed back into the block. If the block under which the project applied is no longer open, NYSERDA will reallocate these funds into a subsequent block. Table 1 presents the initial block levels and budgets for New York City and Rest of State (ROS) Investor Owned Utility (IOU) territories. Long Island blocks will be included in the Retail Incentive Program Manual and supported through RGGI funds.

NYSERDA will also promote other means to improve project economics and bankability including financing options through the New York Green Bank which has committed to deploying at least \$200

Energy Storage Market Acceleration Incentives Implementation Plan

million to enable energy storage project deployment in New York.¹

2.1 Customer and Project Eligibility

In order to receive incentive funding in any of the IOU service territories, the customer must contribute to the System Benefits Charge (SBC) as evidenced by a recent utility bill. This includes customers of the New York Power Authority. New projects submitted to the utility interconnection queue after March 11, 2019, and that also meet minimum project maturity requirements described in the Program Manual, are eligible to apply for incentives. Projects previously selected under an IOU Non-Wires Alternative (NWA), and projects that submitted a proposal to an open NWA before March 11, 2019 and pending decision or negotiation, are not eligible for incentive funding. New projects to an IOU's future NWA solicitation may seek incentive funding.

Eligible projects include: (1) retail, demand metered customers that install stand-alone energy storage, or storage paired with on-site generation such as solar PV behind the customer's electric meter (BTM); (2) standalone energy storage or storage paired with an eligible generation source such as solar PV, connected directly into the distribution system and compensated under the VDER Value Stack tariff; and (3) retail, non-demand metered customers that install energy storage paired with a solar PV system BTM.

An energy storage project receiving incentive funding under this Program may not also receive a Bulk Storage Incentive described in Section 3, or a NYSERDA Renewable Energy Credit under the Renewable Energy Standard procurements.

Projects must also meet the following requirements:

- The energy storage system must be a new, permanent, stationary system designed and installed by a Participating Contractor. Incentives will be provided directly to the Participating Contractor of record for the project, or their assignee.
- The storage system must be electric grid-connected chemical, thermal, or mechanical storage and operated primarily for electric load management or shifting electric generation to more beneficial time periods while operating in parallel with the utility grid. The system may also provide other customer benefits such as backup power during a grid outage or power quality.
- The storage equipment must consist of commercial products carrying at least a 10-year manufacturer's warranty. The warranty must cover the entire energy storage system, including ancillary equipment, pumps, thermal management and power electronics. Experimental, beta, or prototype equipment is not eligible. The terms of the warranty are to be negotiated between the Participating Contractor/manufacturer and customer.
- The storage system may not be relocated without NYSERDA's written approval and must remain in New York for its entire life.
- The storage system must be certified to meet minimum safety requirements by a Nationally Recognized Testing Laboratory as evidenced by applicable UL listings. These listings are described in the Program Manual and will evolve to meet current best practices over time. These UL listings must be received by the time that the system enters commercial operation.
- The system must be designed to maintain a minimum round-trip efficiency defined in the Program Manual and installed in accordance with the design and system components submitted

¹ Case 13-M-0412, Order Establishing NY Green Bank and Providing Initial Capitalization, issued and effective December 19, 2013

Energy Storage Market Acceleration Incentives Implementation Plan

in the project application and approved by NYSERDA.

- The system must be installed in compliance with all manufacturers’ installation requirements, applicable laws, regulations, codes, licensing, and permit requirements including, but not limited to, the International Building Code Series as amended by the New York State Uniform Code Supplement; the National Electric Code; New York State’s Standard Interconnection Requirements and the utility’s interconnection agreement; and all applicable State, city, town, or local ordinances or permit requirements including the New York State Environmental Quality Review (SEQR); Article 10; and any additional requirements of the local Authority Having Jurisdiction (AHJ).

NYSERDA reserves the right to deny project applications if the contractor is delinquent on other NYSERDA-funded projects. Incentives will not be awarded until a project has achieved an approved status by NYSERDA. Any Contractor that moves forward with the installation of a project that does not yet have an approved status does so at the Contractor’s own financial risk. Developers and customers should refer to the Program Manual for the current program requirements, eligibility, and contractor acceptance criteria.

2.2 Incentive levels

Incentives are offered at a fixed amount per AC kWh of usable storage capacity, up to 5 MW of AC power rating. The current incentive level will be available on the NYSERDA Energy Storage Program dashboard at <http://www.nysERDA.ny.gov/energy-storage>. A maximum incentive per project will also be established in the Program Manual. Table 1 presents the proposed incentive levels and block sizes which may be adjusted based on market factors as described in Section 2.3.

Table 1. Blocks and Incentive Levels for Commercial Retail Incentives ²

Block 1 at \$350/kWh will draw from a common budget for all IOU territories whether the energy storage is paired with PV solar or standalone storage. Beginning with Block 2, New York City will have its own blocks. The block size and budget will be managed based on the total MWh; MWs indicated are the anticipated MWs that will be built under the block. The first three blocks are included below. Additional blocks will be informed by market conditions and experience with deploying these retail and bulk incentives and will consider use cases and sectors that can reach sustainability without incentives.

	Rest of State IOUs			New York City		
	Incentive	MWh / MW	\$ Budget	Incentive	MW / MWh	\$ Budget
Block 1	\$350/kWh	100 MWh/25 MW	\$35,000,000	\$350/kWh	Included in ROS budget	
Block 2	\$250/kWh	125 MWh/30 MW	\$31,250,000	\$300/kWh	60 MWh / 15 MW	\$18,000,000
Block 3	\$200/kWh	150 MWh/40 MW	\$30,000,000	\$240/kWh	65 MWh / 16 MW	\$15,600,000

This proposed incentive will be provided at the dollar value listed for each of the first four (4) hours of a system’s duration and decline to 50% of this dollar value for hours 5 and 6 of duration with no incentive for any duration beyond 6 hours.

² Represents the total incentive budget for retail use cases which includes funds authorized by the Storage Order and \$40 million already approved in Clean Energy Funds for PV + energy storage projects.

Energy Storage Market Acceleration Incentives Implementation Plan

Blocks and Incentive Levels for Mass Market Retail Incentives

A proposed residential PV + storage incentive will begin on Long Island, where project economics are the strongest, and then expand to the IOU service territories as project economics improve.

2.3 Flexibility to Adapt to Market Conditions

Initial incentive levels and block sizes may be adjusted based on market factors, and NYSERDA will monitor uptake in each region and sector. Market conditions are expected to change, and adoption in individual regions and sectors may exceed or fall below projections. Cost data, project economics and adoption trends will be obtained from a NYSERDA storage cost components survey conducted in the first quarter of each calendar year, storage incentive applications, aggregated data from IOU procurements, market research studies, and developers. NYSERDA will re-examine the incentive levels and structure as necessary to optimize the Program's ability to achieve overall program goals. Redesign may include the reallocation of funds and capacity among sectors and regions.

NYSERDA will share information with all stakeholders regarding program progress and market conditions by making data and analysis publicly available. If changes are necessary, NYSERDA will provide sufficient notice to enable a smooth transition after gathering market data, consulting with stakeholders, and guidance from DPS staff.

2.4 Participating Contractors

Energy storage systems will be incentivized for customers through a network of eligible contractors who will contract directly with the customer. Eligible storage Contractors will be approved by NYSERDA to enter the program based on their experience and references, with specific requirements defined in the Program Manual. A list of Eligible Contractors will be posted on NYSERDA's [Storage Incentive web page](#). Existing approved solar PV Contractors and Builders will be eligible to submit PV + energy storage project applications in both the Commercial and Residential sectors. Eligibility criteria for storage developers is described below and in the Program Manual and will follow a similar set of acceptance criteria as that used for PV Contractors and Builders.

An Eligible Contractor will be held responsible for meeting all program requirements as detailed in the version of the Program Manual in effect at the time. The Eligible Contractor will work directly with the customer, receive the incentive payment (unless assigned to another approved entity), be responsible for adhering to its obligations under contract with NYSERDA, and be responsible for customer complaints, warranties, and any production guarantees or bill savings that their contract with the customer may provide. The Eligible Contractor will be responsible for the installation and quality of the project, including compliance with local siting regulations.

Eligible Contractors will be responsible for all aspects of their energy storage projects funded under the Program. The Eligible Contractor must provide a single point of responsibility for the installation, maintenance, and operation of the storage system. Subcontractors may help fulfill these obligations. Regardless of the teaming arrangement, however, the Eligible Contractor will remain responsible for all aspects of the project.

Eligible Contractors will be provided access to the NYSERDA online Portal to submit project applications. Project applications will require the following information that NYSERDA will review and approve:

Energy Storage Market Acceleration Incentives Implementation Plan

- the location of the storage system, facility type where it is installed, and customer information (if the system is located with customer load);
- the intended use of the energy storage system;
- a description of the energy storage system including storage technology type, manufacturer, kW and kWh, and roundtrip efficiency;
- proof of any UL safety listings currently obtained and storage system warranty;
- the intended design of the installation; and
- Eligible Contractor and customer certifications.

Once an application has been received, the project may undergo a desktop design review examining the technical and financial feasibility of the system's sizing compared to its intended use case. In this review, NYSERDA or its designee may examine technical specifications, including the site plan and drawing, and system sizing along with customer data for financial feasibility. Projects that are approved will be approved at the incentive rate that existed at the time the application was submitted.

2.5 Quality Assurance

NYSERDA maintains the integrity of the program through an independent Standards and Quality Assurance (SQA) team which manages the Quality Assurance/Quality Control (QA/QC) system for the program. The QA/QC system has several components including, but not limited to, establishment of program standards and comprehensive field and photo/desk inspections. Quality Assurance refers to the NYSERDA process of field and photo inspections including the resolution of any issues identified during the field or desk/photo inspection. The inspections will occur during construction and after the system has been installed and receives the utility's Permission to Operate. QA will occur for every project until the Participating Contractor has a proven successful quality track record under the incentive program, evidenced by at least three systems of that size installed without critical or major deficiencies. Corrective actions to remedy deficiencies identified during QA shall be the responsibility of the Contractor. Contractors may also be moved into probation status, suspended or terminated based on the results of QA inspection or violating program requirements.

NYSERDA's SQA team will manage the QA process. The Contractor will be responsible for ensuring compliance of the energy storage system with all applicable laws, regulations, rules and standards, including requirements of the local AHJ. The QA inspection will provide NYSERDA with an opportunity to evaluate the accuracy of the site analysis and design paperwork as well as verify the system was installed according to all program requirements. The QA inspection will include selected health, safety, and performance items. QA field and photo/desk inspections will be conducted by a qualified independent third party, using comprehensive field and photo inspection QA checklists and inspection processes approved by NYSERDA. These checklists will be available for review on NYSERDA's Energy Storage Incentive web page and updated as needed.

Following an inspection, either field or photo, NYSERDA will produce a detailed report and determine whether the project fully complies with all program requirements and meets acceptable standards of workmanship. The QA inspection report will provide all evaluated elements of the project and list any nonconformances identified. Projects that have nonconformances related to critical (health and safety) or major (system performance) attributes will automatically fail. Projects that have only nonconformances related to minor or incidental attributes may pass or fail based on the number and type of nonconformance observed. The Contractor is responsible for correcting all nonconformances identified in the time required

Energy Storage Market Acceleration Incentives Implementation Plan

by NYSERDA, determined by NYSERDA at its sole discretion based on the degree of nonconformance. Contractors are required to submit proof to NYSERDA demonstrating correction of all items identified.

2.6 Measurement and Verification

Measurement and Verification (M&V) refers to NYSERDA review of the performance of the system during ongoing operations. M&V will occur for every project until the Participating Contractor has a proven successful quality track record under the incentive program, evidenced by at least three systems of that size installed without critical or major deficiencies.

All projects funded under this Program must install a revenue grade meter to record the energy storage system's charge and discharge activity. All projects will initially be required to undergo M&V to verify that the system is operating as intended and within the expectations established during the design review phase of the project application. This will include the benefits derived from using the storage system including savings, bill credits or other revenue. The Contractor will be required to provide NYSERDA's M&V contractor with interval data showing charge and discharge for a period of up to five years.

In order to show progress in achieving the State's storage goals, and to highlight projects and use cases, NYSERDA will list all storage projects deployed on the NYSERDA DER Integrated Data System at <https://der.nyserdera.ny.gov/>. This will include non-proprietary data on individual projects deployed and may include aggregated total kWh discharged through an energy storage system. NYSERDA may also generate a third-party case study for public distribution at a future date, with permission from the host site and the Participating Contractor.

2.7 Payment

No incentive funding will be paid until the following items have been submitted and approved by NYSERDA:

- all required siting and permitting approvals;
- permission to operate from the utility;
- final Professional Engineer-stamped system designs;
- the total installed project cost;
- a decommissioning plan; and
- completion of NYSERDA's quality assurance inspection and resolution of any issues identified.

The specific payment parameters will be outlined in the Program Manual and may change over time.

2.8 Low to Moderate Income (LMI) Customer Access

NYSERDA will provide technical assistance resources to address barriers to projects serving LMI customers and affordable housing providers. This includes maximizing project economics and replication and meeting resiliency needs during a grid outage. NYSERDA will dedicate technical assistance resources to working with municipal, non-profit, and public housing facilities to examine the most effective business models for deploying energy storage in conjunction with other on-site clean generation such as solar PV. These technical assistance services can also be made available to schools, medical facilities, and other facilities of refuge located in LMI communities to maximize project benefits,

Energy Storage Market Acceleration Incentives Implementation Plan

including resiliency. These activities will be conducted as part of NYSERDA's energy storage soft cost reduction program in coordination with NY-Sun's LMI initiatives. LMI adoption will be monitored and NYSERDA will propose any modifications, as needed.

3. BULK STORAGE INCENTIVES

The proposed Bulk Storage Incentive Program will provide financial support for new energy storage systems over 5 MW of AC power that primarily provide wholesale market energy, ancillary services and/or capacity services. Systems may be interconnected at the transmission, sub-transmission or distribution level and may provide distribution services in addition to wholesale services. Incentive funds will be deployed through a NYSERDA-administered declining block incentive. Eligible energy storage systems are commercially available chemical, thermal, or mechanical systems installed within each IOUs distribution and bulk system. Long Island projects will also be supported through RGGI funds and described in the Program Manual. NYSERDA will also work with the IOUs to incentivize projects procured under their Utility Bulk Dispatch Rights RFPs, as described in Section 3.8. The requirements and eligibility that follow relate to the NYSERDA-administered declining block incentive which will be officially launched and ready to accept project applications and display dashboards showing committed and remaining funds in the second quarter of 2019.

These proposed incentives are designed to compensate for benefits accruing over a 20-year life of the storage asset such as cost savings resulting from reducing soft costs and accelerating the cost decline curve, environmental benefits such as carbon savings (peak/off-peak arbitrage by charging from cleaner energy off-peak to displace the need for more emitting fossil-based generation during peak periods), hosting capacity improvements, and improving system resiliency. This 20-year life includes augmentation as required of the storage technology. As described in the [IOU implementation plans](#) filed on February 11 and 12, 2019, the Bulk Storage Dispatch Rights RFP evaluation criteria will also consider localized benefits from emissions reductions including in environmental justice communities.

NYSERDA will also promote other means to improve project economics and bankability including financing options through the New York Green Bank which has committed to deploying at least \$200 million to enable energy storage project deployment in New York.³

3.1 Project Eligibility

Projects must meet the following minimum project eligibility requirements in order to apply for an incentive under the Bulk Storage Incentive Program.

- Completed its Facility Study in the New York Independent System Operator (NYISO) interconnection process, which is Stage 9 in the NYISO interconnection queue and the point at which the interconnection cost allocations are calculated, or completed the equivalent distribution utility study if connecting directly into the distribution system.
- Executed agreement demonstrating site control for the duration of the project's lifespan.
- Completed draft Environmental Impact Study with a negative declaration as evidenced by meeting minutes of the local government or written approval.

³ Case 13-M-0412, Order Establishing NY Green Bank and Providing Initial Capitalization, issued and effective December 19, 2013

Energy Storage Market Acceleration Incentives Implementation Plan

- If applicable, proof that the required Article 10 Application has been deemed compliant.

The following projects are ineligible:

- Projects that have been dispatched by the NYISO into the day-ahead, real-time, or ancillary services markets prior to March 11, 2019.
- Projects owned by IOUs or the New York Power Authority.
- Projects with a paired renewable and storage system and compensated through a NYSERDA-awarded REC contract.
- Projects awarded an IOU Bulk Dispatch Rights contract.
- Projects that receive a NYSERDA Retail Storage Incentive.

The proposed Bulk Storage Incentive Program will not be made available in Con Edison's service territory because storage incentives will instead be provided exclusively under Con Edison's Bulk Storage Dispatch Rights RFP. This exclusion will be re-examined after evaluating the results of the utility's first procurement.

Projects must also meet the following requirements:

- NYSERDA will only award one project per meter or per NYISO single point identifier (PTID).
- The energy storage system must be comprised of new products, electrically interconnected within New York, and that are NYISO-eligible to provide energy, capacity, and/or ancillary services.
- The storage system may not be relocated within New York without NYSERDA's written approval.
- If a project is relocated outside New York, NYSERDA will seek a return of its incentive funding from the developer or asset owner of record, calculated based on a pro-rata share of a 20-year life that the storage system would not remain in New York.
- The storage equipment must consist of commercial products carrying a manufacturer's warranty. The warranty must cover the entire energy storage system including ancillary equipment and power electronics. Experimental, beta, or prototype equipment is not eligible.
- The storage system must be certified to meet minimum safety requirements by a Nationally Recognized Testing Laboratory as evidenced by specific UL listings defined in the Program Manual. These will evolve to meet current best practices in the storage industry. These UL listings must be received by the time that the system enters commercial operation.
- Energy storage systems and components must comply with all manufacturers' installation requirements, applicable laws, regulations, codes, licensing, and permit requirements. This includes, but is not limited to, SEQRL; Article 10; the International Building Code Series as amended by the New York State Uniform Code Supplement; the National Electric Code; New York State's Standard Interconnection Requirements; and all applicable State, city, town, or local ordinances or permit requirements, and any additional requirements of the local AHJ.
- The system must be designed to maintain a minimum round-trip efficiency defined in the Program Manual and installed in accordance with the design and system components submitted in the application and approved by NYSERDA.

Energy Storage Market Acceleration Incentives Implementation Plan

3.2 Incentive levels

The proposed incentives will be offered at a fixed amount per usable kWh of installed storage capacity measured in AC at the Commercial Operation Date. This capacity will be verified through NYSERDA’s Quality Assurance inspection. Projects providing wholesale capacity services will receive the stated incentive rate. Projects providing only energy arbitrage or ancillary services will receive 75% of the stated incentive rate. A maximum incentive per project will also be established in the Program Manual. Tables 2 and 3 provide the initial incentive levels which may be adjusted based on market factors. The current incentive levels will be available on the NYSERDA Energy Storage Program website. All projects will reserve and lock in their incentive rate at the time a completed application is submitted and approved by NYSERDA.

- Projects up to 20 MW will have 18 months to achieve commercial operation upon receiving the incentive award. NYSERDA may extend this time period based on extenuating circumstances outside the developer’s control, as determined at NYSERDA’s sole discretion.
- Projects above 20 MW will have 24 months to achieve commercial operation upon completion of the NYISO Class Year process. NYSERDA may extend this time period based on extenuating circumstances outside the developer’s control, as determined at NYSERDA’s sole discretion.

Upon application approval, NYSERDA will reserve the incentive funding for the project. The approved project must maintain good standing in the NYISO or distribution utility interconnection queue in order to continue reserving funds. NYSERDA will verify this progress through project advancement demonstrated in the interconnection queue, discussions with the NYISO or distribution utility, and periodic reports from the Contractor demonstrating progress in meeting project development milestones. The developer must accept its interconnection cost allocation to continue reserving incentive funds for the project. In addition, the Contractor must provide NYSERDA with evidence of closing of financing for the facility or self-financing.

Table 2. Incentive Levels for Projects Less than 20 MW in Total Size

The proposed incentive level indicated below is based upon the year in which an accepted project application is submitted to NYSERDA, since projects less than 20 MW do not need to pursue the NYISO Class Year process. As noted in Section 3.3, incentive levels may be adjusted by NYSERDA, with DPS staff guidance, at a future date to reflect market conditions.

2019	2020	2021	2022	2023	2024	2025
\$110/kWh	\$100/kWh	\$90/kWh	\$80/kWh	\$70/kWh	\$60/kWh	\$50/kWh

Table 3. Incentive Levels for Projects Greater than 20 MW in Total Size

The proposed incentive level indicated below is based upon the Class Year in which the project will be examined since any project over 20 MW must pursue the NYISO Class Year process in order to offer energy, ancillary services and/or capacity services. As noted in Section 3.3, incentive levels may be adjusted by NYSERDA, with DPS staff guidance, at a future date to reflect market conditions.

First NYISO Class Year to Begin After Filing of this Plan (estimated to begin in 2019)	Second NYISO Class Year to Begin After Filing of this Plan (estimated to begin in 2021-22)
\$85/kWh	\$75/kWh

Energy Storage Market Acceleration Incentives Implementation Plan

3.3 Flexibility to Adapt to Market Conditions

NYSERDA will monitor uptake in each region and use case. Market conditions are expected to change, and adoption in individual regions and use cases may exceed or fall below projections. Cost data, project economics and adoption trends will be obtained from a NYSERDA storage cost components survey conducted in the first quarter of each calendar year, storage incentive applications, aggregated data from New York's investor owned utilities procurements, market research studies, and developers. NYSERDA will re-examine the incentive levels and structure as necessary, with DPS staff guidance, to optimize the Program's ability to achieve overall program goals. Redesign may include the reallocation of funds and incentive levels.

NYSERDA will share information with all stakeholders regarding program progress and market conditions by making data and analysis publicly available. If changes are necessary, NYSERDA will provide sufficient notice to enable a smooth transition after gathering market data, consulting with stakeholders, and consulting with DPS staff.

3.4 Project Submission

Contractors are fully responsible for all aspects of their energy storage projects funded under the Program and must demonstrate relevant prior experience. The Contractor must provide a single point of responsibility for the installation, maintenance, and operation of the storage system for the life of the project. The Contractor may use subcontracted teams to fulfill these obligations. Regardless of the teaming arrangement, however, the Contractor remains fully responsible for all aspects of the project.

A Contractor must be registered to do business in New York State. The Contractor must meet all program requirements, including required insurance coverage, as detailed in the Program Manual in effect at the time. A Contractor must comply with all local authority requirements for registration and licensing.

In its first project application to NYSERDA, the Contractor must submit evidence demonstrating that the Contractor and core project team have prior experience developing bulk energy storage, wind, PV, or other electric power generation installations. Contractors will also be evaluated on past performance in other NYSERDA and utility programs, if applicable. Contractors will be required to submit a quality assurance plan, organizational chart, and resumes for key personnel. A project application will not be approved if the Contractor has unresolved performance issues in this or other New York State or utility programs. In subsequent project applications, the Contractor will attest that no material changes have occurred to the company or key staff.

NYSERDA reserves the right to deny project applications if the contractor is delinquent on other NYSERDA-funded projects. Any Contractor that moves forward with the installation of a project that does not yet have an approved status by NYSERDA does so at the Contractor's own financial risk. Project applications will be submitted through a NYSERDA online portal. In addition to the information required above, an application must include evidence of achieving the minimum project maturity as well as the following:

- location of the storage system and facility type where installed;
- intended use case;
- a description of the energy storage system including storage technology type, manufacturer,

Energy Storage Market Acceleration Incentives Implementation Plan

- MW and MWh, and roundtrip efficiency;
- intended design of the installation; and
- Contractor certifications.

Once an application has been received, the project may undergo a desktop design review examining the technical and financial feasibility of the system's sizing compared to its intended use case. In this review, NYSERDA or its designee may examine technical specifications, including the site plan and drawing, and system sizing. Projects that are approved will be approved at the applicable incentive rate that existed at the time when the application was submitted.

The Contractor may assign the project and NYSERDA award or payments to subsequent purchasers pursuant to the Program Manual in effect at the time. The Contractor shall provide NYSERDA with necessary documentation to demonstrate the purchaser meets all eligibility requirements. If the project has not yet begun commercial operation, the Contractor shall provide NYSERDA with evidence of the proposed new Contractor's prior experience developing bulk energy storage, wind, PV, or other electric power generation installations.

3.5 Quality Assurance

NYSERDA maintains the integrity of the program through an independent Standards and Quality Assurance (SQA) team, which manages the Quality Assurance/Quality Control (QA/QC) system for the program. The QA/QC system has several components including, but not limited to, establishment of program standards and comprehensive field and photo/desk inspections. Quality Assurance refers to the NYSERDA process of field and photo inspections including the resolution of any issues identified during the field or desk/photo inspection. The inspections will occur during construction and after the system has been installed, is commissioned and enters Commercial Operation. QA will occur for every project. Corrective actions to remedy deficiencies identified during QA shall be the responsibility of the Contractor. Contractors may also be moved into probation status, suspended or terminated based on the results of QA inspection or violating program requirements.

NYSERDA's SQA team will manage the QA process. The Contractor will be responsible for ensuring compliance of the energy storage system with all applicable laws, regulations, rules and standards, including requirements of the local AHJ. The QA inspection will provide NYSERDA with an opportunity to evaluate the accuracy of the site analysis and design paperwork as well as verify the system was installed according to all program requirements. The QA inspection will include selected health, safety, and performance items. QA field and photo/desk inspections will be conducted by a qualified independent third party, using comprehensive field and photo inspection QA checklists and inspection processes approved by NYSERDA. These checklists will be available for review on NYSERDA's Energy Storage Incentive web page.

Following an inspection, either field or photo, NYSERDA will produce a detailed report and determine whether the project fully complies with all program requirements and meets acceptable standards of workmanship. The QA inspection report will provide all evaluated elements of the project and list any nonconformances identified. Projects that have nonconformances related to critical (health and safety) or major (system performance) attributes will automatically fail. Projects that have only nonconformances related to minor or incidental attributes may pass or fail based on the number and type of nonconformance observed. The Contractor is responsible for correcting all nonconformances identified in the time required by NYSERDA, determined by NYSERDA at its sole discretion based on the degree of nonconformance. Contractors are required to submit proof to NYSERDA demonstrating correction of all items identified.

Energy Storage Market Acceleration Incentives Implementation Plan

3.6 Measurement and Verification

Measurement and Verification (M&V) refers to NYSERDA's review of the performance of the system during ongoing operations. M&V will occur for every project. All projects funded under this Program must install a revenue grade meter to record the energy storage system's charge and discharge activity. All projects will initially be required to undergo M&V to verify that the system is operating as intended and within the expectations established during the design review phase of the project application. This will include the benefits derived from using the storage system. The Contractor will be required to provide NYSERDA's M&V contractor with interval data showing charge and discharge for a period of up to five years.

In order to show progress in achieving the State's storage goals, and to highlight projects and use cases, NYSERDA will list all storage projects deployed on the NYSERDA DER Integrated Data System at www.der.nyserderda.ny.gov. This will include non-proprietary data on individual projects and may include aggregated total kWh discharged through an energy storage system. NYSERDA may also generate a third-party case study for public distribution at a future date, with permission from the Participating Contractor.

3.7 Payment

In order to receive the first payment of the incentive award, a project must have passed the NYSERDA QA inspection and begun being dispatched by NYISO into the day-ahead, real-time, or ancillary services markets. Payments will not begin until the following have been submitted and approved by NYSERDA:

- all required siting and permitting approvals;
- proof that the project has entered commercial operation, as defined in the Program Manual in effect at the time;
- the total installed project cost;
- a decommissioning plan; and
- completion of NYSERDA's QA requirements, and resolution of any issues identified.

3.8 Coordination with Utility Bulk Storage Dispatch Rights Requests for Proposals

Under the Storage Order, the IOUs are required to issue an initial RFP in 2019, and subsequent RFPs annually as necessary, to competitively procure bulk energy storage dispatch rights for up to seven-year terms. As described in the [IOU implementation plans](#) filed on February 11 and 12, 2019, these contracts will provide a fixed revenue stream to the developer, and help the utilities to experience operating as a Distribution System Platform Provider to maximize distribution and wholesale system benefits for ratepayers. NYSERDA will work with each IOU to provide incentive funding as required on contracted projects based on an economic evaluation of the bids. The NYSERDA incentive will consider the incentive levels in effect at that time (Tables 2 and 3) and the lower cost of project capital resulting from a fixed utility revenue stream. The developer may not also apply for funding under the NYSERDA Bulk Storage Incentive Program, since any NYSERDA incentive will be provided through the IOU Dispatch Rights contract.⁴

⁴ The NYSERDA Retail and Bulk Storage Incentive program eligibility and program requirements included in this Plan do not establish the eligibility criteria and requirements for the utility solicitations. Interested parties shall refer to the specific Utility Dispatch Rights RFPs for requirements.

Energy Storage Market Acceleration Incentives Implementation Plan

4. BUDGET

The design of the incentive programs proposed herein is structured to provide a reduced incentive glidepath with participation criteria and payment requirements set to achieve goals within the established budget, based on the pace of market activity and unbounded by annual budgets. Table 4 presents the initial budget by sector for the energy storage incentives authorized by the Storage Order and the \$40 million of previously authorized Clean Energy Funds for PV + storage projects. Excluded from this table is approximately \$53 million of RGGI Funds that have been authorized by NYSERDA’s Board of Directors for use on Long Island for the Retail and Bulk Incentives, as described in the Program Manuals. In addition to the program incentive budget, the Storage Order authorized funding for program implementation, NYSERDA administration, evaluation, and State cost recovery fees. Energy storage soft cost reduction activities described in this Plan will be supported by \$25 million in Clean Energy Funds previously authorized under the Reducing Barriers to Distributed Energy Storage CEF Investment Plan.

Table 4. NYSERDA Energy Storage Program Budget 2019-2025 ^a

Program Budget Element ^b	Budget
Retail Use Case Incentives (includes \$40 million in CEF funds)	\$130,000,000
Bulk Incentives	150,000,000
Unallocated funds (to be utilized based on DPS guidance)	70,000,000
Consumer education	2,000,000
Implementation, Quality Assurance, and Measurement and Verification	9,960,000
Program Administration	22,733,000
Evaluation	5,000,000
State Cost Recovery Fee	4,440,000
Total	\$394,133,000

^a This Table includes incentive funding awarded between 2019-2025 as described in this Plan and program implementation/administration, quality assurance, M&V, and evaluation costs related to administering these awards through the 2026-2027 State Fiscal Year, at which time Staff anticipates all projects will have been fully paid.

^b This table does not include RGGI funds allocated by NYSERDA for customers served by PSEG Long Island.

Any change to the allocation between Retail Incentives and Bulk Incentives, and requests to commit the unallocated funds, will be submitted for DPS approval through a revised Implementation Plan. Prior to seeking approval, NYSERDA will seek stakeholder input.

Program administration costs include salary and fringe benefit costs for NYSERDA staff involved in managing programs, allocable salary and fringe benefit costs for administrative support staff, direct program management expenses (travel and other costs), and allocable overhead administrative, facility and equipment expenses.

NYSERDA will manage the Program within the administration budget, optimize administration of the programs to the best of its ability, and keep DPS Staff informed of actual costs and necessary modifications to program design over time.

Energy Storage Market Acceleration Incentives Implementation Plan

5. PERFORMANCE METRICS AND EVALUATION

The following performance metrics will be measured and reported annually in the State of Storage Report required by the Storage Order:

- Average total installed cost of energy storage systems
- Total MWs and MWhs deployed, including those funded by NYSERDA incentive funds
- Major progress during the year in reducing soft costs
- New impediments to deployment that have been identified and proposed solutions
- Adjustments to market acceleration incentive funds

The number of projects awarded, MWs and MWhs incentivized, and total incentive funds committed will be available on the NYSERDA [Energy Storage webpage](#). In addition, NYSERDA will conduct periodic evaluations of the portfolio of projects funded for statewide peak reduction impacts and anticipated carbon benefits. Impact, Market and Process evaluations are anticipated during the course of this program as described below.

Given the long-term funding authorization and the desire to be responsive and flexible to evolving needs, this section outlines likely evaluation activities at a high level, while purposefully leaving flexibility for future discussion between NYSERDA and DPS staff to enumerate the specific direction and study plans.

Impact evaluations will be conducted to verify actual production of installed storage systems; investigate reasons for differences, if any, in actual vs. projected economics; and examine persistence of system performance over time. Impact evaluation will deploy a sampling approach to cost-effectively address the population and potentially various segments or types of installed projects. The specific impact evaluation objectives, approaches and timelines will be further defined by NYSERDA and DPS staff with stakeholder input.

Market and Process Evaluations will assess important market indicators over time to understand the impact of the program and to help position the program for maximum effectiveness. Market and Process evaluation will likely be applied to understand indicators such as system cost, evolution of business models, and installer and customer satisfaction over time. The details of this potential evaluation area will also be determined by NYSERDA and DPS staff with stakeholder input.

The total proposed budget for evaluation of the NYSERDA Energy Storage Incentive Program is \$5.0 million from 2019 through 2025. This aggregate budget will be managed over the duration of the Program in consultation with DPS staff to deliver these studies and others as may be needed. The proposed evaluation funding will also support internal NYSERDA staffing requirements and external consultant activities pertaining to evaluation.