

# Bulk Energy Storage Incentive Program

## Program Manual

January 2020



**NYSERDA**

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# Summary

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NYSERDA's Bulk Storage Incentive program provides financial support for new energy storage systems over 5 megawatts (MW) of power measured in alternating current (AC) that 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 incentive.

These 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.

# 1 Project Eligibility

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Eligible energy storage systems are commercially available chemical, thermal, or mechanical systems physically located within New York State and interconnected into New York’s bulk transmission system or an Investor Owned Utility’s (IOU) transmission or distribution system. Projects located in Con Edison’s New York City service territory that choose not to participate in Con Edison’s Bulk Storage Dispatch Rights RFP, or are not selected for award, will become eligible to apply for NYSERDA incentives directly under this Program beginning April 1, 2020. Projects installed in Long Island Power Authority’s territory may become eligible in the future subject to the availability of Regional Greenhouse Gas Initiative (RGGI) funds.

Projects must meet the following minimum project eligibility requirements in order to apply for an incentive under this program.

- Project must be in Stage 9 in the NYISO interconnection queue or later (see NYISO interconnection stage list below, with more information contained within [NYISO’s OATT 30 Attachment X – Standard Large Facility Interconnection](#)), or have begun 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.
- If applicable, proof that the required Article 10 Application has been deemed compliant. Note: Standalone Energy Storage Projects in New York are not considered generators and not required to complete the Article 10 process.

## NYISO Interconnection Queue Stages

1. Scoping Meeting with NYISO Pending
2. Feasibility Study Pending
3. Feasibility Study in Progress
4. System Impact Study Pending
5. System Impact Study in Progress
6. System Impact Study Approved
7. Facility Study Pending
8. Rejected Cost Allocation/Next Feasibility Study
9. Facility Study in Progress
10. Accepted Cost Allocation
11. Interconnection Agreement
12. In Construction
13. In-Service for Test
14. In-Service

Projects must also adhere to 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 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 or relocated outside of New York State without repaying the incentive as described in Section 8 below.
- 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 the New York State Environmental Quality Review Act (SEQRA) (or the City Environmental Quality Review Act (CEQR)); 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 Section IX and installed in accordance with the design and system components submitted in the application and approved by NYSERDA.

The following projects are not eligible for the Bulk Storage Declining Incentive program:

- 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.
- Paired renewable and storage system projects that are compensated through a NYSERDA-awarded Renewable Energy Certificate (REC) contract as a paired system.
- Projects awarded an IOU Bulk Dispatch Rights contract.
- Projects that receive a NYSERDA Retail Storage Incentive.

## 2 Contractor Eligibility

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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 and have the capability to provide or ensure that warranty services are provided on all storage systems installed. A participating contractor must comply with all local authority requirements for registration and licensing. Participating contractors are prohibited from using NYSEERDA's logo on their website or any marketing materials.

In its first project application to NYSEERDA, 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 NYSEERDA and utility programs, if applicable. Contractors must 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.

NYSEERDA reserves the right to deny project applications if the contractor is delinquent on other NYSEERDA-funded projects. Any contractor that moves forward with the installation of a project that does not yet have an executed contract with NYSEERDA does so at the contractor's own financial risk. Incentives are not awarded until a project has an executed contract with NYSEERDA.

A Participating contractor is responsible for:

- Meeting all program requirements, as set forth in the Bulk Storage Incentive Program Manual in effect at the time
- Obtaining all necessary permits and approvals
- Adherence to its obligations under contract with NYSEERDA
- Warranties
- Installation and quality of the project, including compliance with local siting regulations

## Participating Contractor Resources

Local permitting authorities, electric utilities, developers, and integrators in New York State will have access to [technical assistance resources](#) through NYSERDA. Services include market information and guidance, technical assistance, trainings, project technical and economic screenings, permitting and interconnection guidance, and site visits by expert consultants that have been retained by NYSERDA. Participating contractors can also access fact sheets, guides, webinars, and workshops or conferences online at [nyserda.ny.gov/energystorage](https://nyserda.ny.gov/energystorage) or by contacting [energystorage@nyserda.ny.gov](mailto:energystorage@nyserda.ny.gov).

### 3 Incentive Structure

The 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 eligible to provide wholesale capacity services, as shown by having CRIS rights through the NYISO, will receive the stated incentive rate. Projects providing only energy arbitrage and/or ancillary services will receive 75% of the stated incentive rate. This incentive will be provided at the dollar value listed below for each of the first four (4) hours of a system’s duration and decline to 25% of this dollar value for hours 5 and 6 of duration with no incentive for any duration beyond 6 hours.

Tables 1 and 2 provide the current incentive levels. Refer to the NYSERDA Energy Storage dashboard for MWs and MWhs committed and remaining funding available in the IOU service territories. There is no maximum project size; however, the total NYSERDA incentive will not exceed \$25 million on a single project. Developers may not subdivide a parcel or project for purposes of exceeding this cap.

All projects will reserve and lock in their incentive rate at the time a completed application is submitted and approved by NYSERDA.

**Table 1. Incentive Levels for Projects 20 MW and Less in Total Size**

The incentive level is based on the calendar year an accepted project application is submitted to NYSERDA since projects 20 MW and less follow the Small Generator Interconnection Procedures at the NYISO.

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

Projects 20 MW and less will have 18 months to achieve commercial operation upon contract execution. Projects that do not achieve commercial operation by the required date will be canceled unless a request for an extension has been submitted to NYSERDA and approved. NYSERDA may extend this time period based on extenuating circumstances outside the developer’s control, as determined at NYSERDA’s sole discretion.

**Table 2. Incentive Levels for Projects Exceeding 20 MW in Total Size**

The incentive level is based upon the NYISO Class Year the project will be examined since any project exceeding 20 MW must pursue the NYISO Class Year process in order to offer energy, ancillary services and/or capacity services.

First NYISO Class Year to Begin After March 11, 2019 (estimated to begin in 2019)	Second NYISO Class Year to Begin After March 11, 2019 (estimated to begin in 2021-22)
\$85/kWh	\$75/kWh

Projects exceeding 20 MW will have 24 months to achieve commercial operation upon completion of the NYISO Class Year process. Projects that do not achieve commercial operation by the required date will be canceled unless a request for an extension has been submitted to NYSERDA and approved.



NYSERDA may extend this time period based on extenuating circumstances outside the developer's control, as determined at NYSERDA's sole discretion.

### Changes to the Incentive Level

Initial incentive levels 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.

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. Changes to the incentive level due to market factors will not reduce the incentive of an already awarded project that meets all requirements of this program.

## 4 Demonstrating Continued Project Viability

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Upon application approval, NYSERDA will provide an award letter and issue a contract to the participating contractor. The contract will serve to reserve the incentive funds 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 following major project development milestones must be demonstrated to NYSERDA within 30 days as each is achieved in order to continue reserving incentive funds. NYSERDA may request a project update at any time. Failure to provide evidence of these milestones may result in contract termination.

- The developer must accept its interconnection cost allocation to continue reserving incentive funds for the project.
- Execute the interconnection agreement.
- Apply for and receive all required government permits and approvals including SEQRA or CEQR, Article 10 if applicable, building permit, electrical permit, and fire permit. Developers must keep approved permits current and not expired.
- Close project financing or demonstrate evidence of self-financing.
- Commence construction and complete construction.
- Provide NYSERDA with a commissioning report documenting the results of commissioning in accordance with manufacturer specifications.
- Enter commercial operations that are defined as when the project has begun being dispatched by the NYISO into the wholesale day-ahead, real-time, or ancillary services markets.
- The contractor may assign the project and NYSERDA contract or payments to subsequent purchasers at any stage in compliance with this Program Manual and the executed contract. The contractor will provide NYSERDA with necessary documentation to demonstrate the purchaser meets all eligibility requirements. If the project has not yet begun commercial operation, the contractor will provide NYSERDA with evidence of the proposed new contractor's prior experience developing bulk energy storage, wind, PV, or other electric power generation installations.

## 5 Submitting a Project Application

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Contractors must submit project applications for incentives by using the NYSERDA Bulk Storage Incentive Program Application available from this link within Program Opportunity Notice 4139: [nysERDA.ny.gov/Funding-Opportunities/Current-Funding-Opportunities](https://nysERDA.ny.gov/Funding-Opportunities/Current-Funding-Opportunities). Incomplete applications will not be reviewed. Project applications must meet all technical requirements in Section IX and submit the following as part of the project application:

- NYISO documentation that project is in Stage 9 of the NYISO interconnection queue (a copy of the current NYISO interconnection queue or written confirmation from the NYISO stating the project is in Stage 9 if the queue has not been updated). For distribution interconnected projects, written confirmation from the distribution utility that the facility/final interconnection study is underway.
- An executed agreement demonstrating site control for the duration of the project's lifespan.
- Negative declaration under SEQR or CEQR as evidenced by meeting minutes or written approval from the local Authority Having Jurisdiction/lead agency.
- If applicable, proof that the required Article 10 Application has been deemed compliant.
- Approved Special Use Permit from the local municipality.
- Type of energy storage system and product description, including manufacturer equipment specifications for all major components of the storage system, such as the storage component (e.g., battery), inverter, converter, controller, and additional system components.
- Site plan including location and layout of all energy storage system components: storage system, inverters/chargers, management system disconnects, point of interconnection, and meter.
- Installation schedule: realistic installation and interconnection schedule taking into account timeline requirements of permitting agencies and commissioning.
- Estimate of total project costs through commercial operation including development, equipment, construction, and commissioning.
- Completed and signed NYSERDA project application form.

The following items must be submitted when completed and may be provided with the project application or after an award has been reserved, as indicated by an award notification email from NYSERDA. In all cases, the following documentation must be submitted before an incentive payment will be made.

- Electrical drawing: use standard symbols to clearly describe the energy storage system. Either a one- or three-line drawing is acceptable and must indicate:
  - Quantity, conductor size, and insulation type of all energized (hot) conductors, neutral/grounded conductors, and ground conductors.
  - Type and characteristics of all raceways, conduit, and enclosures.

- The voltage and amperage ratings of all switches, inverters/chargers, batteries, electrical panels, and other relevant equipment as applicable. The rating of the main service panel and its main breaker must be given.
- The quantity, manufacturer, and model of the inverters/chargers, and electrical storage system components.
- A decommissioning plan addressing the manner in which the energy storage system and its components will be recycled or safely disposed at the end of life or following system damage or failure, including the methods and tools necessary to indicate how the system and its components will be decommissioned and removed from the site, and how the site will be restored to its original state, if necessary. The decommissioning plan must include disposal options that comply with applicable New York State Environmental Conservation Law requirements, transportation requirements from the New York State Department of Transportation, and any other applicable laws or regulations, including State and Federal environmental laws and requirements of the local AHJ.
- Round-trip efficiency for the storage system.
- Proof of any received safety certifications detailed in the Technical Requirements under Section IX (note: these UL listings must be received by commercial operation).
- Proof of storage system manufacturer warranty.

## Design Review

Once an application has been received by NYSERDA, the project may undergo a technical and financial review (design review). NYSERDA will review technical specifications, including the site plan and drawing, for compliance with program rules. NYSERDA will review the system sizing for feasibility. The scope of review by NYSERDA of the installation of the storage systems is limited solely to determining whether such storage systems conform to Bulk Energy Storage Incentive Program terms, conditions, and requirements. NYSERDA does not make any representations of any kind regarding the results to be achieved by any storage system, or the adequacy or safety of such measures.

Approved projects will be funded at the incentive rate that existed at the time when the application was submitted. The contractor is responsible for ensuring the energy storage system is installed in accordance with the design and system components submitted in the application and approved by NYSERDA. However, NYSERDA's approval of the project application does not guarantee the system design, engineering, construction, and/or installation of the energy storage system is proper or in compliance with any particular laws (including patent laws), regulations, codes, or industry standards. Energy storage systems not installed according to the NYSERDA-approved design must have a project modification approved by NYSERDA. Upon inspection, if it is determined the system is not installed as approved, the contractor may not be eligible for incentive payments for the project and may be precluded from submitting project applications in the future. Contractors who proceed with projects that are not approved by NYSERDA do so at their own risk.

## **Project Modification**

After Contractor has received an executed contract, changes may be made to lower the number of MWs and MWhs based on the results of a NYISO or utility interconnection study or to the system design. Such changes may be requested of NYSERDA by contacting [energystorage@nyserda.ny.gov](mailto:energystorage@nyserda.ny.gov). Projects may not be increased in size without applying for a new incentive at the incentive level then in place. If, at a later date, the Contractor decides to add duration to a previously awarded and/or constructed project, the additional energy storage capacity will be awarded based on the prevailing incentive level and program rules in effect at that time. The total duration will be considered based on the MWs and MWh located behind the single point identifier (PTID) (e.g., for determining the incentive provided for hours 5 and 6 on an existing 4-hour duration project). The site location may not change. Awarded projects initially intending to provide capacity that subsequently decide to provide only energy and ancillary services will have the incentive rate adjusted according to the rules mentioned previously.

## **Payment Assignment**

The Contractor may request approval from NYSERDA to assign the incentive payment to another entity. The Contractor will be responsible for completing a Payment Assignment Form, to be provided by NYSERDA upon request, and obtaining the required signatures. All rights and responsibilities will remain with the Contractor.

## **Full Assignment**

The Contractor may request approval from NYSERDA to assign the NYSERDA award and executed contract to subsequent purchasers of the project at any stage of the project in compliance with this Program Manual and the executed contract. 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. The Contractor will be responsible for completing a Full Assignment Form, to be provided by NYSERDA upon request, and obtaining the required signatures. NYSERDA reserves the right to deny a full assignment request and may ask for additional documentation before approving the request.

## **Project Cancellation**

Requests to cancel a project must be done by submitting a request for cancellation to [energystorage@nyserda.ny.gov](mailto:energystorage@nyserda.ny.gov). Should a project wish to move forward after cancellation, the Participating Contractor must submit a new project application. In this case, the incentive level and all rules in effect at the time the new application is submitted will apply.

## 6 Quality Assurance

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NYSERDA maintains program integrity through an independent Standards and Quality Assurance (SQA) team, which manages the Quality Assurance (QA) system for the program. The participating contractor is responsible for ensuring compliance of the system with all applicable laws, regulations, rules, and standards, including requirements of the local AHJ, and demonstrating compliance with the requirements in the [Battery Energy Storage Guidebook](#) published by NYSERDA.

The QA program has several components, including a review of qualifications and credentials, paperwork audits, establishment of program standards, and comprehensive field and photo inspections for purposes of inspecting for conformance with program requirements. QA field and photo inspections include verification of the contracted scope of work, accuracy of the site analysis, comparison of installation to submitted design drawings, and the overall delivered quality of the energy storage installation. The NYSERDA SQA team, or its representatives, may make a reasonable number of visits to the installation site before, during, and after installation of an energy storage system to assess overall compliance.

The purpose of the QA inspection is to provide NYSERDA with an opportunity to evaluate the accuracy of the site analysis and design paperwork and verify the system was installed according to all program requirements. The QA inspection also includes selected health, safety, and performance items as well as specific compliance items per applicable code.

Pre-commissioning field or photo inspections as well as post-commissioning QA field or photo inspections will be conducted on each project funded under this program. The energy storage project inspections will confirm the installed storage equipment (MW/MWh AC) is as approved by the program; ensure general quality of the storage installation complies with codes, standards, and industry accepted practices; and appropriate metering and data logging are in place. The QA inspection does not include specific compliance with any codes, standards, laws, regulations, or industry accepted practices; the Contractor is responsible for ensuring the system is installed in compliance with all applicable codes, standards, laws, regulations, and industry accepted practices. The storage system must be commissioned in accordance with manufacturer specifications, and a commissioning report must be provided to NYSERDA. The commissioning report should document the specific parameters in which the system was fully charged and discharged to determine its usable energy in accordance with manufacturer requirements.

QA field and photo inspections are conducted by a qualified independent third party, using comprehensive field inspection QA checklists that will be made available to participating contractors and inspection processes approved by NYSERDA. These inspections will be scheduled at the site operator's convenience. Every effort will be made to accommodate the schedule of the participating contractor, but the site operator's schedule and efficient scheduling of inspections will take precedence.

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 details of all evaluated elements of the project and list any nonconformances identified. The inspection report will provide an overall score of the project and identify a pass or fail. Projects that have nonconformances related to critical (health and safety) or major (system performance) attributes will automatically fail. Projects that have only nonconformances to minor or incidental attributes may pass or fail based on the number and type of nonconformance observed. Participating contractors are required to respond to NYSERDA with proof of corrective action for those projects that received a failed inspection report. The participating contractor is responsible for correcting all nonconformances identified in the time required and determined by NYSERDA at its sole discretion based on the degree of nonconformance.

NYSERDA has the right to provide a copy of the QA report or specific information from the field or photo inspection directly to the customer, AHJ, or the NYISO or interconnecting utility based on health, safety, and compliance concerns. In an emergency, NYSERDA or its representatives may shut down the system and will notify the contractor of such action as soon as is possible.

## 7 Measurement and Verification

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All projects will be required to undergo 90 days of M&V to verify the system is operating as intended. All projects funded under this program must utilize a NYISO or electric distribution utility revenue grade meter to record the net energy charged and discharged (kWh) from the energy storage system. The meter must be accurate to within  $\pm 2\%$  according to all applicable ANSI C-12 testing protocols and certified for accuracy by a Nationally Recognized Testing Laboratory (NRTL).

A NYSERDA quality assurance contractor will be provided interval data showing 15-minute charge and discharge data from the energy storage system through an automated data transfer. This will be established prior to the QA inspection and data will be provided for at least five years. NYSERDA will use this data to verify system performance and extrapolate grid benefits from operation of the energy storage system. In addition, the project location, energy storage type, use case, MW, and MWh size will be displayed on NYSERDA's DER Integrated Data System at <https://der.nyserda.ny.gov/>. Net cumulative MWh discharged may also be displayed on the DER portal, in no more granular data than cumulative quarterly totals.

NYSERDA may also generate a third-party case study at a future date, with permission from the participating contractor. If a project is selected for case study analysis, NYSERDA or NYSERDA's QA contractor may request the participating contractor to provide additional data.



## 8 Payment Terms

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Payments will not begin until after the following items have been submitted and approved by NYSERDA:

- All required siting and permitting approvals
- Permission to operate, if required, from the NYISO or electric distribution utility
- Documentation of entering commercial operation demonstrated by dispatch by NYISO into the day-ahead, real-time, or ancillary services markets
- A decommissioning plan and any other remaining items from Section IV
- Total installed cost, including the percent of total installed cost comprised of each of the following four line items:
  - Hardware: Battery modules, inverter, containerization, controller, power control, HVAC system, meter, insulation, and other components. Excludes upgrades required for permitting or interconnection approval.
  - Engineering and construction: Design, site preparation/survey, transportation, Professional Engineer approval, testing, electrician and installation labor, wiring, fencing, testing, commissioning, and enrollment in energy markets. Excludes upgrades required for permitting or interconnection approval.
  - Permitting and siting: Application fees, responding to requests for additional information, studies, and unique safety protections required from the AHJ.
  - Interconnection: Application and required upgrades or studies cost.
- Completion of NYSERDA's quality assurance requirements, including verifying usable capacity and resolution of any issues identified

The incentive amount will be paid in four equal payments of 25% each over three years as follows:

- Payment 1 upon completion of the above, including the system beginning commercial operation defined as the project being dispatched by the NYISO into the wholesale day-ahead, real-time, or ancillary services markets.
- Payments 2, 3, and 4 will be made after each of the next 12 months of commercial operation and following submission of charge/discharge interval meter data to NYSERDA's M&V contractor.
- Projects seeking capacity rights may choose to provide ancillary services while still completing the CRIS process. In this case, the first and second payments will be made upon providing the necessary documentation to NYSERDA. Additional payments will not be made until the project obtains its CRIS rights.

## Clawback

If the system is moved to another location in New York State that is not eligible for incentives such as a municipal electric utility or electric cooperative whose customers do not pay the SBC Surcharge, or relocated outside New York State, 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 does not remain in an eligible New York State location.

NYSERDA reserves the right to seek reimbursement of payments if an approved energy storage system was not actually installed, was not installed as required under the Bulk Energy Storage Incentive program or NYSERDA Agreement, was not installed according to the approved system design, was completely installed prior to NYSERDA's approval of the project application, or is no longer operating in accordance with the rules of the program or agreement.

# 9 Technical Requirements

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The following additional technical requirements apply to all projects funded under this program.

## Installed in New York State

Systems must be installed and electrically interconnected in New York.

## Energy Storage System Warranty

The storage equipment must consist of commercial products carrying a manufacturer warranty. The warranty must cover the entire energy storage system, including ancillary equipment and power electronics. Experimental, beta, or prototype equipment is not eligible.

## Grid Connected

The energy storage system must be connected to the transmission, sub-transmission or electric utility's distribution system, and must be operated for meeting New York State electric system needs.

## Safety Certifications: Listed to UL or CAN Standards

All eligible energy storage systems must be certified for safety by a Nationally Recognized Testing Laboratory (NRTL) as evidenced by listing to UL 9540 or CAN 9540 (Standard for Energy Storage Systems and Equipment) with subcomponents meeting each of the following standards that are applicable based on the storage type (chemical, thermal, mechanical): UL 1973 (Standard for Batteries for Use in Stationary, Vehicle Auxiliary Power and Light Electric Rail Applications), UL 1642 (Standard for Lithium Batteries), UL 1741 or UL 62109 (inverters and power converters). These listings must be received by the time the system enters commercial operation. In all cases energy storage systems must satisfy the requirements of the local AHJ. A field evaluation may also be conducted by an NRTL to the applicable product safety standard(s).

## Inverter Requirements

All inverters must be certified as meeting all applicable standards of IEEE and UL and approved by the NYISO or applicable electric utility.

## Round Trip Efficiency

All energy storage systems must be designed to maintain a minimum 70% round-trip efficiency. Roundtrip efficiency is the difference between kWh used to charge the system and kWh discharged from the system, including any parasitic losses and all forms of usable energy, and measured using the design procedures indicated in Pacific Northwest National Lab / Sandia National Lab's Protocol for Uniformly Measuring and Expressing the Performance of Energy Storage Systems (SAND 2016-3078 R).

## Other Components

All components of each energy storage system including charge controllers, wiring, and metering equipment must be new equipment and certified as meeting the requirements of all relevant national, New York State, local codes and standards, and any additional requirements of the local AHJ.

## Structural Requirements

The contractor is responsible for determining that a building is structurally able to support the addition of an energy storage system without overstressing the structure or increasing the load beyond acceptable national and State limits.

## Compliance with Laws and Codes

Energy storage systems and components must comply with all manufacturers' installation requirements, applicable laws, regulations, codes, licensing, and permit requirements. This includes the New York State Environmental Quality Review Act (SEQRA) (or the City Environmental Quality Review Act [CEQR]); any applicable provisions of the New York State Environmental Conservation Law (ECL) and Department of Environmental Conservation (DEC) regulations pertaining to disposal; Article 10, if applicable; 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. It is the Contractor's responsibility to ensure compliance with all such laws; NYSERDA will inspect to ensure such compliance and may terminate the agreement at any time upon a finding that any applicable law or code has not been complied with.



**State of New York**

Andrew M. Cuomo, Governor

**New York State Energy Research and Development Authority**

Richard L. Kauffman, Chair | Alicia Barton, President and CEO