Battery Energy Storage System Model Permit

Understanding the permitting requirements of residential and small commercial battery energy storage systems.
Section Contents

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Overview
The Model Permit is intended to help local government officials and AHJs establish the minimum submittal requirements for electrical and structural plan review that are necessary when permitting residential and small commercial battery energy storage systems.

Additionally, battery energy storage systems shall comply with all applicable provisions of the codes, regulations, and industry standards as referenced in the New York State Uniform Fire Prevention and Building Code.

The Battery Energy Storage System Model Permit is based on the 14th Edition of the National Electric Code (NEC), which is anticipated to be adopted by New York State in 2020. NYSERDA will continue to update the Guidebook as these codes and standards evolve.

The workable version of this document can be found at nyserda.ny.gov/Energy-Storage-Guidebook, under Battery Energy Storage System Model Permit tab.

PERMIT APPLICATION
Battery Energy Storage System Model Permit

Note: Language in [ALL CAPS] below indicates where local jurisdictions need to provide information specific to the jurisdiction. Language in italics indicates explanatory notes from the authors of this document that may be deleted from the distributed version.

SUBMITTAL INSTRUCTIONS
This application and the following attachments will constitute the Battery Energy Storage System Permitting Package.
• This application form, with all fields completed and bearing relevant signatures.
• Permitting fee of $[ENTER FEE HERE], payable by [ENTER VALID PAYMENT METHODS, If checks are allowed INCLUDING WHO CHECKS SHOULD BE MADE PAYABLE TO]
• Required Construction Documents for the battery energy storage system being installed, including required attachments.

Completed permit applications can be submitted electronically to [EMAIL ADDRESS] or in person at [BUILDING DEPARTMENT ADDRESS] during business hours [INDICATE BUSINESS HOURS].

APPLICATION REVIEW TIMELINE
Permit determinations will be issued within [TIMELINE] calendar days upon receipt of complete and accurate applications. The municipality will provide feedback within [TIMELINE] calendar days of receiving incomplete or inaccurate applications.

FOR FURTHER INFORMATION
Questions about this permitting process may be directed to [MUNICIPAL CONTACT INFORMATION].
## PROPERTY OWNER

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## EXISTING USE

- [ ] Residential
- [ ] Commercial

## PROVIDE THE TOTAL SYSTEM CAPACITY RATING

Total System Capacity Rating: ________ kWh

Power Rating: ________ kW (Select One)

- [ ] AC or [ ] DC

## SELECT SYSTEM CONFIGURATION

- [ ] AC Coupled
- [ ] DC Coupled
- [ ] Standalone

## SELECT BATTERY TYPE

- [ ] Lithium-ion, all types
- [ ] Lead-acid, all types
- [ ] Nickel-cadmium (Ni-Cd)
- [ ] Flow batteries
- [ ] Other: ____________________________

## SELECT INSTALLATION TYPE

- [ ] Indoor
- [ ] Outdoor
- [ ] Attached/Detached/Open Garage
- [ ] Rooftop
- [ ] Dedicated Use Building

## BATTERY ENERGY STORAGE SYSTEM INSTALLATION CONTRACTOR

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PERMITS AND APPROVALS REQUIRED

The following permits are the minimum requirements for battery energy storage systems installed with an aggregate energy capacity up to 600 kWh.

1. Battery Energy Storage System Permit

2. [LIST TYPE OF PERMIT(S) REQUIRED BY THE LOCAL JURISDICTION, i.e., ELECTRICAL OR BUILDING PERMIT].

SUBMITTAL REQUIREMENTS

In order to submit a complete permit application for a new battery energy storage system, the applicant must include:

  a) Completed Application form on page 2.

  b) Construction Documents, with listed attachments. Construction Documents must be stamped and signed by a New York State Registered Architect or New York State Licensed Professional Engineer.

General Requirements

• Minimum plan size is 11"x17" with a minimum font of 10.
  - Include 4 full sets of plans and 2 sets of supporting documents.

• Include the applicable codes on the cover sheet for the project.

• Include the complete scope of work on the cover sheet for the project.

• All battery energy storage systems, all dedicated use buildings, and all other buildings or structures that (1) contain or are otherwise associated with a battery energy storage system and (2) subject to the NYS Uniform Fire Prevention and Building Code (Uniform Code) and/or the NYS Energy Conservation Construction Code (Energy Code) shall be designed, erected, and installed in accordance with all applicable provisions of the Uniform Code, all applicable provisions of the Energy Code, and all applicable provisions of the codes, regulations, and industry standards as referenced in the Uniform Code, the Energy Code, and the [Village/Town/City] Code.
Site Plan and Floor Plan Requirements

- Include a legend or key for the site and floor plan with equipment symbols.
- The site plan shall include:
  - The location of the structure and the location where the system is to be installed.
  - Show conduit/cable routing of battery energy storage system.
  - Include underground trench detail, if applicable.
  - Show overhead runs, if applicable.
  - Show method and location of required ventilation equipment (if required) for indoor installations.
- Identify the total number of batteries.
- The floor plan shall include:
  - New equipment for the battery energy storage system.
  - Existing equipment for interconnection.
  - Show required working clearances for all existing/new electrical equipment.
  - Show whether the equipment is to be installed indoors or outdoors.
  - Show method and location of requirement ventilation equipment (if required) for indoor installations.
  - Show method of protection from physical damage for the battery energy storage system.
  - Show means of access to battery energy storage system.
  - Denote whether conductors are routed indoors or outdoors.
- Provide an elevation drawing of the system equipment and specify elevation in relation to flood plains.
  - If the house is in a flood zone, it shall be above base flood elevation.
- Provide supporting documents from manufacturer if equipment is subject to physical damage.

Electrical

- Installations shall be in compliance with the Battery Energy Storage System Inspection Checklist. The Battery Energy Storage System Inspection Checklist provides an overview of common points of inspection that the applicant should be prepared to show compliance.
- Plans shall include a note that a plug-in type back-fed circuit breakers connected to an interconnected supply shall be secured in in accordance with (NEC 408.36(D)).
- Provide a permanent plaque or directory denoting all electric power sources on or in the premises, which shall be installed at the main service panel and at all locations of all electric power production sources capable of being interconnection (2017 NEC 706.11).
- One or Three-Line Diagram
  - Show grounding and bonding for the battery energy storage system, including the ground return path.
  - Show method of interconnection.
  - Show overcurrent protection method and rating when required.
  - Include detailed wiring information for all new circuits, including:
    > Conductor size/type
    > Number of conductors
    > Conduit size
    > Conduit type
  - Show all disconnection means.
  - Show ratings (voltage, ampacity, environmental, etc) for new and existing service equipment.
• Specifications and installation instructions
  - Prepackaged and pre-engineered battery energy storage systems shall be installed in accordance with their listing and the manufacturer’s instructions.
  - Provide specification sheets and installation instructions for the following equipment:
    > Batteries
    > Inverter
    > Transformer or autotransformer
    > Transfer switch(es)
    > ESS support or racking
    > Converters
    > Interconnecting cables and connectors
    > Management system, including charge controller(s)
    > Panelboards
    > HVAC/thermal management system
    > Fire rated material
  - Storage batteries and battery storage systems shall comply with the following:
    > Storage batteries shall be listed in accordance with UL 1973
    > Prepackaged and pre-engineered battery energy storage systems shall be listed in accordance with UL 9540
    *Exception:* Lead-acid batteries are not required to be listed
  - An approved energy management system shall be provided for battery technologies other than lead-acid and nickel cadmium for monitoring and balancing cell voltages, currents, and temperatures within the manufacturer’s specifications. The system shall transmit an alarm signal to an approved location if potentially hazardous temperatures or other conditions such as short circuits, over voltage or under voltage are detected.

**Fire Requirements**

- BESS installations in one to two family residential dwellings must comply with the following:
  > Individual BESS units shall have a maximum rating of 20kWh.
  > Individual BESS units shall be separated from each other by a minimum of 3 feet unless smaller separation distances are allowed per manufacturer’s instructions.
  > Individual BESS units installed outdoors on exterior walls shall be located a minimum 3 feet from doors and windows.
  > Interconnected smoke alarms shall be installed throughout areas where BESS are installed. Where BESS are installed in an area where smoke alarms cannot be installed in accordance with their listing, an interconnected listed heat alarm shall be installed and be connected to the smoke alarm system.
  > Indoor installations of BESS that include batteries that produce hydrogen or other flammable gases during charging shall meet the exhaust ventilation requirements set forth in the applicable fire code.
  > BESS that have the potential to release toxic or highly toxic gas during charging, discharging, and normal use conditions shall be installed outdoors.

**Structural Requirements**

- If the battery energy storage system is wall mounted and its weight is 200 lbs (or more), provide structural details in the drawings and calculations as a separate document (Uniform Code).
- If multiple battery energy storage systems are installed and the combined weight is 400 lbs or more, provide structural details in the drawings and calculations as a separate document (Uniform Code).
DEPARTMENTAL CONTACT INFORMATION

Once all permits to construct the battery energy storage system installation have been issued and the system has been installed, it must be inspected before final approval is granted for the battery energy storage system. On-site inspections can be scheduled by contacting [DEPARTMENT] by telephone at [PHONE NUMBER] or electronically at [WEBSITE OR EMAIL ADDRESS].

Inspection requests received within business hours are typically scheduled for the next business day. If next business day is not available, inspection should happen within a five-day window. [IF MUNICIPALITY ACCEPTS THIRD PARTY INSPECTIONS, INDICATE THIS AND PROVIDE A LIST OF APPROVED INSPECTORS].

In order to receive final approval, the following inspection is required:

[FINAL INSPECTION] The applicant must contact [INSERT CONTACT INFORMATION] when ready for a final inspection. During this inspection, the inspector will review the complete installation to ensure compliance with codes and standards, as well as confirming that the installation matches the records included with the permit application. The applicant must have ready, at the time of inspection, the following materials and make them available to the inspector:

- Copies of as-built drawings and equipment specifications, if different than the materials provided with the application.
- Photographs of key hard to access equipment.

[MUNICIPALITY NAME] has adopted a standardized “Battery Energy Storage System Inspection Checklist”, which can be found here: [WEBSITE ADDRESS].

Questions?

If you have any questions about the Battery Energy Storage System Model Permit, please email questions to cleanenergyhelp@nyserda.ny.gov or request free technical assistance at nyserda.ny.gov/Energy-Storage-Guidebook. The NYSERDA team looks forward to partnering with communities across the State.