

Permitting Outdoor Energy Storage Systems in NYC: AHJ Conceptual Design Meetings Preparation Guide

Overview

The Smart Distributed Generation (DG) Hub, established by Sustainable CUNY of the City University of New York in 2013, is a comprehensive effort to develop a strategic pathway to safe and effective solar and storage installations in New York City. This document was created in collaboration with the NYC Department of Buildings (DOB) and the NYC Fire Department (FDNY). It is intended for developers who are in the early stages of planning an energy storage system (ESS) project in New York City.

Prior to formally submitting permit and approval applications, developers should schedule one or more conceptual design meeting(s) with representatives from FDNY and the Office of Technical Certification and Research (OTCR) within DOB, both of which are Authorities Having Jurisdiction (AHJs) for ESS projects in NYC. The purpose of these meetings is to give the AHJs an initial understanding of the proposed project design and ensure the developer fully understands the relevant minimum permitting requirements and processes.

The checklists below are intended to assist developers in preparing for their conceptual design meetings with the AHJs. Developers should present information about their proposed ESS project plans as outlined in the checklists below, to the extent possible. Where relevant, developers should use appropriate pictures, diagrams, and/or illustrations to support their explanations to ensure the proposed design is as clear as possible. Information can be incorporated into a PowerPoint or other presentable format.

Developers should remember that required permits/approvals vary based on system size. The table below provides a summary of the permits/approvals required by FDNY and DOB. Definitions of system sizes for various battery chemistries are detailed in the FDNY Rule on Outdoor Energy Storage Requirements, [3RCNY 608-01](#), page 15.

AHJ	Approval Type	System Size Applicability
DOB	DOB standard permits (construction & electrical)	All system sizes
DOB	OTCR Approval	All system sizes
FDNY	Equipment Approval/Certificate of Approval	All system sizes
FDNY	Permit	Medium & Large systems only
FDNY	(Site-specific) Installation Approval* <i>*part of FDNY Permit application package</i>	Large systems only

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Checklist I: Basic Project Information

Prior to Conceptual Design Meetings with the AHJs, the developer should compile the information below, and if possible, conduct a visit to the site to confirm relevant details.

General Project Information

- Zoning district of proposed site and any potential zoning-related restrictions
- ESS Installation type (rooftop, ground-mount, mobile, indoor)
- Use case (incentive program, demand charge reduction, energy arbitrage, resiliency, etc.)
- Interconnection type (front-of-meter, behind-the-meter)

Basic System Specifications

- System size, including power (kW), energy (kWh), and duration (hr)
- Battery technology/chemistry, and Inverter information (make/model)
- Battery manufacturer
- Battery system integrator
- ESS physical properties (length, height, width, weight for cells, modules, and cabinets/racks)
- Enclosure type, if applicable – walk-in container or cabinet
- Any other distributed generation system/technology that the ESS is tied to

Basic Site Information

- Buildings or other infrastructure near and/or adjacent to the site
- Sensitive areas/structures (schools, nursing homes, public assembly areas, residential dwellings, hospitals, etc.) that are located near the site
- Other potential hazards located near the site (hazmat storage, etc.)
- Fire Dept. access for first responders to site (and/or rooftop)
- Hydrant/water availability (distance of hydrant to location)
- For any rooftop, building-adjacent, or indoor siting:
 - Facility type (commercial, industrial, residential, etc.)
 - Building type (warehouse, multi-family, etc.)
 - Building and/or rooftop construction type (combustible vs. non-combustible, etc.)
- Flood zone (yes/no)
- Special/unique risk reduction features, associated with either the system or the site itself, that will support fire service during an emergency (for example, a fully-staffed location)

Testing and Certifications

It is a **mandatory requirement** that all energy storage systems must be certified to UL 9540 (which includes UL 1973 for the battery and UL 1741 for the inverter), and must undergo UL 9540A testing.

- Has the ESS received UL 9540 certification?
 - If not, where in the process is it? This information can be obtained/confirmed by the battery system manufacturer or integrator
- Has the ESS undergone UL 9540A testing?
 - If not, where in the process is it? This information can be obtained/confirmed by the battery system manufacturer or integrator

Checklist II: Agency-Specific Information

ESS technologies and configurations vary widely, and the siting and design requirements therefore vary accordingly. For the checklist items below you will need to reference the appropriate publications – web links are provided.

FDNY

Carefully review the following sections referenced from pages 15-32 of the FDNY's Rule on Outdoor Energy Storage Requirements, [3RCNY 608-01](#). During Conceptual Design Meetings with FDNY, be prepared to speak to the following 3RCNY 608-01 requirements indicated below, to the extent possible, providing visuals where applicable.

- Section (c) General provisions (permit, certificate of fitness, etc.)
 - Be prepared to discuss (c)(5) Certificate of Fitness, and (c)(7) UL listings and testing.
- Section (d) Equipment Approval
 - Equipment approval can be obtained via the FDNY Certificate of Approval (COA) Process, and is dependent upon UL 9540A burn test data. It can be obtained initially for a specific battery product and then applied toward subsequent installations of the same product. It is recommended to discuss and coordinate with your selected manufacturer and/or integrator.
- Section (e) Installation Approval (for Large battery projects only)
 - Provide as much of the detail listed in (e)(3) as possible (keep in mind that the more information you can provide, the better FDNY will understand your proposal).
 - It is also helpful to include information about hydrant(s) main size and whether hydrant(s) is dead-end or gridded. This information can be obtained by contacting the NYC Department of Environmental Protection (DEP) or FDNY.
- Section (g) General Design & Installation Requirements
 - Provide as much of the detail listed in (g) as possible (keep in mind that the more information you can provide, the better FDNY will understand your proposal). Pay particular attention to (g)(1)(B), (g)(1)(C), and (g)(1)(D) for rooftop installations.
 - Note that some requirements outlined in (g) are dependent upon 9540A burn test results.
- Section (h) Enclosure Design & Installation Requirements
 - The requirements in section (h) vary depending upon the battery size and chemistry. Be sure to note the requirements that would apply to your proposed system.
 - Note that many requirements outlined in (h) are dependent upon 9540A burn test results.
- Section (i) Operational & Maintenance Requirements
 - Be prepared to discuss (i)(4) for emergency response.
 - Be prepared to discuss (i)(5) for de-commissioning (e.g. company that will provide services; and if indoor or rooftop, how to remove from building)

DOB OTCR (Office of Technical Certification & Research)

Prior to a Conceptual Design Meeting with DOB OTCR, review the [Buildings Bulletin 2019-002](#) and [OTCR Battery Application Checklist](#). Prepare a list of questions about any of the items in these documents that you may want to clarify during your initial meeting.

Next Steps

The publications below contain the fully detailed requirements that must be satisfied for energy storage project design and development. As you pursue further design plans and requisite submission materials and information needed for permit applications and approvals, carefully review the following.

Filing/Submittal Requirements:

The [NYC Outdoor Lithium Ion Permitting & Interconnection Guide](#) (February 2020 version) provides a comprehensive overview of the entire permit application process and all approvals needed across all three of the NYC AHJs for ESS projects: DOB, FDNY, and Con Edison.

- See **pages 4-7** for step-by-step flowcharts of the entire permitting process
- Pages **8-19** detail the permit application processes for DOB, OTCR and FDNY
- Pages **26-28** detail the interconnection application process for Con Edison

Project Design, Standards, and Codes Requirements:

Lithium-ion battery chemistries: The *Guide* referenced above provides a consolidated list of all design requirements (in addition to filing/submittal requirements) pertaining specifically to outdoor lithium-ion systems, distilled from the Buildings Bulletin 2019-002, the OTCR Battery Application Checklist, and FDNY Rule 3RCNY 608-01.

- See **pages 20-25** for outdoor lithium-ion requirements chart

Non-Lithium battery chemistries: The AHJ ESS publications detail each agency's specific requirements for all ESS chemistry types, not only limited to lithium ion. If pursuing a **non-lithium** ESS project, review these documents to identify requirements pertaining to your specific battery type, some of which will differ depending on chemistry type:

- [OTCR Battery Application Checklist](#)
- [FDNY Rule 3RCNY 608-01](#)

Additional Note on Test-Based Site and Design Criteria: When the manufacturer has not specified relevant installation and design criteria for a given ESS product, the developer must conduct a comprehensive analysis of the UL 9540A large scale burn test results in order to determine the following. This analysis must be presented to FDNY and DOB OTCR as early in the application process as possible:

- Spacing distances – between ESS units, between ESS unit and other exposures, between FDC and ESS unit
- Fire detection system
- Fire protection/sprinkler design – e.g. water needs
- Manual gas/smoke purge system
- Deflagration venting
- Thermal management
- Dispersion analysis (if conducted)

Educational resources on UL 9540A testing and application of the data to fire safety aspects of ESS project design are available from the Sustainable CUNY Smart DG Hub at www.smartdghub.org