

# Energy Storage System Permitting and Interconnection Process Guide For New York City Lithium-Ion Outdoor Systems

*February 2020*



NYSERDA

SMART DG Hub 



*With Technical Assistance Provided by DNV GL*

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## INTRODUCTION

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 solar+storage installations in New York. The work of the DG Hub is supported by the U.S. Department of Energy, the New York State Energy Research & Development Authority (NYSERDA), the New York Power Authority (NYPA), and the City of New York.

The Smart DG Hub is engaged in efforts to remove barriers and open the market for solar and energy storage systems (ESS) in NYC through partnerships with technical advisors that include DNV GL, Underwriters Laboratory (UL), subject matter experts (SME) from industry, academia, and utilities, and city agencies. The Hub focuses on facilitating development of clear permitting processes for ESS in NYC, sharing best practices, helping to reduce the learning curve for Authorities Having Jurisdiction (AHJ) and vendors, and providing clarity on the safe installation of ESS.

The 2020 updated ***Energy Storage Permitting and Interconnection Process Guide for New York City: Lithium-Ion Outdoor Systems*** is designed to provide building owners, project developers and other industry participants with an understanding of the permitting and interconnection requirements and approval processes for outdoor Lithium-Ion based ESS in NYC. Familiarity with permitting and interconnection requirements can lower project soft costs and expedite the installation process.

## DEVELOPMENT OF THE PROCESS GUIDE AND UPDATES

This guide was developed in collaboration with the NYC Department of Buildings (DOB), the Fire Department of the City of New York (FDNY), and Consolidated Edison (Con Edison). Since the original publication of this Guide in April 2018, these three authorities have adopted their own formal requirements for permitting and interconnecting ESS, as listed in the box at right. This guide is aligned with and consolidates the information contained in these publications. However, readers should familiarize themselves with these publications. Future addendums to this Guide will be forthcoming as necessary.

## PROCESS GUIDE CONTENTS

This Energy Storage Systems Permitting Process Guide for Lithium-Ion Outdoor Batteries outlines the permitting and approval processes for DOB, FDNY, and Con Edison and provides a breakdown of each authority's specific process presented in both tabular and flowchart formats. Each table outlines:

### **AGENCY PUBLICATIONS**

#### **FDNY RCNY 608.1 – adopted 10/1/19**

Establishes standards, requirements and procedures for the design, installation, operation and maintenance of outdoor stationary storage battery systems that use various types of new energy storage technologies, including lithium-ion, flow, nickel-cadmium and nickel metal hydride batteries.

#### **DOB Bulletin 2019-007 – adopted 9/26/19**

Clarifies the applicable zoning use group and limitation when establishing facilities for non-accessory fuel cell systems and battery energy storage systems.

#### **DOB Bulletin 2019-002 – adopted 1/30/2019**

Establishes filing & submittal requirements, and outlines the approval process for lithium-ion, flow batteries, lead acid, and valve regulated lead-acid battery energy storage systems listed to UL 9540.

#### **Con Edison Energy Storage System Guide Version 2 / December 2018**

Provides high level details of the electric interconnection process, typical steps, challenges, and technical solutions associated with ESS projects.

- what approvals are needed
- required submission documents
- how to submit the requisite materials
- required fees
- a summary of key steps
- contact information for questions

For questions about this Guide or general technical assistance regarding energy storage permitting in NYC please contact the CUNY Smart DG Hub:

[www.smartdghub.com](http://www.smartdghub.com)

[smartdghub@cuny.edu](mailto:smartdghub@cuny.edu)

(812) 302-2735

## SUMMARY OF THE PERMITTING PROCESS FOR ESS IN NYC

Deploying ESS in New York City involves three separate authorities. The following table outlines the permits, reviews and approvals required across each authority. For an explanation of the acronyms below, see the Key Terms section on page 29.

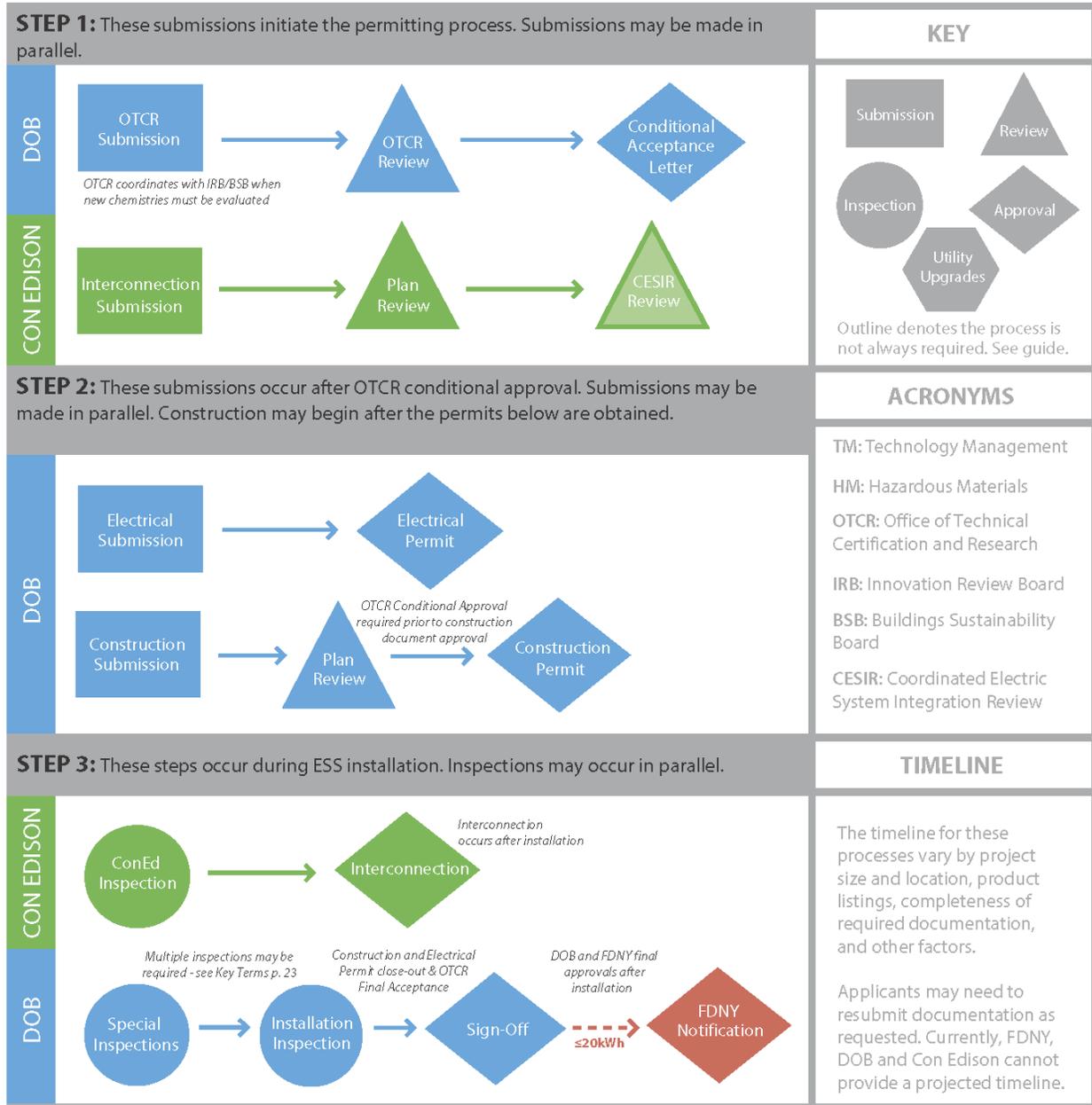
TABLE SUMMARIZING THE PERMITTING PROCESS FOR ESS IN NYC		
AUTHORITY	REQUIRED REVIEWS	REQUIRED APPROVALS
DOB	Office of Technical Certification and Research (OTCR) Material Acceptance <i>Note: Includes zoning review</i>	OTCR Approval
	Innovation Review Board (IRB) and Building Sustainability Board (BSB) Review <i>Note: Lithium-Ion, Lead Acid, Valve Regulated Lead Acid, and some Flow Batteries are exempt from IRB and BSB review. Check with OTCR for updated list of exempted batteries.</i>	
	Local DOB Borough Office or Development Hub	Electrical Permit & Construction Permit
FDNY	Technology Management & Hazmat Operations Review	Letter of Approval
Con Edison	Energy Services CESIR <i>Note: CESIR review is not always required; Con Edison will inform applicants if CESIR review is required.</i>	Interconnection Approval

### NOTES ON PERMITTING PROCESS

- Notify DOB’s OTCR and FDNY that an application is forthcoming, including expected system capacity and anticipated installation timeline. A courtesy meeting is encouraged for first-time applicants before beginning the application process. Agency contact information is provided in the tables below.
- It is recommended that project developers initiate FDNY review once designs are approximately 80% complete. As fire codes may require alterations to plans, it is not recommended that engineering work stamped by a professional engineer (PE) be completed prior to submitting application paperwork to FDNY.
- The flowcharts on pages 5-7 provide an overall view of the permitting processes for small, medium, and large systems, and expanded details are listed in the remainder of the Guide. The process for small systems differs from the process for medium and large systems, as small systems are treated more prescriptively.
- UL 9540A testing is required once for all new battery system models, while a report prepared by the test laboratory will need to be submitted to FDNY and DOB for each individual project submission, alongside the test data analysis that impacts system design and site-specific conditions. If requested, raw test data may be required.

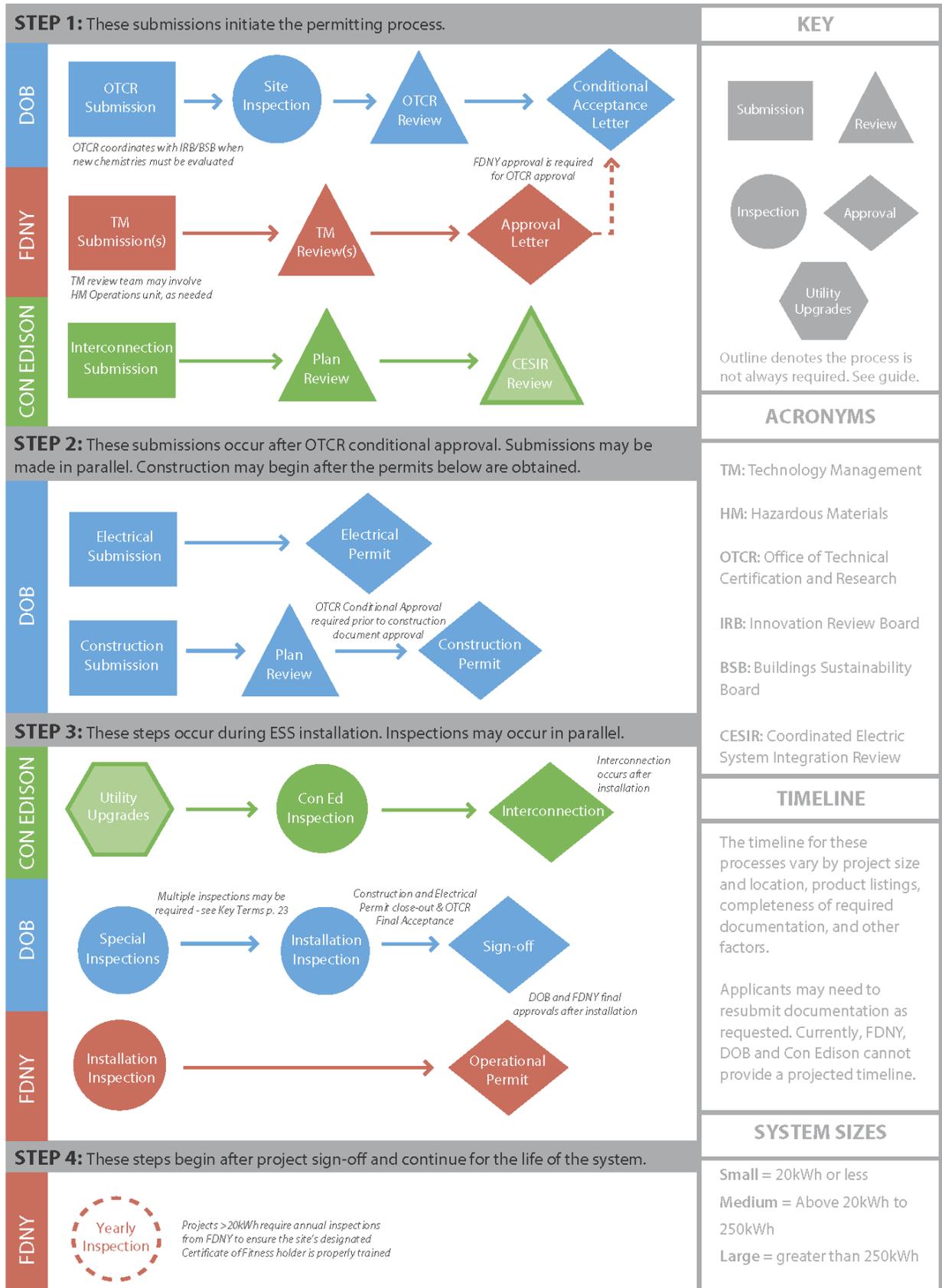
## ESS PERMITTING AND INTERCONNECTION FLOW CHARTS

### NYC Permitting & Interconnection Process: Small Systems (≤20kWh)



# Permitting and Interconnection Process Guide For New York City Lithium-Ion Outdoor Systems

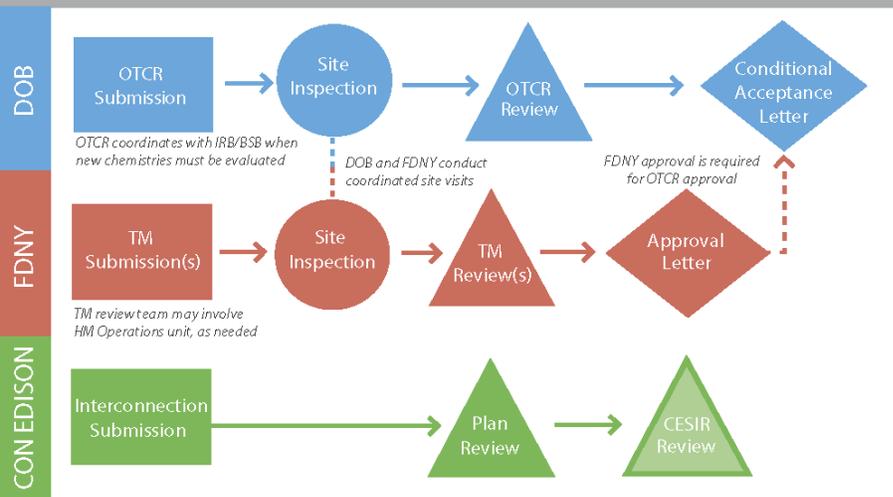
## NYC Permitting & Interconnection Process: Medium Systems (>20kWh – ≤250kWh)



# Permitting and Interconnection Process Guide For New York City Lithium-Ion Outdoor Systems

## NYC Permitting & Interconnection Process for Large Systems (>250kWh)

**STEP 1:** These submissions initiate the permitting process.



### KEY

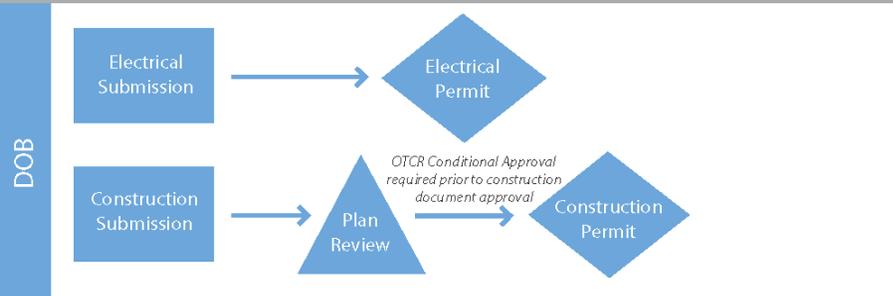


Outline denotes the process is not always required. See guide.

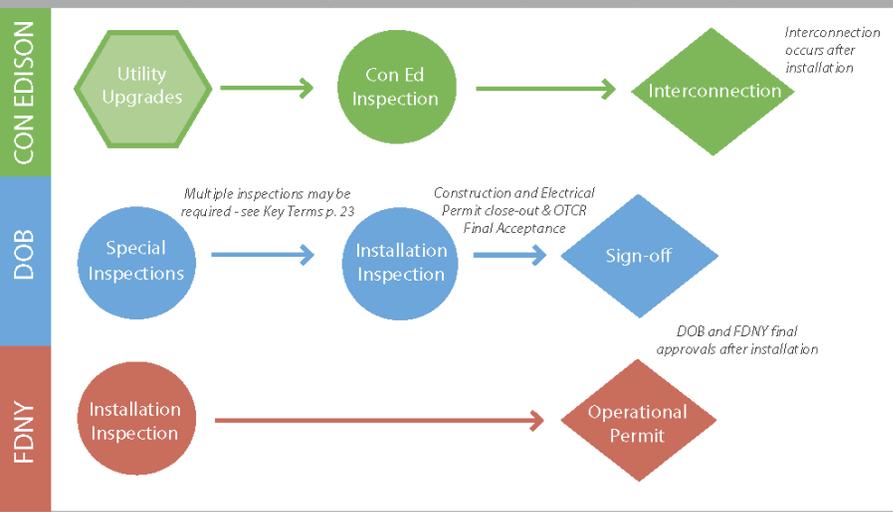
### ACRONYMS

- TM: Technology Management
- HM: Hazardous Materials
- OTCR: Office of Technical Certification and Research
- IRB: Innovation Review Board
- BSB: Buildings Sustainability Board
- CESIR: Coordinated Electric System Integration Review

**STEP 2:** These submissions occur after OTCR conditional approval. Submissions may be made in parallel. Construction may begin after the permits below are obtained.



**STEP 3:** These steps occur during ESS installation. Inspections may occur in parallel.



### TIMELINE

The timeline for these processes vary by project size and location, product listings, completeness of required documentation, and other factors.

Applicants may need to resubmit documentation as requested. Currently, FDNY, DOB and Con Edison cannot provide a projected timeline.

### SYSTEM SIZES

- Small = 20kWh or less
- Medium = Above 20kWh to 250kWh
- Large = greater than 250kWh

**STEP 4:** These steps begin after project sign-off and continue for the life of the system.



## PERMITTING PROCESSES BY AUTHORITY

### NYC DEPARTMENT OF BUILDINGS (DOB) PROCESS

Obtaining permission to install an ESS through the NYC Department of Buildings (DOB) requires the following:

- (1) DOB General Project Filing (Construction\* & Electrical Permits)
- (2) DOB Office of Technical Certification and Research (OTCR) site-specific material acceptance via a Conditional Acceptance Letter\*\*

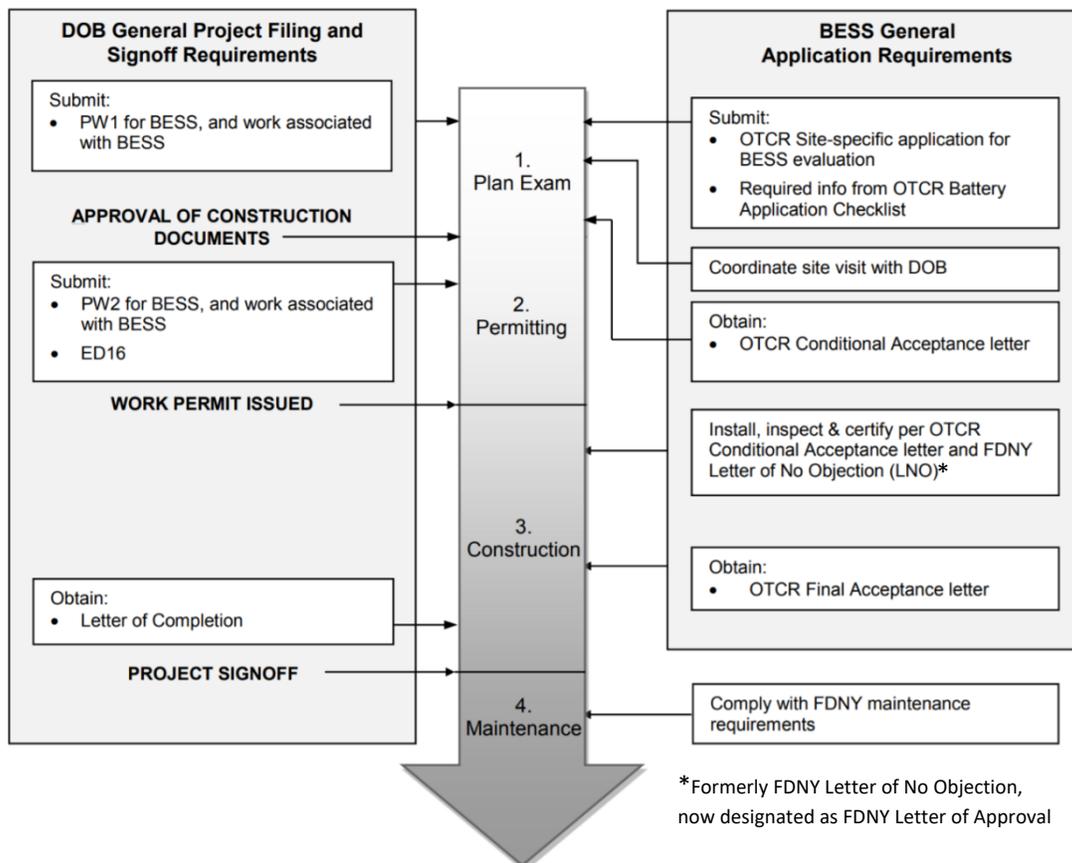
\*A zoning analysis is required to be submitted as part of the Construction Permit application, and

\*\* OTCR will perform a preliminary zoning review at receipt of application.

Depending on the zoning district and use group classification as determined via the zoning analysis, ESS projects may require additional special permits/variances via the Board of Standards & Appeals (BSA) or the City Planning Commission (CPC). See the CUNY DG Hub's [Zoning Matrix guide](#) for further reference.

The process described in this section reflects information established in the DOB [Buildings Bulletin 2019-002](#) and [Buildings Bulletin 2019-007](#). Figure 1 below, from Bulletin 2019-002, provides a timeline and general overview of the DOB permitting, inspection, and approval process. The left side of the diagram indicates the steps involved for the general DOB project filing and sign-off requirements (Construction Permit and Electrical Permit), while the right side indicates the steps involved for the DOB OTCR review. These are parallel processes; please take note of the timeline for submitting the requisite forms.

**Figure 1. Department Filing, Submittal and Approval Process for BESS - from DOB Buildings Bulletin 2019-002**



The chart below expands in more detail the DOB construction permit application process:

<h2 style="margin: 0;">CONSTRUCTION PERMIT FOR BATTERY STORAGE TECHNOLOGIES</h2>	
Construction Permit	Construction permits are required in accordance with Chapter 1 of the NYC Administrative Code ( <a href="#">Section 28-105</a> ). A construction permit will not be issued until the OTCR Conditional Acceptance Letter has been issued.
Required Submission Documents	<p>Initial forms to submit:</p> <ul style="list-style-type: none"> <li>• <a href="#">PW1 – Plan/Work Approval (PW1 User Guide)</a></li> </ul> <p>Important:</p> <ol style="list-style-type: none"> <li>(1) Must include a zoning analysis for all outdoor installations including rooftops – see <a href="#">Bulletin 2019-007</a> for details.</li> <li>(2) Must be submitted under full Plan Examination, not professional certification.</li> <li>(3) Under the “Work Type” section, select “OT” and enter “Battery Energy Storage System”.</li> </ol> <ul style="list-style-type: none"> <li>• <a href="#">TR1 – Technical Report: Statement of Responsibility (construction progress/special inspections)</a></li> <li>• <a href="#">TR8 – Technical Report: Statement of Responsibility (energy code progress inspections)</a></li> <li>• <a href="#">ACP5 or ACP7 – Asbestos Abatement Form</a> (if there is risk of asbestos contamination)</li> <li>• Architectural Drawings and Electrical Diagram (see the <a href="#">Development Hub’s Guide</a> for full service review and the National Electric Code Section 690.1).</li> </ul> <p>Forms to submit after receiving OTCR Conditional Acceptance Letter:</p> <ul style="list-style-type: none"> <li>• <a href="#">PW2 – Work Permit Application</a></li> <li>• <a href="#">PW3 – Cost Estimate</a></li> <li>• <a href="#">C408 – System Commissioning and completion requirements</a></li> </ul> <p>Sign-off forms and letters to submit after installation:</p> <ul style="list-style-type: none"> <li>• <a href="#">PW7 – Letter of Completion Review Request</a></li> <li>• <a href="#">Final PW3 – Cost Affidavit</a></li> <li>• <a href="#">Final TR1 – Technical Report (certification of complete inspections)</a></li> <li>• <a href="#">Final TR8 – Technical Report (certification of complete inspections)</a></li> <li>• <a href="#">C408 – System Commissioning reports</a></li> </ul> <p>Notes:</p> <ol style="list-style-type: none"> <li>(1) Paperwork must be filed by registered design professional, expeditor, contractor, registered special inspection agency, etc.</li> <li>(2) System Commissioning is a requirement for every energy storage project, regardless of size.</li> </ol>

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	The requirements for the commissioning report are defined in Section <a href="#">C408</a> of the Energy Code.
How to submit	<ul style="list-style-type: none"> <li>• <a href="#">Online</a> (through Hub Full Service)</li> <li>• <b>In-person:</b> See list of <a href="#">Borough Offices</a></li> </ul>
Fee	Varies, see 2014 NYC Construction Code ( <a href="#">§1-112</a> ) for more detail. Use <a href="#">PW3</a> to complete a cost estimate.
Timeline	Plan examiners aim to issue construction document approval within 2-3 weeks of submission.
Summary of key steps	<ol style="list-style-type: none"> <li>1. Applicant determines if building requires an asbestos investigation. <i>Associated forms: ACP5 or ACP7</i></li> <li>2. Asbestos investigator completes survey report, if required.</li> <li>3. Applicant submits construction permit forms, drawings, and the commissioning and equipment functional performance testing plans. Applicant pays fees online. <i>Associated forms: PW1, PW2, PW3, TR1, and TR8</i></li> <li>4. DOB reviews the application; may request clarifications from the applicant.</li> <li>5. If requirements are met, DOB issues construction document approval.</li> <li>6. Once required permits and permissions are obtained, developer begins installation project.</li> <li>7. Functional performance testing of equipment must be conducted and registered design professional or approved agency provides a “Preliminary Commissioning Report” of test procedures and results to the building owner.</li> <li>8. Building owner provides the code official with a “letter of transmittal” demonstrating the owner has received the Preliminary Commissioning Report.</li> <li>9. A registered design professional or approved agency must prepare a “Final Commissioning Report” for the building owner and submit a certification to the DOB with applicable fees.</li> <li>10. Applicant requests a Construction Inspection <a href="#">online</a>.</li> <li>11. Applicant submits the sign off documents. <i>Associated forms: PW7, final PW3, final TR1, and final TR8</i></li> <li>12. If inspections and paperwork are approved, then DOB issues Construction Sign-off in BIS.</li> </ol>

The chart below expands in more detail the DOB electrical permit application process:

ELECTRICAL PERMIT FOR BATTERY STORAGE TECHNOLOGIES	
Electrical Permit	Electrical permits are required for all ESS installations. See the note below and the Electrical Code Rules ( <a href="#">§34-05</a> ) for more information.
Required Submission Documents	<ul style="list-style-type: none"> <li>Form <a href="#">ED16a</a></li> <li>Equipment specification sheets</li> <li>A single or three-line electrical diagram (diagram required on-site during inspections).</li> </ul> <p>Note: Paperwork must be filed by a NYC Electrical Licensee or NYS Licensed Professional Engineer. See the DOB <a href="#">Forms</a> page for more information, and <a href="#">instructions</a> on completing the ED16a.</p>
How to Submit	May be submitted <a href="#">online</a> .
Fees	<p>Fees vary. There is an initial \$40 application fee for each electrical permit plus an additional range of fees, not to exceed \$5,000, depending on the equipment installed and other proposed work. See NYC Electrical Code (<a href="#">§27-3018</a>) page 18 for fee details.</p> <p>Note: Fees are non-refundable. Checks and money orders accepted; make payable to “Department of Buildings.”</p>
Timeline	Issued immediately upon submission. Applicants should wait to submit the Electrical Permit until after OTCR Conditional Acceptance letter is issued.
Summary of key steps	<ol style="list-style-type: none"> <li>1. Apply for and obtain electrical permit before construction begins.</li> <li>2. Installation must comply with the NYC Construction Codes, NYC Electrical Code, the conditions of the required listing, and the OTCR Conditional Acceptance Letter.</li> <li>3. Applicant requests an electrical inspection <a href="#">online</a>.</li> <li>4. Inspector inspects the system.</li> </ol>
Contact	Electrical permit: 212.393.2441

The chart below expands in more detail the DOB OTCR review/approval process. The OTCR’s **Battery Application Checklist: Required Submittal Information** provides a list of all information and documentation required for the submission package, see page 14-16 or access [online](#):

DOB OTCR PROCESS FOR MATERIAL ACCEPTANCE OF BATTERY STORAGE TECHNOLOGIES	
OTCR Approval	Site-specific material acceptance is required for all stationary ESS installations. An OTCR Final Acceptance letter is a requirement for sign-off.  Relevant codes: See <a href="#">1 RCNY §101-12</a> and the <a href="#">NYC Construction Codes Article 113</a> .
Required Submission Documents	<ul style="list-style-type: none"> <li>• Site-specific approval application (<a href="#">OTCR-2</a>) Note: The applicant can be anyone associated with the project, including the owner, PE/RA, and manufacturer, among others.</li> <li>• All applicable documents in accordance with the <a href="#">OTCR Battery Application Checklist</a> (see page 14 below) Note: The DOB approved Zoning Analysis shall also be submitted to OTCR as part of the OTCR Battery Application Checklist.</li> </ul>
How to Submit	<ul style="list-style-type: none"> <li>• <b>In-person or via mail:</b> Office of Technical Certification and Research, 280 Broadway, 7<sup>th</sup> Floor, New York, NY 10007</li> </ul>
Fee	\$600 per OTCR-2 application (non-refundable)
Timeline	The timeline varies depending on siting, site visits, and additional information requested.
Summary of key steps	<ol style="list-style-type: none"> <li>1. Applicant submits the completed OTCR-2 site-specific application form along with \$600 processing fee.</li> <li>2. For batteries with capacity over 20 kWh, OTCR will coordinate a site visit with the applicant and FDNY.</li> <li>3. Applicant will submit the following:               <ol style="list-style-type: none"> <li>i. All required items listed in the battery application checklist (p. 14-16 below).</li> <li>ii. For <i>new</i> battery chemistries requiring BSB and IRB review*, a 10-minute Powerpoint presentation addressing the battery technology and installation details.  *Lithium-ion batteries are exempt from BSB/IRB review. However, <i>new</i> battery chemistries that have not been previously evaluated by OTCR will require this review. OTCR coordinates BSB and IRB review.</li> </ol> </li> <li>4. OTCR reviews project submission documents, as well as recommendations from BSB/IRB if applicable. OTCR may request</li> </ol>

	<p>clarifications from the applicant.</p> <ol style="list-style-type: none"> <li>5. OTCR makes its final decision after review of application documents and FDNY Letter of Approval. OTCR issues Conditional Acceptance or rejection letter. The Conditional Acceptance letter establishes conditions for the Final Acceptance letter which may include <a href="#">special inspection</a> requirements. OTCR also posts its determination on <a href="#">BIS</a> (Building Information System).</li> <li>6. Once construction and electrical permits and OTCR Conditional Acceptance letter are obtained, the developer installs project.</li> <li>7. If a “special inspection” is required (as required in BC Chapter 17 or prescribed by OTCR), then a third party will perform the inspection. (See <a href="#">BC Chapter 17</a>)</li> <li>8. Installation must comply with the NYC Construction Codes, NYC Electrical Code, the conditions of the required listing, FDNY Letter of Approval, and the OTCR Conditional Acceptance Letter.</li> <li>9. OTCR issues the Final Acceptance letter after applicant satisfies all conditions.</li> </ol>
Contact	<p><a href="mailto:OTCR@Buildings.nyc.gov">OTCR@Buildings.nyc.gov</a>, 212.393.2626</p>

## NYC Department of Buildings OTCR Battery Application Checklist: Required Submittal Information

The following information is required for all Battery Energy Storage Systems (BESS) submitted to the Department of Buildings for evaluation. Please contact the Office of Technical Certification and Research (OTCR) at [OTCR@buildings.nyc.gov](mailto:OTCR@buildings.nyc.gov) prior to submitting the required information.

### 1. Project Information

- Location/Address
- Contact Information (Name, address, telephone# and email)
  - Registered Design Professional
  - Integrator or Manufacturer
  - Building/site Owner
- Incentive program. Provide program name and number (if applicable)
- Construction Application for Permit. Provide NYC Department of Buildings Job# (required prior to issuance of OTCR Conditional Acceptance Letter)
- Electrical Permit - Provide NYC Department of Buildings Permit # (required prior to issuance of OTCR Conditional Acceptance Letter)
- Installation conditions
  - Location: Indoor, outdoor, rooftop, etc.
  - Application: Solar PV Storage, Load shedding, etc.;
  - Energy Source: Solar array, utility supplied, etc.
- Building/site Information, as applicable
  - Construction classification and description of materials (steel frame, corrugated steel and concrete, etc.)
  - Occupancy Classification
  - Special flood hazard area
  - Fire district

### 2. ESS Properties and Characteristics

- Narratives
  - Equipment Description
  - System Description
- Battery Information
  - General Information (Make/model #; Product literature; Cabinet, rack or container)
  - Chemistry (Lithium-Ion, VRLA, etc.)
  - Physical Properties (length, height, width and weight for cells, modules, and cabinets/racks)
  - Electrical (electrical capacity in kWh)
  - Lifespan
- Inverter Information – Make/model #
- Electrical Interconnection

### 3. Specific Risks/Concerns

- Corrosive spills/electrolyte leakage. Does the ESS have free electrolyte? If so, provide the electrolyte volume and containment volume (cu. Yd.).

### 4. Construction Documents

- Required information. Confirm the following information is provided on construction documents:
  1. Location and layout diagram of the room or area in which the ESS is to be installed (included

- distances to adjacent construction, nearby equipment, egress features, FDNY access to site, dunnage (if applicable), security features such as fencing, bollards, etc.)
  - 2. Details on the hourly fire-resistance ratings of assemblies enclosing the ESS.
  - 3. The quantities and types of ESS to be installed.
  - 4. Manufacturer's specifications, ratings and listings of each ESS.
  - 5. Description of energy (battery) management systems and their operation.
  - 6. Location and content of required signage.
  - 7. Details on fire suppression, smoke or fire detection, thermal management, ventilation, exhaust and deflagration venting systems, if provided.
  - 8. Support arrangement associated with the installation, including any required seismic restraint.
- Provide the following plans:
- General Notes
  - Site
  - Architectural
  - Fire suppression
  - Electrical (provide single line diagram of the BESS including connection to renewal energy system and premises' electrical system)
  - Structural

## 5. Proposed Design Features

- Fire separation (provide hourly rating for indoor installations)
- Rooftop construction (Confirm minimum Class B per BC 1505, identify roofing material) Fire suppression (NFPA 13 or NFPA 15 for outdoor Li-Ion installations)
- Venting (confirm room complies with MC 502.4 (rooms) and MC 502.5 (cabinet enclosures), where applicable)
- Structural (Confirm dunnage complies with BC Chapter 16 and Chapter 22, Confirm concrete pad complies with BC Chapter 16 and 19)
- Electrical (Confirm compliance with 2011 NYC Electrical Code)
- Fire Protection (Indicate if automatic fire alarm is provided, indicate if central station monitoring is provided)
- Peer review (Indicate if peer review is suggested)
- Storage of hazardous material report. For storage systems with hazardous materials, a copy of the report filed in accordance with BC 414.1.3 shall be provided.

## 6. Certification and Testing

- BESS
  - UL 9540. Provide copy of listing and web link from certification database.
  - UL 9540A Testing. Provide a copy of the report.

## 7. System Monitoring

- Report if 24/7 remote monitoring is provided. Provide identification for service provider and submit monitoring contract.
- Battery management system (BMS). Literature must detail communication protocols, auxiliary outputs (for controlling/signaling output), auxiliary inputs (for fire alarm connection/emergency power off), capability of disconnecting individual battery/string of batteries under emergency shutdown, 24/7 remote monitoring for early warning.

## 8. Operating Manuals

- Incident Training Manual including

- Material Safety Data Sheet (MSDS) or Safety Data Sheet (SDS)
- Employee hazardous material training document
- Emergency shutdown procedures
- Emergency first-aid requirements
- Emergency Response Plan
- Operation and training program and manual
- Safety and Handling Guidelines
- Safety and Warning Signage
- Maintenance plan including
  - Details for replacement
  - Compatibility of replacement parts
- Recycling plan including
  - Recycling details
  - Decommissioning plan

## 9. Additional Requirements

- Zoning Analysis prepared by NYS PE/RA. For outdoor installations, including rooftop. Must submit for plan review. Submit DOB-approved Zoning Analysis prior to permit.
- Code Analysis (prepared and signed by NYS PE/RA). A code analysis shall be presented in tabular format. Supporting documentation shall be provided to substantiate the analysis. This analysis should include, but not be limited to comparison of requirements for standby power, emergency power or uninterrupted power supplies and hazardous classifications.
  - MC 502.4 & MC 502.5 (Exhaust Requirements)
  - BC 509 (Separation of incidental use areas)
  - BC 903 (Automatic sprinkler detection)
  - BC 904 (Alternative automatic fire-extinguishing systems)
  - BC 907. 2 (Fire alarm and detection systems)
  - FC 608 (Requirements for battery storage systems)
  - BC 307 (High-hazard Group H occupancy)
- Risk Analysis (prepared and signed by NYS PE). The Risk Analysis shall include a tabulated summary of hazards as indicated below and detailed mitigation measures used to lower the severity level of the hazard. The analysis shall include the following:
  - Identification of Hazards. A table shall be provided that identifies Hazard Modes as it pertains to the battery technology proposed and shall include, but not limited to, the following:
    - Electrical; External Short-Circuit, Internal Cell Fault, Abnormal Charge, Overcharge, Over-Discharge, Soft Short
    - Thermal; External and Internal Fire, Elevated Temperature, Energetic Failures (Thermal Runaway), Thermal Abuse
    - Mechanical; Crush, Nail Intrusion, Shock, Drop, Poor Cell Design, Vibration
    - System; Contactors Fail Closed, Loss of HV Continuity, Chassis Fault, BMS Fault
  - Severity Levels of Hazards (EUAR).
  - Likelihood Levels
  - Hazard Modes and Risk Mitigation Analysis
  - Battery Safety Gap Analysis

The Risk Analysis shall be prepared in accordance with ISO.IEC 31010 *Risk Management – Risk Assessment Techniques*. The Risk Analysis is prepared on a site-specific basis.

<b>DOB RESOURCES FOR PERMITTING ESS</b>	
<b>General DOB</b>	
<ul style="list-style-type: none"> <li>• DOB website: <a href="http://www1.nyc.gov/site/buildings/index.page">http://www1.nyc.gov/site/buildings/index.page</a></li> <li>• Building Information System (BIS): <a href="http://a810-bisweb.nyc.gov/bisweb/bsqpm01.jsp">http://a810-bisweb.nyc.gov/bisweb/bsqpm01.jsp</a></li> <li>• NYC Development Hub: <a href="http://www1.nyc.gov/site/buildings/industry/the-hub.page">http://www1.nyc.gov/site/buildings/industry/the-hub.page</a></li> <li>• Codes and Reference: <a href="https://www1.nyc.gov/site/buildings/codes/nyc-code.page">https://www1.nyc.gov/site/buildings/codes/nyc-code.page</a></li> </ul>	
<b>ESS Bulletins &amp; Documents</b>	
<ul style="list-style-type: none"> <li>• Bulletin 2019-002 – filing/submittal requirements and approval process for lithium-ion, flow batteries, lead acid, and valve regulated lead-acid battery energy storage systems listed to UL 9540: <a href="https://www1.nyc.gov/assets/buildings/bldgs_bulletins/bb_2019-002.pdf">https://www1.nyc.gov/assets/buildings/bldgs_bulletins/bb_2019-002.pdf</a></li> <li>• Bulletin 2019-007 – applicable zoning use group and limitation for non-accessory BESS: <a href="https://www1.nyc.gov/assets/buildings/bldgs_bulletins/bb_2019-007.pdf">https://www1.nyc.gov/assets/buildings/bldgs_bulletins/bb_2019-007.pdf</a></li> <li>• OTCR Battery Application Checklist: <a href="https://www1.nyc.gov/assets/buildings/pdf/OTCR_battery_app_checklist">https://www1.nyc.gov/assets/buildings/pdf/OTCR_battery_app_checklist</a></li> </ul>	
<b>OTCR/IRB/BSB</b>	
<ul style="list-style-type: none"> <li>• OTCR page: <a href="http://www1.nyc.gov/site/buildings/codes/otcr.page">http://www1.nyc.gov/site/buildings/codes/otcr.page</a></li> <li>• OTCR Rule: <a href="http://www1.nyc.gov/assets/buildings/rules/1_RCNY_101-12.pdf">http://www1.nyc.gov/assets/buildings/rules/1_RCNY_101-12.pdf</a></li> <li>• OTCR Forms: <a href="http://www1.nyc.gov/site/buildings/codes/otcr-forms.page">http://www1.nyc.gov/site/buildings/codes/otcr-forms.page</a></li> </ul>	
<b>Electrical Permit</b>	
<ul style="list-style-type: none"> <li>• E-filing website: <a href="https://a810-efiling.nyc.gov/eRenewal/loginER.jsp">https://a810-efiling.nyc.gov/eRenewal/loginER.jsp</a></li> <li>• Electrical Forms: <a href="https://www1.nyc.gov/site/buildings/about/forms-electrical.page">https://www1.nyc.gov/site/buildings/about/forms-electrical.page</a></li> <li>• NYC Electrical Code page on DOB website: <a href="https://www1.nyc.gov/site/buildings/codes/electrical-code.page">https://www1.nyc.gov/site/buildings/codes/electrical-code.page</a></li> <li>• Administrative Sections of the 2011 NYC Electrical Code: <a href="http://www.nyc.gov/html/dob/downloads/bldgs_code/electrical_code_local_law_39of2011.pdf">http://www.nyc.gov/html/dob/downloads/bldgs_code/electrical_code_local_law_39of2011.pdf</a></li> </ul>	
<b>Construction Permit</b>	
<ul style="list-style-type: none"> <li>• E-filing website: <a href="https://a810-efiling.nyc.gov/eRenewal/loginER.jsp">https://a810-efiling.nyc.gov/eRenewal/loginER.jsp</a></li> <li>• Construction Forms: <a href="http://www1.nyc.gov/site/buildings/about/forms.page">http://www1.nyc.gov/site/buildings/about/forms.page</a></li> <li>• NYC 2014 Construction Codes page: <a href="http://www1.nyc.gov/site/buildings/codes/2014-construction-codes-updates.page">http://www1.nyc.gov/site/buildings/codes/2014-construction-codes-updates.page</a></li> <li>• Administrative Sections of the 2014 NYC Building Code: <a href="http://www.nyc.gov/html/dob/apps/pdf_viewer/viewer.html?file=2014CC_BC_Chapter_1_Administration.pdf&amp;section=conscode_2014">http://www.nyc.gov/html/dob/apps/pdf_viewer/viewer.html?file=2014CC_BC_Chapter_1_Administration.pdf&amp;section=conscode_2014</a></li> <li>• Section ECC C408: System Commissioning: <a href="https://www1.nyc.gov/assets/buildings/apps/pdf_viewer/viewer.html?file=2016ECC_CHC4.pdf&amp;section=energy_code_2016">https://www1.nyc.gov/assets/buildings/apps/pdf_viewer/viewer.html?file=2016ECC_CHC4.pdf&amp;section=energy_code_2016</a></li> </ul>	

## FIRE DEPARTMENT OF THE CITY OF NEW YORK (FDNY) PROCESS

The FDNY evaluates all projects on a site-by-site basis, based on the information supplied as listed below. Adhering to these requirements does not guarantee approval, and applicants should always consult with FDNY.

FDNY APPLICATION PROCESS FOR ESS	
Required Submission Documents	<ul style="list-style-type: none"> <li>• <a href="#">TM-2</a> form (Certificate of Approval for new equipment*) <i>*For equipment that has not previously received a COA from the FDNY. To be submitted by the equipment manufacturer or authorized officer of the manufacturer.</i></li> <li>• <a href="#">TM-1</a> form(s) (Application for Plan Examination) Medium and Large battery systems require a TM-1 for the battery system and where applicable, separate TM-1 forms will also be required for the fire alarm system and the fire suppression system</li> <li>• Supporting Documentation, depending on system size, should include                             <ul style="list-style-type: none"> <li>○ Plans showing proposed location</li> <li>○ Narrative with a description of the system.</li> <li>○ Include any Con Ed interconnection numbers or information if the project is part of an incentive program such as BQDM, Non-Wires, etc.</li> <li>○ Commissioning/Decommissioning plans</li> <li>○ Locations of FD connections (if required)</li> <li>○ Hydrant locations and main sizes</li> <li>○ Battery chemistry, energy (kWh, MWh), and all requirements of the FDNY Rule 608.1</li> <li>○ Cut sheets of system components</li> <li>○ Installation manuals</li> <li>○ Other pertinent information as requested by FDNY</li> <li>○ UL listing and certification (Listing to UL 9540, UL 1973, UL 1741 and other pertinent UL certifications)</li> <li>○ Testing conducted to UL 9540A testing standards by an independent NYC-approved testing agency*. The complete test report and data shall be provided.</li> </ul> </li> </ul> <p style="font-size: small; margin-top: 10px;">*The UL 9540A fire safety test is required once per battery system model. Testing must be conducted by a Nationally Recognized Test Laboratory (NRTL) that is approved to conduct UL 9540 or UL 1973 certification, and/or approved by DOB. Batteries without this testing may still be considered while manufacturers perform UL 9540A testing.</p>

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Who can submit the application	The TM-1 application(s) shall be prepared by a registered design professional or an expert in the subject field. The TM-2 application, when required, shall be submitted by the equipment manufacturer or authorized officer of the manufacturer.
When to submit	Submissions to FDNY and the DOB can be made in parallel. If a DOB job number has been issued, include this under item #7 on the TM-1.
How to submit	<ul style="list-style-type: none"> <li>• <b>In-person:</b> Window #8, 1<sup>st</sup> Floor, 9 Metrotech Center Hours: Mon-Fri, 8am – 3pm</li> <li>• <b>Mail*:</b> Fire Department of the City of New York Bureau of Fire Protection Technology Management 9 MetroTech Center, Third Floor, Room 3W-2 Brooklyn, NY 11201-3857 <i>*Except fire alarm plans – these must be submitted in person</i></li> </ul>
Fee	<p>\$420 per TM-1 application + \$525 fee for new technology/technical analysis (non-refundable). Credit cards, checks, and money orders are accepted.</p> <p>\$625 per TM-2 application for new/original applications, \$50 for renewal applications.</p>
Timeline	Applications are typically reviewed within 40 business days. This timeline may increase if additional site visits or other information is required, or if the FDNY is unfamiliar with the battery technology being considered.
Steps	<ol style="list-style-type: none"> <li>1. Applicant submits all applicable paperwork (Applicant should notify FDNY that an application is forthcoming).</li> <li>2. FDNY will contact the applicant to schedule a site visit*</li> <li>3. FDNY will review the application</li> <li>4. FDNY will notify the applicant of its decision; a Letter of Approval will be issued to the applicant and to DOB if approved</li> </ol> <p><i>*Two site visits may be necessary if Technology Management and Hazardous Materials are unable to schedule a joint site visit.</i></p>
Contact	Technology Management: <a href="mailto:tech.mgt@fdny.nyc.gov">tech.mgt@fdny.nyc.gov</a> , 718.999.2405

## APPLICANT CHECKLIST FOR OUTDOOR LITHIUM-ION BATTERY SYSTEMS

The following checklist is a comprehensive list of documentation, certifications, and other NYC requirements for permitting applications, including applicability based on system size. Reference the information below, *including important details contained in the footnotes on pages 23-25*, when preparing the application packages for **both** DOB and FDNY. Further technical details, including requirements for non-lithium battery types, are found in the [FDNY RCNY 608.1](#) and the [DOB OTCR Battery Checklist](#).

Documentation		Details	Aggregate System capacity (kWh)		
			≤ 20	>20 - ≤250	> 250
FDNY	TM-1 (Battery)	Application for plan examination – energy storage system	N/A		
	TM-1 (Alarm)	Application for plan examination – fire alarm system	N/A		
	TM-1 (Fire Protection)	Application for plan examination – fire protection/suppression system	TBD <sup>4</sup>	TBD <sup>4</sup>	
	TM-2	Certificate of Approval – for new equipment only, that has not previously received a COA.			
DOB	OTCR-2	Site specific approval application			
	ED16-A	Electrical permit			
	PW1	Application for Plan/Work Approval for DOB			
	PW2	Work Permit Application			
	PW3	Project cost estimate			
	TR1	Technical Report: Statement of Responsibility (Construction code)			
	TR8	Technical Report: Statement of Responsibility (Energy code)			
Site plans	Indicating placement of ESS container(s) and auxiliary equipment, to scale, demonstrating compliance with siting requirements <sup>1</sup>				
Other structures on site	If planned adjacent-to-building placement, state if the building is of non-combustible construction or has a 1-hour rated fire assembly, in compliance with adjacent placement requirements <sup>2</sup>			Evaluated on a case by case basis <sup>3</sup>	Evaluated on a case by case basis <sup>3</sup>
	If another energy storage system is already on site, this must be indicated with storage capacity of other system noted.		N/A		
Site use	Industrial, commercial, residential, multi-use, etc.				
Site characteristics	Flood, seismic, environmental, and vehicle protections specified in NYC Construction Codes and NY Fire Code Section 312.				
System description	A system specification or similar including at least narrative description of system, total system capacity (kWh and kW), and total system weight and dimensions				
Single line drawing	Demonstrating compliance with NYC Electrical Code, as applicable to energy storage and balance of system devices, indicating placement and interconnection of equipment, including electrical disconnects				

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	or emergency stops.			
UL 1973	Certification required (batteries)			
UL 1741	Certification required (inverters, controllers, and interconnection systems)			
UL 9540	Certification required (energy storage systems)			
UL 9540A	UL 9540A testing and test data. Where these tests have not yet been conducted, AHJs will determine a reasonable period within which testing shall be completed. Each system must undergo this testing once.			
Explosion analysis	Based on UL 9540A-compliant test data, conducted by an approved test laboratory			
Fire analysis	Based on UL 9540A-compliant test data, conducted by an approved test laboratory.			
Risk analysis	Generic FMEA / risk analysis required, in accordance with IEC 60812 and DOB stipulated requirements as outlined in Appendix A, including sign-off by NYS PE.			N/A
	Site specific FMEA / risk analysis required, if not already produced as part of UL 9540 certification, in accordance with IEC 60812 and DOB stipulated requirements as outlined in DOB OTCR Battery Checklist, including sign-off by NYS PE.	N/A	N/A	
Battery specification	If not included in system specification, a specification sheet or similar including total number of batteries, battery chemistry, and voltage			
Inverter specification	If not included in system specification, a specification sheet or similar including make, model, and rating			
System enclosure specification	If not included in system specification, a specification sheet or similar including confirmation that container is of non-combustible material, is approved or appropriate for planned use (with ratings as applicable), and is secured against unauthorized personnel.			
	Drawing of cabinets or racks within container, indicating number and type of each.	N/A		
Communication and controls specification	If not included in system specification, a specification sheet or similar including: 1) description of 24/7 remote monitoring at inverter, string, and battery level of at least current, voltage and temperature; 2) approved battery management system (BMS) capable of balancing current, voltage, and temperature, as well as remote shut-down in case of emergency conditions; 3) description of on-system status indicator (screen or indicator light), noting system status (e.g., idle, active, faulted); 4) Delineation of manufacturer-assessed safe operation ranges; 5) communication methods (e.g., 4G cell)			
Monitoring and fire detection/ alarm specification	If not included in system specification, a specification sheet or similar for smoke, gas, and temperature sensors, which produce audible and visual alarms in the area. If a fire detection system or automatic fire suppression system is required, a central station connection shall be required.	N/A <sup>4</sup> (unless testing indicates)		
Fire protection system	If applicable, drawing of dry pipe fire extinguishing system, designed in accordance with NFPA 15 (2007 edition), with allowance for non-	N/A <sup>4</sup> (unless	N/A <sup>4</sup> (unless	

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description	automatic release, which is to be provided in the battery enclosure/container. Water pressure and flow rates determined by hydraulic calculations.	testing indicates)	testing indicates)	
	If applicable, drawing of facility fire suppression system aligned with BC 903 or BC 904.	N/A <sup>4</sup> (unless testing indicates)	N/A <sup>4</sup> (unless testing indicates)	
	If system is installed on a rooftop and requires a water based fire protection system, drawing of sprinkler system, with FDNY access to Fire Department Connection serving system at grade level shall be provided	TBD <sup>4</sup>		
Non-water suppression system	If installed, specification sheets or similar providing manufacturer name, system details, and SDS. Drawing of system to indicate position within container. If applicable, should be in compliance with BC 904.			
Specification for purge (exhaust) system	Under abnormal conditions, if flammable gases can be trapped inside an enclosure, FDNY requires an exhaust fan with a remote power switch be available to first responders so they can remove gases from the enclosure without getting close to the enclosure	N/A <sup>4</sup> (unless testing indicates)	N/A <sup>4</sup> (unless testing indicates)	
Deflagration venting and exhaust	Based on explosion analysis conducted on UL 9540A test data, exhaust and deflagration venting should be described, such that exhaust, flame, or explosion is minimized and directed upward away from combustible materials and personnel. Deflagration venting should be done according to NFPA 68 standard.	N/A <sup>4</sup> (unless testing indicates)	N/A <sup>4</sup> (unless testing indicates)	
Installation and commissioning plan	Plan should include coordination expectation with interconnection authority (Con Edison). Notification of installation/commissioning must be provided to FDNY by emailing the date, location, type and size of the system to <a href="mailto:tech.mgt@fdny.nyc.gov">tech.mgt@fdny.nyc.gov</a> not later than two (2) business days prior to the scheduled action.	Notification only <sup>5</sup>		
Operations and maintenance plan	O&M manual provided, or similar, including a noted understanding that maintenance must be logged as required by NYC Fire Code 107.7, available for inspection on request. Brief instructions shall be provided at the required shut offs and with the building representative in a labeled box, readily accessible by Fire Department Personnel. Systems that are used as utility interactive systems shall be listed and identified as utility interactive systems.			
Decommissioning and disposal plan	Description of planned process for end of life and emergency removal after fire or other damaging event, including SME contact information, recycling information, and DOT compliant transportation plan. Notification of decommissioning/removal must be provided to FDNY by emailing the date, location, type and size of the system to <a href="mailto:tech.mgt@fdny.nyc.gov">tech.mgt@fdny.nyc.gov</a> not later than two (2) business days prior to the scheduled action.	Notification only <sup>5</sup>		
	Decommissioning/removal of a malfunctioning system that has given abnormal temperature or gas readings must be coordinated with the FDNY HazMat Unit who may send representatives to monitor the decommissioning process. The HazMat Unit shall be notified two (2)			

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	business days prior to the scheduled action, or in as timely a manner as circumstances allow, by calling the Department Communications Office in the borough in which the battery system is located.			
Emergency management plan	Plan must be available on site or with the Certificate of Fitness (CoF) holder, and include at least: 1) List of considered issues; 2) Process by which issues are detected and assessed; 3) On-site emergency response, including shut-down procedures and hazards which first responders should be aware of; 4) Emergency notification process and contact info, for SME, operators, owners, AHJ, and emergency responders, as applicable; 5) CoF response timeline within 2 hours and SME immediately available by phone; 6) Area clean up (including spill control and neutralization requirements <sup>6</sup> ), system repair, and/or system removal			
Certificate of Fitness (CoF)	RCNY 608.1 requires that all outdoor stationary storage battery systems be under the general supervision of person holding an FDNY Certificate of Fitness. <sup>7</sup>			
Signage	Signage must comply with Signage Requirements <sup>8</sup> , and be posted on the container and at entrance to the space. All equipment shall additionally be labeled as required by NYC Mechanical and Electrical code, or as required by certifications.			
Rooftop structural analysis	If installed on a rooftop, analysis demonstrating rooftop is structurally capable of handling all anticipated loads. <sup>9</sup>			
Rooftop flammability protections	Description of building as meeting all flammability, fire protection, siting, and emergency response requirements as outlined in FDNY RCNY 608.1. <sup>9</sup>			

<sup>1</sup>Siting requirements:

- Must demonstrate compliance with NYC zoning requirements per zoning area and equipment category.
- Description of access to energy storage system equipment and clearly defined and maintained means of egress as required by code (both Fire and Building Codes' Chapter 10, as applicable).
- Must indicate distance from other site features, regardless of proximity to energy storage system, covering at least:
  - Minimum of 10' from: Lot lines, public ways, buildings (and air intakes or openings such as doors and windows), stored combustible material, hazardous material, high piled stock, other exposure hazards, means of egress, and required exits;
  - OR can install a line of protection (or fire barrier) if approved by AHJ;
  - OR if explosion and fire analysis using data obtained from UL 9540A testing demonstrates otherwise and is not in conflict with zoning or building code. DOB requires review and approval of data obtained under UL 9540A testing.
- Indicate location and distance from fire hydrants and standpipes, as applicable.
- Location of shut-off and electrical disconnects on site must be specified on plans or described and should be within line of sight or clearly signed, and be compliant with NEC Article 706 and ADA.
- If installation on rooftop below 100 ft, description of how installation complies with Fire department roof top access for emergency responders, NYC Fire Code 504.4.

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<sup>2</sup> Adjacent to building requirements are not specifically denoted in the FDNY Rule or DOB Bulletin, but are best recommended practice from NFPA 855:

- Must be under 20 kWh.
- Building must be non-combustible with non-combustible exterior walls;
  - OR a 1-hour fire rated assembly over the existing building surface that extends 5 feet on either side of the container and 10 feet in the direction of expected flame travel in the event of a fire.
- AND installed at least 5 ft. from any openings in walls (windows, doors, vents, etc.) and 10 ft. from required exit;
  - OR where insufficient space, a non-combustible or 1-hour fire rated assembly barrier may be put in place, if approved by AHJ.
- UL 9540A test results may be submitted to OTCR for evaluation. OTCR may omit the above requirements based on their evaluation.

<sup>3</sup> Over 20kW system site requirements are to be evaluated on a case by case.

<sup>4</sup> Applicability pending UL 9540A testing results.

<sup>5</sup> For small battery systems, the owner or Certificate of Fitness (CoF) holder shall notify FDNY no later than two (2) business days after the commissioning or decommissioning of a small system by emailing [tech.mgt@fdny.nyc.gov](mailto:tech.mgt@fdny.nyc.gov) the battery type, manufacturer and rated energy capacity, and the name and CoF number of the CoF holder who will be, or is no longer, responsible for supervision of the system.

<sup>6</sup> Spill Control and Neutralization Requirements:

- For free-flowing electrolyte, method and materials shall be capable of neutralizing a spill of the total capacity from the largest cell or block to a pH between 5-9.
- For immobilized electrolyte, the method and material shall be capable of neutralizing a spill of 3% of the capacity of the largest cell or block to a pH between 5-9.

<sup>7</sup> FDNY anticipates that installers or other persons associated with the design or installation of the battery system would be the persons qualified to supervise such systems. The CoF holder is responsible for supervising the commissioning, operations and maintenance, recordkeeping, annual inspections, decommissioning, and emergency management situations. The fee for most Certificates of Fitness is \$25 for a 3-year period.

<sup>8</sup> Signage Requirements – must follow ANSI Standard Z535, as per below:

- Dimensions at least 8.5" x 11".
- Made of durable material.
- Must have non-glare finish, and characters must contrast with background.
- If sign fades, a new one must replace it.
- Characters must be a minimum of 0.5" in height.
- Sign must be securely attached at approximately 5 ft.
- Sign will include following or equivalent:
  - Space/container contains energized battery systems.
  - The container contains energized electrical circuits.
  - Subject Matter Expert and reach-back phone number linked to monitoring system to relay information to First Responders in case of emergency.



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- Markings identifying the type of system (e.g., Lithium-ion, Sodium, etc.) and any chemistry-specific hazard.
- If electrical disconnect is not within sight of energy storage equipment, sign indicating its location will be provided per NEC.
- If shut off is located separately from battery system, sign shall indicate it is connected to an energy storage device.

### <sup>9</sup> Rooftop locations requirements:

- The building roof covering or roofing system shall be noncombustible within five (5) feet of the battery system installation.
- Rooftop battery system installations, including structural, electrical or other associated equipment, shall not obstruct the rooftop access and clear path required by FC504.4 for buildings 100 feet or less in height.
- There shall be access to the rooftop from a building stairway, or other means of rooftop access authorized by the Building Code. A safe, unobstructed path must be provided from the bulkhead door or other point of entry to the entrance(s) to the battery system enclosure or to the service/access panel (if any).
- Any dunnage or other structural support for the battery system installation shall have a minimum one (1) hour fire rating for small and medium battery systems and two (2) hours for large battery systems.
- On rooftops of buildings provided with a standpipe, a minimum of two (2) standpipe hose outlets shall be provided within the building bulkhead, in accordance with FC912, at an approved distance from the stationary storage battery system installation sufficient to ensure safety of firefighting operations. On rooftops of buildings that do not have a standpipe, an approved water supply source shall be provided for firefighting operations. If a standpipe is provided for the battery system installation, the fire department connections shall be identified by durable signage or markings conspicuously posted at street level in accordance with FC912.
- Rooftop installations shall comply with the separation distances set forth in R608-01(g)(1)(c) for means of egress; hazardous materials or combustible materials storage facility or area; overhead power lines or other aboveground electrical installation; public utility or 18 transportation infrastructure; and other stationary storage battery system installations.
- Rooftop installations shall be located a reasonable distance (but not less than 10 feet) from the bulkhead entrance door or other rooftop access location pursuant to R608-01(g)(1)(D)(3).
- Valve-regulated lead-acid (VRLA) and flow batteries may not be installed on rooftops unless the applicant demonstrates to the satisfaction of the Department that the hazardous materials used in such systems can be safely stored and used on a rooftop, and the application adequately addresses leak detection, spill containment and the movement of such hazardous materials through the building.

## CON EDISON PROCESS

Below is a summary of the interconnection process, for ESS up to 5 MW. Further details can be found in the Con Edison [Energy Storage System Guide, Version 2 December 2018](#).

CON EDISON INTERCONNECTION OF ESS	
Application requirements	<p>Applications must follow the <a href="#">New York State Standardized Interconnection Requirements</a> (SIR), Appendix F. Visit Con Edison’s <a href="#">Applying for Private Generation Interconnection</a> page for a summary of required forms with accompanying links. Requirements will differ depending on project size.</p> <p>Note: From an interconnection perspective, ESS will be treated as a generator under the SIR process.</p>
How to initiate the process	<p>Applicant creates interconnection application via Power Clerk, Con Edison’s online portal for distributed generation applications. There are two separate portal links, one for projects <a href="#">greater than 50 kW</a> and one for projects <a href="#">50kW or less</a>. For a tutorial on using Power Clerk, <a href="#">see this video</a>. For projects above 5 MW, please contact <a href="mailto:dgexpert@coned.com">dgexpert@coned.com</a> for additional guidance.</p>
When to submit	<p>Submissions to Con Edison can be made in parallel to DOB and FDNY submissions. If a DOB job number has been issued, include this in the Project Center project description.</p>
How to submit	<p>Online through <a href="#">Power Clerk</a>.</p>
Fees	<p>Fees for ESS applications will follow the SIR:</p> <ul style="list-style-type: none"> <li>• <b>Systems ≤ 50 kW:</b> No application fee</li> <li>• <b>Systems &gt; 50 kW:</b> \$750 (returned if not used for upgrades)</li> <li>• <b>Systems requiring Coordinated Electric System Integration Review (CESIR):</b> This is a site-specific cost.                             <ul style="list-style-type: none"> <li>○ To determine if a CESIR is required, Con Edison will assess site-specific factors such as service to the building and local network conditions.</li> </ul> </li> <li>• <b>Systems requiring Utility’s System Modification:</b> This is a site-specific cost.</li> </ul> <p>Note: Applications can be processed before the fee is collected. Con Edison will contact the applicant to request payment if it is needed.</p>
Forms and required documents	<p>The application package consists of the following:</p> <p>NOTE: All forms listed below are available via the <a href="#">Applying for Private Generation Interconnection page</a> and can be uploaded to Power Clerk; also see the <a href="#">DG Documentation Checklist</a> for a full list of items that may be</p>

	<p>required.</p> <ol style="list-style-type: none"> <li>1. Customer Authorization Letter</li> <li>2. Signed Standardized Contract (Appendix A of SIR)</li> <li>3. Signed Standardized Application (Appendix B of SIR)</li> <li>4. \$750 application fee (see fee details above)</li> <li>5. Technical drawings (<a href="#">three line diagram</a>) &amp; equipment specifications as required (more details <a href="#">here</a>)</li> <li>6. Manufacturer data sheets</li> <li>7. Copy of the verification test procedure</li> <li>8. Completed Application Form G (required for net metering or standby service rate applications)</li> </ol>
<p>Timeline</p>	<p>Application review times vary. The timelines below are indicative of Con Edison review times as per the NYS SIR. They do not include requests for missing information, iterative design reviews, additional inspections that may be required, or changes to project parameters. These timelines should be reviewed as a minimum for interconnection. Applicants can track the status of their job online through the Project Center’s “My Projects” tab or by communicating with their Customer Project Manager (CPM), who is assigned after the applications are submitted.</p> <ul style="list-style-type: none"> <li>• <b>10 business days</b> or less for Con Edison to acknowledge receipt of the initial service request; applicant will be notified if any information is missing.</li> <li>• <b>Up to 15 business days</b> for Con Edison to complete preliminary review of the system design.</li> <li>• <b>If required – 60 business days</b> or less for Con Edison to complete CESIR study for projects up to 2MW, and 80 business days or less for projects between 2MW-5MW.</li> <li>• <b>10 business days</b> or less after Con Edison receives the certification documentation for it to issue a Final Acceptance Letter.</li> </ul>
<p>Recommended Steps for systems 50 kW to 5MW</p>	<p>The following steps are recommended to complete the interconnection process for ESS:</p> <ol style="list-style-type: none"> <li>1. Applicant submits paperwork on Power Clerk.</li> <li>2. Con Edison acknowledges the application has been received by emailing the applicant and assigning a Customer Project Manager (CPM).</li> <li>3. Con Edison starts application review.</li> <li>4. Con Edison notifies applicant if application is complete or missing documentation.</li> <li>5. Con Edison starts preliminary review of the system once the application is complete.</li> </ol>

	<ol style="list-style-type: none"> <li>6. Con Edison communicates preliminary review findings, including potential estimated upgrade costs. The preliminary review may indicate that a CESIR is required to determine the costs of upgrades or interconnection solutions.</li> <li>7. If a CESIR is required, applicant then commits to a CESIR via Power Clerk and by paying for any CESIR review costs that Con Edison identifies.</li> <li>8. If a CESIR is required, then Con Edison completes a CESIR and provides costs of upgrades or the interconnection solution to applicant. The CESIR costs will be site-specific.</li> <li>9. Applicant commits to pay for the utility construction of Utility System Modification, if required.</li> <li>10. If a modification is required, Con Edison will provide a general timeframe for the project, and complete the required work.*</li> <li>11. Con Edison issues an “Approval to Build” Letter.</li> <li>12. The system is installed.*</li> <li>13. Applicant emails the CPM to request an inspection.</li> <li>14. Applicant's facility is tested in accordance with the SIR.</li> <li>15. Cost Reconciliation and Final Acceptance Letter emailed to applicant.</li> </ol> <p>*Steps 10 and 12 may occur in parallel once the contractor agrees to pay for the upgrade.</p>
Inspections	<p>Provided free of charge by Con Edison as per above Process Steps.</p> <p>All ESS must complete an on-site verification test and inspection.</p>
Questions	<p>Questions should be directed to the Con Edison CPM. Additional information on general incentive programs and process guidelines is available at Con Edison’s <a href="#">DG Home Page</a>.</p>

## KEY TERMS

- **Building Information System (BIS):** The DOB’s online database of NYC property profiles, licensing and licensee information, buildings violations, and complaints, among other information. BIS provides the public with real-time access to DOB data and information.
- **Buildings Sustainability Board (BSB):** The DOB’s Buildings Sustainability Board (BSB) reviews and evaluates new renewable energy and other technologies related to environmental sustainability that are not addressed in the New York City Construction Code.
- **Coordinated Electric System Interconnection Review (CESIR):** Detailed engineering studies that assess the impact of interconnecting large amounts of distributed generation (DG) onto the grid. The CESIR identifies upgrades to the grid that may be required to accommodate the DG.
- **Energy Storage System (ESS):** Systems that enable the storage of energy and the charging and discharging of power. ESS in this Guide refers to systems that use battery technologies to store energy.
- **Innovation Review Board (IRB):** The DOB’s Innovation Review Board (IRB) reviews new technologies, design or construction techniques, materials or products, or specific projects that will use them to determine their environmental and sustainability benefits. The IRB also makes recommendations on the conditions and purposes for which each technology may be used in New York City. In addition, the IRB streamlines approvals of specific innovative projects.
- **Office of Technical Certification and Research (OTCR):** OTCR oversees technical certifications of approved agencies and entities performing inspections, tests, and material approvals. It also evaluates new technologies that enhance safety, sustainability and efficiency. Note: See RCNY [§101-12](#) for more information on OTCR.
- **Rules of the City of New York (RCNY):** The City's official compilation of approximately 6,000 rules, which prescribe standards that must be met regarding fees, licenses, permits, and other activities over which City agencies have jurisdiction.
- **Special Inspections:** An Energy Progress Inspection and Special Inspections will need to be completed prior to scheduling construction inspections. The Energy Progress Inspection is often completed by the NYS PE/RA and the Special Inspections are completed by third party Special Inspectors. At a minimum, construction projects require verification during construction of structural stability, fire-resistant penetrations and joints, air sealing and insulation, and energy code compliance. Additional inspections depending on a project’s specifics may be required. <https://www1.nyc.gov/site/buildings/codes/special-inspections.page>

**ABOUT**

The City University of New York formed the Smart Distributed Generation Hub (Smart DG Hub) to develop a strategic pathway to a more resilient distributed energy system. The Smart DG Hub, working in collaboration with NYS municipalities and partners across the state, has developed an extensive portfolio of educational resources about solar+storage, including guidance for permitting these systems.

**CONTACT:** SmartDGHub@cuny.edu

<http://www.smartdghub.org/>

