RESILIENT SOLAR
(SOLAR + BATTERY STORAGE)

FDNY Filing Procedures

March 31th, 2022
Yash Patel
• CUNY in conjunction with FDNY has drafted permitting process guidelines for Outdoor Lithium Ion
• Other chemistries will follow similar procedure, but pertinent information will vary based on technology
• All application submissions must be done online through the FDNY business portal

FDNY Business Portal

FDNY Outdoor Stationary Storage Battery Systems Rule

FDNY Fire Code 2022

Energy Storage System Permitting and Interconnection Process Guide For New York City
New York Fire Department Fire Code 2022

• Allows indoor and R-3 occupancies BESS installation
  • The allowed installations and conditions will be noted on the certificate of approval (CoA) for the BESS

• Requires the BESS to be listed to UL 9540 2nd edition (2020)
  • Can be listed to UL 9540 1st edition (2016), if BESS got listed prior to FC 2022 and is tested to 9540A 4th edition (2019)
FILING AN APPLICATION
CERTIFICATE OF APPROVAL – NEW EQUIPMENT

- TM-2 Application
- $625 examination fee
- Narrative that describes the BESS, modes of operation, any incorporated safety system and activation sequence
- Data sheet + cut-sheets of system components
- MSDS for the chemical components within the BESS
- Installation and operational manuals
- UL listing and certification (Listing to UL 9540, UL 1973, UL 1741 and other pertinent UL certifications)
- UL 9540A testing results and hazard mitigation analysis (HMA) or a failure modes and effects analysis done by New York licensed fire protection engineer.
- Emergency response plan (optional)
• TM-1 Application
• $420 + $525 ($945 total) examination fee
• Plans Showing Proposed Location
• Narrative for scope of work
• Cut-sheets of system components
• Installation manuals and technical documentation
• Commissioning and Decommissioning plan
• UL Listings
• Other pertinent information (CoA approval, etc.)
Things to consider:

- Size (what’s needed and what hazards that would pose)
- All nearby exposures
- Gas Hazards (Toxicity and Deflagration)
- Fire Protection Systems
- FDNY connections?
- FDNY response? (clean agent and water)
- Certificate of Fitness Holder and SME
- Emergency Response
  - Shutdown
  - Emergency signals
  - Actual emergencies
- Vehicles
- Disposal of the BESS
TYPES OF INSTALLATIONS

• Outdoors
  • Roof top is considered outdoor
• Indoors
• R-3 Occupancies
  • Attached garage
  • Detached garage
  • Mount on exterior wall

* All installations require BESS to have a valid CoA and follow conditions stipulated in the CoA

*Notice to the Department shall be made in accordance with FC 608.10.3 and 3 RCNY 608-01 (f)(3) for all installations.
BESS Size Limit
- Attached garage (20 kWh per dwelling unit)
- Detached garage / Exterior wall (40 kWh per dwelling unit)

Installation Requirements
- BESS has CoA
  - Follow FC 608.13 and conditions in CoA
- BESS doesn’t have TM-2
  - File TM-2, Installation not allowed without CoA
BESS Size Limit
• No size limit

Installation Requirements
• BESS has CoA
  • Follow requirements in 3 RCNY 608-01 based on BESS energy density
  • File TM-1 for site specific installation approval
  • File TM-1 based on 3 RCNY 608-01 for:
    • Fire Alarm system
    • Non-water based fire suppression (if included in BESS)
    • NFPA 15 designed water spray system
• BESS doesn’t have TM-2
  • File TM-2, Installation not allowed without CoA
INDOOR INSTALLATION

BESS Size Limit
• Follows FC Table 608.9.1.1
  • Control areas limitations set forth in FC 5003.8.3.3

Installation Requirements
• BESS has CoA
  • Installation parameters within CoA, requirements of FC 608.9.1, manufacturer requirements
    • No need to file TM-1 with FDNY and only needs DOB approval
  • Installation parameters not within CoA, requirements of FC 608.9.1, manufacturer requirements
    • File TM-1 for site specific installation approval
• BESS doesn’t have CoA
  • File TM-2, Installation not allowed without CoA
TM-2 Filing Procedure

For the equipment approval (Certificate of approval)
Go to FDNY Business:
1. Select Design and Installation Application;
2. Select Technology Management Application;
3. Select Certificates of Approval Application
   New/Renewal/Amendment
4. Pay fee and upload all necessary documents

* If there is any questions or concerns, please direct them to FDNY.businesssupport@FDNY.nyc.gov
TM-1 Filing Procedure

For the site-specific approval (Letter of Acceptance)
Go to FDNY Business:
1. Select Design and Installation Application;
2. Select Technology Management Application;
3. Select Engineering Application/Amendment, Category Stationary (Battery) Energy Storage System
4. Pay fee and upload all necessary documents

For the Fire Alarm portion
FDNY Business:
1. Select Design and Installation Application;
2. Select Technology Management Application;
3. Select Fire Alarm Application New/Amendment
4. Pay fee and upload all necessary documents

If system is provided with Internal Clean Agent System:
For the non-water based Fire Extinguishing System (clean agent Mechanical portion) (Letter of Acceptance) (TM-1 Form)
Go to FDNY Business:
1. Select Design and Installation Application;
2. Select Technology Management Application;
3. Select Engineering Application/Amendment, Category Non-water fire extinguishing systems (FC904), Sub-category Clean agent systems (FC904)
4. Pay fee and upload all necessary documents

For the Water-Based Fire Extinguishing System (NFPA 15)** FYI the design density of the water-based system (NFPA 15) shall be 0.5 gpm/ft^2 **
Go to FDNY Business:
1. Select Design and Installation Application;
2. Select Technology Management Application;
3. Select Engineering Application/Amendment Category Other
4. Pay fee and upload all necessary documents
BESS Description

• System size (kWh and kW)
• Applicable product standards met
• Battery specific:
  • Number of Batteries
  • Battery Chemistry
  • Voltage
  • UL Listings (UL 1973, UL 9540 etc.)
  • Cascading Protection
• Battery Encasement:
  • Number and type of racks
  • Cabinet information (if provided)
  • Ventilation for off gassing (if required)
  • Deflagration venting (if required)

• Inverter:
  • Size
  • Type
  • UL Listing
  • Monitors for: over current, over temperature, etc.
• Battery Management System (BMS):
  • Description of system
  • Monitors for: battery voltages, temperatures, current, etc.

• Safety measures:
  • Additional safety monitors not captured in the system description
    ➢ Ex. Hydrogen sensors, ground fault protection, etc.
  • Sequence of events if malfunction happens at battery or system level
    ➢ Explain how software detects malfunctions
  • Arc Fault Protection as per NEC 2014
INFORMATION AND SUPPORTING DOCUMENTATION

- Process to shut down system
  - Rapid Shutdown As per NEC 2014
  - Location of Rapid Shutdown Switch
  - Use of software to shut down
  - List who has access to these systems
- Specify any existing dangers
  - Ex. Isolation of the system does not remove any charge present in the batteries.
- Commissioning and decommissioning plans
  - NFPA 855 for guidance
- Emergency Management Plan
  - Detailed plan of action in the event of failure
INFORMATION AND SUPPORTING DOCUMENTATION

Building Information

• Building Construction type (Non-Combustible)
• Building Use and Occupancy
• Description of where BESS will be located (indoor, outdoor etc.)
• Available FDNY access to BESS
• Description of Ventilation system for entire building and HVAC intakes in the vicinity of proposed BESS location
• Description of water-based suppression system, and for location of BESS (may require additional protection depending on technology)
• Standpipe hose outlet locations near installation
• Emergency exit locations
• Fire hydrant locations
Applicant submits all required paperwork

Once submitted, the application will be reviewed by FDNY and if any information is required a letter of deficiency will be issued through the FDNY portal

If needed FDNY will contact the applicant to set up a joint site visit, conducted by Tech-Management and HazMat

FDNY will notify applicant of decision; if approved, a Letter of Acceptance (LOA) or Conditional Letter of Acceptance (CLOA) will be issued

*Approval shall be obtained from NYC Department of Buildings (DOB) and all other agencies having jurisdiction
Chief Brian Cordasco, Chief of Technology Management, Brian.Cordasco@fdny.nyc.gov

Kam Chan, Director of Technology Management, Kam.Chan@fdny.nyc.gov

Winnie Lei, Assistant Deputy Director, Winnie.lei@fdny.nyc.gov

Chief Michael Maiz, HazMat Chief, Michael.Maiz@fdny.nyc.gov

Ratan Roy, P.E, Sustainability Unit, Ratan.Roy@fdny.nyc.gov

Alexander Banc, Sustainability Unit, Alexander.Banc@fdny.nyc.gov

Yash Patel, Sustainability Unit, Yash.Patel@fdny.nyc.gov

Ningshengjie Gao, Sustainability Unit, Ningshengjie.Gao@fdny.nyc.gov
REFERENCES

FDNY Business Portal

FDNY Outdoor Stationary Storage Battery Systems Rule

FDNY Fire Code 2022
(https://www1.nyc.gov/site/fdny/codes/fire-code/proposed-fire-code.page)

Energy Storage System Permitting and Interconnection Process Guide For New York City
(https://nysolarmap.com/media/2101/li-ion-permitting-guide-2020-updated_11320.pdf)