



# RESILIENT SOLAR (SOLAR + BATTERY STORAGE)

FDNY Filing Procedures

March 31<sup>th</sup>, 2022

Yash Patel





# RESILIENT SOLAR (SOLAR + STORAGE)



- 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](#)





# CHANGES TO THE FIRE CODE



## 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 2<sup>nd</sup> edition (2020)
  - Can be listed to UL 9540 1<sup>st</sup> edition (2016), if BESS got listed prior to FC 2022 and is tested to 9540A 4<sup>th</sup> 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)



# FILING AN APPLICATION FOR INSTALLATION (CAN BE SUBMITTED IN PARALLEL WITH DOB)



- 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

Things that need to be considered:

- 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



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

\* 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.



# R-3 OCCUPANCY INSTALLATION



## 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





# OUTDOOR INSTALLATION



## 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



# ONLINE FILING PROCEDURE



## 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](mailto:FDNY.businesssupport@FDNY.nyc.gov)



# ONLINE FILING PROCEDURE



## 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<sup>2</sup> \*\*

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



# INFORMATION AND SUPPORTING DOCUMENTATION



## 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



# INFORMATION AND SUPPORTING DOCUMENTATION



- 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.



# INFORMATION AND SUPPORTING DOCUMENTATION



- 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



# REVIEW PROCESS

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



# UNIT CONTACT INFORMATION



**Chief Brian Cordasco**, Chief of Technology Management, [Brian.Cordasco@fdny.nyc.gov](mailto:Brian.Cordasco@fdny.nyc.gov)

**Kam Chan**, Director of Technology Management, [Kam.Chan@fdny.nyc.gov](mailto:Kam.Chan@fdny.nyc.gov)

**Winnie Lei**, Assistant Deputy Director, [Winnie.lei@fdny.nyc.gov](mailto:Winnie.lei@fdny.nyc.gov)

**Chief Michael Maiz**, HazMat Chief, [Michael.Maiz@fdny.nyc.gov](mailto:Michael.Maiz@fdny.nyc.gov)

**Ratan Roy, P.E.**, Sustainability Unit, [Ratan.Roy@fdny.nyc.gov](mailto:Ratan.Roy@fdny.nyc.gov)

**Alexander Banc**, Sustainability Unit, [Alexander.Banc@fdny.nyc.gov](mailto:Alexander.Banc@fdny.nyc.gov)

**Yash Patel**, Sustainability Unit, [Yash.Patel@fdny.nyc.gov](mailto:Yash.Patel@fdny.nyc.gov)

**Ningshengjie Gao**, Sustainability Unit, [Ningshengjie.Gao@fdny.nyc.gov](mailto:Ningshengjie.Gao@fdny.nyc.gov)



# REFERENCES

FDNY Business Portal

(<https://www1.nyc.gov/site/fdny/business/support/fdny-business.page>)

FDNY Outdoor Stationary Storage Battery Systems Rule

(<https://www1.nyc.gov/assets/fdny/downloads/pdf/codes/3-rcny-608-01.pdf>)

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](https://nysolarmap.com/media/2101/li-ion-permitting-guide-2020-updated_11320.pdf))