*235 Attachment 3*

**Town of Blooming Grove**

**Battery Energy Storage System Appendixes**
**[Added 10-5-2019 by L.L. No. 7-2019]**

## APPENDIX 1: Commissioning Plan

The battery energy storage system commissioning plan shall include the following information:

1. A narrative description of the activities that will be accomplished during each phase of commissioning including the personnel intended to accomplish each of the activities.

2. A listing of the specific BESS and associated components, controls and safety related devices to be tested, a description of the tests to be performed and the functions to be tested.

3. Conditions under which all testing will be performed, which are representative of the conditions during normal operation of the system.

4. Documentation of the owner's project requirements and the basis of design necessary to understand the installation and operation of the BESS.

5. Verification that required equipment and systems are installed in accordance with the approved plans and specifications.

6. Integrated testing for all fire and safety systems.

7. Testing for any required thermal management, ventilation or exhaust systems associated with the BESS installation.

8. Preparation and delivery of operation and maintenance documentation.

9. Training of facility operating and maintenance staff.

10. Identification and documentation of the requirements for maintaining system performance to meet the original design intent during the operation phase.

## APPENDIX 2: Supplemental Guidance for Developing the Fire Safety Compliance Plan

Disclaimer: Appendix 2 is primarily based on the 2021 International Fire Code. It is important to note that New York State under the Uniform Fire Prevention and Building Code is utilizing the 2015 International Fire Code at the time of this Guidebook publication. These requirements set forth in Appendix 2 are more comprehensive than the 2015 International Fire Code. NYSERDA will continue to update this Guidebook as these codes and standards evolve.

1. Hazard mitigation analysis. A failure modes and effects analysis (FMEA) or other approved hazard mitigation analysis shall be provided in accordance with Section 2021 IFC 104.7.2 under any of the following conditions:

- Where BESS technologies not specifically identified in Table 1: Battery Energy Storage System Tier 2 Threshold Quantities are provided.

- More than one BESS technology is provided in a room or enclosed area where there is a potential for adverse interaction between technologies.

- Where allowed as a basis for increasing maximum allowable quantities. See 2021 IFC Section 1206.5.2.

1.1. Fault condition. The hazard mitigation analysis shall evaluate the consequences of the following failure modes. Only single failure modes shall be considered.

- A thermal runaway condition in a single BESS rack, module or unit.

- Failure of any battery (energy) management system.

- Failure of any required ventilation or exhaust system.

- Voltage surges on the primary electric supply.

- Short circuits on the load side of the BESS.

- Failure of the smoke detection, fire detection, fire suppression, or gas detection system.

- Required spill neutralization not being provided or failure of a required secondary containment system.

1.2. Analysis approval. The fire code official is authorized to approve the hazardous mitigation analysis provided the consequences of the hazard mitigation analysis demonstrate:

- Fires will be contained within unoccupied BESS rooms or areas for the minimum duration of the fire-resistance rated separations identified in Section 7.4.

- Fires in occupied work centers will be detected in time to allow occupants within the room or area to safely evacuate.

- Toxic and highly toxic gases released during fires will not reach concentrations in access of immediately Dangerous to Life or Health (IDLH) level in the building or adjacent means of egress routes during the time deemed necessary to evacuate occupants from any affected area.

- Flammable gases released from BESS during charging, discharging and normal operation will not exceed 25% of their lower flammability limit (LFL).

- Flammable gases released from BESS during fire, overcharging and other abnormal conditions will be controlled through the use of ventilation of the gases preventing accumulation or by deflagration venting.

1.3. Additional protection measures. Construction, equipment and systems that are required for the BESS to comply with the hazardous mitigation analysis, including but not limited to those specifically described in this Appendix shall be installed, maintained and tested in accordance with nationally recognized standards and specified design parameters.

2. Fire remediation. Where a fire or other event has damaged the BESS and ignition or re-ignition of the BESS is possible, the system owner, agent, or lessee shall take the following actions, at their expense, to mitigate the hazard or remove damaged equipment from the premises to a safe location.

2.1. Fire remediation. Where, in the opinion of the fire code official, it is essential for public safety that trained personnel be on site to respond to possible ignition or re-ignition of a damaged BESS, the system owner, agent or lessee shall immediately dispatch one or more fire mitigation personnel to the premise, as required and approved, at their expense. These personnel shall remain on duty continuously after the fire department leaves the premise until the damaged energy storage equipment is removed from the premises, or earlier if the fire code official indicates the public safety hazard has been abated.

2.2. Fire mitigation personnel. On-duty fire mitigation personnel shall have the following responsibilities:

- Keep diligent watch for fires, obstructions to means of egress and other hazards.

- Immediately contact the fire department if their assistance is needed to mitigate any hazards or extinguish fires.

- Take prompt measures for remediation of hazards in accordance with the decommissioning plan

- Take prompt measures to assist in the evacuation of the public from the structures.

3. Battery energy storage management system. Where required by the BESS listing an approved energy storage management system shall be provided that monitors and balances cell voltages, currents and temperatures within the manufacturer's specifications. The system shall disconnect electrical connections to the BESS or otherwise place it in a safe condition if potentially hazardous temperatures or other conditions such as short circuits, over voltage or under voltage are detected.

4. Enclosures. Enclosures of BESS shall be of noncombustible construction.

5. General installations requirements. Stationary and mobile BESS shall comply with the requirements of Sections 5.1 through 5.12.

5.1. Electrical disconnects. Where the BESS disconnecting means is not within sight of the main electrical service disconnecting means, placards or directories shall be installed at the location of the main electrical service disconnecting means indicating the location of stationary storage battery system disconnecting means in accordance with NFPA 70.

Exception: Electrical disconnects for lead acid and nickel cadmium battery systems at facilities under the exclusive control of communications utilities and operating at less than 50 VAC and 60 VDC shall be permitted to have electrical disconnects signage in accordance with NFPA 76.

5.2. Working clearances. Access and working space shall be provided and maintained about all electrical equipment to permit ready and safe operation and maintenance of such equipment in accordance with NFPA 70 and the manufacturer's instructions.

5.3. Fire-resistance rated separations. Rooms and other indoor areas containing BESS shall be separated from other areas of the building in accordance with Section 8.4. BESS shall be permitted to be in the same room with the equipment they support.

5.4. Seismic and structural design. Stationary BESS shall comply with the seismic design requirements in Chapter 16 of the International Building Code, and shall not exceed the floor loading limitation of the building.

5.5. Vehicle impact protection. Where BESS are subject to impact by a motor vehicle, including fork lifts, vehicle impact protection shall be provided in accordance with 2021 IFC Section 312.

5.6. Combustible storage. Combustible materials shall not be stored in BESS rooms, areas, or walk-in units. Combustible materials in occupied work centers covered by Section 5.10 shall be stored at least three feet (914 mm) from BESS cabinets.

5.7. Toxic and highly toxic gases. BESS that have the potential to release toxic and highly toxic gas during charging, dis-charging and normal use conditions shall be provided with a hazardous exhaust system in accordance with Section 502.8 of the International Mechanical Code.

5.8. Signage. Approved signs shall be provided on or adjacent to all entry doors for BESS rooms or areas and on enclosures of BESS cabinets and walk-in units located outdoors, on rooftops or in open parking garages. Signs designed to meet both the requirements of this section and NFPA 70 shall be permitted. The signage shall include the following or equivalent.

- "Energy Storage System", "Battery Storage System", "Capacitor Energy Storage System", or the equivalent.
- The identification of the electrochemical BESS technology present.
- "Energized electrical circuits"

- If water reactive electrochemical BESS are present the signage shall include “APPLY NO WATER”

- Current contact information, including phone number, for personnel authorized to service the equipment and for fire mitigation personnel required by Section 2.2.

Exception: Existing electrochemical BESS shall be permitted to include the signage required at the time they were installed.

5.9. Security of installations. Rooms, areas and walk-in units in which electrochemical BESS are located shall be secured against unauthorized entry and safe-guarded in an approved manner. Security barriers, fences, landscaping, and other enclosures shall not inhibit the required air flow to or exhaust from the electrochemical BESS and its components.

5.10. Occupied work centers. Electrochemical BESS located in rooms or areas occupied by personnel not directly involved with maintenance, service and testing of the systems shall comply with the following.

- Electrochemical BESS located in occupied work centers shall be housed in locked noncombustible cabinets or other enclosures to prevent access by unauthorized personnel.

- Where electrochemical BESS are contained in cabinets in occupied work centers, the cabinets shall be located within 10 feet (3,048 mm) of the equipment that they support.

- Cabinets shall include signage complying with Section 5.8.

5.11. Open rack installations. Where electrochemical BESS are installed in a separate equipment room and only authorized personnel have access to the room, they shall be permitted to be installed on an open rack for ease of maintenance.

5.12. Walk-in units. Walk-in units shall only be entered for inspection, maintenance and repair of BESS units and ancillary equipment, and shall not be occupied for other purposes.

6. Electrochemical BESS Protection. The protection of electrochemical BESS shall be in accordance with 6.1 6.8 where required by Section 8 through 10.

6.1. Size and separation. Electrochemical BESS shall be segregated into groups not exceeding 50 kWh (180 Mega joules). Each group shall be separated a minimum three feet (914 mm) from other groups and from walls in the storage room or area. The storage arrangements shall comply with Chapter 10.

Exceptions:

- Lead acid and nickel cadmium battery systems in facilities under the exclusive control of communications utilities and operating at less than 50 VAC and 60 VDC in accordance with NFPA 76.

- The fire code official is authorized to approve larger capacities or smaller separation distances based on large scale fire testing.

6.2. Mixed electrochemical energy systems. Where rooms, areas and walk-in units contain different types of electrochemical energy technologies, the total aggregate quantities of the systems shall be determined based on the sum of percentages of each technology type quantity divided by the maximum allowable quantity of each technology type. The sum of the percentages shall not exceed 100% of the maximum allowable quantity.

6.3. Elevation. Electrochemical BESS shall not be located in the following areas:

- Where the floor is located more than 75 feet (22 860 mm) above the lowest level of fire department vehicle access, or

- Where the floor is located below the lowest level of exit discharge.

Exceptions:

- Lead acid and Nickel cadmium battery systems less than 50 VAC and 60 VDC installed in facilities under the exclusive control of communications utilities in accordance with NFPA 76.

- Where approved, installations shall be permitted in underground vaults complying with NFPA 70, Article 450, Part III.

- Where approved by the fire code official, installations shall be permitted on higher and lower floors.

6.4. Fire detection. An approved automatic smoke detection system or radiant energy-sensing fire detection system complying with 2021 IFC Section 907.2 shall be installed in rooms, indoor areas, and walk-in units containing electrochemical BESS. An approved radiant energy-sensing fire detection system shall be installed to protect open parking garage and rooftop installations. Alarm signals from detection systems shall be transmitted to a central station, proprietary or remote station service in accordance with NFPA 72, or where approved to a constantly attended location.

6.4.1. System status. Where required by the fire code official, visible annunciation shall be provided on cabinet exteriors or in other approved locations to indicate that potentially hazardous conditions associated with the BESS exist.

6.5. Fire suppression systems. Rooms and areas within buildings and walk-in units containing electrochemical BESS shall be protected by an automatic fire suppression system designed and installed in accordance with one of the following:

- An automatic sprinkler system designed and installed in accordance with 2021 IFC Section 903.3.1.1 with a minimum density of 0.3 gpm/ft.2 based on the fire area or 2,500 ft.2 design area, whichever is smaller.

- Where approved, an automatic sprinkler system designed and installed in accordance with Section 903.3.1.1 with a sprinkler hazard classification based on large scale fire testing.

- The following alternate automatic fire extinguishing systems designed and installed in accordance with Section 904, provided the installation is approved by the fire code official based on large scale fire testing.

  - NFPA 12, Standard on Carbon Dioxide Extinguishing Systems

  - NFPA 15, Standard for Water Spray Fixed Systems for Fire Protection

  - NFPA 750, Standard on Water Mist Fire Protection Systems

  - NFPA 2001, Standard on Clean Agent Fire Extinguishing Systems

  - NFPA 2010, Standard for Fixed Aerosol Fire-Extinguishing Systems

Exception: Fire suppression systems for lead acid and nickel cadmium battery systems at facilities under the exclusive control of communications utilities that operate at less than 50 VAC and 60 VDC shall be provided where required by NFPA 76.

6.5.1. Water reactive systems. Electrochemical BESS that utilize water reactive materials shall be protected by an approved alternative automatic fire-extinguishing system in accordance with 2021 IFC Section 904, where the installation is approved by the fire code official based on large scale fire testing.

6.6. Maximum enclosure size. Outdoor walk-in units housing BESS shall not exceed 53 feet by eight feet by 9.5 feet high, not including bolt-on HVAC and related equipment, as approved. Outdoor walk-in units exceeding these limitations shall be considered indoor installations and comply with the requirements in Section 8.

6.7. Vegetation control. Areas within 10 feet (3 m) on each side of outdoor BESS shall be cleared of combustible vegetation and other combustible growth. Single specimens of trees, shrubbery, or cultivated ground cover such as green grass, ivy, succulents, or similar plants used as ground covers shall be permitted to be exempt provided that they do not form a means of readily transmitting fire.

6.8. Means of egress separation. BESS located outdoors and in open parking garages shall be separated from any means of egress as required by the fire code official to ensure safe egress under fire conditions, but in no case less than 10 feet (3,048 mm).

Exception: The fire code official is authorized to approve a reduced separation distance if large scale fire testing is provided that shows that a fire involving the BESS will not adversely impact occupant egress.

7. Electrochemical BESS technology specific protection. Electrochemical BESS installations shall comply with the requirements of this section in accordance with the applicable requirements of Table 2.

**Table 2 Electrochemical BESS Technology Specific**

| Compliance Required[b] | Battery Technology | | | | Other BESS and Battery Technologies[b] |
|---|---|---|---|---|---|
| | Lead-acid | Ni-Cad & Ni-MH | Lithiumion | Flow | |
| 7.1 Exhaust ventilation | Yes | Yes | No | Yes | Yes |
| 7.2 Spill control and neutralization | Yes[c] | Yes[c] | No | Yes | Yes |
| 7.3 Explosion control | Yes[a] | Yes[a] | Yes | Yes | Yes |
| 7.4 Safety Caps | Yes | Yes | No | Yes | Yes |
| 7.5 Thermal runaway | Yes[d] | Yes | Yes[e] | Yes | Yes[e] |

a. Not required for lead-acid and nickel cadmium batteries at facilities under the exclusive control of communications utilities that comply with NFPA 76 and operate at less than 50 VAC and 60 VDC.

b. Protection shall be provided unless documentation acceptable to the fire code official is provided in accordance with 2021 IFC Section 104.7.2 that provides justification why the protection is not necessary based on the technology used.

c. Applicable to vented (i.e. flooded) type nickel cadmium and lead acid batteries.

d. Not required for vented (i.e. flooded) type lead acid batteries.

e. The thermal runaway protection is permitted to be part of a battery management system that has been evaluated with the battery as part of the evaluation to UL 1973.

7.1. Exhaust ventilation. Where required by Table 2 or elsewhere in this code, exhaust ventilation of rooms, areas, and walk-in units containing electrochemical BESS shall be provided in accordance with the International Mechanical Code and Section 7.1.1 or 7.1.2.

7.1.1. Ventilation based upon LFL. The exhaust ventilation system shall be designed to limit the maximum concentration of flammable gas to 25% of the lower flammable limit (LFL) of the total volume of the room, area, or walk-in unit during the worst-case event of simultaneous charging of batteries at the maximum charge rate, in accordance with nationally recognized standards.

7.1.2. Ventilation based upon exhaust rate. Mechanical exhaust ventilation shall be provided at a rate of not less than 1 ft3/min/ft2(5.1 L/sec/m2) of floor area of the room, area, or walk-in unit. The ventilation shall be either continuous or shall be activated by a gas detection system in accordance with Section 7.1.2.4.

7.1.2.1. Standby power. Mechanical exhaust ventilation shall be provided with a minimum of two hours of standby power in accordance with 2021 IFC Section 1203.2.5.

7.1.2.2. Installation instructions. Required mechanical exhaust ventilation systems shall be installed in accordance with the manufacturer's installation instructions and the International Mechanical Code.

7.1.2.3. Supervision. Required mechanical exhaust ventilation systems shall be supervised by an approved central station, proprietary or remote station service in accordance with NFPA 72, or shall initiate an audible and visible signal at an approved constantly attended on-site location.

7.1.2.4. Gas detection system. Where required by Section 7.1.2, rooms, areas, and walk-in units containing BESS shall be protected by an approved continuous gas detection system that complies with 2021 IFC Section 916 and with the following:

- The gas detection system shall be designed to activate the mechanical ventilation system when the level of flammable gas in the room, area, or walk-in unit exceeds 25% of the LFL.
- The mechanical ventilation system shall remain on until the flammable gas detected is less than 25% of the LFL.
- The gas detection system shall be provided with a minimum of 2 hours of standby power in accordance with 2021 IFC Section 1203.2.6.
- Failure of the gas detection system shall annunciate a trouble signal at an approved central station, proprietary or remote station service in accordance with NFPA 72, or shall initiate an audible and visible trouble signal at an approved constantly attended on-site location.

7.2. Spill control and neutralization. Where required by Table 2 or elsewhere in this code, areas containing free-flowing liquid electrolyte or hazardous materials shall be provided with spill control and neutralization in accordance with this section.

7.2.1. Spill control. Spill control shall be provided to prevent the flow of liquid electrolyte or hazardous materials to adjoining rooms or areas. The method shall be capable of containing a spill from the single largest battery or vessel.

7.2.2. Neutralization. An approved method to neutralize spilled liquid electrolyte shall be provided that is capable of neutralizing a spill from the largest battery or vessel to a pH between 5.0 and 9.0.

7.3. Explosion control. Where required by Table 2 or elsewhere in this code, explosion control complying with Section 911 shall be provided for rooms, areas or walk-in units containing electrochemical BESS technologies.

Exceptions:

- Where approved, explosion control is permitted to be waived by the fire code official based on large scale fire testing which demonstrates that flammable gases are not liberated from electrochemical BESS cells or modules.
- Where approved, explosion control is permitted to be waived by the fire code official based on documentation provided in accordance with 2021 IFC Section 104.7 that demonstrates that the electrochemical BESS technology to be used does not have the potential to release

flammable gas concentrations in excess of 25% of the LFL anywhere in the room, area, walk-in unit or structure under thermal runaway or other fault conditions.

7.4. Safety caps. Where required by Table 2 or elsewhere in this code, vented batteries and other BESS shall be provided with flame-arresting safety caps.

7.5. Thermal runaway. Where required by Table 2 or elsewhere in this code, batteries and other BESS shall be provided with a listed device or other approved method to prevent, detect and minimize the impact of thermal runaway.

8. Indoor installations. Indoor BESS installations shall be in accordance with Sections 8.1 through 8.4.

8.1. Dedicated use buildings. For the purpose of Table 3 dedicated use BESS buildings shall be classified as Group F-1 occupancies and comply with all the following:

- The building shall only be used for BESS, electrical energy generation, and other electrical grid related operations.

- Occupants in the rooms and areas containing BESS are limited to personnel that operate, maintain, service, test and repair the BESS and other energy systems.

- No other occupancy types shall be permitted in the building.

- Administrative and support personnel shall be permitted in areas within the buildings that do not contain BESS, provided:

- The areas do not occupy more than 10% of the building area of the story in which they are located.

- A means of egress is provided from the incidental use areas to the public way that does not require occupants to traverse through areas containing BESS or other energy system equipment.

8.2. Non-dedicated use buildings. For the purpose of Table 3 non-dedicated use buildings include all buildings that contain BESS and do not comply with 8.1 dedicated use building requirements.

**Table 3 Indoor BESS Installations**

| Compliance Required | Dedicated Use Buildings[a] | Non-Dedicated Use Buildings[b] |
|---|---|---|
| 5. General Installation Requirements | Yes | Yes |
| 6.1. Size and separation | Yes | Yes |
| 6.3. Elevation | Yes | Yes |
| 6.4. Smoke and automatic fire detection | Yes[c] | Yes |
| 6.5. Fire suppression systems | Yes[d] | Yes |
| 8.3. Dwelling units and sleeping units | NA | Yes |
| 8.4. Fire-resistance rated separations | Yes | Yes |
| 7. Technology specific protection | Yes | Yes |

a. See Section 8.1.
b. See Section 8.2.
c. Where approved by the fire code official, alarm signals are not required to be transmitted to a central station, proprietary or remote station service in accordance with NFPA 72, or a constantly attended location where local fire alarm annunciation is provided and trained personnel are always present.
d. Where approved by the fire code official, fire suppression systems are permitted to be omitted in dedicated use buildings located more than 100 feet (30.5 M) from buildings, lot lines, public ways, stored combustible materials, hazardous materials, high piled stock and other exposure hazards.

8.3. Dwelling units and sleeping units. BESS shall not be installed in sleeping units or in habitable spaces of dwelling units.

8.4. Fire-resistance rated separations. Rooms and areas containing BESS shall include fire-resistance rated separations as follows:

- In dedicated use buildings, rooms and areas containing BESS shall be separated from areas in which administrative and support personnel are located.

- In non-dedicated use buildings, rooms and areas containing BESS shall be separated from other areas in the building.

Separation shall be provided by 2 hour rated fire barriers constructed in accordance with Section 707 of the International Building Code and 2 hour rated horizontal assemblies constructed in accordance with Section 711 of the International Building Code, as appropriate.

9. Outdoor installations. Outdoor installations shall be in accordance with Sections 9.1 through 9.3. Exterior wall installations for individual BESS units not exceeding 20 kWh shall be in accordance with 9.4.

9.1. Remote outdoor installations. For the purpose of Table 4, remote outdoor installations include BESS located more than 100 feet (30.5 M) from buildings, lot lines, public ways,

stored combustible materials, hazardous materials, high piled stock and other exposure hazards.

9.2. Installations near exposures. For the purpose of Table 4, installations near exposures include all outdoor BESS installations that do not comply with 9.1 remote outdoor location requirements.

**Table 4 Outdoor BESS Installations**

| Compliance Required | Remote Installations[a] | Installations Near Exposures[b] |
|---|---|---|
| 5. General Installation Requirements | Yes | Yes |
| 6.1 Size and separation | No | Yes[c] |
| 6.4. Smoke and automatic fire detection | Yes | Yes |
| 6.5. Fire suppression systems | Yes[d] | Yes |
| 6.6. Maximum enclosure size | Yes | Yes |
| 6.7. Vegetation control | Yes | Yes |
| 6.8. Means of egress separation | Yes | Yes |
| 9.3. Clearance to exposures | Yes | Yes |
| 7. Technology specific protection | Yes | Yes |

a. See Section 9.1.
b. See Section 9.2.
c. In outdoor walk-in units, spacing is not required between BESS units and the walls of the enclosure.
d. Where approved by the fire code official, fire suppression systems are permitted to be omitted.

9.3. Clearance to exposures. BESS located outdoors shall be separated by a minimum 10 feet (3,048 mm) from the following exposures:

- Lot lines
- Public ways
- Buildings
- Stored combustible materials
- Hazardous materials
- High-piled stock
- Other exposure hazards

Exceptions:

- Clearances are permitted to be reduced to 3 feet (914 mm) where a 1-hour free standing fire barrier, suitable for exterior use, and extending 5 feet (1.5 m) above and extending 5 feet (1.5 m) beyond the physical boundary of the BESS installation is provided to protect the exposure.

- Clearances to buildings are permitted to be reduced to 3 feet (914 mm) where noncombustible exterior walls with no openings or combustible overhangs are provided on the wall adjacent to the BESS and the fire-resistance rating of the exterior wall is a minimum 2 hours.

- Clearances to buildings are permitted to be reduced to 3 feet (914.4 mm) where a weatherproof enclosure constructed of noncombustible materials is provided over the BESS, and it has been demonstrated that a fire within the enclosure will not ignite combustible materials outside the enclosure based on large scale fire testing.

9.4. Exterior wall installations. BESS shall be permitted to be installed outdoors on exterior walls of buildings when all of the following conditions are met:

- The maximum energy capacity of individual BESS units shall not exceed 20 kWh.

- The BESS shall comply with applicable requirements in this Appendix.

- The BESS shall be installed in accordance with the manufacturer's instructions and their listing.

- Individual BESS units shall be separated from each other by at least three feet (914 mm).

- The BESS shall be separated from doors, windows, operable openings into buildings, or HVAC inlets by at least five feet (1,524 mm)

Exception: Where approved smaller separation distances in items 4 and 5 shall be permitted based on large scale fire testing.

10. Special installations. Rooftop and open parking garage BESS installations shall comply with Sections 10.1 through 10.6.

10.1. Rooftop installations. For the purpose of Table 5, rooftop BESS installations are those located on the roofs of buildings.

10.2. Open parking garage installations. For the purpose of Table 5, open parking garage BESS installations are those located in a structure or portion of a structure that complies with Section 406.5 of the International Building Code.

**Table 5 Special BESS Installations**

| Compliance Required | Rooftops[a] | Open Parking Garages[b] |
|---|---|---|
| 5. General Installation Requirements | Yes | Yes |
| 6.1. Size and separation | Yes | Yes |
| 6.4. Smoke and automatic fire detection | Yes | Yes |
| 6.6. Maximum enclosure size | Yes | Yes |
| 6.8. Means of egress separation | Yes | Yes |
| 10.3. Clearance to exposures | Yes | Yes |
| 10.4. Fire suppression systems | Yes | Yes |
| 10.5. Rooftop installations | Yes | No |
| 10.6. Open parking garage installations | No | Yes |
| 7. Technology specific protection | Yes | Yes |

a. See Section 10.1.
b. See Section 10.2.

10.3. Clearance to exposures. BESS located on rooftops and in open parking garages shall be separated by a minimum 10 feet (3,048 mm) from the following exposures:

- Buildings, except the building on which rooftop BESS is mounted
- Any portion of the building on which a rooftop system is mounted that is elevated above the rooftop on which the system is installed
- Lot lines
- Public ways
- Stored combustible materials
- Locations where motor vehicles can be parked
- Hazardous materials
- Other exposure hazards

Exceptions:

- Clearances are permitted to be reduced to 3 feet (914 mm) where a 1-hour free standing fire barrier, suitable for exterior use, and extending 5 feet (1.5 m) above and extending 5 feet (1.5 m) beyond the physical boundary of the BESS installation is provided to protect the exposure.

- Clearances are permitted to be reduced to 3 feet (914.4 mm) where a weatherproof enclosure constructed of noncombustible materials is provided over the BESS and it has been demonstrated that a fire within the enclosure will not ignite combustible materials outside the enclosure based on large scale fire testing.

10.4. Fire suppression systems. BESS located in walk-in units on rooftops or in walk-in units in open parking garages shall be provided with automatic fire suppression systems within the BESS enclosure in accordance with Section 6.5. Areas containing BESS other than walk-in units in open parking structures on levels not open above to the sky shall be provided with an automatic fire suppression system complying with Section 6.5.

Exception: A fire suppression system is not required in open parking garages if large scale fire testing is provided that shows that a fire will not impact the exposures in Section 10.3.

10.5. Rooftop installations. BESS and associated equipment that are located on rooftops and not enclosed by building construction shall comply with the following:

- Stairway access to the roof for emergency response and fire department personnel shall be provided either through a bulkhead from the interior of the building or a stairway on the exterior of the building.

- Service walkways at least 5 feet (1,524 mm) in width shall be provided for service and emergency personnel from the point of access to the roof to the system.

- BESS and associated equipment shall be located from the edge of the roof a distance equal to at least the height of the system, equipment, or component but not less than 5 feet (1.5 m).

- The roofing materials under and within 5 feet (1,524 mm) horizontally from a BESS or associated equipment shall be noncombustible or shall have a Class A rating when tested in accordance with ASTM E108 or UL 790.

- A Class I standpipe outlet shall be installed at an approved location on the roof level of the building or in the stairway bulkhead at the top level.

- The BESS shall be the minimum of 10 feet from the fire service access point on the roof top.

10.6. Open parking garages. BESS and associated equipment that are located in open parking garages shall comply with all of the following:

- BESS shall not be located within 50 feet (15,240 mm) of air inlets for building HVAC systems.

Exception: This distance shall be permitted to be reduced to 25 feet (7.620 mm) if the automatic fire alarm system monitoring the radiant-energy sensing detectors de-energizes the ventilation system connected to the air intakes upon detection of fire.

- BESS shall not be located within 25 feet (7,620 mm) of exits leading from the attached building where located on a covered level of the parking structure not directly open to the sky above.

- An approved fence with a locked gate or other approved barrier shall be provided to keep the general public at least five feet (1,024 mm) from the outer enclosure of the BESS.

**APPENDIX 3: Operations and Maintenance Plan**

The operations and maintenance documentation shall be provided to both the BESS owner and their operator before the battery energy storage system is put into operation. A copy of the documentation shall be placed in an approved location to be accessible to facility personnel, fire code officials, and emergency responders.

The battery energy storage system Operations plan shall include design, construction, installation, testing and commissioning information associated with the battery energy storage system as initially approved after being commissioned, as well as the following information:

1. Manufacturer's operation manuals and maintenance manuals for the entire BESS or for each component of the system requiring maintenance, that clearly identify the required routine maintenance actions.

2. Name, address and phone number of a service agency that has been contracted to service the BESS and its associated safety systems.

3. Maintenance and calibration information, including wiring diagrams, control drawings, schematics, system programming instructions and control sequence descriptions, for all energy storage control systems.

4. Desired or field-determined control set points that are permanently recorded on control drawings at control devices or, for digital control systems in system programming instructions.

5. A schedule for inspecting and recalibrating all BESS controls.

6. A service record log form that lists the schedule for all required servicing and maintenance actions and space for logging such actions that are completed over time and retained on site.

**APPENDIX 4: Emergency Operations Plan**

An emergency operations plan shall include the following information:

1. Procedures for safe shutdown, de-energizing, or isolation of equipment and systems under emergency conditions to reduce the risk of fire, electric shock, and personal injuries, and for safe start-up following cessation of emergency conditions.

2. Procedures for inspection and testing of associated alarms, interlocks, and controls.

3. Procedures to be followed in response to notifications from the Battery Energy Storage Management System, when provided, that could signify potentially dangerous conditions, including shutting down equipment, summoning service and repair personnel, and providing agreed upon notification to fire department personnel for potentially hazardous conditions in the event of a system failure.

4. Emergency procedures to be followed in case of fire, explosion, release of liquids or vapors, damage to critical moving parts, or other potentially dangerous conditions. Procedures can include sounding the alarm, notifying the fire department, evacuating personnel, de-energizing equipment, and controlling and extinguishing the fire.

5. Response considerations similar to a safety data sheet (SDS) that will address response safety concerns and extinguishment when an SDS is not required.

6. Procedures for dealing with battery energy storage system equipment damaged in a fire or other emergency event, including maintaining contact information for personnel qualified to safely remove damaged battery energy storage system equipment from the facility.

7. Other procedures as determined necessary by the Town to provide for the safety of occupants and emergency responders.

8. Procedures and schedules for conducting drills of these procedures."