New York Battery and Energy Storage Technology Consortium
230 Washington Avenue Ext., Suite 101, Albany NY 12203
(518) 694-8474
www.ny-best.org

April 24, 2026

TO: Kelly Carr, Fire Code Counsel
Andrew Dushynskiy, Chief Inspector
Stephen M. Velez, Code Development Coordinator/ Deputy Chief Inspector

Fire Department of the City of New York
9 MetroTech Center
Brooklyn, NY 11201

RE: NY-BEST's Proposed Fire Code Amendments

Dear Ms. Carr, Mr. Dushynskiy, and Mr. Velez,

The New York Battery and Energy Storage Technology Consortium (NY-BEST) is pleased to submit the following Fire Code amendment proposals as part of the Fire Department of the City of New York (FDNY) 3rd Fire Code Revision Project.

Sincerely,

Dr. William Acker
Executive Director

Claudia Villar-Leeman
Sr. Director, Policy and Regulatory Affairs

Introduction

NY-BEST submits the following proposed amendments to Section FC 608 governing Stationary Battery Energy Storage Systems (BESS) and Section FC 309.3 Battery-powered industrial trucks, industrial equipment and mobility devices. These proposals reflect input from companies affiliated with NY-BEST, representing battery manufacturers, micromobility companies, project developers, and engineering firms operating in New York City. NY-BEST looks forward to participating in the FDNY Advisory Committee to continue to discuss these proposals.

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Section FC 608: Stationary Battery Energy Storage Systems (BESS)

Proposal 1: Integration of 3 RCNY 608-01 into Fire Code Section FC 608

1. *2022 Fire Code Section:* Section FC 608
2. *Type of Proposed Amendment:* New text
3. *Proposal:*
   NY-BEST recommends that FDNY undertake the integration of 3 RCNY 608-01 into Fire Code Section FC 608 as part of the 3rd Fire Code Revision Project. NY-BEST defers to FDNY on the specific mechanism and structure of integration.

4. *Statement of Problem and Substantiation:*
   Battery energy storage system regulations in New York City are currently split across two separate frameworks: Fire Code Section FC 608 and the Fire Department rule 3 RCNY 608-01. This parallel structure creates redundancy and unnecessary complexity for market participants navigating both documents simultaneously. Consolidating these requirements into a single unified section of the Fire Code would improve clarity and consistency.

Proposal 2: Scope - FC 608.1

1. *2022 Fire Code Section:* Section FC 608.1
2. *Type of Proposed Amendment:* New text
3. *Proposal:*
   FC 608.1:"This section shall govern stationary energy storage systems, including emergency power, standby power, uninterruptible power, [~~and~~] mobile systems, and fleet-operated plug-in portable energy storage systems as defined herein."

4. *Statement of Problem and Substantiation:*
   The current scope of FC 608 does not clearly address fleet-operated plug-in portable energy storage systems. Without a defined regulatory category, these devices are subject to stationary-ESS requirements that were not designed for this product class. Applying requirements such as UL 9540, UL 9540A large-scale fire testing, NFPA 68, and central station monitoring to consumer-scale cord-connected devices is inappropriate. A distinct fleet-operated plug-in category requirement for UL 2743 is the appropriate regulatory response. The full alternative compliance framework for this category is proposed in Proposal 11.

Proposal 3: Listing and Testing Standards - FC 608.2; FC 608.4; 3 RCNY 608-01(c)(7)

1. *2022 Fire Code Section:* FC 608.2; FC 608.4; 3 RCNY 608-01(c)(7)
2. *Type of Proposed Amendment:* Revised text
3. *Proposal:*
   Updated standards: In the longer term, NY-BEST supports updating requirements to

reference NFPA 855-2026 edition, and UL 9540A 6th edition, but recommends that any such update include a clearly defined implementation timeline that provides sufficient runway for the manufacturing sector to complete testing under the new standards prior to the compliance deadline. This could include a bulletin prior to the Code revision to alert industry to the upcoming requirements.

Indoor residential: NY-BEST also recommends that FDNY consider allowing compliance with the UL 9540A Floor-Mounted Indoor Residential (FMIR) test, verified by a Nationally Recognized Testing Laboratory (NRTL), in lieu of separate full-scale or large-scale fire testing for indoor BESS installations. This could be incorporated into the Fire Code language as follows:

> *FC 608.4.2.* Stationary energy storage systems shall be subjected to full-scale testing (referred to as 'large-scale testing' in NFPA 855) in accordance with ANSI/Underwriters Laboratories (UL) Test Method 9540A (4th edition), entitled 'Test Method for Evaluating Thermal Runaway Fire Propagation in Battery Energy Storage Systems,' or other approved test method, or its failure mode and effects documented by other approved test data. Notwithstanding the foregoing, data provided by a Nationally Recognized Testing Laboratory (NRTL) demonstrating that an energy storage system has been subjected to Underwriters Laboratories (UL) Test Method 9540A, Section 9.2, "Test Method – Indoor Floor-Mounted BESS Units," including Subsection 9.2.21 (cheesecloth indicator), and has met all performance criteria set forth in Table 9.1, may be deemed sufficient to satisfy the intent of this section without full-scale or large-scale fire testing, provided that the following additional conditions are demonstrated:
>
> 1. No measurable increase in temperature or heat flux is observed at adjacent units, target surfaces, or enclosing walls thereby demonstrating the absence of a credible pathway for thermal propagation to adjacent units or structures;
> 2. Off-gassing from the initiating unit does not exceed detectable thresholds, and does not result in ignition of the surrounding atmosphere under test conditions;
> 3. No ignition of the cheesecloth indicator or other secondary combustibles occurs, confirming the absence of hazardous heat or flame projection;
> 4. No sustained flaming or thermal propagation to adjacent units or materials occurs during and following the test event; and
> 5. The test results collectively demonstrate that thermal runaway is contained to the initiating unit, with no credible pathway for propagation to adjacent units, structures, or critical equipment.
>
> Where these conditions are met and documented to the satisfaction of the Authority Having Jurisdiction (AHJ), such data may be accepted as an approved alternative demonstrating that the system does not present a material risk of fire propagation, and full-scale testing pursuant to UL 9540A or large-scale fire testing pursuant to NFPA 855 shall not be required.

4. *Statement of Problem and Substantiation:*
   Updated standards: FC 608.2 references NFPA 855 without specifying an edition, and 3 RCNY 608-01(c)(7)(B) references UL 9540A 2018 edition. Both standards have since been updated significantly. NFPA 855 2026 edition was released last fall, and UL 9540A 6th edition was released March 13, 2026. UL9540A has been updated to incorporate improved pass/fail criteria for fire propagation, assessment of fire propagation as a result of sprinkler discharge, and sprinkler spacing guidelines. NFPA 855-2026 similarly introduces material changes to large scale fire testing requirements and clearance distances. NY-BEST supports moving toward these updated standards as they provide a more rigorous and comprehensive basis for evaluating BESS safety. However, NY-BEST is concerned that some examiners have begun informally requiring compliance with the updated standards before they have been codified. Requiring compliance on this basis risks freezing development and introducing uncertainty and risk into the market. The timing of formal adoption is therefore critical, and NY-BEST recommends that FDNY establish a clear compliance deadline in coordination with industry to avoid this outcome.

   Indoor residential: For indoor residential installations specifically, the UL 9540A Floor-Mounted Indoor Residential (FMIR) test, set forth in Section 9.2 of UL 9540A, has been part of the standard since Edition 4 (2019) and is specifically designed for this installation type. It specifies five performance criteria that, when met and verified by an NRTL, demonstrate that thermal runaway is contained to the initiating unit with no credible pathway for propagation to adjacent units or structures. Systems that meet these criteria do not present a material risk of fire propagation and should not be required to undergo separate full-scale or large-scale fire testing for indoor residential installations. Adopting the FMIR test criteria as an approved alternative would provide a well-defined, nationally-recognized compliance pathway, accelerating the COA process for indoor residential BESS while maintaining safety.

Proposal 4: Separation Distances - 3 RCNY 608-01(g)(1)(C)

1. *2022 Fire Code Section:* 3 RCNY 608-01(g)(1)(C)
2. *Type of Proposed Amendment:* Revised text
3. *Proposal:*
   3 RCNY 608-01(g)(1)(C): "Separation distances for large systems shall be a minimum of 10 feet from the following exposures, except where lesser or greater distances are determined based on performance-based criteria derived from full-scale fire testing data, including maximum allowable radiant heat flux measured at the exterior side of interior lot lines, demonstrating [~~required by the equipment approval or installation approval based on full-scale testing data that indicate~~] that a battery system fire will or will not adversely impact one or more of the following exposures…"

For small and medium systems, NY-BEST recommends aligning with NFPA 855 Section 15.5, which establishes a 3-foot minimum separation distance, reducible based on large-scale fire testing.

NY-BEST also recommends that the COA process be amended to explicitly require that each product's COA specify approved separation distances based on product-specific large scale fire testing data.

4. *Statement of Problem and Substantiation:*
   The current code already contemplates lesser or greater separation distances based on full scale fire testing data. However, in practice this pathway is unclear and inconsistently applied, resulting in misalignment between FDNY and OTCR requirements. AHJs are requiring some developers to provide setbacks well in excess of the 10-foot code requirement, or fire walls around entire sites, even where full scale testing data would support lesser distances. This inconsistency limits deployable capacity on projects that meet the code as written and creates regulatory uncertainty that is inhibiting development. Ensuring each product's COA explicitly specifies approved product-specific separation distances based on LSFT data would provide clarity and consistency for developers, engineers, and regulators alike, while preserving FDNY's authority to require greater distances where warranted.

   For residential systems, the current 10-foot standard is not consistent with national practice and is infeasible for many residences in NYC. NFPA 855 Section 15.5 establishes a 3-foot minimum separation distance for residential BESS units, reducible based on large scale fire testing. Aligning with NFPA 855 on residential separation distances, while still evaluating residential systems on a product-specific basis, would support growth in this segment without compromising safety.

Proposal 5: Structural Support Fire Rating - 3 RCNY 608-01(g)(1)(D)(4)

1. *2022 Fire Code Section:* 3 RCNY 608-01 (g)(1)(D)(4)
2. *Type of Proposed Amendment:* Revised text
3. *Proposal:*
   3 RCNY 608-01 (g)(1)(D)(4): "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. This fire rating shall be achieved via the prescriptive methods described in NYC Building Code Chapter 7, or via calculation according to ACI 216.1, ASCE 29, or AISC DG 19."

4. *Statement of Problem and Substantiation:* The current code does not specify how the required fire rating shall be demonstrated, creating ambiguity in how this provision is applied during review. The proposed addition provides specific, recognized pathways for compliance, ensuring consistent application across projects.

Proposal 6: Fire Extinguishing System - 3 RCNY 608-01(h)(3); FC 608.9.4.1.2

1. *2022 Fire Code Section:* 3 RCNY 608-01(h)(3); FC 608.9.4.1.2
2. *Type of Proposed Amendment:* Revised text
3. *Proposal:*
   3 RCNY 608-01(h)(3): "Fire extinguishing system. An *approved* [~~dry pipe~~] water fire extinguishing system designed and installed (1) in accordance with NFPA Standard 15 (2007 edition), (2) in accordance with NFPA Standard 13, or (3) as substantiated by PE-stamped analysis, modeling, or test data, and approved by the Department, shall be provided in *stationary storage battery system* enclosures."

   FC 608.9.4.1.2: "Control areas housing stationary energy storage systems shall be fully protected throughout by a sprinkler system designed in accordance with NFPA 15, NFPA 13, or as [~~except as may~~] otherwise [~~be~~] approved based on equipment listings and testing results pursuant to FC 608.4.

4. *Statement of Problem and Substantiation:*
   Outdoor systems: When outdoor BESS regulations were first developed, requiring high-density surface drenching under NFPA 15 was a reasonable precaution given limited fire testing data and the novel nature of the technology in a dense urban environment. Since then, large-scale fire testing has advanced significantly, and products can now demonstrate through UL 9540A testing whether they limit fire propagation. Industry and first-responder best practice has also evolved toward containing and isolating a BESS fire rather than attempting active suppression. Aggressive external water application can prolong a fire event and may no longer be the best approach for outdoor installations. A more limited spray approach under NFPA 13, focused on smoke containment and protection of surrounding exposures, is now more appropriate. Several battery manufacturers now offer standard designs compatible with NFPA 13, eliminating the need for complex nozzle and dry pipe configurations and fire protection support structures above battery containers. A performance-based pathway allowing PE-stamped analysis or test data as an alternative basis for system design would provide appropriate flexibility for future technologies and site-specific conditions.

   Indoor systems: NFPA 15 is typically not feasible for newer indoor BESS designs. NFPA 13 overhead sprinklers are the appropriate standard for indoor installations, serving both direct battery cooling and structural protection of the building. The determination of system type under NFPA 13 (wet, single or double interlock preaction, or deluge) should be made by the Engineer of Record in agreement with FDNY, as the appropriate system type will vary based on installation-specific conditions. Sprinkler density and design area should be determined based on Large Scale Fire Testing conducted in accordance with UL 9540A 6th Edition, with engineering analysis correlating results to the specific installation. UL 9540A 6th Edition now requires assessment of fire propagation as a result of sprinkler discharge

and provides sprinkler spacing guidelines, addressing previous concerns regarding lack of supporting data. These proposed changes are consistent with NFPA 855-2026 and IFC 2024.

Proposal 7: Explosion Mitigation - 3 RCNY 608-01(h)(4)

1. *2022 Fire Code Section:* 3 RCNY 608-01(h)(4)
2. *Type of Proposed Amendment:* Revised text
3. *Proposal:*
   NY-BEST recommends that the code be amended to explicitly provide that alternative means of explosion mitigation may be approved through the COA process, based on product-specific Failure Mode and Effects Analysis (FMEA), large scale fire testing, and deflagration analysis. NY-BEST does not support removing NFPA 68 as a means of compliance.

4. *Statement of Problem and Substantiation:*
   NY-BEST supports making explicit in the code language a pathway for alternative acceptable means of explosion mitigation to be approved through the COA process, on a product-by-product basis, based on FMEA, large scale fire testing, and deflagration analysis. Explosion control methods have evolved significantly since IFC 2018, and a COA-based pathway would allow FDNY to evaluate newer approaches without requiring a code amendment each time.

   NY-BEST understands there has been consideration of removing NFPA 68 as a means of compliance for explosion mitigation, but NY-BEST does not support this position. Large scale fire testing has shown deflagrations during testing, and NFPA 855 task groups are reconsidering mandating NFPA 68 by 2029. Retaining NFPA 68 as a means of compliance is therefore appropriate.

Proposal 8: Signage - 3 RCNY 608-01(i)(6); FC 608.11.3

1. *2022 Fire Code Section:* 3 RCNY 608-01(i)(6); FC 608.11.3
2. *Type of Proposed Amendment:* Revised text
3. *Proposal:*
   NY-BEST supports the recommendation to amend 3 RCNY 608-01(i)(6) to add a requirement that a complete site map, including the location of BESS equipment and potential hazards to first responders, be posted at the exterior boundary of the project, consistent with the 2025 New York State Fire Code.

4. *Statement of Problem and Substantiation:*
   The current signage requirements in the Fire Code provide important information about individual battery systems but do not require a site-level map that would give first responders a clear picture of the overall installation and its hazards upon arrival at an incident. A site map posted at the exterior boundary would improve situational awareness

for first responders and is consistent with the approach taken in the 2025 New York State Fire Code. Some NY-BEST member companies with operational assets in New York City are already providing site maps of this kind as a best practice.

Proposal 9: Monitoring - 3 RCNY 608-01(g)(2) and(i)(1); FC 608.9.2 and 608.11.2

1. *2022 Fire Code Section:* 3 RCNY 608-01(g)(2); 3 RCNY 608-01(i)(1); FC 608.9.2; FC 608.11.2
2. *Type of Proposed Amendment:* Revised text
3. *Proposal:*
   Large systems: NY-BEST recommends amending 3 RCNY 608-01(g)(2) and FC 608.9.2 to prescribe minimum remote monitoring parameters for large systems, including at minimum: state of charge, voltage, temperature, current, fault flags, and connectivity status. NY-BEST further recommends amending 3 RCNY 608-01(i)(1) to require that in the event of an emergency, BESS owners make available to FDNY relevant data stream or CCTV monitoring (though such access should not extend to normal operations).

   Small and medium systems: The 24/7 staffed remote monitoring facility requirement of 3 RCNY 608-01(i)(1) and the central station monitoring requirement of FC 608.11.2 should not apply to small and medium systems.

4. *Statement of Problem and Substantiation:*
   Large systems: The current code requires remote monitoring of battery system status and temperature but does not specify what parameters must be monitored. Prescribing a minimum telemetry set would ensure that the market has clarity on the information FDNY is looking for. In an emergency, access to real-time data streams and CCTV footage could significantly improve situational awareness for first responders. However, continuous FDNY access during normal operations is unnecessary and would impose an undue burden on system owners.

   Small and medium systems: The current 3 RCNY 608-01(i)(1) assumes small and medium systems, including residential BESS, will be monitored by a constantly attended remote monitoring facility, which is impractical for small-scale products. Residential systems are significantly smaller, less complex, and typically operated as consumer-grade appliances with distinct characteristics and a lower risk profile compared to commercial or utility-scale BESS. Most residential systems utilize UL-certified battery management systems with built-in automated fault detection, isolation, and shutdown capabilities, and push notifications directly to system owners. Furthermore, after a critical fault triggers electrical isolation, many residential BESS lose cloud connectivity and may only support local diagnostics, making continuous remote monitoring impractical. Forwarding all fault notifications directly to FDNY would also risk excessive false alarms, as most notifications reflect warnings or pre-threshold conditions that systems resolve through automatic shutdown well before hazardous states are reached. Therefore, remote monitoring requirements should not apply to small and medium systems.

Proposal 10: Indoor Energy Storage Systems - FC 608.7, FC 608.9, FC 608.13

1. *2022 Fire Code Section:* FC 608.7.1; FC 608.9.1.1; FC 608.9.4.1; FC 608.13
2. *Type of Proposed Amendment:* Revised text
3. *Proposal:*
   Maximum Aggregate Rated Energy Capacity: NY-BEST recommends increasing the maximum aggregate rated energy capacity for indoor lithium-ion battery systems in Table 608.9.1.1 from 400 kWh to 600 kWh per control area, consistent with IFC 2024 Table 1207.5.

   Dedicated Use Buildings: NY-BEST recommends that FDNY consider developing regulations for dedicated use buildings in New York City, consistent with IFC 2024 Section 1207.7.1, including whether Maximum Allowable Quantity (MAQ) and control area requirements should apply to dedicated use buildings. This may require an amendment to FC 608.9.4.1.3, which currently limits Occupancy Restrictions of indoor BESS to Group A (assembly), Group R1 or R2 (Residential), and Group I (Institutional); NY-BEST recommends considering inclusion of Group F-1 (Factory and Industrial) to enable indoor dedicated use buildings. Further, for dedicated use buildings where the exclusive use is energy infrastructure, supervision via remote monitoring with a strictly mandated response time should be permitted in lieu of requiring a Fire Life Safety (FLS) director, Fire Emergency Planning (FEP) coordinator, certificate of qualification holder or other responsible person to be on premises during regular business hours, as currently required by FC 608.7.1.

4. *Statement of Problem and Substantiation:*
   Maximum Aggregate Rated Energy Capacity: The current maximum aggregate rated energy capacity of 400 kWh per control area for lithium-ion battery systems is below the national standard of 600 kWh established in IFC 2024. As demand for grid-tied indoor BESS grows, these limits will increasingly constrain installations, which could otherwise provide energy affordability and grid reliability benefits to NYC residents. At the same time, testing standards have advanced significantly since the current limits were established. The combination of more rigorous listing requirements, improved large scale fire testing under UL 9540A, and a growing track record of safe installations provides a stronger basis for confidence in modern BESS products than existed when the 400 kWh limit was set.

   Dedicated Use Buildings: The current code does not provide a clear pathway for dedicated energy storage facilities or indoor BESS in Factory and Industrial (F-1) occupancy buildings. Dedicated use building regulations exist in IFC 2024 Section 1207.7.1 but have not been adopted in NYC. This gap is limiting development of facilities that could provide significant benefits to the city's grid and residents, including in relation to lowering electricity costs, facilitating closure of emitting power plants, and improving grid resiliency; establishing a clear regulatory pathway for this building type would unlock these benefits while ensuring safety and providing certainty for the market. In particular, the question of whether MAQ and control area requirements should apply in dedicated use buildings warrants explicit

consideration. For buildings used exclusively for energy infrastructure, requiring a Fire Life Safety (FLS) director, Fire Emergency Planning (FEP) coordinator, or other responsible person on premises during regular business hours is unnecessarily burdensome where robust remote monitoring is in place. A remote monitoring pathway with a mandated response time would provide equivalent safety, in line with grid-connected outdoor BESS projects.

Proposal 11: Plug-In Portable Energy Storage Systems

1. *2022 Fire Code Section:* FC 608
2. *Type of Proposed Amendment:* New text
3. *Proposal:*
   NY-BEST recommends that FDNY establish a distinct regulatory sub-category for fleet-operated plug-in portable energy storage systems, defined as: cord-connected consumer devices of 1-5 kWh capacity listed to ANSI/CAN/UL 2743, designed to be carried and operated by a resident or occupant via a standard 120V outlet, not permanently installed or hardwired, and enrolled in a fleet management program. For purposes of this section, a fleet management program means a program operated by a company that deploys, owns, or manages plug-in portable energy storage systems on behalf of residents or occupants, and maintains the ability to remotely monitor and manage each deployed unit. NY-BEST proposes the following alternative compliance framework for this product class:

   Listing Standard: Fleet-operated plug-in portable energy storage systems shall be listed to ANSI/CAN/UL 2743 (April 30, 2020 revision or later). Listing to UL 9540 and large-scale fire testing per UL 9540A shall not be required for this product class.

   Equipment Approval: In lieu of standard documentation requirements to apply for a Certificate of Approval (COA) via a TM-2, fleet-operated plug-in portable energy storage systems shall instead require: (a) UL 2743 listing report; and (b) end-of-life replacement protocol. Large-scale fire test reports, fixed-enclosure drawings, and suppression system specifications shall not be required for this product class.

   Site-Specific Permitting: Per-installation permits shall not be required for fleet-operated plug-in portable energy storage systems. In lieu thereof, NY-BEST recommends that FDNY establish a product registration process for this product class, under which: (a) fleet operators obtain product-level approval through the COA process for each model deployed; and (b) fleet operators maintain a unit registry containing the serial number and service address of each deployed unit, to be shared with FDNY on request, enabling FDNY to identify whether units are present at an incident location and to contact the fleet operator for incident response if needed.

   Commissioning and Decommissioning: Per-site commissioning and decommissioning requirements shall not apply. Factory commissioning via UL 2743 production testing and end-of-life takeback, documented as part of the COA, shall satisfy these requirements.

Remote Monitoring: Fleet operators shall maintain 24/7 cloud telemetry on each deployed unit, monitoring at minimum: state of charge, voltage, temperature, current, fault flags, and connectivity status. Fleet-operator-held telemetry of this kind shall satisfy both the remote monitoring facility requirement of 3 RCNY 608-01(i)(1) and the central station monitoring requirement of FC 608.11.2 for this product class. Data shall be retained and made available to FDNY on request or in the event of an incident.

Separation Distances: Prescriptive separation distance requirements shall not apply to plug-in portable energy storage systems. For plug-in units, UL 2743 placement guidance in the product manual is the appropriate control.

Grid Services Programs: Enrollment of a plug-in portable energy storage system in a grid flexibility or demand response program shall not place the device under exclusive control of an electric utility for purposes of FC 608.1. Physical control of the unit remains with the resident or fleet operator.

4. *Statement of Problem and Substantiation:*

The alternative compliance framework proposed in this section is intentionally scoped to fleet-operated systems rather than all plug-in portable energy storage systems. Consumer products that residents purchase independently through retail or e-commerce channels and plug in on their own present a regulatory challenge that is difficult to address through traditional fire code mechanisms. Fleet-operated systems, by contrast, are deployed and managed by a single operator that maintains visibility into each unit's location, status, and performance, creating a clear regulatory touchpoint for FDNY that does not exist for individually purchased consumer products. This framework leverages that operational structure to establish meaningful safety requirements that are proportionate to the risk profile of this product class.

Listing Standard: The current code does not establish a distinct regulatory category for plug-in portable energy storage systems. As addressed in Proposal 2 (Scope), applying stationary-ESS requirements to cord-connected consumer devices listed to UL 2743 is inappropriate. UL 2743 is the listing standard for portable power packs and includes portable-specific abuse tests, including drop tests and mobility-relevant abuse conditions that UL 9540 does not cover. The April 30, 2020 revision covers the largest number of currently deployed models. Large-scale fire testing per UL 9540A is not appropriate for this product class, as it is not scaled to sub-5 kWh consumer devices.

Equipment Approval: The standard COA documentation requirements were designed for stationary BESS and are not appropriate for consumer-scale plug-in devices. Large-scale fire test reports, fixed-enclosure drawings, and suppression system specifications are not applicable to this product class and should not be required. A UL 2743 listing report and

end-of-life replacement protocol provide FDNY with the relevant safety information for this product class.

Site-Specific Permitting: Per-installation permitting is structurally incompatible with products that ship through retail and e-commerce channels and are plugged in by residents without a formal installation. A product registration process, where fleet operators maintain a registry of deployed units and share it with FDNY on request, gives FDNY the information it needs to respond to any incidents without requiring per-installation permits that would be extremely difficult to enforce for products sold through retail and online channels.

Commissioning and Decommissioning: Per-site commissioning and decommissioning requirements were designed for permanently installed stationary systems and do not translate to consumer-scale plug-in devices. A resident unboxes a plug-in unit and plugs it into a wall outlet; there is no installation event to commission. Factory commissioning via UL 2743 production testing ensures the product meets safety standards before it reaches the consumer, and end-of-life takeback programs ensure safe disposal. Documenting these as part of the COA for fleet-operated units provides FDNY with the relevant lifecycle information for this product class without imposing requirements that are incompatible with how these products are manufactured, sold, and used.

Remote Monitoring: Fleet operators of plug-in portable energy storage systems generally already operate 24/7 cloud telemetry on deployed units, monitoring state of charge, voltage, temperature, current, fault flags, and connectivity, and use this data for end-of-life detection and automated incident alerting. Codifying this as satisfying the monitoring and notification requirement and central station monitoring requirement for this product class provides FDNY with access to relevant data in the event of an incident without requiring infrastructure that is not designed for consumer-scale products.

Separation Distances: Prescriptive separation distances are not enforceable for devices residents move at will. These units are designed to operate within a few feet of furniture, walls, and people, consistent with their UL 2743 listing. UL 2743 placement guidance in the product manual is the appropriate control for this product class.

Grid Services Programs: As fleet operators deploy plug-in units at scale in households enrolled in grid flexibility programs, there is a risk that code language referring to exclusive control of an electric utility could inadvertently subject household-scale consumer electronics to utility-scale fire code provisions. The utility or aggregator issues charge and discharge signals via application programming interface only, but physical control of the unit remains with the resident or fleet operator.

Proposal 12: Non-Flammable Flow Battery Systems

1. *2022 Fire Code Section:* FC 608
2. *Type of Proposed Amendment:* New text

3. *Proposal:*
   NY-BEST recommends that FDNY establish a distinct regulatory sub-category for non-flammable flow battery systems, defined as electrochemical energy storage systems utilizing a liquid electrolyte that is aqueous and non-combustible, does not exhibit thermal runaway, and is listed to UL 1973. This sub-category includes Vanadium Redox Flow Batteries (VRFBs) and other flow battery chemistries meeting these criteria. NY-BEST proposes the following alternative compliance framework for this product class, upon department approval and submission of technical data or a Failure Mode and Effects Analysis (FMEA) demonstrating the non-combustible nature of the electrolyte:

   Fire Testing: Non-flammable flow battery systems may provide technical data or a Failure Mode and Effects Analysis (FMEA) in lieu of full-scale fire propagation testing, provided the technical data demonstrates that the electrolyte is non-combustible and the system does not exhibit thermal runaway.

   Fire Extinguishing System: For flow battery systems utilizing non-flammable, aqueous electrolytes, fire extinguishing requirements shall be governed by NFPA 13 based on the surrounding occupancy hazard. Dedicated internal or external suppression for the battery chemistry itself shall not be required where technical data demonstrates the electrolyte is non-combustible.

   Explosion Mitigation: Explosion mitigation per NFPA 68 shall not be required for non-flammable flow battery systems. Ventilation for hydrogen management shall be provided in accordance with IEEE 1635/ASHRAE 15 based on the system's specific electrochemical off-gassing rates during overcharge.

   Indoor and Below-Grade Installations: Non-flammable flow battery systems using non-combustible electrolytes that have demonstrated no fire risk per FMEA analysis should receive an “Unlimited” designation for the aggregate capacity limit in Table 608.9.1.1 for indoor installations. Non-flammable flow battery systems should be permitted for installation below grade without dedicated use building status, provided UL 1973 leak containment standards are met. Non-flammable flow battery systems should be permitted to be housed in standard occupancy control areas with controlled access and proper signage, and should not be subject to the high-hazard occupancy construction requirement of FC 608.9.4.1.4.

   Separation Distances: Separation distances for non-flammable flow battery systems may be reduced to 3 feet from property lines and buildings (or the minimum required for maintenance access), provided the system enclosure is non-combustible and UL 9540A testing confirms zero radiant heat flux hazard to exposures.

   Ventilation: Ventilation requirements for non-flammable flow battery systems should be based on the specific off-gassing properties of the electrolyte, in accordance with IEEE

1635/ASHRAE 15, and should be incorporated in the product's Certificate of Approval. The ventilation requirements of FC 608.9.4.1.6 and 3 RCNY 608-01(h)(8) should not apply. Explosion mitigation per 3 RCNY 608-01(h)(4) shall not be required for non-flammable flow battery systems.

Smoke Purge: Smoke purge shall not be required for non-flammable flow battery systems utilizing non-combustible electrolytes where the technology does not produce smoke during a failure event.

Statement of Problem and Substantiation:
Non-flammable flow battery systems utilize aqueous, non-combustible electrolytes and do not exhibit thermal runaway. The hazard profile of these systems is fundamentally different from lithium-ion and other flammable-chemistry BESS; since the electrolyte is 80% water, it is incapable of supporting a self-sustaining flame. The current code applies a MAQ framework to all battery chemistries, resulting in requirements that are not appropriate for non-flammable flow battery deployments. A distinct regulatory pathway reflecting the actual hazard profile of this chemistry would allow more appropriate safety measures to be applied.

Fire Testing: Because non-flammable flow battery systems do not present a fire propagation risk from the electrolyte itself, full-scale fire propagation testing is not the appropriate tool for demonstrating safety for this product class. An FMEA or other technical data confirming non-combustibility of the electrolyte and the absence of thermal runaway is more appropriate for department approval.

Fire Extinguishing System: The primary fire risk for non-flammable flow battery systems is the outer cabinetry and associated electronics, not the electrolyte. Standard NFPA 13 overhead sprinklers are effective at managing this risk and are consistent with the surrounding occupancy hazard. Requiring dedicated internal or external suppression systems for a chemistry that presents no combustion risk is not appropriate.

Explosion Mitigation: Applying NFPA 68 deflagration venting requirements to non-flammable flow battery systems is not appropriate. This chemistry lacks the fuel source necessary for a deflagration event. Ventilation designed around the specific off-gassing properties of the electrolyte, in accordance with IEEE 1635/ASHRAE 15, is the appropriate safety control for this chemistry.

Indoor and Below-Grade Installations: The 400 kWh aggregate capacity limit and the high-hazard occupancy construction requirement are premised on fire propagation risk from the battery chemistry. Because non-flammable flow battery systems present no fire load from the electrolyte, these requirements should not apply to this product class. Similarly, the restriction on below-grade installations is premised on fire propagation risk that does not exist for non-combustible electrolytes, provided leak containment

requirements under UL 1973 are met. Permitting non-flammable flow battery systems in standard occupancy control areas with controlled access and proper signage would support higher-density deployments in constrained NYC urban sites without compromising safety.

Separation Distances: Because non-flammable flow battery systems present no fire load from the electrolyte, the 10-foot separation distance requirement is not appropriate for this chemistry. A reduced separation distance of 3 feet, supported by UL 9540A testing confirming zero radiant heat flux, would allow higher-density deployments in constrained NYC urban sites without compromising safety.

Ventilation: Ventilation requirements for non-flammable flow battery systems should be tailored to the specific off-gassing properties of the electrolyte rather than designed for flammable chemistries. IEEE 1635/ASHRAE 15 provides the appropriate framework for determining ventilation requirements based on electrochemical off-gassing rates, and incorporating these requirements into the product's COA ensures consistent application across installations.

Smoke Purge: Smoke purge requirements are premised on the generation of smoke during a failure event. Where manufacturer technical data or FMEA confirms that the specific flow battery chemistry does not produce smoke during a failure, this requirement is not necessary for safety purposes.

Section FC 309.3: Battery-powered industrial trucks, industrial equipment and mobility devices

Proposal 13: Reorganization of FC 309.3

1. *2022 Fire Code Section:* FC 309.3
2. *Type of Proposed Amendment:* Revised text
3. *Proposal:* NY-BEST recommends that FC 309.3 be reorganized into distinct indoor and outdoor sections, with separate requirements for each installation context. Further, NY-BEST recommends that FC 309.3 establish a separate sub-section for powered mobility devices using a storage battery, distinct from powered industrial trucks and powered industrial equipment.

4. *Statement of Problem and Substantiation:*
   The current FC 309.3 applies a largely uniform framework to both indoor and outdoor installations, creating ambiguity about which requirements apply in each context. FDNY's October 2025 Equipment and Installation Approval Guide already establishes separate processes for indoor and outdoor installations, including distinct clearance distances, approval pathways, and agency involvement. Codifying this separation in the Fire Code itself would provide clarity for installers, property owners, and regulators, and would align the code with FDNY's existing administrative practice. NY-BEST strongly supports FDNY's stated intent to reorganize and clarify section 309.3 into indoor and outdoor installations, as noted in the Working Group Activity Summary Memo, published June 3, 2025.

   Additionally, the current Code groups together powered mobility devices, powered industrial trucks, and powered industrial equipment under a single framework, despite their fundamentally different risk profiles, scale, and use cases. Establishing separate sub-sections for each product class would allow the code to apply proportionate requirements and reduce ambiguity.

Proposal 14: Listing Standards - FC 309.3; FC 309.3.1

1. *2022 Fire Code Section:* FC 309.3.1
2. *Type of Proposed Amendment:* Revised text
3. *Proposal:* NY-BEST supports amending FC 309.3.1 to require that battery charging cabinets and charging docks (enclosed and unenclosed) be listed to UL 4900, Micromobility Charging Equipment (1st edition, February 2025). NY-BEST further supports the requirement that enclosed battery charging cabinets additionally be listed to UL 1487, Battery Containment Enclosures (1st edition, February 2025). NY-BEST also recommends that FDNY provide a clear definition of “enclosed” versus “unenclosed” cabinets in the updated code.

4. *Statement of Problem and Substantiation:*
   The current FC 309.3.1 references UL 1564, UL 2272, and UL 2849 as listing standards for battery chargers, but does not reference UL 4900 or UL 1487, as both standards were published in 2025, after the current Fire Code was adopted. UL 4900 addresses electric shock and fire risks of charging infrastructure, while UL 1487 evaluates a battery containment enclosure's ability to withstand thermal runaway events including fire, explosion, and shrapnel. FDNY's Equipment and Installation Approval Guide already informally requires both certifications as part of the COA process. Codifying these requirements in the Fire Code would provide improved clarity and consistency.

Proposal 15: UL 1487-Certified Cabinet as Fire Area

1. *2022 Fire Code Section:* FC 309.3.1
2. *Type of Proposed Amendment:* Revised text
3. *Proposal:* NY-BEST recommends that FDNY reconsider and codify the ability of a UL 1487-certified battery charging cabinet to meet the NYC Fire Code definition of a Fire Area per FC 202: "The aggregate floor area enclosed and bounded by fire walls, fire barriers, exterior walls and/or horizontal assemblies of a building." Each UL 1487-certified cabinet would be considered a single Fire Area with an aggregate energy capacity not exceeding 50 kWh per cabinet. NY-BEST recommends allowing multiple UL 1487-certified cabinets to be installed in the same room, with the aggregate energy capacity of each cabinet not exceeding 50 kWh, provided that each cabinet maintains required clearances from other cabinets and operations as specified in the COA.

   If FDNY is not open to adopting this proposal, NY-BEST recommends as an alternative that FDNY:
   - Lift the 50 kWh aggregate energy capacity limit per fire area in FC 309.3.3(3) for UL 1487-certified cabinets, and that the aggregate energy capacity for indoor micromobility charging in a single fire area be increased to 400 kWh, provided the cabinets have required UL certifications and an FDNY Certificate of Approval.
   - Not require that UL 1487-certified cabinets in dedicated spaces be separated from service and repair areas, or from other cabinets, by a one-hour rated fire barrier per FC 309.3.3(5).
   - Permit multiple UL 1487-certified cabinets in a single fire area up to the recommended 400 kWh limit, in line with FC Table 608.9.1.1 capacity limits for lithium-ion technologies.

4. *Statement of Problem and Substantiation:*
   NY-BEST acknowledges that FDNY has declined to equate a UL 1487-certified cabinet with a Fire Area to date. However, NY-BEST urges FDNY to reconsider this position in light of the

now-published UL 1487 standard, which was not available during the initial Working Group discussions. UL 1487 certifies the ability of a battery containment enclosure to contain a fire, requiring that the enclosure fully prevent external flaming and explosion in the event of thermal runaway. The following UL 1487 test requirements support this conclusion:

- UL 1487 Section 16 (Internal Thermal Runaway Test) conditions of acceptance include: no external flaming; no charring or ignition of cheesecloth indicator material wrapped around the exterior of the enclosure during testing; no thermal runaway effluent gas release from locations other than dedicated vents; no ejection of cells, components, fragments, or projectiles; and cabinet temperature limits that prevent ignition of adjacent materials.
- UL 1487 Section 17 (Internal Deflagration Test) conditions of acceptance include: no evidence of ignition or sustained burning of enclosure components; no rupture of the enclosure; no ejection of components or projectiles; and no external flaming except through pressure relief devices or dedicated vents.

These requirements demonstrate that a UL 1487-certified cabinet functions as a self-contained fire barrier, consistent with the FC 202 definition of a Fire Area. There is precedent for this approach in other jurisdictions; for example, Section 325.6 of the 2022 San Francisco Fire Code states that a Battery Cabinet shall be considered a single Fire Area with an aggregate energy capacity not exceeding 50 kWh.

NY-BEST notes that the current NYC Fire Code already allows indoor lithium-ion ESS installations up to 400 kWh per control area under FC Table 608.9.1.1, establishing a precedent for this capacity level for UL-tested and FDNY-certified equipment. NY-BEST looks forward to discussing both proposals with FDNY in the advisory group.

Proposal 16: Indoor Installations - Dedicated and Non-Dedicated Areas - FC 309.3.3

1. *2022 Fire Code Section:* FC 309.3.3
2. *Type of Proposed Amendment:* Revised text
3. *Proposal:* NY-BEST recommends amending FC 309.3.3 to establish distinct requirements for dedicated and non-dedicated indoor areas:

   Non-Dedicated Areas: NY-BEST recommends that battery charging be permitted in a non-dedicated indoor area where either: (a) a UL 1487-certified cabinet is used, with a minimum 3-foot clearance maintained from other cabinets and operations, and a fire barrier with a minimum one-hour fire-resistance rating separating the cabinet from combustible materials or other occupancy uses within 10 feet; or (b) a UL 4900-certified unenclosed charging dock is used, with a minimum 18-inch clearance maintained between batteries during charging operations and thermal propagation testing conducted by a Nationally Recognized Testing Laboratory (NRTL) or approved testing agency demonstrating that fire does not propagate between batteries. NY-BEST also recommends that FDNY consider

enabling non-dedicated UL 1487-certified cabinet installations in occupancies including but not limited to restaurants and bike rooms accessory to residential buildings.

Dedicated Areas: NY-BEST recommends that all other indoor battery charging configurations where six or more batteries are being charged at a single indoor location, and not otherwise addressed above, require a dedicated area. For purposes of this section, a dedicated area is defined consistent with FC 309.3.3(6) as an area that is dedicated for battery charging and secured from unauthorized entry, separated by a fire barrier which encloses the entire space with a minimum one-hour fire-resistance rating, and protected by a fire sprinkler system and one or more smoke detectors or smoke alarms.

4. *Statement of Problem and Substantiation:*
Non-Dedicated Areas: The current FC 309.3.3(6) requires that where six or more devices are charged at a single indoor location, the space must be a dedicated charging room separated by a one-hour fire barrier enclosing the entire space, protected by a sprinkler system and smoke detection. Constructing a dedicated space significantly increases the cost of installing indoor charging and may not be feasible in many buildings, particularly in dense urban environments. Requiring a dedicated space is likely to discourage property managers from pursuing a cabinet option for on-site micromobility charging, which may result in less safe storage and charging practices overall.

NY-BEST strongly supports allowing UL 1487-certified cabinets to be installed in non-dedicated spaces for most occupancy groups, particularly Storage and Factory occupancies, consistent with FDNY's response in the Working Group Activity Summary Memo. UL 1487-certified cabinets have demonstrated the ability to fully contain a fire in both deflagration and thermal runaway tests, as described in Proposal 15, and a 3-foot clearance from other operations, consistent with clearances from electrical equipment established by the NYC Electrical Code, combined with a one-hour fire barrier separating the cabinet from combustible materials within 10 feet, provides appropriate protection without requiring a fully enclosed dedicated room. NY-BEST also recommends that FDNY consider enabling non-dedicated installations in restaurants, which rely on delivery workers who may otherwise charge e-bike batteries without a cabinet, and in bike rooms accessory to residential buildings, which serve residents who may otherwise charge batteries in their apartments. NY-BEST acknowledges that FDNY has declined to recommend this in Residential or Assembly occupancies including Group A-2 restaurants to date, and looks forward to discussing this further with FDNY in the advisory group.

For unenclosed UL 4900-certified charging docks, a minimum 18-inch clearance between batteries during charging operations is supported by IFC 2024 Section 322.4(6), which requires a minimum of 18 inches to be maintained between the location of the battery on each powered micromobility device during charging operations. Where batteries are sufficiently separated, the risk of fire propagation between devices is materially reduced.

NY-BEST also notes a concern raised by developers that if unenclosed UL 4900-certified cabinets with additional NRTL thermal propagation testing are permitted indoors in non-dedicated areas, this regulatory pathway could reduce the incentive to invest in enclosed UL 1487-certified outdoor cabinets, which likely present a lower fire risk but at higher cost. However, the additional costs associated with indoor siting and NRTL thermal propagation testing for unenclosed cabinets may offset this cost difference in practice. NY-BEST recommends that FDNY consider this dynamic carefully to avoid inadvertently creating incentives for less protective installations, and looks forward to discussing the appropriate pathway with FDNY in the advisory group.

Proposal 17: Outdoor Installations - FC 309.3

1. *2022 Fire Code Section:* FC 309.3
2. *Type of Proposed Amendment:* New text
3. *Proposal:*
   Environmental and Weatherization Testing: NY-BEST recommends that outdoor battery charging cabinets be required to hold a UL 1487 certification designated for outdoor use, including weatherization testing in line with UL 50E, Enclosures for Electrical Equipment, Environmental Considerations.

   Outdoor Clearance Distances: NY-BEST recommends that outdoor battery charging cabinets be located at least 10 feet from hazardous materials and 3 feet from all other occupied structures, unless protected by a fire barrier with a minimum one-hour fire-resistance rating. NY-BEST recommends that FDNY clarify in the updated code whether required separation distances distinguish between fixed combustibles such as wooden structures, dumpsters, and parking booths, and transient combustibles such as parked vehicles, bikes, and temporary objects, as this distinction has not been clear during site inspections.

   Fire Barriers: NY-BEST supports FDNY's position in the Working Group Activity Summary Memo that fire barriers should not be required for outdoor installations. Where an unmovable combustible object is within the required clearance zone, NY-BEST supports the recommendation that a noncombustible barrier with a minimum one-hour fire-resistance rating be required to separate the cabinet from the combustible object.

4. *Statement of Problem and Substantiation:*
   Environmental and Weatherization Testing: The current FC 309.3 does not currently include weatherization testing requirements for outdoor battery charging cabinets. UL 1487 addresses indoor and outdoor installations separately; explicitly requiring an outdoor-designated certification that ensures cabinets have been evaluated for outdoor conditions including rain, dust, and temperature fluctuations. UL 50E likely provides the appropriate weatherization testing framework and is referenced extensively within UL 1487.

Outdoor Clearance Distances: The current FC 309.3 does not include codified clearance distances for outdoor battery charging cabinet installations. FDNY's Equipment and Installation Approval Guide establishes administrative clearance requirements, including 15 feet from flammable and combustible liquids and compressed gas storage, but these may be excessively stringent. NY-BEST proposes the above reduced distances as a starting point for discussion. NY-BEST also recommends that FDNY clarify the distinction between fixed combustibles and transient combustibles to ensure clarity and consistency during inspections.

Fire Barriers: Fire barriers are often impractical at outdoor locations. A noncombustible barrier where an unmovable combustible object falls within the required clearance zone provides a practical alternative that addresses the specific hazard without requiring full enclosure.

NY-BEST thanks FDNY for the opportunity to provide these comments and looks forward to continued collaboration through the advisory committee process.