



NFPA 75-2020: Fire Protection of ITE

Analysis of Impact Considerations on Design & Installation of IT Equipment

This analysis is intended to identify and analyze changes in the **2020 Edition of NFPA 75, Standard for the Fire Protection of Information Technology Equipment**, which have potential impact on safety and installation of IT equipment, including the National Differences / requirements in **CSA/UL 62368-1, Audio/Video, Information and Communication Technology Equipment – Part 1: Safety Requirements**.

NFPA 75, Standard for the Fire Protection of Information Technology Equipment, was prepared by the Technical Committee on Electronic Computer Systems. It was first published in 1962 and has had numerous editions since then.

The **Scope (1.1)** of the standard covers the requirements for the protection of information technology equipment (ITE) and ITE areas. The **Purpose (1.2)** of the standard is to set forth the minimum requirements for the protection of ITE equipment and ITE areas from damage by fire or its associated effects —namely, smoke, corrosion, heat, and water.

The Standard is both adopted by local jurisdictions and used by the insurance industry for accepting ITE Rooms & Areas, otherwise known as Computer Rooms, Data Centers and similar spaces.

The 2020 NFPA 75 is available from the NFPA: <https://www.nfpa.org/codes-and-standards/all-codes-and-standards/list-of-codes-and-standards/detail?code=75> .

Explanation of Impact Statements:

Statement	Impact
None	Anticipate no impact on IT equipment due to the change.
Minor*	Anticipate limited impact on IT equipment due to the change.
Considerable*	Anticipate considerable impact on IT equipment due to the change.

* For new/revised requirements that are considered at this time **more onerous** than existing requirements, the Impact Statement (Minor, Considerable) will be followed by a (+). For new/revised requirements that are considered at this time **less onerous** than existing requirements, the Impact Statement (Minor, Considerable) will be followed by a (-). No symbol next to a Minor statement indicates that, although there could be limited impact associated with the change, it is indeterminate at this time whether it will be more or less.



NFPA 75 Section	Title	Summary	Impact Statement	Revision to be proposed as ND in CSA / UL 62368-1, Ed. No. 3?
3.3.4	Battery Types Stationary	Due to more expansive requirements being added for Uninterruptible Power Supply (UPS) systems in 11.5, four new terms / definitions have been added for stationary batteries often used in ITE Rooms, including (3.3.4.1) Lithium-Ion Battery, (3.3.4.2), Nickel Cadmium (NiCd) Battery, (3.3.4.3) Valve-Regulated Lead Acid (VRLA), and (3.3.4.4) Vented (Flooded).	None. Definition.	No. Does not impact IT equipment requirements. See 11.5.
3.3.18	Modular Data Center	Due to new requirements being added for Modular Data Centers in Section 13, a new term and definition have been added for Modular Data Centers. This definition is taken from NEC Article 646, Modular Data Centers.	None. Definition.	No. Does not impact IT equipment requirements.
3.3.27	Uninterruptible Power Supply (UPS)	Due to more expansive requirements being added for UPS systems in 11.5, a new term and definition of Uninterruptible Power Supply (UPS) has been added.	None. Definition.	No. Does not impact IT equipment requirements. See 11.5.
9.2.3 / 9.2.4	Automatic Detection Systems	The requirements for Automatic Detection Systems (9.2) now acknowledge detection may be monitored inside ITE cabinets. Therefore, a new 9.2.3 and 9.2.4 have been added to include requirements when done so.	Minor (+). ITE cabinet designs may change to more readily accommodate automatic detection systems in ITE cabinets.	Yes. Not a new normative IT equipment requirement but a potential installation requirement that equipment may need to accommodate. Thus, reference to these requirements will be proposed to be added to regulatory annex DVA as informative material.



<p>11.5</p>	<p>Uninterruptible Power Supply (UPS)</p>	<p>NFPA 75-2020 contains a completely rewritten and expanded section 11.5, Uninterruptible Power Supplies (UPSs), which now covers, UPS systems (11.5.1), Batteries (11.5.2), Lead-Acid and Nickel-Cadmium Batteries (11.5.3), Lithium-Ion Batteries (11.5.4), Other Battery Types (11.5.5).</p> <p>Note, the origin of these requirements is NFPA 1, Fire Code, and not the new NFPA 855-2020, Standard for the Installation of Stationary Energy Storage Systems, due to some concern by the NFPA 75 committee on how NFPA 855 would impact legacy UPS systems, especially those with Lead-Acid Batteries. However, it is expected these requirements will closer align with NFPA 855 in the future.</p> <p>Provided below are some of the key sections within 11.5 - see NFPA 75 for complete listing of sections.</p>	<p>Minor (+).</p> <p>Although the installation requirements for UPS, including stationary batteries, in ITE Rooms / Areas may be impacted considerably, the impact on IT Equipment should be minimal.</p>	<p>Yes.</p> <p>Revision of Annex DVA to point to these new requirements in 11.5 for UPS, especially pre-engineered Li-Ion UPS, which usually are certified. However, detailed references to individual sub-sections are not needed since most of these requirements are installation requirements and not IT equipment requirements. The scope of CSA / UL 62368-1 does not cover UPS systems.</p>
<p>11.5.1.1</p>		<p>Addresses uninterruptible power supply (UPS) system disconnects also are required to disconnect the battery.</p>	<p>“</p>	<p>“</p>
<p>11.5.1.2</p>		<p>States that storage battery systems in the ITE area shall comply with the requirements of NFPA 70, Article 480.</p>	<p>“</p>	<p>“</p>



11.5.3	Lead-Acid and Nickel-Cadmium Batteries	Addresses Lead-Acid and Nickel-Cadmium Batteries, including safety features, spill control, neutralization, ventilation, and signage.	“	“
11.5.4	Lithium-Ion Batteries	Addresses Lithium-Ion Batteries, including maximum allowable quantities, battery arrays, hazard mitigation analysis, Listings, installation, suppression and detection, and testing, maintenance and repairs.	“	“
11.5.4.3.2		Requires energy storage systems shall be segregated into arrays not exceeding 50 KWh (180 Mega joules) each.	“	“
11.5.4.3.3		Requires a minimum 3-foot separation from other arrays and from walls in the storage room or area. Requires that the storage arrangements shall comply with the egress provisions in NFPA 101.	“	“
11.5.4.3.4		Has provisions that listed pre-engineered stationary storage battery systems and prepackaged stationary storage battery systems shall not exceed 250 KWh (900 Mega joules) each.	“	“
11.5.4.3.5		States that the AHJ shall be permitted to approve listed pre-engineered lithium-ion battery UPS systems and prepackaged lithium-ion battery UPS systems with larger capacities or smaller battery array spacing if large-scale fire and fault condition testing conducted or witnessed and reported by an	“	“



		approved testing laboratory is provided showing that a fire involving one array will not propagate to an adjacent array and will be contained within the room for a duration equal to the fire resistance rating of the room separation required by 11.5.2.1.3.		
11.5.4.4	Hazard Mitigation Analysis	Requires a hazard mitigation analysis be provided to the AHJ when any of the following conditions are present: (1) More than one stationary storage battery technology is provided in a room or indoor area where there is a potential for adverse interaction between technologies. (2) When allowed as a basis for increasing maximum allowable quantities as specified in 11.5.4.2.2.	“	“
11.5.4.4.1		Identifies six (6) conditions that the hazard mitigation analysis must consider.	“	“
11.5.4.5	Listings	States lithium-ion batteries used in UPS systems shall be listed in accordance with <i>UL 1973, Standard for Batteries for Use in Stationary, Vehicle Auxiliary Power and Light Electric Rail (LER) Applications.</i> Prepackaged and pre-engineered lithium-ion battery UPS systems shall be listed in accordance with <i>ANSI / UL 9540, Standard</i>	“	“



		for Safety for Energy Storage Systems and Equipment.		
11.5.4.5.1		Prepackaged and pre-engineered UPS systems (non-lithium) shall be listed in accordance with ANSI / UL 1778, Uninterruptible Power Supply Systems.	“	“
11.5.4.6	Installation	Addresses installation requirements such as battery management systems, battery chargers, signage, and mixed battery systems.	“	“
11.5.4.6.1	Battery Management System	States an approved battery management system shall be provided for monitoring and balancing cell voltages, currents, and temperatures within the manufacturer’s specifications. The system shall transmit an alarm signal to an approved location if potentially hazardous temperatures or other conditions including short circuits, overvoltage (i.e., overcharge) or under voltage (i.e., over discharge) are detected.	“	“
11.5.4.6.2	Battery Chargers	States battery chargers shall be compatible with the battery manufacturer’s electrical ratings and charging specifications. Battery chargers shall be listed in accordance with the UL 1564, Standard for Industrial Battery Chargers , or provided as part of a listed pre-engineered or prepackaged lithium-ion battery UPS system.	“	“



13	Modular Data Centers	Section 13.1 clarifies that the provisions in this standard apply to modular data centers (MDCs), except as modified by Chapter 13. The rest of Section 13 (13.2 to 13.12) is mostly a placeholder for future work.	Minor. There should be minor if any impact on the IT Equipment. Although most MDCs have been subjected to NEC Article 646 (MDC) requirements, which covers mostly electrical aspects, they may not have been subjected to the fire protection requirements in NFPA 75. Therefore, there could be some impact as more MDCs are subjected to NFPA 75 when they may not have in the past. However, the IT equipment requirements remain essentially the same.	No. Existing national difference in Clause 1 (Scope), 1DV.2.4, already states the standard does not cover Modular Data Centers (MDCs), only the ITC equipment contained within, and that in the U.S., Modular Data Centers are covered by UL 2755, Modular Data Centers.
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