



POSITION STATEMENT SUMMARY

Lithium-ion batteries and diesel generators in data centres

Position

Effective 3 June 2026, the following is a position of Fire and Rescue NSW (FRNSW):

FRNSW stipulates the following positions for a data centre building:

Battery storage rooms designed to house lithium-ion battery units/systems that provide uninterrupted power supply to the data centre should be appropriately separated from the remainder of the building with fire-rated construction. FRNSW does not support a reduction in the fire-resistance levels for such rooms and FRNSW's preference is that the bounding construction achieves an FRL of 240/240/240 for load-bearing elements and -/240/240 for non-load-bearing elements.

FRNSW recommends the provision of a sprinkler system that has been verified against representative large-scale fire test data for energy storage system (ESS) groups with a capacity of more than 50 kWh. Where such verification is not available, relevant international standards or guidelines applicable to the battery capacity, chemistry, configuration and installation arrangement may be used to determine the required sprinkler system design criteria.

Detached structures or buildings containing vertically stacked diesel generators and/or diesel tanks require appropriate fire safety measures to be provided including adequate fire resistance of the structure, fire separation from fire source features, suppression and firefighting equipment, and any other measures required for occupant life safety and facilitating fire brigade intervention. FRNSW considers that the use and fire load presented by these structures is beyond that typically associated with a Class 10 structure and more closely resembles a Class 8 use.

Reference must be made to the FRNSW website to ensure this position is current at the time of use, and this position has not been superseded or revoked.

Summary

Battery storage rooms

Battery storage rooms designed to house lithium-ion battery units/systems that provide uninterrupted power supply to the data centre should be appropriately separated from the remainder of the building with fire-rated construction.

UL 9540A cell, module and unit-level tests do not, in isolation, represent the credible fire scenario expected by FRNSW for battery energy storage systems (BESS) installed within a room/compartment. Where large-scale fire testing has been undertaken, such testing is commonly conducted in open-air conditions. These tests may not adequately represent the fire behaviour of battery units installed within a compartment, where radiative feedback from the hot gas layer, surrounding enclosure surfaces and other compartment effects may influence fire growth, heat release rate and fire duration. Accordingly, the evidence currently available may not provide a comprehensive understanding of the expected fire behaviour of a BESS installed within a fire compartment.

In addition, temperatures generated during a fire involving lithium-ion battery units may exceed those expected under the AS1530.4 (Methods for fire tests on building materials, components and structures, Part 4: Fire-resistance tests for elements of construction). As a result, the performance of fire-resisting construction exposed to lithium-ion battery fires is relatively unknown. This may create difficulties for firefighting operations. In this context, the performance of active and passive fire protection measures,

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such as fire-resisting construction and sprinkler systems, is considered critical in containing the fire to the room or unit of origin and limiting fire spread to adjoining areas.

Based on the above, FRNSW does not support a reduction in the fire-resistance levels for rooms or compartments containing lithium-ion battery units. FRNSW's preference is that the bounding construction of such battery rooms achieves an FRL of 240/240/240 for load-bearing elements and - /240/240 for non-load-bearing elements.

Performance of sprinkler systems for rooms containing lithium-ion batteries

NFPA855:2026 requires a large-scale fire test for energy storage system (ESS) groups with a capacity of more than 50 kWh, and the separation distance must be validated by the large-scale fire test. In addition, NFPA855:2026 requires the sprinkler system to use the density based on the large-scale fire test as defined in the NFPA855:2026 for ESS groups with size of more than 50 kWh. This position statement seeks to align with the latest requirements for non-residential BESS installations, particularly in relation to the testing evidence required to support the sprinkler system design criteria.

This position statement seeks to align with the latest NFPA 855:2026 requirements for non-residential BESS installations. Specifically, for ESS groups exceeding the capacity of 50 kWh, NFPA 855 requires validation of sprinkler system design criteria and separation distances via large-scale fire testing (such as UL 9540A or equivalent). This statement aims to ensure that all sprinkler system designs and fire hazard mitigation plans are supported by the testing evidence.

Where the large-scale fire tests are not available, relevant international standards or guidelines applicable to the battery chemistry, capacity, arrangement and installation conditions should be used to determine the required sprinkler design criteria.

Detached structures or buildings containing diesel generators and/or diesel tanks

Where detached structures or buildings contain vertically stacked diesel generators and/or diesel tanks, appropriate fire safety measures need to be considered including adequate fire resistance of the structure, fire separation from fire source features, suppression and firefighting equipment, and any other measures required for occupant life safety and facilitating fire brigade intervention.

FRNSW considers that the use and fire load presented by these structures is beyond that typically associated with a Class 10 structure and more closely resembles a Class 8 use. As these structures or buildings contain a significant amount of combustible liquid, spanning over several levels, FRNSW considers that appropriate consideration needs to be provided to the fire safety measures commensurate with the risk.

This position statement has been authorised for release by Chief Superintendent Fire Safety, FRNSW.

Contact us

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