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Comment Received From: Phillip Carranco

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Applicant Must Conduct Testing in Accordance with Most Current 6th Edition Testing Procedures

Dear California Energy Commission Commissioners and Staff,

I am writing in my capacity as a Senior Regulatory Compliance Engineer to urge the Commission to require BESS applicants to conduct testing in accordance with the UL 9540A 6th Edition (published March 13, 2026) as part of project approvals, permitting, and safety evaluations. This updated standard represents a critical advancement in fire safety assessment and directly supports the Commission's goals of safe, reliable, and responsible deployment of energy storage technologies.

Key Differences Between UL 9540A 5th and 6th Editions

The 5th Edition (2025) provided valuable refinements to testing protocols, including clearer definitions (e.g., initiating cell and thermal runaway propagation), improved measurement techniques for temperature, heat flux, and gas composition, and more detailed procedures for various battery chemistries. However, its installation-level testing primarily evaluated mitigation effectiveness (such as sprinklers or aerosols) after thermal runaway, without standardized intentional ignition of vented off-gases.

In contrast, the 6th Edition fundamentally strengthens the standard by fully integrating Large-Scale Fire Testing (LSFT) as the formalized 4th-level (installation-level) test in Section 10. This includes:

- Intentional ignition of off-gases produced during thermal runaway to simulate real-world fire scenarios.
- Evaluation of fire and explosion propagation risks between adjacent BESS units and to surrounding structures.
- Enhanced assessment of deflagration hazards, gas accumulation/venting behavior, and enclosure performance (including new Annex C).
- Clearer pass/fail criteria focused on non-propagation.
- Reduced reliance on unit-level testing for non-residential systems, replaced by the more comprehensive LSFT.

These changes align the standard more closely with the 2026 edition of NFPA 855, including Annex G.11 guidance.

Enhanced Information for Authorities Having Jurisdiction (AHJs)

The 6th Edition equips fire marshals, AHJs, and regulators with significantly more actionable, real-world data. Unlike prior editions that relied heavily on extrapolation from smaller-scale tests, the LSFT provides empirical evidence on:

- Fire spread potential between units under ignited conditions.
- Effectiveness of enclosures, spacing, and passive/active fire protection in realistic

failure modes.

• Gas composition, heat release rates, and explosion risks in enclosed or semi-confined environments.

This information enables better-informed decisions on site-specific spacing, maximum allowable energy capacity per fire area, ventilation design, suppression strategies, and overall project risk. It directly supports Hazard Mitigation Analyses (HMAs) and reduces ambiguity in permitting reviews.

Potential Issues if Testing Is Not Conducted to the 6th Edition

Relying solely on 5th Edition or earlier data creates several risks:

• Incomplete Safety Characterization: AHJs may lack sufficient information to assess propagation risks involving ignited off-gases, potentially leading to overly conservative (or inadequately protective) installation requirements.

• Permitting Delays and Project Stalls: Fire marshals and local authorities have increasingly requested enhanced large-scale testing; gaps in data can result in additional scrutiny, supplemental testing requirements, or outright denials—contributing to the delays already seen in numerous jurisdictions.

• Increased Safety and Liability Exposure: In the event of an incident, installations evaluated under less comprehensive testing may face questions about due diligence, complicating insurance, emergency response planning, and public confidence.

• Inconsistent Standards Across Projects: Without a uniform requirement for the latest edition, disparities in safety validation could undermine statewide goals for reliable grid modernization and renewable integration.

Adopting the 6th Edition as a requirement would promote consistency, elevate safety benchmarks, and accelerate responsible BESS deployment while addressing legitimate concerns from communities and first responders.

We respectfully recommend that the Commission incorporate this requirement into relevant guidelines, procurement processes, or safety evaluations for BESS projects.

Thank you for your leadership in advancing California's clean energy future through robust safety standards. We look forward to your response and continued collaboration.

Sincerely,

Phillip Carranco
Sr Regulatory Compliance Engineer