

San Francisco Fire Department



Division of Fire Prevention and Investigation

August 23, 2024

Mr. Jeremy Pollock, Executive Officer
San Francisco Local Agency Formation Commission (LAFCo)
1 Carlton B. Goodlett Place
San Francisco, CA 94102

Re: Feedback on LAFCo Study Regarding Battery Energy Storage Systems (BESS)

Dear Mr. Pollock,

The San Francisco Fire Department (SFFD) appreciates the opportunity to review and provide feedback on the LAFCo study concerning Battery Energy Storage Systems (BESS). We recognize the increasing interest from residents and commercial property owners in adopting BESS to reduce their carbon footprint, enhance energy independence, and ensure power availability during grid outages. However, ensuring the safe implementation of these systems is paramount to prevent hazards that could jeopardize lives, property, and the environment.

As the Authority Having Jurisdiction (AHJ), the SFFD has a multifaceted role in overseeing Energy Storage Systems throughout their lifecycle. This includes setting standards based on applicable fire codes, reviewing BESS project plans, conducting installation inspections, and managing BESS fires when necessary. When the fire code is silent or ambiguous—such as regarding battery hazards—our team must interpret these risks and develop standards to ensure public safety and protect our firefighters.

The 2022 California Fire Code (CFC) currently lacks specific hazard classifications for batteries used in BESS, leaving significant regulatory decisions to the AHJ. The absence of detailed data on battery performance during fires, long-term use, and environmental exposure further complicates regulation. To address these gaps, the SFFD has created Administrative Bulletins (ABs) to clarify our interpretation and application of the code. Administrative Bulletin 5.12 (AB 5.12) was developed to assist the public in understanding BESS requirements for single-family (A-3) and multi-family homes (A-2) as outlined in the 2022 CFC.

For instance, AB 5.12 addresses the potential hazards associated with interior BESS installations near property lines in unfinished wood-framed constructions. To mitigate these risks, we require the installation of 5/8-inch Type X gypsum board behind and above the BESS to reduce fire risks to neighboring properties in the event of a thermal runaway. This precaution was not specified in the 2022 CFC.

Although the report was drafted primarily before June 2024, it is important to note that, effective July 1, 2024, the CFC increased the maximum aggregate capacity for BESS from 280 kWh to 600 kWh, aligning with regulations in other jurisdictions as mentioned in the report. Additionally, the mid-cycle supplement codified the need for gypsum board protection, although it did not specify dimensions as detailed in our AB 5.12.



The LAFCo report also references our interpretation of fire code language concerning BESS “systems” and “units,” suggesting that this may impose additional requirements on homeowners for aggregate BESS exceeding 20 kWh. However, it is crucial to note that the CAL-FIRE Office of the State Fire Marshal issued Code Interpretation 24-02 on July 9, 2024, clarified that the 20 kWh limit applies to each individual unit and to the aggregate rating. Installations exceeding this limit must comply with California Fire Code Sections 1207.1 through 1207.9. Consequently, installations exceeding 20 kWh, whether as a “unit” or a “system,” will also require a building permit, and the SFFD will enforce these requirements accordingly.

The SFFD has also observed numerous fires involving lithium-ion battery-powered mobility devices (PMDs). In response, we have updated the San Francisco Fire Code (SFFC) to mandate that batteries in these devices must be listed and that buildings storing or charging five or more PMDs must include a 1-hour rated room with fire sprinklers and a smoke detection system. We acknowledge that PMDs and BESS are distinct and should be treated accordingly.

To address hazards related to electric vehicle (EV) charging, we developed Administrative Bulletin 4.29 (AB 4.29) to guide the installation of indoor EV charging stations. Given the lack of specific hazard classifications for lithium-ion batteries in the CFC, AB 4.29 provides guidance on fire sprinkler design and rated enclosures necessary to contain fires before emergency services arrive, as water alone cannot extinguish these vehicle battery fires.

We understand the challenges faced by building owners in complying with code requirements for BESS, PMDs, and indoor EV charging stations. To support compliance, we offer pre-application meetings where designers and building owners can seek code clarifications or propose alternative solutions. We remain committed to updating the SFFC and our Administrative Bulletins as new information becomes available.

Finally, based on the study, state legislation requirements, and our experience with Solar App+, we recommend modifications to the software’s permitting capabilities. Enhancing these capabilities could significantly streamline the process and facilitate the broader installation of BESS.

Thank you for your attention to these important safety considerations.

Sincerely,

A handwritten signature in blue ink, appearing to read "Ken Cofflin".

Ken Cofflin
Fire Marshal
Assistant Deputy Chief
San Francisco Fire Department

cc: AFM Kathy Harold



CAL FIRE - OFFICE OF THE STATE FIRE MARSHAL

Code Interpretation 24-02

Issued: July 9, 2024

Electrical Energy Storage Systems (ESS) Listing and Rating

OVERVIEW

Code Section(s): California Fire Code (CFC) 1207.11.1 & 1207.11.4
Edition: 2022 California Fire Code
Requested By: Bryan Hamlin, HomeGrid subsidiary of Lithion
Date Received: October 23, 2023

QUESTION:

Does CFC 1207.11.1 require the company that performs testing and lists a product be the same company that develops the testing standards.

ANSWER:

No. CFC 1207.11.1 states that ESS shall be listed and labeled in accordance with UL 9540.

QUESTION:

Does the CFC 1207.11.4 individual 20kWh limit apply when modularized units can be stacked beyond that limit?

ANSWER:

Yes. Per CFC 1207.11.4, each unit shall be 20kWh maximum. ESS installations exceeding the permitted individual or aggregate ratings shall be installed in accordance with California Fire Code Sections 1207.1 through 1207.9.