

**INITIAL STATEMENT OF REASONS  
FOR PROPOSED BUILDING STANDARDS  
OF THE STATE FIRE MARSHAL  
REGARDING THE 2022 CALIFORNIA RESIDENTIAL CODE  
CALIFORNIA CODE OF REGULATIONS, TITLE 24, PART 2.5**

**(SFM 05/21)**

The Administrative Procedure Act (APA) requires that an Initial Statement of Reasons be available to the public upon request when rulemaking action is being undertaken. The following information required by the APA pertains to this particular rulemaking action:

**STATEMENT OF SPECIFIC PURPOSE, PROBLEM, RATIONALE and BENEFITS**

Government Code Section 11346.2(b)(1) requires a statement of specific purpose of each adoption, amendment, or repeal and the problem the agency intends to address and the rationale for the determination by the agency that each adoption, amendment, or repeal is reasonably necessary to carry out the purpose and address the problem for which it is proposed. The statement shall enumerate the benefits anticipated from the regulatory action, including the benefits or goals provided in the authorizing statute.

**CHAPTER 1  
SCOPE AND ADMINISTRATION  
DIVISION I  
CALIFORNIA ADMINISTRATION**

**Item 1-1**

**Chapter 1, Administration, Division I, California Administration, Section 1.1.0  
General through 1.1.12**

The SFM is proposing to maintain the adoption of those existing California provisions contained in Sections 1.1 through 1.1.12 with modification as shown below.

**CAC Recommendation:**

Approve

**Agency Response:**

Accept

**Item 1-2**

**Chapter 1, Administration, Division I, California Administration, Section 1.1.1 Title**

The SFM is proposing to repeal the adoption by reference of the 2018 International Residential Code and incorporate and adopt by reference in its place the 2021 International Residential Code for application and effectiveness in the 2022 California Residential Code.

**CAC Recommendation:**

Approve

**Agency Response:**

Accept

**Item 1-3**

**Chapter 1, Administration, Division I, California Administration, Section 1.11 through 1.11.11**

The SFM is proposing to maintain the adoption of those existing California provisions contained Sections 1.11 through 1.11.11 with modifications as shown below

**CAC Recommendation:**

Approve

**Agency Response:**

Accept

**Item 1-4**

**Chapter 1, Administration, Division I, California Administration, Section 1.11.1**

The SFM is proposing to add a definition of Specified State-Occupied.

The State Fire Marshal is required as per passed in Senate Bill 85. Public resources: omnibus trailer bill. (2019-2020) to provide clarifying language regarding Specified State Occupied Occupancies. The regulations adopted by the State Fire Marshal will meet the intent of Health and Safety Code Sections 13208 and 13146.

**Problem being addressed:** With the passage of Senate Bill 85. Public resources: omnibus trailer bill. (2019-2020), the Office of the State Fire Marshal is required to provide clarifying language regarding Specified State Occupied Occupancies.

**Anticipated benefits from this regulatory action:** This regulatory proposal benefits California and stakeholders by clarifying and updating the safety requirements for Specified State Occupied Occupancies.

**Factual Basis/Rationale:** The Office of the State Fire Marshal is required to clarify and define Specified State Occupied Occupancies as per Senate Bill 85. Public resources: omnibus trailer bill. (2019-2020).

...

**CAC Recommendation:**

Further Study

**Agency Response:**

Accept.

The SFM Fire and Life Safety Division held a workgroup to further improve on the purpose and intent of the proposed definition of Specified state occupied buildings.

Item 4 and Item 5 were discussed with the Department of Finance (DOF).

Item 4 addresses buildings that are leased by the state in the entirety (4 stories or less).

Item 5 addresses all other buildings. The State Fire Marshal should retain oversight for buildings that: 1) met a state occupancy threshold (potentially 75 percent or greater) and 2) had certain size and design specifications, the most important of which is an assembly (auditorium) occupancy greater than 5,000 square feet. The primary concern with these buildings being the egress requirements needed for assemblies of this size and the potential risk to life.

Item 6 was modified to address the State Fire Marshal's authority for spaces within a building that are leased by the state and have an occupancy use of a Group H or Group L.

Item 7 simplifies that the SFM will have the authority over state leased buildings with facilities housing state records or state artifacts or any combination of both.

Item 9 was added to align with the use of the term in the Health and Safety Code that California State institutions may include buildings and facilities that care for people with special needs. This can include but not limited to prisons, detention facilities, hospitals, and health facilities.

**Item 1-5**

**Chapter 1, Administration, Division I, California Administration, Section 1.11.4.4 Fire Clearance Preinspection**

Section 1.11.4.4 and 1.11.4.5 are updated to meet the Health & Safety Code Section 13244. The statute has changed the fees that are charged for inspections. These changes were made in other parts of Title 24, but Part 2.5 was missed. This will correlate with the other parts of Title 24.

**CAC Recommendation:**

Approve

**Agency Response:**

Accept

**Item 1-6**

**Chapter 1, Administration, Division I, California Administration, Section 1.11.4.5 Care Facilities**

Section 1.11.4.4 and 1.11.4.5 are updated to meet the Health & Safety Code Section 13244. The statute has changed the fees that are charged for inspections. These changes were made in other parts of Title 24, but Part 2.5 was missed. This will correlate with the other parts of Title 24.

**CAC Recommendation:**

Approve

**Agency Response:**

Accept

**Item 1-7**

**Chapter 1, Administration, Division I, California Administration, Section 1.11.11  
Adopting Agency Identification**

Adding this section correlates with the other parts of Title 24. It establishes the adopting agency acronym as SFM for the Office of the State Fire Marshal as it will appear in the matrix tables.

**CAC Recommendation:**

Approve

**Agency Response:**

Accept

**CHAPTER 1  
SCOPE AND ADMINISTRATION**

***DIVISION II*  
SCOPE AND ADMINISTRATION**

**Item 1-8**

**Chapter 1, Scope and Administration, Division II**

The SFM proposes to adopt Chapter 1, Administration, Division II Administration Sections R101.1-R102.6, R104.2-R104.4, R104.9-R104.9.1, R105.1, R105.2 Building items: 1-10, R105.2.1-R105.2.2, R105.3-R105.3.1, R105.4, R105.6-R105.7, R106, R107, R109.1, R109.1.4, R109.1.5, R109.1.5.1, R109.1.6, R110, R111, R113.1-R113.2, R114

**CAC Recommendation:**

Approve

**Agency Response:**

Accept

**Item 1-9**

**Chapter 1, Scope and Administration, Division II, User Note**

The user note is a tool to understand the intent of the Chapter. Other parts of Title 24 include the user note. The proposal to add it to the Residential Code is to correlate the format with the other parts of Title 24 and to add the commentary as a valuable tool to the code user.

**CAC Recommendation:**

Approve

**Agency Response:**

Accept

**Item 1-10**

**Chapter 1, Administration, Division II, Administration**

The SFM is proposing editorial corrections.

**CAC Recommendation:**

Approve

**Agency Response:**

Accept

**Item 1-11**

**Chapter 1, Administration, Division II, Administration**

The SFM is proposing to modify Section 105.2 based on proposed changes in Chapter 7A, Section 710A for accessory building and structures.

Without the addition of this language, Exception #1 to the “Building” portion of Section 105.2 basically instructs the code user to ignore the code altogether for these structures, even though the construction is within the scope and application of portions of Chapter 3 Section R337 (namely Section R337.10 ACCESSORY STRUCTURES). The goal of this change is to correlate this section with Chapter 3 Section R337 and instruct the code user to consult Section R337.10, regardless of whether or not a permit is required. The language being added does not impose any regulatory provisions nor any requirement for a permit; rather it is informational for the benefit of the code user only.

**CAC Recommendation:**

Approve

**Agency Response:**

Accept

**CHAPTER 2  
DEFINITIONS**

**Item 2-1**

**Chapter 2, Definitions**

The SFM proposes to carry forward the existing adopted sections in Chapter 2 with existing amendments and modification as show below.

The SFM proposes to adopt the definitions of Energy Storage Systems; Fuel Cell Power System, Stationary; Intermodal Shipping Container; Jurisdiction; Kitchen; Live/work unit; Manufactures installation instructions; Permit; Person, Photovoltaic Module; Photovoltaic Panel; Photovoltaic Panel System; Photovoltaic Shingles; Platform Construction; Plenum; Rated Design; Refrigerant, Refrigerating system; Registered Design Professional; Roof Assembly; Skylight; Skylight unit; Skylights and sloped Glazing; Sleeping Unit; Solar Energy System, Solar Heat Gain Coefficient; Solar Thermal System; Standard Reference Design; Stationary Fuel Cell Power plant; Storm Shelter; Structural Composite Lumber; Townhouse Unit, Vent; Water Distribution System; Water Main; Yard

**CAC Recommendation:**

Approve

**Agency Response:**

Accept

**Item 2-2**

**Chapter 2, Section R202 General Definitions, Child Care**

The SFM is proposing a definition for Child Care.

Current regulation as it is printed in California Code of Regulations (CCR) Title 22. The Department of Social Services (DSS) has for approximately 10 years been transitioning from the term “Day Care” to “Child Care”. The profession of childcare has evolved into a more inclusive type of care that can include early learning and child development. The caring aspect of the facilities are more emphasized. The State Fire Marshal work group is including the definition to be more consistent between regulations.

CCR 22 Section 101152 c (7) “Child Care Center” or “Day Care Center” (or “center”) means any childcare facility of any capacity, other than a family childcare home as defined in Section 102352f. (1), in which less than 24-hour per day non-medical care and supervision are provided to children in a group setting. The term “Child Care Center” supersedes the term “Day Care Center” as used in previous regulations.

Here is the link:

[https://govt.westlaw.com/calregs/Document/I96014AD0D4C011DE8879F88E8B0DAAAE?viewType=FullText&listSource=Search&originationContext=Search+Result&transitionType=SearchItem&contextData=\(sc.Search\)&navigationPath=Search%2fv1%2fresults%2fnavigation%2fi0ad7140b00000175fcccf25cb0006a64%3fNav%3dREGULATION\\_PUBLICVIEW%26fragmentIdentifier%3dI96014AD0D4C011DE8879F88E8B0DAAAE%26startIndex%3d1%26transitionType%3dSearchItem%26contextData%3d%2528sc.Default%2529%26originationContext%3dSearch%2520Result&list=REGULATION\\_PUBLICVIEW&rank=1&t\\_T1=22&t\\_T2=101152&t\\_S1=CA+ADC+s](https://govt.westlaw.com/calregs/Document/I96014AD0D4C011DE8879F88E8B0DAAAE?viewType=FullText&listSource=Search&originationContext=Search+Result&transitionType=SearchItem&contextData=(sc.Search)&navigationPath=Search%2fv1%2fresults%2fnavigation%2fi0ad7140b00000175fcccf25cb0006a64%3fNav%3dREGULATION_PUBLICVIEW%26fragmentIdentifier%3dI96014AD0D4C011DE8879F88E8B0DAAAE%26startIndex%3d1%26transitionType%3dSearchItem%26contextData%3d%2528sc.Default%2529%26originationContext%3dSearch%2520Result&list=REGULATION_PUBLICVIEW&rank=1&t_T1=22&t_T2=101152&t_S1=CA+ADC+s)

**CAC Recommendation:**

Approve

**Agency Response:**

Accept

**Item 2-3**

**Chapter 2, Section R202 General Definitions, Day-Care**

The SFM proposes to amend the definition of Day-Care.

The SFM proposes to amend the definition of Day-Care. The occupancy of day-care is for a limited time during any day. The code is clear that it can be any time of the day, it was not described in the definition. This is an editorial change, to have consistency with the Social Service regulations in Title 22 and the current regulations.

**CAC Recommendation:**

Approve

**Agency Response:**

Accept

**Item 2-4**

**Chapter 2, Definitions, Energy Storage Systems**

The SFM proposes to carry forward the existing California amended definition of ESS to correlate with the definition in the California Fire Code and delete the model code definition that is slightly different.

**CAC Recommendation:**

Approve

**Agency Response:**

Accept

**Item 2-5**  
**Chapter 2, Definitions, Exterior Wall Assembly**

Reason: The definitions of exterior wall covering, and exterior wall assembly are being added because they are needed to distinguish between different exterior wall products.

**CAC Recommendation:**

Approve

**Agency Response:**

Accept

**Item 2-6**  
**Chapter 2, Definitions, Exterior Wall Covering**

Reason: The definitions of exterior wall covering, and exterior wall assembly are being added because they are needed to distinguish between different exterior wall products.

**CAC Recommendation:**

Approve

**Agency Response:**

Accept

**Item 2-7**  
**Chapter 2, Section 202 General Definitions, Inflatable Amusement Device**

The SFM proposes a new definition.

A definition for inflatable amusement devices is included to correlate the type of devices covered by new proposed California Fire Code requirements.

**CAC Recommendation:**

Approve

**Agency Response:**

Accept

**Item 2-8**  
**Chapter 2, Section 202 General Definitions, Large-Scale Fire Testing**

The SFM proposes a new definition.



The definition of what large-scale testing means is a growing problem for the installation of Energy Storage Systems. An explosion in 2019 in Arizona resulted in a significant event, a deflagration, and firefighters seriously injured. The Energy Storage System (ESS) compliance world have correctly pointed out that the installation would not have complied with either 2018 fire codes, even more so NFPA 855 and the 2021 IFC. We used the 2018 fire codes and NFPA 855 as benchmarks on safety.

UL 9540A was developed to ensure there was a standard method to conduct the required large-scale fire test, not to create a concept like UL 1973 that provides an out.

Many of us believed if a system is installed in accordance with the 2018 fire codes or NFPA 855 a reasonable level of safety has been provided and we have addressed what happened in Arizona. However, inadequate large-scale fire test reports are being applied where there wasn't a large-scale fire when the cells are capable of thermal runaway, that reasonable level of safety is not occurring and the language and intent of the fire codes and NFPA 855 are not being complied with. We are still installing potential Arizona hazards.

The definition in NFPA 855 is clear. The proposed language brings the definition from NFPA 855 into the Fire Code for the clear intent of the meaning used within the code regulations for Chapter 12 for ESS.

**Cost Impact:** There will be no increase or decrease in cost, as the regulations are existing in code.

**CAC Recommendation:**

Approve

**Agency Response:**

Withdrawn.

The SFM is withdrawing the proposal to add the definition of large-scale test based on comments received during the BFO CAC hearings on July 7 and 8, 2021. The term is used in many other applications including exterior wall covering tests, high pile storage, as well as energy storage systems. The SFM is proposing the adoption of UL9540A 4<sup>th</sup> Edition which clearly defines what is required for a large-scale test for energy storage systems.

**Item 2-9**

**Chapter 2, Section R202 General Definitions, Photovoltaic (PV) Panel System, Ground-Mounted**

The SFM proposes a new definition for Photovoltaic (PV) Panel System, Ground mounted.

Ground-mounted photovoltaic panel systems are referenced in the 2021 I-codes, in IBC Sections 1607.4.4 and 3111.3.5; in IRC Section R324.7; and in IFC Section 1205.5.

**CAC Recommendation:**

Approve

**Agency Response:**

Accept

**Item 2-10**

**Chapter 2, Section R202 General Definitions, Photovoltaic (PV) Support Structure Elevated**

The SFM proposes a new definition for Photovoltaic (PV) support structure elevated.

Most PV panels in the marketplace have been fire tested and assigned a “type rating” in accordance with UL 1703. However, some PV panels might not have that fire testing, and could be marked “not fire rated.” This proposal clarifies that PV panels marked “not fire rated” cannot be used on elevated/overhead PV structures that could have people or cars beneath them, with or without a full roof assembly. Where elevated PV structures have PV panels mounted over open-grid framing with no roof deck or sheathing cannot achieve a “fire classification” because there is no combustible roof covering to ignite in a UL 2703 spread-of-flame or burning brand test. Therefore, it is sufficient protection to install only type-rated modules. The same is true when PV panels are installed directly over noncombustible metal sheathing without a stand-off mounting system. Where elevated PV structures have a roof assembly and PV panels are rooftop mounted over that roof assembly, then those structures

**CAC Recommendation:**

Approve

**Agency Response:**

Accept

**Item 2-11**

**Chapter 2, Section R202 General Definitions, Toddler**

The SFM proposes a new definition for Toddler.

Day Care facilities are licensed by the Department of Social Services. The classifications of the children are infants – age 0 to 24 months, toddlers – 18 to 36 months and preschool, etc. The intent of the regulations is to provide a level of safety to the children that are non-ambulatory or unable to self-evacuate in an emergency. The conflict is that there is an overlap of the definition of infants and toddlers. The Office of the State Fire Marshal conducted a Day Care Workgroup to address issues with the current regulations. The workgroup recommended the legal definition of toddlers from the Health & Safety Code Section 1596.55 and to include them in the regulations to remove the conflict in the definitions. This proposal will also remove the conflict with the Social Service’s classification of daycares. This will allow the building and fire code officials to classify the

occupancy of I-4 or E based on Social Services classifications for licensing. This will be determined by the age of the children within the childcare facility.

**CAC Recommendation:**

Approve

**Agency Response:**

Accept

**Item 2-12**

**Chapter 2, Section R202 General Definitions, Wildland- Urban Interface**

The SFM proposes to add the definition of Wildland-Urban Interface to Chapter 2 definitions. The wildland fire provisions are in Chapter 3 Section R337.

**CAC Recommendation:**

Approve

**Agency Response:**

Accept

**CHAPTER 3  
BUILDING PLANNING**

**Item 3-1**

**Chapter 3, Building Planning**

The SFM proposes to adopt Sections R301.1, R302, R303.6-R303.9.1, R304, R305, R308, R309.5, R309.6, R310, R311, R312, R313, R314, R315, R316.2, R316.2.1, R316.3, R319, R321, R324, R325, R326, R328, R329, R330, R335, R336, R337, R338 of Chapter 3 and carry forward existing amendments with modifications as shown below.

**CAC Recommendation:**

Approve

**Agency Response:**

Accept

**SECTION R302  
FIRE-RESISTANT CONSTRUCTION**

**Item 3-2**

**Chapter 3, Building Planning, Section R302**

The SFM is proposing editorial corrections to the section pointers for sprinklers from P2904 to R313.

**CAC Recommendation:**

Approve

**Agency Response:**

Accept

**SECTION R310  
EMERGENCY ESCAPE AND RESCUE OPENINGS**

**Item 3-3**

**Chapter 3, Building Planning, Section R310 Emergency Escape and Rescue Openings**

The primary purpose of this proposal is to correlate the regulations in the California Residential code with the California Building Code.

**R310.1.** The language proposed for deletion conflicts with Fire Department access minimum widths in the Fire Code and California Code of Regulations Title 19.

**R310.1.1** The amendment to the section is intended to correlate with other parts of Title 24 for California provisions that regulate security bars and window opening control devices.

**R310.2.3.** The California amendment is no longer needed, as the model code now replicates the same regulations.

**CAC Recommendation:**

Approve

**Agency Response:**

Accept

**SECTION R313  
AUTOMATIC FIRE SPRINKLER SYSTEMS**

**Item 3-4**

**Chapter 3, Building Planning, Section R324 Solar Energy Systems**

The SFM proposed to carry forward the amendments to Section R313, which is Section P2904 relocated. SFM also proposes to bring in updates from the 2021 International Residential Code Section P2904 to be incorporated into the 2022 California Residential Code Section R313.

**R313.3.2.1**

**Reason:** NFPA 13D allows intermediate temperature sprinklers to be used in lieu of ordinary temperature sprinklers in dwelling units, even where elevated ambient temperatures are not expected. So long as the sprinkler used qualifies as a residential sprinkler based on the Response Time Index (RTI) and passing the UL1626 fire test, there is no reason for activation temperature to be limited. Permitting intermediate temperature sprinklers to be used in lieu of ordinary temperature sprinklers can help to avoid the risk of mixing up sprinklers during installation and can ensure that intermediate temperature sprinklers will be present in locations where elevated ambient temperatures may or may not have been anticipated.

**Cost Impact:** The code change proposal will not increase or decrease the cost of construction Residential sprinklers of ordinary or intermediate temperature range are typically the same cost, and this proposal does not require the use of a different sprinkler. It simply allows flexibility.

...

### ***R313.3.2.3***

**Reason:** Listed dry pipe residential sprinkler systems are available, are recognized by NFPA 13D, and are a viable option for freeze protection in lieu of other methods that are currently permitted.

**Cost Impact:** The code change proposal will not increase or decrease the cost of construction Proposal allows an additional alternative to current requirements for freeze protection as an option. There is no mandatory requirement being added.

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### ***R313.3.3.2***

**Reason:** The proposal will correlate with an allowance in NFPA 13D to have a control valve on a standalone sprinkler system. Although NFPA 13D allows such valves to be electronically monitored in lieu of locking, this proposal requires that the valve be locked open, which could be accomplished by simply providing a nylon strap to secure the valve handle. If an owner also wants to electronically monitor the valve, that would be permitted in addition to securing the valve to discourage tampering.

**Cost Impact:** The code change proposal will not increase or decrease the cost of construction. The proposal adds an allowance to have a master control valve, but there is no mandate to include one.

...

### ***R313.3.4.1***

#### ***R313.3.4.1.1***

#### ***R313.3.4.1.2***

#### ***R313.3.4.1.3***

**Reason:** These revisions are intended to correlate with NFPA 13D and current installation practices for residential sprinklers protecting spaces with sloped and/or beamed ceilings.

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The current Section P2904.4.2 (3) sends the user to the manufacturer's data sheets for special design information related to sloped and/or beamed ceilings, but data sheets for most residential sprinklers no longer provide guidance for these conditions. A 2010 Fire Protection Research Foundation study helped to standardize sprinkler protection criteria for ceilings with slopes and beams by determining that many sloped and beamed ceilings can be sufficiently protected using the same design criteria that apply to horizontal ceilings. This prompted NFPA to add model design criteria to their sprinkler standards and manufacturers are now amending cut sheets to delete criteria for ceiling configurations that are covered by NFPA's standards. Without this revision to Section P2904, the IRC will no longer provide sufficient guidance for protection of sloped or beamed ceilings, and that could be improperly interpreted as only allowing smooth, flat, horizontal ceiling configurations in sprinklered dwellings.

**Cost Impact:** The code change proposal will decrease the cost of construction. The sprinkler rules in the IRC, as written, would not allow for sloped ceilings which made the installation of sprinkler systems much more costly than need be.

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**TABLE R313.3.5.2(2)**  
**MINIMUM WATER METER PRESSURE LOSS ( $PL_m$ )<sup>a</sup>**

**Reason:** This proposal revises the water meter table in the IRC to better correlate with the water meter table in NFPA 13D, which was updated in the 2013 edition based on research that was published in a Fire Protection Research Foundation Report titled, "Residential Fire Sprinklers - Water Usage and Water Meter performance Study" in 2011. The revised IRC table will include NFPA 13D correlated values for 5/8-inch, 3/4-inch and 1-inch meters, and it retains entries for flows less than 18 gpm, which have been adjusted to reflect findings from the Fire Protection Research Foundation study. NFPA 13D does not include these lesser flows, but the IRC has always included them since low-flow systems are an option for affordable housing. This proposal does not add values for 1 1/2-inch and 2-inch meters, which are included in NFPA 13D, because these meter sizes are excessive and unnecessary for flow demands associated with home fire sprinkler systems. Including them in the table could be taken as a basis of validation for water purveyors looking to justify local requirements for larger, more expensive meters.

**Bibliography:**

[NFPA Fire Statistics](https://www.nfpa.org/News-and-Research/Fire-statistics-and-reports/Research-reports/Suppression/Residential-Fire-Sprinklers)

<https://www.nfpa.org/News-and-Research/Fire-statistics-and-reports/Research-reports/Suppression/Residential-Fire-Sprinklers>

**Cost Impact:** The code change proposal will not increase or decrease the cost of construction. No expected cost consequences are anticipated to be associated with this proposal in most cases since actual meter pressure loss values are typically available. The prescriptive table values are only included in the code for rare occasions where actual values cannot be ascertained.

**CAC Recommendation:**

Approve

**Agency Response:**

Accept

**SECTION 324  
SOLAR ENERGY SYSTEMS**

**Item 3-5**

**Chapter 3, Building Planning, Section R324 Solar Energy Systems**

The primary purpose of this proposal is to establish appropriate fire testing and listing criteria for overhead photovoltaic (PV) support structures that could have people or vehicles in the space beneath them.

**R324.6.2.1 Alternative setback at ridge.**

**Reason:** Editorial correction to a section reference for sprinklers.

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***R324.8 Elevated photovoltaic (PV) support structures.***

***R324.8.1 PV panels installed over open grid framing or non-combustible deck.***

***R324.8.2 PV panels installed over a roof assembly.***

The primary purpose of this proposal is to establish appropriate fire testing and listing criteria for overhead photovoltaic (PV) support structures that could have people or vehicles in the space beneath them. Sometimes referred to as “solar shade structures,” they are most commonly constructed over vehicle parking spaces of surface parking lots, are sometimes built on the uppermost level of parking garages but could be built in a variety of locations with or without cars parked beneath.

Overhead PV structures are referenced in 2021 IBC Section 1607.14.4, and in 2019 California Building Code Section 503.1, but without any definitions.

In 2021 IBC Section 1607.14.4.3, these structures are described as “Structures with open grid framing and without a roof deck or sheathing supporting photovoltaic panel systems.”

In 2019 California Building Code Section 503.1, Exception 2, these structures are described as: “... solar photovoltaic panels supported by a structure with no use underneath...” In Exception 3, there is a more-specific description by location: “... solar photovoltaic panels supported by a structure over parking stalls ...”

Ground-mounted photovoltaic panel systems are referenced in the 2021 I-codes, in IBC Sections 1607.4.4 and 3111.3.5; in IRC Section R324.7; and in IFC Section 1205.5.

For the proposed definition of Elevated PV Support Structure note the minimum height threshold of 7’-6” is consistent with IBC 1003.2.

Most PV panels in the marketplace have been fire tested and assigned a “type rating” in accordance with UL 1703. However, some PV panels might not have that fire testing, and could be marked “not fire rated.” This proposal clarifies that PV panels marked “not fire rated” cannot be used on elevated/overhead PV structures that could have people or cars beneath them, with or without a full roof assembly.

Where elevated PV structures have PV, panels mounted over open-grid framing with no roof deck or sheathing cannot achieve a “fire classification” because there is no combustible roof covering to ignite in a UL 2703 spread-of-flame or burning brand test. Therefore, it is sufficient protection to install only type-rated modules. The same is true when PV panels are installed directly over noncombustible metal sheathing without a stand-off mounting system. Where elevated PV structures have a roof assembly and PV panels are rooftop mounted over that roof assembly, then those structures must have a fire classification according to Section 1505.9. There are several different stakeholder groups that will benefit from this proposal.

This proposal was prepared by the Sustainable Energy Action Committee (SEAC), a forum for all stakeholders (including, but not limited to, AHJs, designers, engineers, contractors, first responders, manufacturers, suppliers, utilities, and testing labs) to collaboratively identify and find solutions for issues that affect the installation and use of solar energy systems, energy storage systems, demand response, and energy efficiency. The purpose is to facilitate the deployment and use of affordable, clean, and renewable energy in a safe, efficient, and sustainable manner. All recommendations from SEAC are approved by diverse stakeholders through a consensus process.

**Cost Impact:** The code change proposal will not increase or decrease the cost of construction. It encourages the use of solar without adversely impacting safety.

**CAC Recommendation:**

Approve

**Agency Response:**

Accept

**SECTION R325  
MEZZANINES**

**Item 3-6**

**Chapter 3, Building Planning, Section R325 Mezzanines**

The SFM proposes to make an editorial correction to the reference section for residential sprinklers.

**CAC Recommendation:**

Approve



**Agency Response:**

Accept

**SECTION R326  
HABITABLE ATTICS**

**Item 3-7**

**Chapter 3, Building Planning, Section R326 Habitable Attics**

The SFM proposes to make an editorial correction to the reference section for residential sprinklers.

**CAC Recommendation:**

Approve

**Agency Response:**

Accept

**SECTION R328  
ENERGY STORAGE SYSTEMS**

**Item 3-8**

**Chapter 3, Building Planning, Section R328 Energy Storage Systems**

The SFM proposes to adopt Section R328, carry forward existing amendments, repeal and replace some amendments with model code language as shown below.

**R328.1 General.**

**R328.2 Equipment listings.**

**R328.3 Installation.**

**R328.3.1 Spacing.**

**R328.4 Locations.**

**R328.5 Energy ratings**

**R328.6 Electrical installation.**

**R328.7 Fire detection.**

**R328.8 Protection from impact.**

**R328.8.1 Garages.**

***R328.8.2 Other locations subject to vehicle impact.***

***R328.8.3 Impact Protection Options.***

***Figure R328.8.1 ESS Vehicle Impact Protection***

***Figure R328.8.3 ESS Vehicle Impact Protection Options***

**R328.9 Ventilation.**

**R328.10 Electric vehicle use.**

**R328.11 Documentation and labeling.**

**R328.12 Toxic and highly toxic gas.**

**Reason:** Last cycle the portion of the International Fire Code dealing with Stationary Battery Storage Systems was heavily rewritten by the Energy Storage Work Group of the ICC Fire Code Action Committee to address changes in technology and application of battery storage systems. When that work was accepted by the IFC Committee and the voting membership, new Section R327 was added to the International Residential Code to provide for some core requirements when the systems are installed in one- and two family dwellings and townhouses. Simultaneous to that work, NFPA created a new NFPA 855 Energy Storage Systems Standard for a comprehensive document addressing the hazards of energy storage systems. The ICC FCAC Energy Storage Work Group continued to work on the topic in coordination with the work being done by the NFPA 855 committee to keep the technical details of the documents as coordinated as possible. As a result, the new requirements in the 2018 edition of the IFC have been heavily updated as to structure and the topics covered.

This proposal is an outgrowth of work done by the NFPA 855 Committee specific to one- and two-family dwellings and townhouses as well as new language added to the IFC for the 2021 edition addressing R-3 and R-4 Group Occupancies.

The concerns identified for one and two-family dwellings and townhouses dealt with:

- Where the ESS units could be located.
- Energy rating maximum of individual units.
- Aggregate energy ratings when more than one unit is installed.
- Linkage to the fire code when energy limitations are exceeded.
- Fire separation.
- Fire detection.
- ESS that may produce toxic or highly toxic gases during operation.
- Temporary use of electric vehicle as ESS for the dwelling.

The breakdown of the suggested changes are as follows:

New definition: The definition for Energy Storage Systems (ESS) from the IFC has been brought over to the IRC for consistency of terminology between the IFC and NFPA 855.

**R328 generally:** The term Energy Storage Systems has replaced the term Stationary Storage Battery Systems.

**R328.1 General:** Has been modified to identify the sections ESS shall comply with and to add a separate pointer for the section applicable to the temporary use of an electric vehicle as an ESS.

**R328.2 Equipment Listings:**

Has been modified to pull the exception for the systems with less than 1 kWh and provide it as the energy rating level trigger for cleaner application of the requirements. Exception 2 has been deleted since the use of electric vehicles is covered by the new section R327.5. In its place language, has been added providing for the installation of utility or commercial listed systems (not listed for residential use) to be outside the dwelling and to be in accordance with the IFC. Exception 3 is deleted since that topic is now covered by the initial language at the start of R328.2.

**R328.3 Installation:** Has been modified to replace the current terminology with ESS, and a restriction against installation in “living space” has been added to address concerns that there are other locations such as hallways that are not covered by the existing restriction for habitable spaces. That addition provides consistency with language added to NFPA 855.

**R328.3.1 Spacing:** Adds a separation requirement of 3 feet between ESS units unless large scale testing has documented that an event in one unit will not propagate to the next unit.

**R328.4 Location:** Adds a listing of specific installation locations consistent with the IFC R-3 and R-4 locations and NFPA 855.

**R328.5 Energy Ratings:** Provides a limitation on the maximum energy rating of an individual unit as well as an aggregate energy rating for specific installation locations. The size of an event is directly correlated to the amount of energy stored. It then provides that if increased energy above these limits is desired the installation shall be done in accordance with the IFC.

**R328.6 (Prior R327.4) Electrical Installation:** Has been modified to replace the current terminology with ESS.

**R328.7 Fire Detection:** The SFM proposes to repeal California amendments and replace with model code language and propose modifications based on further study of ESS.

The purpose of this proposal is to:

1. Divide the single paragraph into distinct parts for clarity, separating the charging language from the provisions to provide single-station or multi-station smoke alarms per the code.
2. Correct the section pointer to the revised location.
3. Clarify the intent is to provide both heat detection and alarm annunciation in the ESS location through the use of listed heat alarms. The term heat detector was replaced because the heat detectors do not include a local annunciator. A heat detector is only required to detect a heat event, and safety officials want an audible alarm.

### **R328.8 Protection from Impact**

The SFM proposes to adopt amend Section R328.8 based on further study of ESS systems with the collaboration with Sustainable Energy Action Committee (SEAC), ESS subgroup.

First, a minor editorial change is needed to replace stationary storage battery system with ESS. This should have been part of a global change last cycle.

Second, the last sentence referring to appliances has been removed. Section 304.3 of the California Mechanical Code is related to the elevation of ignition sources not vehicle

impact protection. The concern about raising ignition sources has historically been applied to fuel-fired appliances such as water heaters. These types of appliances are the only equipment able to be listed as flammable vapor ignition resistant. Even when a water heater has not been evaluated to ANSI Z21.10, only the actual ignition source needs to be elevated above 18", not the entire water heater. It's important to note that NFPA 70 does not consider the area below 18" a classified location in above-grade residential garages.

The third and most substantial change addresses the need for a clearly defined area in which a residential garage ESS installation would trigger the "Subject to Vehicle Damage" requirement found in R328.8.2. The existing language has led to widely varying interpretations and enforcement of impact protection.

**New language (R328.8.3)** has been added to define this area and set the expectation that the barriers are intended to deflect, resist, or visually deter an impact. This language mirrors the existing Section 312.3 in the IFC.

A minimum installation height of 48" within the likely impact area has been added to allow elevation of the ESS as a permissible mitigation option. An exception to this 48" minimum has been included to recognize that a reduced garage opening height would thereby limit vehicle height and allow a lower placement of equipment before additional protection is needed. This exception is inspired by existing IMC Commentary:

"The height of the vehicle entry opening of the garage or carport can be used as a guide in determining how tall of a vehicle could be driven into the garage or carport"

**A new Figure R328.8.1** has been added to illustrate the zones in which a typical residential garage ESS installation would trigger the need for impact protection. This figure is based on existing International Mechanical Code (IMC) commentary related to the installation of fuel-fired appliances that may pose a fire hazard when damaged. The IMC commentary Figure 304.6 (2) has been modified to reflect common ESS installation locations and takes a similar approach to mitigating the risk of impact.

**New language (R328.8.2)** has been added to address other than garage locations that may also have vehicle access such as residential driveways, and allows some flexibility to the AHJ and installer for larger, non-typical, or custom residential garages where the normal path of vehicle travel falls outside of the area defined in R328.8.1.

Finally, the prescriptive barrier and post designs per International Building Code (IBC) 1607.10 or International Fire Code (IFC) 312.2 may be appropriate for an energy storage system in a public access parking lot, garage, or another throughway. However, the forces assumed in these sections are not representative of the impact scenarios expected in a private residential garage reserved for permanent occupants.

For example, the calculation in IBC 1607.8.3 results in approx. 12K lb.-force applied to the anchorage, which causes readily available bollard to concrete connections to fail. This effectively eliminates the possibility of retrofitting a floor mounted bollard as a solution. Additionally, the posts described in IFC 312.2 cannot be reasonably installed in an existing residential garage, and although uncommon especially those with tensioned concrete slabs. This leaves AHJs and installers with no guidelines for a retrofit bollard designed to deter vehicle operators from carelessly striking the ESS units. While IFC Section 312.3 does allow an alternative approach, designers, installers, and code officials

will benefit from more explicit guidance within Section 1207.11 of the IFC. In new construction posts designed in accordance with Section 312 of the IMC may be feasible, however it is unlikely that a homebuilder would be able to anticipate the installation of an ESS in a specific location in a garage. The proposed options for impact protection were inspired by existing IMC commentary figure 304.6(2). These options have been modified to provide a consistent amount of force resistance across the available choices, something the IMC commentary does not do. These options more reasonably reflect the expected impact scenario described in the commentary text:

“The barriers shown in the commentary figure will not eliminate all possibility of a motor vehicle contacting the appliances but will offer a reasonable warning to a driver who is slowly navigating near the appliances”

And:

“Although this section does not specifically require the impact protection provided to stop any type of vehicle at any speed, the intent is for the impact protection to cause the driver to want to stop vehicle movement out of concern for damage that could be occurring. The choice of the type, structural capacity and the location of barriers is the responsibility of the designer.”

Between limiting the locations that ESS Batteries can be installed, and defining the requirements when impact protection is required, the result will be an improved level of protection from the risk of vehicle impacts, and damage mitigation if incidents do occur.

### **Technical Justification**

An engineering review of the impact protection guidance found across the I-Codes and ASCE 7-16 was completed. Specifically, Section 312 of both the prior and existing IFC, Section 4.5.3 of ASCE 7-16, and commentary language and figures associated with Section 304.6 of the IMC. It is important to recognize that the prescription of the IFC Section 312 for bollards in public driving areas does not lead to a bollard that will resist 12k lbs. as prior editions of the code suggested. In actual testing ((Harrison (SwRI), Evaluation of collision protection provided by vehicle impact bollards and propane cylinder exchange cabinets 2013)) the static resistance was between 900 lbs. at 36" (2.7k lbs. reaction) and 11k lbs. at 36" (33k lbs. reaction).

ASCE 7-16 specifies vehicle barrier systems must resist 6k lbs. load at between 18" and 27" (9k to 13.5k lbs. reaction) There are no commonly available retrofittable bollards that can do this in an average residential garage without adding thickness to the concrete. The IMC commentary figure when back calculated sets a bar of physical resistance which seems more appropriate to this risk and allows for solutions that are more practical to apply. For example, the bollard shown in IMC commentary Figure 304.6(2) will take an impact of about 625 lbs. load applied at 24", resulting in a 1250 lb. reaction force at the post to base plate connection. Likely outcomes based on this force include:

No damage at 0.5 mph impact from an average passenger car.

Bollard would deflect permanently a few inches at a 2-mph collision speed.

Anchor bolts would shear off or blowout at a 5-mph collision speed.

The limitation is mostly the concrete to base plate connection. The IRC requires a 2500-3000 psi mix for garages, and garages are often of stronger mix, especially in freeze prone areas. The average garage concrete slab will fall within these specifications: 2500 - 4000 psi concrete with 5" min thickness. Using 1/2" epoxy anchors this equates to roughly a 2mph impact that could be sustained without significant damage to the bollard. This is

aligned with a standard Uline 4.5" bollard with 1/8" wall thickness and an 8x8x3/8" base plate. More strength requires a larger base plate, as the limitation is the connection to the concrete.

The bolt down bollard specified in this proposal will take a 2000 lb. impact, 24" off the ground with no damage, given 3000 psi concrete. More than 6" of permanent deflection, would require a very significant force, and then only touching the face of the ESS. This seems a reasonable level of protection, and clearance distance.

This proposal was prepared by the Sustainable Energy Action Committee (SEAC), a forum for all stakeholders (including, but not limited to, AHJs, designers, engineers, contractors, first responders, manufacturers, suppliers, utilities, and testing labs) to collaboratively identify and find solutions for issues that affect the installation and use of solar energy systems, energy storage systems, demand response, and energy efficiency. The purpose is to facilitate the deployment and use of affordable, clean and renewable energy in a safe, efficient, and sustainable manner. All recommendations from SEAC are approved by diverse stakeholders through a consensus process.

#### **Bibliography:**

Harrison, O. (2013). Evaluation of Collision Protection provided by vehicle impact bollards and propane cylinder exchange cabinets (Rep. No. 18.19083.01.107.FR1). Southwest Research Institute.

**R328.9 Ventilation** requirements are based on R327.5 of the 2018 IRC. ESS utilizing battery technologies such as lithium-ion batteries do not require mechanical ventilation since they do not produce flammable gases during charging.

**R328.10 Electric Vehicle use:** Provides for the temporary use of an electric vehicle as an ESS to power the dwelling provide it is done in compliance with the NEC and the manufacturer's instructions. The requirement for the manufacturer's instruction compliance ensures that only electric vehicles designed and manufactured for use as an ESS are utilized as compared to someone adding non-approved electrical connections to an existing electric vehicle not designed for this purpose. Temporary is further defined as 30 days with new Section R328.5.1. These changes will provide for correlation with the new language added to the IFC as well as enhancements made when the language was added to NFPA 855. This correlation provides for consistency or requirements across codes and standards.

**R328.11 Documentation and labeling:** Reason: This proposal adds labeling requirements which clarifies what is needed to be done in terms of manufacturer's installation instructions and providing equipment information to the buyer.

**R328.12 Toxic and highly toxic gas:** Provides that an ESS that has the potential to release toxic or highly toxic gases during normal use shall be installed outdoors.

**Cost Impact:** The code change proposal will not increase or decrease the cost of construction This proposed change does not impact the cost of construction of one- or two-

family dwellings and townhouses. ESS are specialty systems typically installed in an existing dwelling by the current owner. In the rare case that a new custom homeowner desires installation of ESS as part of the construction of the custom home, these requirements impact the cost of the ESS portion of the installation not the home itself. The separation requirements were intentionally matched to the existing private garage separation requirements for correlation with construction of the home. These requirements will increase the cost of installation of ESS.

**CAC Recommendation:**

Approve

**Agency Response:**

Accept

**Item 3-9**

**Chapter 3, Building Planning, Section R336 Large Family Day Care homes**

The SFM proposes to update the Health and Safety Code Section 1597.46 for Large Family Day Care Homes.

**CAC Recommendation:**

Approve

**Agency Response:**

Accept

**SECTION R336  
LARGE FAMILY DAY-CARE HOMES**

***R336.1 Large family day-care homes.***

***R336.2 Health and Safety Code Section 1597.46***

***R336.6 Compliance.***

The SFM proposes to amend Section R336.2 to comply with changes made to Health and Safety Code Law by Senate Bill 234, Chaptered with the Secretary of State on Sep. 5, 2019.

Senate Bill No. 234  
CHAPTER 244

An act to amend Sections 1596.72, 1596.73, 1596.78, 1597.30, 1597.45, and 1597.54 of, to add Sections 1597.41, 1597.42, and 1597.455 to, to repeal Section 1597.47 of, and to repeal and add Sections 1597.40, 1597.46, and 1597.543 of, the Health and Safety Code, relating to family daycare homes.

[ Approved by Governor, September 05, 2019. Filed with Secretary of State September 05, 2019.]

## LEGISLATIVE COUNSEL'S DIGEST

SB 234, Skinner. Family daycare homes.

- 1) Revises and recasts legislative findings and declarations regarding the shortage of regulated childcare, the importance of regulated childcare, and the need to promote the development and expansion of regulated childcare.
- 2) Expends the purpose of the CDCFA to include promoting the development and expansion of regulated childcare.
- 3) Modifies the definitions of a “large family daycare home” and “small family daycare home” to include that the care, protection and supervision of children takes place in a facility, as specified.
- 4) Provides that a small family daycare home or large family daycare home includes a detached single-family dwelling, a townhouse, a dwelling unit within a dwelling, or a dwelling unit within a covered multifamily dwelling in which the underlying zoning allows for residential uses. Further provides that a small or large family daycare home is where the daycare provider resides and includes a dwelling or a dwelling unit that is rented, leased, or owned.
- 5) Revises and recasts provisions of law regarding licensed large and small family daycare homes in order to:
  - a. Require local governments to treat licensed large family daycare homes as a residential use of property for the purposes of all local ordinances, giving large family daycare homes the same status as small family daycare homes with regard to local ordinances.
  - b. Update housing protections for licensed family daycare providers to ensure they will not be prohibited from living in a home solely based on the fact that they are operating a family daycare home.
  - c. Clarify that licensed family daycare homes are permitted to operate in apartments and other types of multifamily units.
  - d. Clarify that family daycare providers may be subject to remedies and procedures available to them under the Fair Employment and Housing Act (FEHA) based on potential violation of the CDCFA.
  - e. Require State Fire Marshal to update the building and fire standards relating to life and fire safety for large and small family daycare homes, as provided.



- f. Provide that the use of a home as a small or large family daycare home shall be considered a residential use of property and a use by right for the purposes of all local ordinances, including, but not limited to, zoning ordinances.
- 6) Requires CDSS to, during the license application process for a small or large family daycare home, notify the applicant that defined remedies and procedures relating to fair housing are available to family daycare home providers, family daycare home provider applicants, and individuals who claim that any specified protections have been denied.
- 7) Provides that this bill does not alter the existing rights of landlords and tenants with respect to addressing and resolving issues related to noise, lease violations, nuisances, or conflicts between landlords and tenants.
- 8) Makes technical and conforming changes.

Comments According to the author, childcare provided in licensed family daycare homes is “vitally important for families and our communities, but childcare has increasingly become too expensive and difficult for parents to find.” The author further states that cities and counties have “put up too many barriers” that impeded the creation and expansion of family daycare homes. Additionally, according to the author, many family daycare providers have been “forced to shut down due to property owners unlawfully prohibiting family childcare.” “This legislation helps struggling families who are too often asked to sacrifice their child’s well-being and get the childcare they need to support their families. This legislation will especially help women, including family childcare providers and many of whom are women of color,” per the author.

## **Family Daycare Homes**

Family daycare homes provide a more affordable close to home option for parents seeking childcare. Family daycare homes are licensed in two categories: large family daycare homes, which may care for up to 14 children and small family daycare homes, which may care for up to eight children. There are other differences between the two license categories such as staff-to-child ratio, staff training requirements, and conditions on the physical environment of the home. Licensed family daycare homes play an important role in the childcare market. Family daycare providers offer flexible hours for parents who have non-traditional work schedules in home environments that are frequently close to where families live. Compared to childcare centers, family daycare homes are more likely to care for infants, are more affordable for families, and meet families’ linguistic and cultural needs. This bill proposes to make it easier for childcare providers to operate licensed large family daycare homes by shoring up housing protections and removing barriers that might keep existing small family daycare providers from expanding into a large provider or the opening of new large family daycare homes.

## **Local Zoning Laws**

This bill requires local governments to treat licensed large family daycare homes as a residential use of property for the purposes of all local ordinances. This gives large family daycare homes the same status as small family daycare homes with regard to local ordinances. Many cities and counties have imposed zoning requirements for large family

daycare homes. According to the sponsors, the cost of obtaining zoning permits in some cities and counties can range between \$3,000 and \$10,000, which can be cost prohibitive for a family childcare provider. To address this problem, this bill requires local governments to treat large family based childcare operations just as they do small ones. Thus, all family-based childcare operations would be considered residential use, could not be considered a change of use for building or fire code purposes, and could not be made subject to a business license, tax, or fee.

## **Housing Protections**

This bill updates housing protections for licensed family daycare providers which is intended to ensure such providers will not be prohibited from living in a home solely based on the fact that they are providing childcare. According to the sponsors, existing law gives some property owners the impression that, absent a written agreement with a licensed childcare provider, they can refuse to rent or sell a home to childcare providers. Per the sponsors, family daycare providers are routinely turned down from living in or purchasing all types of homes because they intend to provide home based childcare.

This bill clarifies that childcare providers can have remedies and procedures available to them under the FEHA if their protections are violated under the CDCFA. The CDCFA, which includes all the land-use and housing protections specifically for family daycare homes, lacks language telling providers they can hold local governments and others accountable for violating the law. Consequently, many family daycare providers have nowhere to turn if their protections are violated, per the sponsors. To address this limited awareness, this bill requires CDSS to notify all family day care home license applicants of the remedies and procedures available to them under FEHA. This bill also clarifies that licensed family daycare homes are allowed to operate in apartments and other types of multifamily units. According to the sponsors, reference to the terms “single-family dwelling” and “single-family residence” in existing laws have caused some local governments and landowners to prohibit family daycare providers from operating in apartments and other types of residential multi-family dwellings. This is despite guidance from CDSS and the State Fire Marshal indicating that such prohibition is not allowed.

FISCAL EFFECT: Appropriation: No Fiscal Com.: Yes Local: No

According to the Assembly Appropriations Committee:

- 1) CDSS indicates any costs will be minor and absorbable.
- 2) The State Fire Marshal anticipates negligible costs.

SUPPORT: (Verified 8/20/19)

California Child Care Resource and Referral Network (co-source)

Child Care Law Center (co-source)

United Domestic Workers of America-AFSCME Local 3930/AFL-CIO (co-source)

Alexander Child Care and Preschool

Bananas, Inc.

California Association for the Education of Young Children

California Women's Law Center  
Coco kids Community Action Partnership of San Luis Obispo County, Inc.  
Community Child Care Council of Sonoma County  
Equal Rights Advocates  
Family Child Care Association of San Francisco  
First 5 Sonoma County  
GRACE Morning Song School  
National Council of Jewish Women  
California Parent Voices  
California Positive Discipline Community Resources Public Counsel San Diego County  
Family Child Care Association  
The Future Supporting Family Child Care Western Center on Law & Poverty, Inc.  
Wonder school Three Individuals

OPPOSITION: (Verified 8/20/19) None received

ASSEMBLY FLOOR: 77-0, 8/19/19 AYES: Aguiar-Curry, Arambula, Bauer-Kahan, Berman, Bigelow, Bloom, Boerner Horvath, Bonta, Brough, Burke, Calderon, Carrillo, Cervantes, Chau, Chen, Chiu, Choi, Chu, Cooley, Cooper, Cunningham, Daly, Diep, Eggman, Flora, Fong, Frazier, Friedman, Gabriel, Gallagher, Cristina Garcia, Eduardo Garcia, Gipson, Gloria, Gonzalez, Gray, Grayson, Holden, Irwin, Jones-Sawyer, Kalra, Kamlager-Dove, Kiley, Lackey, Levine, Limón, Low, Mathis, Mayes, Medina, Melendez, Mullin, Muratsuchi, Nazarian, Obernolte, O'Donnell, Patterson, Petrie-Norris, Quirk, Quirk-Silva, Ramos, Reyes, Luz Rivas, Robert Rivas, Rodriguez, Blanca Rubio, Salas, Santiago, Smith, Mark Stone, Ting, Voepel, Waldron, Weber, Wicks, Wood, Rendon

**CAC Recommendation:**

Approve

**Agency Response:**

Accept

**Item 3-10**

**Chapter 3, Building Planning, Section R337 Materials and Construction methods for Exterior Wildfire Exposure**

The SFM proposes to adopt amend Section R337 based on recommendations for the SFM WUI workgroup, which are comprised of various stakeholders.

**SECTION R337  
MATERIALS AND CONSTRUCTION  
METHODS FOR EXTERIOR WILDFIRE EXPOSURE**

**SECTION R337.1  
SCOPE, PURPOSE AND APPLICATION**

**R337.1.1 Scope.**

**Reason:** Correction of the term chapter to section. The addition of the acronym is consistent with terminology used to describe the fire are in a wildland-urban interface. The acronym “WUI” is more commonplace than the spelled out meaning of the acronym. The proposal is to stay current with terminology

**R337.1.2 Purpose.**

**Reason:** Correction of the term chapter to section.

**R337.1.3 Application.**

There are no changes to regulatory provisions; rather, only non-regulatory changes are made, to clarify standing regulations.

The hanging sentence (previously located after the list of exceptions) was moved up to the charging paragraph and revised to clarify what buildings are “applicable”. It is critical that this term, while defined in Section R337.2, be clearly stated in the “Application” section. The sentence already states that they are “all new buildings with residential, commercial, educational, institutional, or similar occupancy type use”.

Since “applicable building” is only used in Section R337.1 and R337.10, placing its definition within R337.2 can confidently be done without interfering with the meaning of the rest of the chapter.

1. Since Exception #1 of R337.1.3 is actually not necessary because the code user still needs to go to Section R337.10 to see if the enforcing agency requires it, Exception #1 can be removed.
2. Exceptions 2 (now #1) and 3 (now #2) are rewritten in language that is similar for consistency.
3. Exception 2 (now #1) refers to Group U accessory buildings and the rewording is just simpler language.
4. Exception 3 (now #2) refers to Group U agricultural buildings and the reference to the appendix adds nothing (as the appendix is not enforceable; see also below).
5. Existing Exception 4 (now #5) is revised with the applicable date and retained and moved to the end as Exception 5.
6. Existing Exception 5 is retained and becomes Exception 3.
7. New Exception 4 is consistent with Section R337.10.2 and relocates section R337.1.3.2 to where it belongs, as an exception to R337.1.3. This clarifies that accessory structures do not have to comply with any other section R337 than section R337.10.

8. A new clause is added to the end of the charging paragraph to clarify that accessory buildings and structures are within the scope of Section R337 but to direct the user exclusively to Section R337.10.

***R337.1.5 Vegetation management compliance.***

**Reason:** Adding the California Fire Code Section 4907 for defensible space compliance.

***R337.1.6 Application to accessory buildings and miscellaneous structures.***

This section is being repealed. A new clause is added to the end of the charging paragraph to clarify that accessory buildings and structures are within the scope of Section R337 but to direct the user exclusively to Section R337.10.

**SECTION R337.2  
DEFINITIONS**

**Reason:** Correction of the term chapter to section.

***APPLICABLE BUILDING.***

**Reason:** The definition was added for comprehensibility for what an applicable building regarding the regulations of Chapter 7A. It is critical that this term, while defined in Section 702A, be clearly stated in the “Application” section. The sentence already states that they are “all new buildings with residential, commercial, educational, institutional, or similar occupancy type use”.

Since “applicable building” is only used in Section 701A and 710A, placing its definition within 702A can confidently be done without interfering with the meaning of the rest of the chapter.

***CDF DIRECTOR***

**Reason:** Editorial. Over the years the State Agency has updated the identity from CDF to Cal Fire. The change is correcting an outdated term.

***EXTERIOR WALL ASSEMBLY.***

**Reason:** The definitions of exterior wall covering, and exterior wall assembly are being added because they are needed to distinguish between different exterior wall products in Section 707 of the California Building Code.

***EXTERIOR WALL COVERING.***

**Reason:** The definitions of exterior wall covering, and exterior wall assembly are being added because they are needed to distinguish between different exterior wall products in Section 707 of the California Building Code.

### ***FIRE PROTECTION PLAN.***

**Reason:** The proposal of a standard fire protection plan section 4903 warranted an updated definition. The second part of the definition is not needed any longer, as the new proposed Section 4903 will cover the requirements and regulations. The group expressed that having the regulation requirements in the definition was not appropriate

### ***FIRE HAZARD SEVERITY ZONES.***

**Reason:** Editorial update to the correct California Fire Code Chapter.

### ***FIRE-RESISTANT VEGETATION.***

**Reason:** The term fire resistant vegetation which is referenced in Chapter 49 was not previously defined. Chapter 49 has been significantly revised; the definition will add clarification to the term used throughout the revision.

Realizing that vegetation can never be completely fire resistant, the definition was composed to describe the beneficial characteristics that determine when vegetation is less likely to be a significant contributing factor in a wildfire. And while all burning vegetation will contribute some heat to a fire, the amount of heat is variable. For instance, dry grasses and other light fuels will initially contribute heat and proceed to burn out quickly compared to thick branches of a tree which take more energy to ignite but will contribute significantly more heat once ignited than a light fuel.

The definition also pays homage to the requirements in Public Resources Code, Division 4, Part 2, Chapter 3, Section 4291 which stipulates the Department of Forestry and Fire Protection to provide guidance on fuel management ensuring “regionally appropriate vegetation suggestions that preserve and restore native species that are fire resistant and/or drought tolerant”. It is essential that in the widely variable climatic regions within California, that homeowners have options to select regionally appropriate fire-resistant vegetation. And to ensure when not native to the region they do not create a higher risk of vegetative flammability than native vegetation. It is also not the intent to imply that native vegetation must be removed, but to allow a comparison of relative flammability between proposed non-native, new vegetation, and existing native vegetation.

**Cost Impact:** The code change proposal will not increase or decrease the cost of construction. This adds clarification to a term referenced in the code.

### ***IGNITION-RESISTANT MATERIAL.***

**Reason:** The definition of ignition resistant material is being revised because SFM Standard 12-7A-5 has been rendered obsolete and is being deleted. In section 703 the standard will no longer appear, but ignition resistant materials will be accepted based on testing to an extended ASTM E84 test (to 30 minutes) or to ASTM E2768. That was the original intent of the SFM.

### ***LOCAL RESPONSIBILITY AREA (LRA).***

**Reason:** Editorial update, no regulation change. Provides consistency with the language in the regulations.

**STATE RESPONSIBILITY AREA (SRA).**

**Reason:** Editorial addition of the acronym to be consistent with terminology used in the regulations.

**WILDFIRE.**

**Reason:** Editorial.

**WILDFIRE EXPOSURE.**

**Reason:** Editorial.

**WILDLAND-URBAN INTERFACE (WUI).**

**Reason:** The addition of the acronym is consistent with terminology used to describe the fire are in a wildland-urban interface. The acronym “WUI” is more commonplace than the spelled out meaning of the acronym. The proposal is to stay current with terminology.

**SECTION R337.3  
STANDARDS OF QUALITY**

**R337.3.1 General.**

**Reason:** Correction of the term chapter to section

**R337.3.3 Approved agency.**

**Reason:** Editorial.

**R337.3.4 Labeling.**

**Reason:** Correction of the term chapter to section

**R337.3.5.2 Weathering.**

**Reason:** Correction of the term chapter to section.

**R337.3.7 Standards of quality.**

**Reason:** This proposal does not change any requirement and does not delete or replace four of the five CA SFM standards that have been replaced by ASTM standards because of the concern about materials and products approved via testing to them. CA SFM 12-7-A2 does not have an ASTM replacement and is proposed to be retained. CA SFM Standard 12-7A-5, Ignition-resistant Material is being replaced because it is no longer correct. It refers to a generic building material surface burning flame spread test standard consisting of an extended “30 minute” ASTM E84 or UL 723 test method as is used for fire-retardant treated wood. It is equivalent to ASTM E2768, which is the 30-minute version of ASTM E84 with the correct pass/fail criteria, consistent with the building code.

A reference to ASTM E119 and UL 263 is being proposed to be added into 707, everywhere there is a requirement to test for a fire resistance rating, and they are being added here. If no information exists on the test for fire resistance rating, ASTM E84 or UL 263 (which are the same test) is the logical test to use, just like elsewhere in the California Code.

The following SFM standards with ASTM equivalents are being retained:

1. SFM Standard 12-7A-1, Exterior Wall Siding and Sheathing. A fire resistance test standard consisting of a 150-kW intensity direct flame exposure for a 10-minute duration. It is equivalent to ASTM E2707.
2. SFM Standard 12-7A-3, Horizontal Projection Underside A fire resistance test standard consisting of a 300-kW intensity direct flame exposure for a 10-minute duration. It is equivalent to ASTM E2957.
3. SFM Standard 12-7A-4, Decking. A two-part test consisting of a heat release rate (Part A) deck assembly combustion test with an under-deck exposure of 80 kW intensity direct flame for a 3-minute duration, and a (Part B) sustained deck assembly combustion test consisting of a deck upper surface burning ember exposure with a 12-mph wind for 40 minutes using a 2.2lb (1kg) burning "Class A" size 12" x 12" x 2.25" (300 mm x 300 mm x 57 mm) roof test brand. It is equivalent to the combination of ASTM E2632 and ASTM E2726. Wherever it is required the code also requires both the ASTM tests to be conducted.
4. SFM Standard 12-7A-4A, Decking Alternate Method A. A heat release rate deck assembly combustion test with an under-deck exposure of 80 kW intensity direct flame for a 3-minute duration. It is equivalent to ASTM E2632.

## **SECTION R337.4 IGNITION-RESISTANT CONSTRUCTION**

### ***R337.4.1 General.***

**Reason:** Correction of the term chapter to section.

### ***R337.4.2 Ignition-resistant materials.***

### ***R337.4.3 Conditions of acceptance for ignition-resistant materials***

#### ***R337.4.3.1 Fire Testing of Wood Structural Panels***

#### ***R337.4.4 Alternative methods for determining ignition-resistant material.***

**Reason:** This eliminates confusion in R337.4.2 by not going to the CA standard which is not necessary when the details are in this section. Moreover, this is consistent with what the IBC did for the 2021 IBC but will not be brought in directly as it is in 7A and not in chapter 23 of the CBC. The new proposed R337.4.3.1 is consistent with the change in



section 2303.2 of the 2021 IBC, which will read as follows, on approval of S166 AM and of S167 AM PC2:

*2021 IBC Section 2303.2 Fire-retardant-treated wood. Fire-retardant-treated wood is any wood product that, when impregnated with chemicals by a pressure process or other means during manufacture, shall have, when tested in accordance with ASTM E84 or UL 723, a listed flame spread index of 25 or less. Additionally, the ASTM E84 or UL 723 test shall be continued for an additional 20-minute period and the flame front shall not progress more than 10 / feet (3200 mm) beyond the centerline of the burners at any time during the test.*

*2021 IBC Section 2303.2.1 Pressure process. For wood products impregnated with chemicals by a pressure process, the process shall be performed in closed vessels under pressures not less than 50 pounds per square inch gauge (psig) (345 kPa).*

*2021 IBC Section 2303.2.2 Other means during manufacture. For wood products impregnated with chemicals by other means during manufacture, the treatment shall be an integral part of the manufacturing process of the wood product. The treatment shall provide permanent protection to all surfaces*

*of the wood product. The use of paints, coating, stains, or other surface treatments is not an approved method of protection as required in this section.*

*2021 IBC Section 2303.2.3 Fire Testing of Wood Structural Panels. Wood structural panels shall be tested with a ripped or cut longitudinal gap of 1/8" (3.2 mm).*

**Background:**

All testing laboratories who are asked to conduct the “extended ASTM E84 test” provide sentences equivalent to the proposed new section R337.4.3.1 in their report. A typical statement is: “The flame front shall not progress more than 10.5 ft. (3.2 m) beyond the centerline of the burners at any time during the 30-minute test period. This is considered evidence of no significant progressive combustion in this test method.” ASTM E84 is a 10-minute test period and is silent on the requirements for 30-minute testing. The “added” criterion of “no evidence of significant progressive combustion” can be used as a “barrier” to the introduction of new materials.

This proposal simply explains that the requirement for “no evidence of significant progressive combustion” is duplicative because it is undefined and the only evidence as to how to measure it is contained in ASTM E2768. Fire testing labs have used as the corresponding criterion that the flame front in the ASTM E84 test does not progress more than 10.5 ft. beyond the centerline of the burners in either the 10-minute test or the continuation of the test for an additional 20 minutes (for a total of 30 minutes).

The “extended ASTM E84 test” is used in the IBC, the IRC, the IFC, the IMC and the IWUIC. It is also used in NFPA codes (NFPA 101, Life Safety Code and NFPA 5000, Building Code) and in NFPA 703 (“Standard for Fire Retardant–Treated Wood and Fire-Retardant Coatings for Building Materials”). It is also used in AC 66 (Acceptance Criteria for Fire-Retardant Treated Wood). However, neither in any of the ICC codes nor in any NFPA code or standard nor in AC 66 nor in ASTM E84 is there any description or guidance for what constitutes “no evidence of significant progressive combustion”. However, there is one standard that contains the criterion for the assessment of “no

evidence of significant progressive combustion”. That standard is ASTM E2768 “Standard Test Method for Extended Duration Surface Burning Characteristics of Building Materials (30 min Tunnel Test)”.

It has been stated that AC 66 (Acceptance Criteria for Fire-Retardant Treated Wood) describes the way in which “no evidence of significant progressive combustion” is assessed. The June 2012 edition of AC 66 states as follows, in sections 3.1.4 and 3.2.4, which is the same language used in the codes, namely:

“3.1.4 Surface Burning Characteristics The surface burning characteristics (flame spread and smoke-developed index) shall be determined in accordance with ASTM E 84 or UL 723. The flame spread index shall be 25 or less and there shall be no evidence of significant progressive combustion when the test is continued for an additional 20-minute period. Additionally, the flame front shall not progress more than 10½ feet (3200 mm) beyond the centerline of the burners at any time during the test. The smoke-developed index shall be 450 or less. For recognition of exterior use, tests shall be conducted both before and after durability tests conducted in accordance with Section 3.1.3. The FRT lumber shall meet the requirements of IBC Section 2303.2, IRC Section R802.1.3, UBC Section 207, SBC Section 202, or BNBC 2310.2, as applicable.”

“3.2.4 Surface Burning Characteristics The surface burning characteristics (flame spread and smoke-developed index) shall be determined in accordance with ASTM E 84 or UL 723. The flame spread index shall be 25 or less and there shall be no evidence of significant progressive combustion when the test is continued for an additional 20-minute period. Additionally, the flame front shall not progress more than 10½ feet (3200 mm) beyond the centerline of the burners at any time during the test. The smoke-developed index shall be 450 or less. For recognition of exterior use, tests shall be conducted both before and after durability tests conducted in accordance with Section 3.2.3. The FRT plywood shall meet the requirements of IBC Section 2303.2 of the IBC or Section R802.1.3 of the IRC, UBC Section 207, SBC Section 202, or BNBC Section 2310.2, as applicable.”

No means has been proposed in any document other than in ASTM E2768 as to what constitutes “no evidence of significant progressive combustion”. Note that ASTM E2768 applies to any material or product and not just to wood. The scope of ASTM E2768 includes the following statement: “The purpose of this fire-test-response standard is to evaluate the ability of a product to limit the surface spread of flame when evaluated for 30 min. This fire-test-response standard uses the apparatus and procedure of Test Method E84 with the total test period extended to 30 min.”

The conditions of classification of ASTM E2768 include the following criteria and are identical to the conditions of acceptance included based on the “extended ASTM E84 or UL 723”:

1. The flame spread index shall be 25 or less as determined for the initial 10 min test period,
2. The flame front shall not progress more than 10.5 ft. (3.2 m) beyond the centerline of the burners at any time during the 30-min test period. This is considered evidence of no significant progressive combustion in this test method.

## SECTION R337.6 VENTS

### **R337.6.1 General.**

### **R337.6.2 Requirements.**

#### **R337.6.2.1 Off ridge and ridge vents**

**Reason:** 706A.1: This is a unification of redundant wording from the following sections: 706A.2 706A.2.1 & 706A.3. This section is intended to qualify the general intent of coverage of the requirements for all applications to follow. It is all now condensed in a single location.

706A.2 Having qualified the intent in the “general” section 706A.1, this section identifies the actual requirements to follow. The applications are not needed as all applications are shown in 706A.1 Previously, it just restated some applications from the “general” section. This was redundant.

Deletion of exceptions 1 and 2: These exceptions are remaining in the code from when there was no listing of vents. With the listing of vents, the exceptions are not needed. Exception 1 includes a term “special eave and cornice vents” that lacks any definition and is not needed because the AHJ should simply accept listed vents. This exception also does not qualify the ability of the vents to “resist the intrusion of flame and burning embers”.

The second exception is based on the concept that sprinklers complying with NFPA 13, plus two other requirements, will ensure safe vents. That is not valid. If a property is sprinklered to NFPA 13 it may very well not sprinkler the attic area. Moreover, there is no assurance that this will prevent the intrusion of flames or burning embers.

#### **R337.6.2.1 Off ridge and ridge vents.**

The SFM proposes to delete language that has been incorporated into the Section 706A.2 requirements. This proposal cleans up the intent of vents in the wildland urban interface area, that any opening where flame and embers may enter the home shall be protected.

The new language allows for a compliance path for off ridge and ridge vents to be used in the wildland urban interface, with protections against ember intrusion. The use of non-wildfire resistant off ridge and ridge vent should be avoided where possible. The current scope of standard ASTM E2886 is the following which excludes off ridge and ridge vents:

- 1.1 This fire-test-response standard prescribes two individual methods to evaluate the ability of a gable end, crawl space (foundation) and other vents that mount on a vertical wall or in the under-eave area to resist the entry through the vent opening of embers and flame. The ability of such vents to completely exclude entry of flames or embers is not evaluated. Roof ridge and off-ridge (field) vents are excluded from this standard. Acceptance criteria are not provided in this standard.

Vents that are tested to the ASTM E2886 standard provide better protection than screens. Of the ridge and off ridge outlet vent options, the following performed well:

- Miami-Dade wind-driven-rain-compliant ridge vent
- Wildfire-resistant off-ridge vent
- Turbine (off-ridge) vent

Wind-blown vegetative debris must be removed from the inlet of all ridge and off-ridge vents. Plastic components are not allowed. All components shall be noncombustible and corrosion resistant.

## **SECTION R337.7 EXTERIOR COVERING**

**R337.7.1 Scope.** *(text remains unchanged)*

**R337.7.2 General.**

**Reason:** Section R337.7.3 contains requirements for both the “exterior wall covering” and the “exterior wall assembly” but they are the same. In fact, exterior wall coverings and exterior wall assemblies are different, and it is important to separate them, and this is being done by splitting R337.7.3 into R337.7.3 (for coverings) and R337.7.4 (for assemblies). The changes to R337.7.2 are simply editorial but it is important also to add a definition of “exterior wall assembly” and of “exterior wall covering”.

For all sections below it is being made clear that combinations of materials or assemblies are permitted by stating “one or more” instead of just “one” of the materials or assemblies.

**R337.7.3 Exterior wall coverings.**

**R337.7.3.1 Extent of exterior wall covering.**

**Reason:** The key changes are that exterior wall covering, and exterior wall assembly are separated into two sections, with R337.7.3 dealing with exterior wall coverings. combined. The sentence in R337.7.3.2, which deals with all exterior wall coverings is being moved to the charging paragraph, without a change in requirements.

Item 2 is being revised to clarify what section contains the requirements for ignition resistant materials. It also clarifies that the ignition resistant material needs to be labeled for exterior use, since not all ignition resistant materials are required to meet the weathering test.

Item 3 is being added because, although fire retardant treated wood (FRTW) is an ignition resistant material, it should be mentioned specifically since the code has requirements for it. Also, the change clarifies that the FRTW must be labeled for exterior use, as above. The fire performance of ignition resistant materials is of the same order as that of FRTW. Both need to meet the extended ASTM E84, with the same criteria. This clarification is being made in all sections.

Items 2 and 3 could be switched but both are exterior wall coverings and not exterior wall assemblies, which have all been moved into a new R337.7.4.

**R337.7.4 Exterior wall assemblies.**

**R337.7.4.1 Conditions of acceptance when tested in accordance with ASTM E2707.**

**Reason:** (new) This contains all the assemblies from the earlier R337.7.3.

Items 1 through 4 are identical to items 3 through 6 of the original section.

Item 5 is being added as a generic version of the two exceptions, both of which address a one-hour fire resistance rated assembly, suitable for exterior fire exposure. In the revised language, it is being made clear that the fire resistance rating is assessed from the exterior

side and is assessed by testing to ASTM E119 or UL 263 (something inherent but missing in the existing text, done in all sections).

The exceptions in the existing text are both examples of what is expected to be a 1-hour fire resistance rating. Therefore, the exceptions should be deleted from their present location as they really represent a new proposed option, which is simply a pair of examples of a 1-hour fire resistance rating. Thus, the exceptions in the original section are being deleted and replaced by items 6 and 7. They are consistent also with what is in the IWUIC.

This proposed revision does not delete the wall assemblies tested to SFM Standard 12-7A-1 or to ASTM E2707 (with the pass/fail criteria in R337.7.4.1), which are identical to each other and are of much lower fire performance than any of the others.

An exception is added to R337.7.4 to indicate that the exterior wall coverings in 707A.3 do not require compliance with R337.7.4, meaning that any exterior wall assembly with one of those three types of exterior wall covering is acceptable.

The IBC contains definitions of “exterior wall envelope” and of “exterior wall covering” but it uses the terms “exterior wall assembly” and “exterior wall envelope” with the same meaning. Therefore, since the terms “exterior wall assembly” and “exterior wall covering” are being used in Section R337 they should be defined here.

Section R337 has a definition for “exterior covering”, as shown below, and that is retained.

**EXTERIOR COVERING.** The exposed siding or cladding material applied to the exterior side of an exterior wall, roof eave soffit, floor projection or exposed underfloor framing.

Note that, in a separate proposal, the requirements for ignition resistant materials (in 704A.2) are being made consistent with the change accepted by the IBC for the 2021 edition. Note also that the requirements for noncombustible materials (in R337.4.4) are, in a separate proposal, being made consistent also with the IBC 2021. Neither of these changes affect section R337.7

***R337.7.5 (formerly R337.7.4) Open roof eaves.***

**Reason:** No change in requirements - This makes the section on open roof eaves fully consistent with the section on exterior walls. Now R337.7.5

***R337.7.6 (formerly R337.7.5) Enclosed roof eaves and roof eave soffits.***

**Reason:** No change in requirements - This makes the section on enclosed roof eaves fully consistent with the sections on exterior walls and open roof eaves. Now R337.7.6.

***R337.7.7 (formerly R337.7.6) Exterior porch ceilings.***

**Reason:** No change in requirements - This makes the section on exterior porch ceilings fully consistent with the sections on exterior walls, open roof eaves, and enclosed roof eaves. Note that items 5 and 6 are identical, relating either to the ASTM or to the CA fire test. Now R337.7.7.

***R337.7.8 (formerly R337.7.7) Floor projections.***

**Reason:** No change in requirements - This makes the section on floor projections fully consistent with the sections on exterior walls, open roof eaves, enclosed roof eaves and exterior porch ceilings. Note that items 5 and 6 are identical, relating either to the ASTM or to the CA fire test. Now R337.7.8.

***R337.7.9 (formerly R337.7.8) Underfloor protection.***

**Reason:** No change in requirements - This makes the section on underfloor protection fully consistent with all the earlier sections. Note that the second sentence in the overall exception needs a verb. Now R337.7.9

***R337.7.10 (formerly R337.7.9) Underside of appendages.***

**Reason:** No change in requirements - This makes the section on underside of appendages fully consistent with all the earlier sections. Note that items 5 and 6 are identical, relating either to the ASTM or to the CA fire test. Note that the second sentence in the overall exception needs a verb. Now R337.7.10.

***R707A.11 (formerly R337.7.10) Conditions of acceptance when tested in accordance with ASTM E2957.***

**Reason:** No change in requirements - Now R337.7.11.

For all cases the requirements allow the use of “one or more” instead of just one of the options.

**SECTION R337.9  
DECKING**

***R337.9.3 Decking Surfaces.***

***R337.9.4 Requirements for type of material in Section R337.9.3, item (1).***

**Reason:** The changes are simple clarification and do not change requirements.

R337.9.3 item 3: ignition resistant material is defined now in 704A.3, and it explains the test methods to be used. Repeating them here simply leads to potential confusion.

R337.9.3 item 3: SFM 12 7A-5 is being deleted and the requirements are in 704A.3.

R337.9.4: this is a typo that was never corrected. These requirements are not for an ignition resistant material.

**SECTION R337.10  
ACCESSORY BUILDINGS AND MISCELLANEOUS STRUCTURES**

***R337.10.1 General.***

***R337.10.2 Applicability.***

***R337.10.3 Where required.***

***R337.10.3.1 (formerly R337.10.3.2) Structures and accessory buildings within 3 feet.***

**R337.10.3.2 Accessory buildings greater than 120 square feet, located 3 or more feet but less than 50 feet.**

**R337.10.3.3 Accessory buildings 120 square feet or less, located 3 or more feet but less than 50 feet.**

**R337.10.3.4 (formerly R337.10.3.3) Miscellaneous structures located 3 or more feet but less than 50 feet**

**Rationale for changes to CBC Section R337.10 ACCESSORY STRUCTURES:**

Section R337.10 was reorganized, and the language clarified, for better flow and consistent categories of accessory structures and buildings. The subsections of R337.10.3 were organized by uniform categories of distances from applicable buildings.

A hole/gap in coverage was identified for accessory buildings located at a distance of between 3’ and 30’ from an applicable building, and the OSFM moves to fill that oversight by mandating enforcement upon those greater than 120 square feet and by leaving it to the discretion local AHJ for those less than 120 square feet.

Since Exception #1 of R337.1.3 is actually not necessary because the code user still needs to go to Section R337.10 to see if the enforcing agency requires it, Exception #1 (which was the only place the code still mentioned this 30-foot threshold) can be removed. This removal of Exception #1 now allows the combining of categories 3’-30’ and 30’-50’.

The following table helps visualize the resultant requirements.

Location	Noncombustible or Ignition-resistant Materials Required Section R337.4.2		
	Accessory Building ≤120 ft <sup>2</sup>	Accessory Building >120 ft <sup>2</sup>	Misc. Structure that requires a permit, (any size)
Attached or <3’	Yes (per R337.10.3.1)	Yes (per R337.10.3.1)	Yes (per R337.10.3.1)
≥3’ and <50’	When required by AHJ (per R337.10.3.3)	Yes (per R337.10.3.2)	When required by AHJ (per R337.10.3.4)

**R337.10.4 Roof construction.**

**Reason:** Section R337.10.4 Roof construction [of accessory structures] was added by overwhelming consensus to address this recognized “Achilles Heel” to all efforts of Section R337.10, and to Section R337 for that matter. Whenever an accessory building is required to be constructed of noncombustible materials or of ignition resistant materials its roof must meet Class A fire rating.

**CAC Recommendation:**

Approve

**Agency Response:**

Accept

**CHAPTER 4  
FOUNDATIONS**

**Item 4-1  
Chapter 4, Foundations**

The SFM proposes to **not** adopt Chapter 4.

**CAC Recommendation:**

Approve

**Agency Response:**

Accept

**CHAPTER 5  
FLOORS**

**Item 5-1  
Chapter 5, Floors**

The SFM proposes to **not** adopt Chapter 5.

**CAC Recommendation:**

Approve

**Agency Response:**

Accept

**CHAPTER 6  
WALL CONSTRUCTION**

**Item 6-1  
Chapter 6, Wall Construction**

The SFM proposes to **not** adopt Chapter 6.

**CAC Recommendation:**

Approve



**Agency Response:**

Accept

**CHAPTER 7  
WALL COVERING**

**Item 7-1  
Chapter 7, Wall Covering**

The SFM proposes to not adopt Chapter 7.

**CAC Recommendation:**

Approve

**Agency Response:**

Accept

**CHAPTER 8  
ROOF-CEILING CONSTRUCTION**

**Item 8-1  
Chapter 8, Roof-Ceiling Construction**

The SFM proposes to adopt Section R801.1, R802.1 - R802.1.6, R803.2.1.2, R806 of Chapter 8.

**CAC Recommendation:**

Approve

**Agency Response:**

Accept

**SECTION R806  
ROOF VENTILATION**

**Item 8-2  
Chapter 8, Roof-Ceiling Construction, Section *R806.1.1 Vents in the Wildland Urban Interface Area (WUI)*.**

The SFM proposes to add section R806.1.1 to ensure that vents in the Wildland Urban Area are protected from the intrusion of burning embers and flame.]

**CAC Recommendation:**

Approve

**Agency Response:**

Accept

**CHAPTER 9  
ROOF ASSEMBLIES**

**Item 9-1  
Chapter 9, Roof Assemblies**

The SFM proposes to adopt Sections R901; R902; R904; R905.16- R905.17.6; R907, of Chapter 9, carry forward existing amendments and propose modifications as show below.

**CAC Recommendation:**

Approve

**Agency Response:**

Accept

**SECTION R902  
FIRE CLASSIFICATION**

**Item 9-2  
Chapter 9, Roof Assemblies**

The SFM proposes to amend R902.1.1-R902.2 to correlate with changes made in the California Building Code for Roof coverings in the Wildland Urban Interface area.

***R902.1.1 Roof coverings within fire hazard severity zones.***

***R902.1.2 (formerly R902.1.2) Roof coverings in all other areas.***

***R902.1.3 (formerly R902.1.4) Roofing requirements a wildland-urban interface fire area.***

...

**R902.3 Building-integrated photovoltaic product.**

Reason: Editorial section number pointer

...

**R902.4 Rooftop-mounted photovoltaic (PV) panel systems.**

Reason: Editorial to correlate with the California Building Code.

...

**CAC Recommendation:**

Approve

**Agency Response:**

Accept

**SECTION R907  
ROOFTOP-MOUNTED PHOTOVOLTAIC PANEL SYSTEMS**

**Item 9-3**

**Chapter 9, Roof Assemblies**

The SFM proposes to move existing amendments from R918 for Rooftop mounted photovoltaic panel systems to the appropriate section R907.

**R907.1 Rooftop-mounted photovoltaic (PV) panel systems.**

***R907.2 Fire classification.***

***R907.3 Installation.***

***R907.4 Photovoltaic panels and modules.***

***R907.5 Fire safety provisions for photovoltaic panels systems.***

**CAC Recommendation:**

Approve

**Agency Response:**

Accept

**Item 9-4**

**Chapter 9, Roof Assemblies**

The SFM proposes to move existing amendments from R918 to section R907, which is a more appropriate location.

**CAC Recommendation:**

Approve

**Agency Response:**

Accept

**CHAPTER 10  
CHIMNEYS AND FIREPLACES**

**Item 10-1**

**Chapter 10, Chimneys and Fireplaces**

The SFM proposes to adopt section 1003.9.2 of Chapter 10 and carry forward existing amendments.

**CAC Recommendation:**

Approve

**Agency Response:**

Accept

**CHAPTER 12  
MECHANICAL ADMINISTRATION**

**Item 12-1  
Chapter 12, Mechanical Administration**

Not printed in the California Residential Code.

**CAC Recommendation:**

Approve

**Agency Response:**

Accept

**CHAPTER 13  
GENERAL MECHANICAL SYSTEM REQUIREMENTS**

**Item 13-1  
Chapter 13, General Mechanical System Requirements**

Not printed in the California Residential Code.

**CAC Recommendation:**

Approve

**Agency Response:**

Accept

**CHAPTER 14  
HEATING AND COOLING EQUIPMENT AND APPLIANCES**

**Item 14-1  
Chapter 14, Heating And Cooling Equipment And Appliances**

Not printed in the California Residential Code.

**CAC Recommendation:**

Approve

**Agency Response:**

Accept

**CHAPTER 15  
EXHAUST SYSTEMS**

**Item 15-1  
Chapter 15, Exhaust Systems**

Not printed in the California Residential Code.

**CAC Recommendation:**

Approve

**Agency Response:**

Accept

**CHAPTER 16  
DUCT SYSTEMS**

**Item 16-1  
Chapter 16, Duct Systems**

Not printed in the California Residential Code.

**CAC Recommendation:**

Approve

**Agency Response:**

Accept

**CHAPTER 17  
COMBUSTION AIR**

**Item 17-1  
Chapter 17, Combustion Air**

Not printed in the California Residential Code.

**CAC Recommendation:**

Approve

**Agency Response:**

Accept

**CHAPTER 18  
CHIMNEYS AND VENTS**

**Item 18-1  
Chapter 18, Chimneys And Vents**

Not printed in the California Residential Code.

**CAC Recommendation:**

Approve

**Agency Response:**

Accept

**CHAPTER 19  
SPECIAL APPLIANCES, EQUIPMENT AND SYSTEMS**

**Item 19-1  
Chapter 19, Special Appliances, Equipment And Systems**

Not printed in the California Residential Code.

**CAC Recommendation:**

Approve

**Agency Response:**

Accept

**CHAPTER 20  
BOILERS AND WATER HEATERS**

**Item 20-1  
Chapter 20, Boilers And Water Heaters**

Not printed in the California Residential Code.

**CAC Recommendation:**

Approve

**Agency Response:**

Accept

**CHAPTER 21  
HYDRONIC PIPING**

**Item 21-1  
Chapter 21, Hydronic Piping**

Not printed in the California Residential Code.

**CAC Recommendation:**

Approve

**Agency Response:**

Accept

**CHAPTER 22  
SPECIAL PIPING AND STORAGE SYSTEMS**

**Item 22-1  
Chapter 22, Special Piping And Storage Systems**

Not printed in the California Residential Code.

**CAC Recommendation:**

Approve

**Agency Response:**

Accept

**CHAPTER 23  
SOLAR THERMAL ENERGY SYSTEMS**

**Item 23-1  
Chapter 23, Solar Thermal Energy Systems**

Not printed in the California Residential Code.

**CAC Recommendation:**

Approve

**Agency Response:**

Accept

**CHAPTER 24  
FUEL GAS**

**Item 24-1  
Chapter 24, Fuel Gas**

Not printed in the California Residential Code.

**CAC Recommendation:**

Approve

**Agency Response:**

Accept

**CHAPTER 25  
PLUMBING ADMINISTRATION**

**Item 25-1  
Chapter 25, Plumbing Administration**

Not printed in the California Residential Code.

**CAC Recommendation:**

Approve

**Agency Response:**

Accept

**CHAPTER 26  
GENERAL PLUMBING REQUIREMENTS**

**Item 26-1  
Chapter 26, General Plumbing Requirements**

Not printed in the California Residential Code.

**CAC Recommendation:**

Approve



**Agency Response:**

Accept

**CHAPTER 27  
PLUMBING FIXTURES**

**Item 27-1  
Chapter 27, Plumbing Fixtures**

Not printed in the California Residential Code.

**CAC Recommendation:**

Approve

**Agency Response:**

Accept

**CHAPTER 28  
WATER HEATERS**

**Item 28-1  
Chapter 28, Water Heaters**

Not printed in the California Residential Code.

**CAC Recommendation:**

Approve

**Agency Response:**

Accept

**CHAPTER 29  
WATER SUPPLY AND DISTRIBUTION**

**Item 29-1  
Chapter 29, Water Supply And Distribution**

Not printed in the California Residential Code.

**CAC Recommendation:**

Approve

**Agency Response:**

Accept

## CHAPTER 30 SANITARY DRAINAGE

### Item 30-1 Chapter 30, Sanitary Drainage

Not printed in the California Residential Code.

**CAC Recommendation:**

Approve

**Agency Response:**

Accept

## CHAPTER 31 VENTS

### Item 31-1 Chapter 31, Vents

Not printed in the California Residential Code.

**CAC Recommendation:**

Approve

**Agency Response:**

Accept

## CHAPTER 32 TRAPS

### Item 32-1 Chapter 32, Traps

Not printed in the California Residential Code.

**CAC Recommendation:**

Approve

**Agency Response:**

Accept

## CHAPTER 33 STORM DRAINAGE

### Item 33-1 Chapter 33, Storm Drainage

Not printed in the California Residential Code.

**CAC Recommendation:**

Approve

**Agency Response:**

Accept

**CHAPTER 34  
GENERAL REQUIREMENTS**

**Item 34-1  
Chapter 34, Storm Drainage**

Not printed in the California Residential Code.

**CAC Recommendation:**

Approve

**Agency Response:**

Accept

**CHAPTER 35  
ELECTRICAL DEFINITIONS**

**Item 35-1  
Chapter 35, Electrical Definitions**

Not printed in the California Residential Code.

**CAC Recommendation:**

Approve

**Agency Response:**

Accept

**CHAPTER 36  
SERVICES**

**Item 36-1  
Chapter 36, Services**

Not printed in the California Residential Code.

**CAC Recommendation:**

Approve

**Agency Response:**

Accept

**CHAPTER 37  
BRANCH CIRCUIT AND FEEDER REQUIREMENTS**

**Item 37-1**

**Chapter 37, Branch Circuit And Feeder Requirements**

Not printed in the California Residential Code.

**CAC Recommendation:**

Approve

**Agency Response:**

Accept

**CHAPTER 38  
WIRING METHODS**

**Item 38-1**

**Chapter 38, Wiring Methods**

Not printed in the California Residential Code.

**CAC Recommendation:**

Approve

**Agency Response:**

Accept

**CHAPTER 39  
POWER AND LIGHTING DISTRIBUTION**

**Item 39-1**

**Chapter 39, Power And Lighting Distribution**

Not printed in the California Residential Code.

**CAC Recommendation:**

Approve

**Agency Response:**

Accept

**CHAPTER 40  
DEVICES AND LUMINAIRES**

**Item 40-1  
Chapter 40, Devices And Luminaires**

Not printed in the California Residential Code.

**CAC Recommendation:**

Approve

**Agency Response:**

Accept

**CHAPTER 41  
APPLIANCE INSTALLATION**

**Item 41-1  
Chapter 41, Appliance Installation**

Not printed in the California Residential Code.

51176, 51177, 51178 and 51179, Public Resources Code Sections 4201 through 4204

**CAC Recommendation:**

Approve

**Agency Response:**

Accept

**CHAPTER 42  
SWIMMING POOLS**

**Item 42-1  
Chapter 42, Appliance Installation**

Not printed in the California Residential Code.

**CAC Recommendation:**

Approve

**Agency Response:**

Accept

**CHAPTER 43  
CLASS 2 REMOTE-CONTROL, SIGNALING AND POWER-LIMITED CIRCUITS**

**Item 43-1**

**Chapter 43, Class 2 Remote-Control, Signaling And Power-Limited Circuits**

Not printed in the California Residential Code.

**CAC Recommendation:**

Approve

**Agency Response:**

Accept

**CHAPTER 44  
REFERENCED STANDARDS**

**Item 44-1**

**Chapter 44, Referenced Standards**

The SFM proposes to adopt Chapter 17, carry forward existing amendments and propose modifications as shown below.

**CAC Recommendation:**

Approve

**Agency Response:**

Accept

**Item 44-2**

**Chapter 44, Referenced Standards, ASTM F2374 Standard Practice For Design, Manufacture, Operation, and Maintenance Of Inflatable Amusement Devices**

This proposal introduces basic safety requirements for inflatable amusement devices also known as “bounce houses”. There have been numerous reported incidents of accidents and injuries involving these devices caused by weather events such as sustained or wind gusts and/or improper set-up, anchorage or use where the “bounce house” is uplifted,

carried away and/or overturned with children or adults inside.

A proposal to regulate these devices was presented in the last cycle but there was concern regarding the difference between outdoors and indoors and permits. At the time ASTM F2374 was not written in a way that it could be referenced but that has changed now, and it is in good shape (including all mandatory language). No discussion of either location or permits is included in this proposal. This proposal is much more compact than the earlier one.

Chapter scoping section is modified to reference proposed new section.

This new section simply adds basic fire and electrical safety requirements for the construction, placement, and operation of portable inflatable amusement devices. The section addresses safety requirements for both outdoor and indoor use of these devices. The electrical safety section simply refers to an existing code section.

A definition for inflatable amusement devices is also included to correlate the type of devices covered by these new IFC code requirements.

The information regarding a certificate and affidavit refer to the existing sections for tents.

**CAC Recommendation:**

Approve

**Agency Response:**

Accept

**Item 44-2.1**

**Chapter 44, Referenced Standards, SFM 12-7A-5 Ignition Resistant Building Material**

The SFM proposes to delete a SFM standard and add updated equivalent standards.

Rationale: This proposal does not change any requirement and does not delete or replace four of the five CA SFM standards that have been replaced by ASTM standards because of the concern about materials and products approved via testing to them. CA SFM 12-7-A2 does not have an ASTM replacement and is proposed to be retained. CA SFM Standard 12-7A-5, Ignition-resistant Material is being replaced because it is no longer correct. It refers to a generic building material surface burning flame spread test standard consisting of an extended 30-minute ASTM E84 or UL 723 test method as is used for fire-retardant treated wood. It is equivalent to ASTM E2768, which is the 30-minute version of ASTM E84 with the correct pass/fail criteria, consistent with the building code.

A reference to ASTM E119 and UL 263 is being proposed to be added into 707, everywhere there is a requirement to test for a fire resistance rating, and they are being added here. If no information exists on the test for fire resistance rating, ASTM E84 or UL 263 (which are the same test) is the logical test to use, just like elsewhere in the California Code.

The following SFM standards with ASTM equivalents are being retained:

1. SFM Standard 12-7A-1, Exterior Wall Siding and Sheathing. A fire resistance test standard consisting of a 150-kW intensity direct flame exposure for a 10-minute duration. It is equivalent to ASTM E2707.
2. SFM Standard 12-7A-3, Horizontal Projection Underside A fire resistance test standard consisting of a 300-kW intensity direct flame exposure for a 10-minute duration. It is equivalent to ASTM E2957.
3. SFM Standard 12-7A-4, Decking. A two-part test consisting of a heat release rate (Part A) deck assembly combustion test with an under-deck exposure of 80 kW intensity direct flame for a 3-minute duration, and a (Part B) sustained deck assembly combustion test consisting of a deck upper surface burning ember exposure with a 12-mph wind for 40 minutes using a 2.2lb (1kg) burning "Class A" size 12" x 12" x 2.25" (300 mm x 300 mm x 57 mm) roof test brand. It is equivalent to the combination of ASTM E2632 and ASTM E2726. Wherever it is required the code also requires both the ASTM tests to be conducted.
4. SFM Standard 12-7A-4A, Decking Alternate Method A. A heat release rate deck assembly combustion test with an under-deck exposure of 80 kW intensity direct flame for a 3-minute duration. It is equivalent to ASTM E2632.

**CAC Recommendation:**

Approve

**Agency Response:**

Accept

**Item 44-3**

**Chapter 44, NFPA 13 Installation of Sprinkler Systems**

NFPA 13-2019~~22~~ (formerly NFPA 13-2019)

*\*See California Fire Code for amendments*

The SFM is proposing to update the referenced standard to correlate with the other parts of Title 24. The rulemaking process between the different model codes can cause conflict in the adoption of the latest standards. The proposal is to establish consistency within the parts of the California Buildings Standards Code. NFPA 13 is amended in the California Fire Code. The reference to the amendments is a reminder that California has amended the National Standard to align with State laws and regulations.

**CAC Recommendation:**

Approve

**Agency Response:**

Accept



**Item 44-4**  
**Chapter 44, NFPA 13D Installation of Sprinkler Systems**

Update to the latest edition, carry forward existing amendments and renumber the following sections as shown below.

The SFM is proposing to update the referenced standard to correlate with the most recent edition of the standard. The rulemaking process between the different model codes can cause conflict in the adoption of the latest standards. The proposal is to establish consistency within the parts of the California Buildings Standards Code. NFPA 13D National Standard is amended by California to align with State laws and regulations based on California specific topographical, climatic, and geographical issues.

NFPA 13D-201922 (formerly NFPA 13D-2019)

**CAC Recommendation:**

Approve

**Agency Response:**

Accept

**Item 44-5**  
**Chapter 44, NFPA 13R Standard for the Installation of Sprinkler Systems in Low-rise Residential Occupancies**

NFPA 13R-201922 (formerly NFPA 13R-2019)

The SFM is proposing to update the referenced standard to correlate with the most recent edition of the standard. The rulemaking process between the different model codes can cause conflict in the adoption of the latest standards. The proposal is to establish consistency within the parts of the California Buildings Standards Code. NFPA 13R National Standard is amended by California to align with State laws and regulations based on California specific topographical, climatic, and geographical issues.

**CAC Recommendation:**

Approve

**Agency Response:**

Accept

**Item 44-6**  
**Chapter 44, NFPA 70 National Electrical Code**

NFPA 70-2020 (formerly NFPA 70-2017)

*\*See California Electrical Code for amendments*

The SFM is proposing to update the referenced standard to correlate with the other parts of Title 24. The rulemaking process between the different model codes can cause conflict in the adoption of the latest standards. The proposal is to establish consistency within the parts of the California Buildings Standards Code. NFPA 70 is amended as the California Electrical Code, part 3 of Title 24. The reference to the amendments is a reminder that California has amended the National Standard to align with State laws and regulations.

**CAC Recommendation:**

Approve

**Agency Response:**

Accept

**Item 44-7**

**Chapter 44, NFPA 72 National Fire Alarm and Signaling Code, as amended\***

NFPA 72-22 (formerly NFPA 72-19)

The SFM is proposing to update the referenced standard to correlate with the most recent edition of the standard. The rulemaking process between the different model codes can cause conflict in the adoption of the latest standards. The proposal is to establish consistency within the parts of the California Buildings Standards Code. NFPA 72 National Standard is amended by California to align with State laws and regulations based on California specific topographical, climatic, and geographical issues.

SFM proposed amendment corrects a publishing error that relocates an amendment to NFPA 72 that was inadvertently located in the 2019 edition of the CBC Section 1008.3.2 as Item 7.

The scope of CBC Section 1008.3.2 identifies areas where emergency power is required for egress illumination. CBC Section 1008.3.2 includes an enumerated list of where emergency power is required for egress illumination.

The subject of NFPA 72, Section 23.8.1.2.1 is positive alarm features. Positive alarm features delay the transmission of fire alarms. Positive alarm features include presignal features. In accordance with CBC Section 907.5.1.1, presignal features are not permitted in Group I-2, I-2.1 and R-2.1 occupancies. NFPA 72, Section 23.8.1.2.1 indicates that positive alarm features are permitted when approved by the authority having jurisdiction. Where they are provided, it is common practice to connect patient room smoke detectors to nurse call systems. The delay of nurse call signals is not permitted. The SFM proposed amendment does not permit a positive alarm feature associated with the operation of a patient room smoke detector located in a Group I-2 or R-2.1 occupancy and therefore such features shall not be approved. The SFM proposed amendment affirms that it is not the intent of the SFM to permit the delay the activation of fire alarms.

This SFM proposed amendment does not establish a new requirement.

Misleading information is a source of confusion for owners, designers, contractors, and code officials. Deleting or correcting such information assists in the interpretation, understanding and application of provisions of the code.

**CAC Recommendation:**

Approve

**Agency Response:**

Accept

**Item 44-8**

**Chapter 44, Referenced Standards, SFM 12-7A-5 Ignition Resistant Building Material**

**Reason:** CA SFM Standard 12-7A-5, Ignition-resistant Material is being replaced because it is no longer correct. It refers to a generic building material surface burning flame spread test standard consisting of an extended 30-minute ASTM E84 or UL 723 test method as is used for fire-retardant treated wood. It is equivalent to ASTM E2768, which is the 30-minute version of ASTM E84 with the correct pass/fail criteria, consistent with the building code.

**CAC Recommendation:**

Approve

**Agency Response:**

Accept

**Item 44-9**

**Chapter 44, Referenced Standards, UL 9540 Standard for Energy Storage Systems and Equipment**

*9540 Edition 2 2020*

Standard for Energy Storage Systems and Equipment

The second edition of UL 9540 has new requirements that limit the maximum energy capacity of individual nonresidential electrochemical ESS to 50 kWh unless they comply with UL 9540A fire test performance criteria. Similarly, there are new requirements for nonresidential electrochemical ESS intended for indoor installations with separations less than three feet to comply with UL 9540A fire test criteria. The minimum separation distances to adjacent units and walls established by UL 9540A fire testing will be reflected in the installation instructions.

**CAC Recommendation:**

Approve

**Agency Response:**

Accept

**Item 44-10**

**Chapter 80, Referenced Standards, UL 9540A Standard for Safety Test Method for Evaluating Thermal Runaway Fire Propagation in Battery Energy Storage Systems**

**9540A Edition 4 2019**

***Standard for Safety Test Method for Evaluating Thermal Runaway Fire Propagation in Battery Energy Storage Systems***

UL 9540A, Test Method for Evaluating Thermal Runaway Fire Propagation in Battery Energy Storage Systems, was developed to help manufacturers have a means of proving compliance to the new regulations. Leveraging our long practice of developing standards with vast experience in similar industries, we worked with regulators to understand concerns and deliver a viable test method to accelerate adoption of innovative technology. UL 9540A was developed to address safety concerns identified by the building codes and the fire service in the United States. The current ICC International Fire Code (2018 IFC) allows an individual battery energy storage system (BESS) unit not exceeding 50 kWh and having a maximum quantity of systems totaling 600 kWh of energy per indoor fire area (battery room). The 2018 IFC and the draft NFPA 855 standards for installation of energy storage systems currently limits the individual BESS unit size for UL 9540 listed units to 250 kWh. These BESS units are to be installed with separation distances of 3 feet (1 meter) between units and between units and any wall. The latest IFC and NFPA 855 drafts allow the code official (AHJ) to approve larger individual BESS units, and separation distances less than 3 feet based on large scale fire testing conducted in accordance with the UL 9540A Test Method.

Results from the UL 9540A Test Method addresses the following key issues identified by building codes and the fire service:

- BESS installation instructions
- Installation ventilation requirements
- Effectiveness of fire protection (integral or external)

Fire service strategy and tactics

**CAC Recommendation:**

Approve

**Agency Response:**

Accept

**APPENDICES**

**Item A-1**  
**Appendices, Appendix AA-AE, Reserved**

Not printed in the California Residential Code.

**CAC Recommendation:**

Approve

**Agency Response:**

Accept

**Item A-2**  
**Appendices, Appendix AF, Radon Control Methods**

SFM proposed to **not** adopt Appendix AF.

**CAC Recommendation:**

Approve

**Agency Response:**

Accept

**Item A-3**  
**Appendices, Appendix AG, Reserved**

Not printed in the California Residential Code.

**CAC Recommendation:**

Approve

**Agency Response:**

Accept

**Item A-4**  
**Appendices, Appendix AH, Patio Covers**

SFM proposed to **not** adopt Appendix AH.

**CAC Recommendation:**

Approve

**Agency Response:**

Accept

**Item A-5**  
**Appendices, Appendix AJ, Existing Buildings and Structures**

SFM proposed to **not** adopt Appendix AJ.

**CAC Recommendation:**

Approve

**Agency Response:**

Accept

**Item A-6**  
**Appendices, Appendix AK, Sound Transmission**

SFM proposed to **not** adopt Appendix AK.

**CAC Recommendation:**

Approve

**Agency Response:**

Accept

**Item A-7**  
**Appendices, Appendix AL, Permit Fees**

SFM proposed to **not** adopt Appendix AL.

**CAC Recommendation:**

Approve

**Agency Response:**

Accept

**Item A-8**  
**Appendices, Appendix AM-AN, Reserved**

Not printed in the California Residential Code.

**CAC Recommendation:**

Approve

**Agency Response:**

Accept

**Item A-9**  
**Appendices, Appendix AO, Automatic Vehicular Gates**

SFM proposed to **not** adopt Appendix AO.

**CAC Recommendation:**

Approve

**Agency Response:**

Accept

**Item A-10**  
**Appendices, Appendix AP, Reserved**

Not printed in the California Residential Code.

**CAC Recommendation:**

Approve

**Agency Response:**

Accept

**Item A-11**  
**Appendices, Appendix AQ, Tiny Houses**

SFM proposed to **not** adopt Appendix AQ.

**CAC Recommendation:**

Approve

**Agency Response:**

Accept

**Item A-11.1**  
**Appendices, Appendix AR, Light Straw-Clay Construction**

SFM proposed to **not** adopt Appendix AR.

**CAC Recommendation:**

Approve

**Agency Response:**

Accept

**Item A-12**

**Appendices, Appendix AT, Solar Ready Provisions-Detached one- and Two-Family Dwellings and Townhouses**

SFM proposed to **not** adopt Appendix AT.

**CAC Recommendation:**

Approve

**Agency Response:**

Accept

**Item A-13**

**Appendices, Appendix AU, Reserved**

Not printed in the California Residential Code.

**CAC Recommendation:**

Approve

**Agency Response:**

Accept

**Item A-14**

**Appendices, Appendix AV, Board of Appeals**

SFM proposed to **not** adopt Appendix AV.

**CAC Recommendation:**

Approve

**Agency Response:**

Accept

**Item A-14.1**

**Appendices, Appendix AW, 3-D-PRINTED Building Construction**

SFM proposed to **not** adopt Appendix AW.



**CAC Recommendation:**

Approve

**Agency Response:**

Accept

**Item A-15**  
**Appendices, Appendix AX, Swimming Pool Safety Act**

SFM proposed to **not** adopt Appendix AX.

**CAC Recommendation:**

Approve

**Agency Response:**

Accept

**Item A-16**  
**Appendices, Appendix AY, Areas Protected by The Facilities of the Central Valley Flood Protection Plan**

SFM proposed to **not** adopt Appendix AY.

**CAC Recommendation:**

Approve

**Agency Response:**

Accept

**Item A-17**  
**Appendices, Appendix AZ, Emergency Housing**

SFM proposed to **not** adopt Appendix AZ.

**CAC Recommendation:**

Approve

**Agency Response:**

Accept

## **TECHNICAL, THEORETICAL, AND EMPIRICAL STUDY, REPORT, OR SIMILAR DOCUMENTS**

Government Code Section 11346.2(b)(3) requires an identification of each technical, theoretical, and empirical study, report, or similar document, if any, upon which the agency relies in proposing the regulation(s).

The SFM did not rely on any technical, theoretical, and empirical study, report, or similar documents outside of those contained in this rulemaking in proposing that CBSC adopt said model code as a reference standard for the placement of existing SFM regulatory amendments for the California Building Standards Codes.

## **STATEMENT OF JUSTIFICATION FOR PRESCRIPTIVE STANDARDS**

Government Code Section 11346.2(b)(1) requires a statement of the reasons why an agency believes any mandates for specific technologies or equipment or prescriptive standards are required.

The SFM believes that the amendments to the model code and additional building standards proposed are offered in both a prescriptive and performance base. The nature and format of the model code adopted by reference allow for both methods, the following is a general overview of the model code proposed to be adopted by reference as well as state modifications:

This comprehensive electric code establishes minimum regulations for fire prevention and fire protection systems using prescriptive and performance-related provisions. It is founded on broad-based principles that make possible the use of new materials and new system designs.

This code is founded on principles intended to establish provisions consistent with the scope of a building and fire code that adequately protects public health, safety, and welfare; provisions that do not unnecessarily increase construction costs; provisions that do not restrict the use of new materials, products or methods of construction; and provisions that do not give preferential treatment to types or classes of materials, products or methods of construction.

The International Residential Code (IBC) provisions provide many benefits, among which is the model code development process that offers an international forum for building and fire safety professionals to discuss performance and prescriptive code requirements. This forum provides an excellent arena to debate proposed revisions. This model code also encourages international consistency in the application of provisions.

## **CONSIDERATION OF REASONABLE ALTERNATIVES**

Government Code Section 11346.2(b)(4)(A) requires a description of reasonable alternatives to the regulation and the agency's reasons for rejecting those alternatives. In the case of a regulation that would mandate the use of specific technologies or equipment or prescribe specific action or procedures, the imposition of performance standards shall be considered as an alternate. It is not the intent of this paragraph to require the agency to artificially construct alternatives or describe unreasonable alternatives.

The SFM has determined that no alternative considered would be more effective in carrying out the purpose for which the regulation is proposed or would be as effective and less burdensome to affected private persons than the proposed adoption by reference with SFM amendments. Therefore, there are no alternatives available to the SFM regarding the proposed adoption of this code.

### **REASONABLE ALTERNATIVES THE AGENCY HAS IDENTIFIED THAT WOULD LESSEN ANY ADVERSE IMPACT ON SMALL BUSINESS**

Government Code Section 11346.2(b)(4)(B) requires a description of any reasonable alternatives that have been identified or that have otherwise been identified and brought to the attention of the agency that would lessen any adverse impact on small business.

The SFM has determined that no alternative considered would be more effective in carrying out the purpose for which the regulation is proposed or would be as effective and less burdensome to affected private persons than the proposed adoption by reference with SFM amendments. Therefore, there are no alternatives available to the SFM regarding the proposed adoption of this code.

### **FACTS, EVIDENCE, DOCUMENTS, TESTIMONY, OR OTHER EVIDENCE OF NO SIGNIFICANT ADVERSE IMPACT ON BUSINESS**

Government Code Section 11346.2(b)(5)(A) requires the facts, evidence, documents, testimony, or other evidence on which the agency relies to support an initial determination that the action will not have a significant adverse economic impact on business.

The SFM has determined that this proposed action will not have a significant adverse economic impact on business. Health and Safety Code Section 18928 requires the SFM, when proposing the adoption of a model code, national standard, or specification shall reference the most recent edition of the applicable model code, national standard, or specification. Therefore, there are no other facts, evidence, documents, testimony, or other evidence on which the SFM relies to support this rulemaking.

### **ASSESSMENT OF EFFECT OF REGULATIONS UPON JOBS AND BUSINESS EXPANSION, ELIMINATION OR CREATION**

Government Code Sections 11346.3(b)(1) and 11346.5(a)(10)

The SFM has assessed whether or not and to what extent this proposal will affect the following:

- A.** The creation or elimination of jobs within the State of California.  
These regulations will not affect the creation, or cause elimination, of jobs within the State of California.
- B.** The creation of new businesses or the elimination of existing businesses within the State of California.  
These regulations will not affect the creation or the elimination of existing business within the State of California.
- C.** The expansion of businesses currently doing business within the State of California.  
These regulations will not affect the expansion of business currently doing business within the State of California.

- D. The benefits of the regulation to the health and welfare of California residents, worker safety, and the state's environment.  
These regulations will update and improve minimum existing building standards, which will provide increased protection of public health and safety, worker safety and the environment.

### **ESTIMATED COST OF COMPLIANCE, ESTIMATED POTENTIAL BENEFITS, AND RELATED ASSUMPTIONS USED FOR BUILDING STANDARDS**

Government Code Section 11346.2(b)(5)(B)(i) states if a proposed regulation is a building standard, the initial statement of reasons shall include the estimated cost of compliance, the estimated potential benefits, and the related assumptions used to determine the estimates.

The SFM does not anticipate any significant cost of compliance with the proposed building standards. The regulations are based on the model code. Health & Safety section 18928 requires that building standard be essentially the same as the most recent edition of the uniform industry codes. These regulations benefits are to have clear, concise, complete and update text of the regulations and standards.

### **DUPLICATION OR CONFLICTS WITH FEDERAL REGULATIONS**

Government Code Section 11346.2(b)(6) requires a department, board, or commission within the Environmental Protection Agency, the Resources Agency, or the Office of the State Fire Marshal to describe its efforts, in connection with a proposed rulemaking action, to avoid unnecessary duplication or conflicts with federal regulations contained in the Code of Federal Regulations addressing the same issues. These agencies may adopt regulations different from these federal regulations upon a finding of one or more of the following justifications: (A) The differing state regulations are authorized by law and/or (B) The cost of differing state regulations is justified by the benefit to human health, public safety, public welfare, or the environment.

The SFM has determined that this proposed rulemaking action does not unnecessary duplicate or conflict with federal regulations contained in the Code of Federal Regulations that address the same issues as this proposed rulemaking.