INITIAL STATEMENT OF REASONS FOR PROPOSED BUILDING STANDARDS OF THE STATE FIRE MARSHAL REGARDING THE 2022 CALIFORNIA MECHANICAL CODE CALIFORNIA CODE OF REGULATIONS, TITLE 24, PART 4 (SFM 05/22)

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.

General Statement of Purpose, Problem, Rationale and Benefits
The Public Problem, Administrative Requirement, or Other Circumstance Addressed Rationale for Necessity

ITEM 1
Chapter 1 SCOPE AND ADMINISTRATION, Division I, California Administration, Section 1.11.1 SFM-Office of the State Fire Marshal

The SFM is proposing to amend the 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).

Health and Safety Code 13146 (A) (5) The State Fire Marshal shall enforce the building standards and other regulations of the State Fire Marshal on all University of California campuses and properties administered or occupied by the University of California and on all California State University campuses and properties administered or occupied by the California State University. For each university campus or property, the State Fire Marshal may delegate that responsibility to the person of the State Fire Marshal's choice who shall be known as the Designated Campus Fire Marshal.

The University of California (UC) currently has a memorandum of understanding (MOU) with the State Fire Marshal. The authority of the State Fire Marshal has been delegated to the Designated Campus Fire Marshal's through the MOU. SFM is amending this section to align with similar amendments made during the 2021 Triennial Code Adoption Cycle to the 2022 California Building, Residential, Fire, and Existing Building Codes (Parts 2, 2.5, 9, and 10 of Title 24) for consistency across Title 24 with no intended change in regulatory effect.

CAC Recommendation:

[Enter CAC recommendation(s), if any]

Agency Response:

[Enter the agency's response to CAC recommendation(s)]

ITEM 2
Chapter 2 DEFINITIONS, Sections 202.0 Definition of terms Refrigerant Concentration Limits

[The SFM proposes to adopt text from the 2024 Uniform Mechanical Code and print as an amendment to the 2022 California Mechanical Code.]

The IAPMO Standards Council and Board of Directors requested that a task group be formed to address A2L since there were concerns and issues with A2L for human comfort applications, such as refrigerant detectors, refrigerant concentration limits, and exhaust termination requirements. Although there was not much concern with A2L for mechanical room applications, there was a need to also address such applications.

Recommendation 4 - Labeling and Identification

> Task Group Recommendation 4 - Labeling and Identification: The nameplate requirements in Section 307.3 are specifically for heat pumps and electric cooling appliances. These requirements include electrical ratings. The scope of Section 1115.5 is a broader scope, including products that do not have electrical ratings. Because the scope of Section 1115.5 is specific to products used in Chapter 11, this requirement belongs in Chapter 11 to provide a complete set of requirements for refrigeration installations.
>
> The Task Group generated recommendations based on ASHRAE 15 with several modifications to address the concerns of the committee regarding health and safety and enforceable code language. The Task Group generated four separate

recommendations. See Item 11-1 for the full report.

Task Group Recommendation 2 - Machinery Rooms: The proposed modification would bring the Uniform Mechanical Code in line with ASHRAE 15. The 3rd edition of UL/CSA 60335-2-40 has requirements for testing (and listing) of equipment using Group A2L refrigerants. The A2L Task Group modified various portions of the extracted language as needed to address enforceability and health and safety concerns. The requirements follow the extraction policy of IAPMO. Furthermore, a definition for Refrigerant Concentration Limit (RCL) is being added from ASHRAE 34 as the term is used but currently not defined in the code.

Item #: 210

UMC 2024 Section: 220.0, Chapter 11, Table 1701.1

COMMITTEE ACTION: ACCEPT AS SUBMITTED

CAC Recommendation:

[Enter CAC recommendation(s), if any]

Agency Response:

[Enter the agency's response to CAC recommendation(s)]

ITEM 3
Chapter 3 GENERAL REGULATIONS, Sections 307.3, 307.4

[The SFM proposes to adopt text from the 2024 Uniform Mechanical Code and print as an amendment to the 2022 California Mechanical Code.]

The IAPMO Standards Council and Board of Directors requested that a task group be formed to address A2L since there were concerns and issues with A2L for human comfort applications, such as refrigerant detectors, refrigerant concentration limits, and exhaust termination requirements. Although there was not much concern with A2L for mechanical room applications, there was a need to also address such applications.

Recommendation 4 - Labeling and Identification

Task Group Recommendation 4 - Labeling and Identification: The nameplate requirements in Section 307.3 are specifically for heat pumps and electric cooling appliances. These requirements include electrical ratings. The scope of Section 1115.5 is a broader scope, including products that do not have electrical ratings. Because the scope of Section 1115.5 is specific to products used in Chapter 11, this requirement belongs in Chapter 11 to provide a complete set of requirements for refrigeration installations.

The Task Group generated recommendations based on ASHRAE 15 with several modifications to address the concerns of the committee regarding health and safety and enforceable code language. The Task Group generated four separate recommendations. See Item 11-1 for the full report.

Item #: 209

UMC 2024 Section: 307.3, 307.4, 1115.5

COMMITTEE ACTION: ACCEPT AS SUBMITTED

CAC Recommendation:

[Enter CAC recommendation(s), if any]

Agency Response:

[Enter the agency's response to CAC recommendation(s)]

ITEM 4
Chapter 6 DUCT SYSTEMS, Section 609.1

[Amend section 609.1 to provide additional guidance for the location of smoke detection.]

The SFM proposed amendment provides additional guidance in the charging paragraph regarding the location of smoke detection required for shutdown of supply-air systems. The SFM proposed amendment differentiates the location of detectors required in supply-air systems from the location of detectors required in return-air systems. The SFM proposed amendment is similar language published in NFPA 72-2022 Section 17.7.6.4.2.1 and NFPA 90A-2021 Section 6.4.2.1.

The additional information provides designers, owners, and code officials with the proper location of smoke detection associated with supply-air systems. The additional information distinguishes the location of detection for supply-air systems from the location of detection for return-air systems. The additional information assists designers, owners and code officials with the design and installation of an effective automatic shutoff of a supply-air-moving system.

(Exception 1)

The SFM proposed amendment permits the use of a total coverage (area) smoke detection system in lieu of duct detection for the shutdown of a return-air system and eliminates the use of a total coverage (area) smoke detection system in lieu of duct detection for shutdown of a supply-air system. The SFM proposed amendment is consistent with provisions of NFPA 72-2022, 17.7.6.4.2.2(B), NFPA 90A-2012, 6.4.2.2 and the International Mechanical Code, 606.2.1. None of these nationally recognized standards permits the use of an area smoke detector system in lieu of duct detection for the shutdown of a supply-air system. Use of area detection in lieu of duct detection for the shutdown of a supply-air system creates a conflict with the provisions of nationally recognized standards. As printed in Section 609.1, Exception 1 of the California Mechanical Code, the language permitting the use of a total coverage (area) smoke detector system without specifying a return-air system may be a vestige from when a return-air system was required in the 1989 and 1992 editions of the California Mechanical Code.

The SFM proposed amendment aligns CMC requirements with those of other applicable

national standards. Conflicting requirements are source of confusion for designers, owners and code officials. Conflicting requirements are especially burdensome when owners are required to adhere to such applicable national standards.

Eliminating inconsistencies between applicable codes and standards assists with the interpretation, understanding and compliance of mechanical code requirements.

(609.1.1 Duct Smoke detectors)

The SFM proposed amendment is not a new requirement. The SFM proposed amendment relocates existing language from the charging paragraph of CMC Section 609.1 to the conclusion of Section 609.1. The relocated language will follow the exceptions printed in Section 609.1. It is not the intent that the exceptions contained in Section 609.1 should nullify compliance with the information included in the language that requires that detectors comply with UL 268 A, NFPA 72 and the California Building and Fire Codes.

This appears to be a formatting issue. Relocating the language requiring compliance with applicable standards and codes to after the exceptions printed in Section 609.1 eliminates unnecessary confusion.

The SFM proposed amendment is not a new requirement. The SFM proposed amendment references an existing section of the California Fire Code that contains additional duct smoke detection provisions relevant to high-rise buildings having occupied floors located more than 75 feet above the lowest level of building access.

Incomplete information and the omission of references to additional applicable provisions are a source of confusion for designers, owners, and code officials. Completing such information and including such references assists with the interpretation and understanding of provisions of the code.

The SFM has provided the Division of the State Architect (DSA) the language for their review.

CAC Recommendation:

[Enter CAC recommendation(s), if any]

Agency Response:

[Enter the agency's response to CAC recommendation(s)]

Chapter 6 DUCT SYSTEMS, Section 609.2

[Add new section 609.2 which aligns with the nationally recognized standards for healthcare facilities.]

The SFM proposed amendment reinstates provisions in the charging paragraph that last appeared in the 1992 California Mechanical Code that require automatic shutoff of return

air systems in excess of 2,000 cubic feet per minute. The SFM proposed amendment is consistent with provisions published in nationally recognized standards including the International Mechanical Code Section 606.2.1, California Building Code Section 907.2.13.1.2 and is consistent with provisions of NFPA 90A-2012, Section 6.4.2.1 applicable to health care facilities that must comply with requirements enforced by the California Department of Public Health, The Joint Commission and the Centers for Medicare and Medicaid Services. In accordance with California Mechanical Code, Table 4-A, the air exchange rates required for spaces in health care facilities range from 6 air exchanges per hour to 20 air exchanges per hour. The air exchange rates required for spaces in health care facilities far exceed the air exchange rates typically required for commercial and residential occupancies. Such robust air exchange rates exacerbate concerns related to smoke movement through air-moving systems installed in health care facilities.

The SFM proposed amendment aligns CMC requirements with those of other applicable national standards. Conflicting requirements are source of confusion for designers, owners and code officials. Conflicting requirements are especially burdensome when owners are required to adhere to such applicable national standards.

Eliminating inconsistencies between applicable codes and standards assists with the interpretation, understanding and compliance of mechanical code requirements.

The SFM proposed amendment is not a new requirement. The SFM proposed amendment references an existing section of the California Fire Code that contains additional duct smoke detection provisions relevant to Group I-2 occupancies having occupied floors located more than 75 feet above the lowest level of fire department vehicle access.

Incomplete information and the omission of references to additional applicable provisions are a source of confusion for designers, owners and code officials. Completing such information and including such references assists with the interpretation and understanding of provisions of the code.

CAC Recommendation:

[Enter CAC recommendation(s), if any]

Agency Response:

[Enter the agency's response to CAC recommendation(s)]

ITEM 5
Chapter 11 REFRIGERATION, Sections 1103.1.1, Table 1103.1.1, Table 1104.1, 1104.2, 1104.5, 1104.6, 1104.6.1, 1104.6.2, 1104.6.2.1, 1104.6.2.2, 1104.6.2.3, 1104.6.2.4, 1104.6.3, 1104.6.4, 1104.6.5, 1104.6.6, 1104.7, 1104.8, 1104.8.1, 1104.8.2, 1104.8.3, 1104.8.4, 1104.9, 1106.2.2, 1106.2.3, 1106.2.4, 1106.2.5, 1106.2.6, 1106.2.7, 1106.2.8, 1106.2.9, 1106.2.9.1, 1106.2.5.2, Table 1106.2.5.2, 1106.4, 1106.13, 1106.13.1,

1106.13.2, 1106.13.3, 1106.13.4, 1106.13.5, 1106.13.6, 1106.13.6.1, 1106.13.6.2, 1106.13.7, 1106.13.8, 1106.13.9, 1106.13.10, 1106.13.10.1, 1106.13.10.2, Table 1106.13.10.2, 1106.13.10.3, 1106.13.10.4, 1106.13.11, 1106.13.11.1, Table 1106.13.11.2, 1106.13.11.2, 1106.13.11.3, 1106.13.11.4, Figure 1106.13.11.4(1), Figure 1106.13.11.4 (2), 1107.1.7.1, 1107.1.7.3, 1112.11.1, 1115.5

The SFM proposes to adopt text from the 2024 Uniform Mechanical Code and print as an amendment to the 2022 California Mechanical Code.

UMC A2L Task Group Report

Roster Members:

Jay Egg (Chair), Julius Ballanco, Rich Benkowski, David Bixby, Dave Dias, Eli Howard, Harshad Inamdar, Philip Johnston, Jim Kendzel, Robert Kuks, David Mann, Jay Peters, Christopher Ruch, Stephen Spletzer, John Taecker, Rusty Tharp, Helen Walter-Terrinoni, Randy Young

Representation

Egg Geothermal, LLC, JB Engineering and Code Consulting, P.C., United Association Department of Education, Air Conditioning Contractors of America (ACCA), Sheet Metal Workers Local 104, SMACNA, Rheem Manufacturing, Daikin Applied Americas, Inc., ASA and HARDI, Sheet Metal Workers Local 104, Codes and Standards International, National Energy Management Institute Committee (NEMIC), The Chemours Company, UL LLC, Goodman Manufacturing, Air Conditioning, Heating, and Refrigeration Institute (AHRI), Sacramento Joint Apprenticeship Training Committee

Overview:

The IAPMO Standards Council and Board of Directors requested that a task group be formed to address A2L since there were concerns and issues with A2L for human comfort applications, such as refrigerant detectors, refrigerant concentration limits, and exhaust termination requirements. Although there was not much concern with A2L for mechanical room applications, there was a need to also address such applications.

On May 2, 2019, in Denver, Colorado, the UMC TC Chair, Harvey Kreitenberg, approved the formation of a UMC A2L Task Group to address exposure risk to the public from mechanical equipment in the UMC and to provide guidance to assist in the control and intervention of Legionella associated with building mechanical systems.

The scope of the Uniform Mechanical Code (UMC) A2L Task Group was to develop recommendations to further this technology, determine the methods available to address A2L exposure risk to public health and safety, expand on the usage and control of A2L refrigerants associated with mechanical systems and equipment, and address related issues such as flammability risk, toxicity, permissible exposure limit, leak detection systems, chemical compatibility and stability, and maintenance procedures for mechanical systems. The task group recommendations will be forwarded to the UMC Technical Committee for consideration in the development of the 2024 edition of the UMC.

The Task Group met four times via teleconference on July 8, 2020, August 24, 2020, October 19, 2020, and November 12, 2020. Proposed recommendations were obtained from members of the task group and any interested parties.

The Task Group generated recommendations based on ASHRAE 15 with several

modifications to address the concerns of the committee regarding health and safety and enforceable code language. The Task Group generated four separate recommendations, as follows:

Recommendation 1 - Human Comfort

Task Group Recommendation 1 - Human Comfort: These are the extracted requirements from ASHRAE 15-2019 that regulate low GWP refrigerants used in direct systems that fall into the safety classification of Group A2L. The A2L Task Group modified various portions of the extracted language as needed to address enforceability and health and safety concerns. The requirements follow the extraction policy of IAPMO.

Item #: 208

UMC 2024 Section: 1103.1.1, Table 1103.1.1, 1104.6 - 1104.7

COMMITTEE ACTION: ACCEPT AS AMENDED BY THE TC

COMMITTEE STATEMENT:

For safety, all joints used on A2L refrigerant piping shall be brazed. Brazed joints are required to be made with brazing alloys having a liquidous temperature above 1000°F (538°C). Brazed joints have been proven to provide a zero percent leak free (no annual leak rate) system beyond the normal lifespan of the equipment for which the system serves. In the event of elevated system piping temperature, brazed joints provide the highest degree of safety and protection from catastrophic failures for high-probability installations. Additionally, the ASHRAE Standard 15-2019, Section 9.10.2, and IAPMO UMC 2021, Section 1106.9, requires that all joints, located in air ducts conveying conditioned air to and from an occupied space shall be constructed to withstand a temperature of 700°F (371°) without leaking into the airstream. This ASHRAE 15 requirement is applicable to all refrigerants including Group A1 and A2L refrigerants. As most refrigerant piping installations for equipment would be considered in the airstream (i.e., above ceiling, equipment closets, mechanical rooms, etc.), this requirement would be applicable to the majority of refrigeration piping installations. As the 2021 UMC, Section 1109.1 requires that all refrigeration piping shall be metallic, and as brazed joints are a proven all metallic joining system, all refrigerant piping, especially A2L refrigerant piping, should be required to be brazed. An exception should be made to Section 1104.6 for the use of male flare joints of access fittings, as these systems will require an access connection for gauges and service equipment. If not already provided by the manufacturer on the system equipment, male flare fittings may be required to be installed on the system piping. The male flare fitting will be required to be able to be isolated from the system by means of an inline valve or have a Schrader (core type) valve incorporated into its construction. Flare fittings are usually ¼” or 5/16” SAE flare and are usually equipped with a brass cap to protect the threads of the fitting and prevent debris from entering the port.

The proposed amount in Section 1104.6.2.3(1) of 4 pounds (1800 grams) promotes public safety and consumer confidence. As the UL 60335-2-40 and ASHRAE 15 standards already reference required refrigerant detection sensor levels (about 1.8 kg or 4 lbs.), there is no need to add any language.

Section 1104.6.4 (1)(a) is being modified to differentiate between applied products and unitary products. Section 1104.6.4(1)(b) was added to be consistent with the modified language in Section 1104.6.2.3. According to AHRI (AHRI Industry Sectors (ahrinet.org) applied products range from Air-cooled water-chilling chillers to water-cooled water-chilling or heat pump water-heating chillers. Unitary products are self-contained equipment to split systems.

Furthermore, Section 1104.6(5)(b) is being stricken and 1104.6(5)(a) is being modified to remove “or” to support the deletion of 1104.6(5)(b). Air should not be exhausted from the ventilation system into the building.

Recommendation 2 - Machinery Rooms

Task Group Recommendation 2 - Machinery Rooms: The proposed modification would bring the Uniform Mechanical Code in line with ASHRAE 15. The 3rd edition of UL/CSA 60335-2-40 has requirements for testing (and listing) of equipment using Group A2L refrigerants. The A2L Task Group modified various portions of the extracted language as needed to address enforceability and health and safety concerns. The requirements follow the extraction policy of IAPMO. Furthermore, a definition for Refrigerant Concentration Limit (RCL) is being added from ASHRAE 34 as the term is used but currently not defined in the code.

Item #: 210

UMC 2024 Section: 220.0, Chapter 11, Table 1701.1

COMMITTEE ACTION: ACCEPT AS SUBMITTED

Recommendation 3 - Table 1104.1

Task Group Recommendation 3 - Table 1104.1: This change clarifies the acceptance of Group A2L refrigerants in high probability systems used for human comfort applications. Section 1104.6 already permits Group A2L refrigerants to be used for human comfort in direct systems provided the equipment is listed for A2L refrigerants. Footnote 4 identifies the requirements in Section 1104.6 for A2L refrigerants. This will assure that the equipment meets the listing and safety requirements of Section 1104.6.

Item #: 211

UMC 2024 Section: Table 1104.1

COMMITTEE ACTION: ACCEPT AS SUBMITTED

Recommendation 4 - Labeling and Identification

Task Group Recommendation 4 - Labeling and Identification: The nameplate requirements in Section 307.3 are specifically for heat pumps and electric cooling appliances. These requirements include electrical ratings. The scope of Section 1115.5 is a broader scope, including products that do not have electrical ratings. Because the scope of Section 1115.5 is specific to products used in Chapter 11, this requirement belongs in Chapter 11 to provide a complete set of requirements for refrigeration installations.

Item #: 209

UMC 2024 Section: 307.3, 307.4, 1115.5

COMMITTEE ACTION: ACCEPT AS SUBMITTED

CAC Recommendation:

[Enter CAC recommendation(s), if any]

Agency Response:

[Enter the agency's response to CAC recommendation(s)]

ITEM 6
Chapter 13 FUEL GAS PIPING, Section 1301.1 Applicability

[The SFM proposes that fuel oil piping systems be installed in accordance with NFPA 37]

The SFM proposed amendment is not a new requirement. NFPA 31 referenced in Section 1301.1 contains requirements that pertain only to oil burning equipment used for heating systems. The proposed SFM amendment identifies that the installation of fuel oil piping systems connected to combustion engines and gas turbines is also a concern. The SFM proposed amendment requires fuel oil piping systems connected to combustion engines and gas turbines are to be installed in accordance with NFPA 37. The SFM proposed amendment coordinates existing provisions of California Building Code Section 442.1 and NFPA 110-2019 that is adopted by California Building Code Section 2702.1.3 and California Fire Code Section 1203.1.3 that require the installation of internal combustion engines and gas turbines including piping systems comply with NFPA 37.

Incomplete information and references to inapplicable or incorrect information are a source of confusion for designers, owners and code officials. Completing such information and correcting such references assists with the interpretation and understanding of provisions of the code.

CAC Recommendation:

[Enter CAC recommendation(s), if any]

Agency Response:

[Enter the agency's response to CAC recommendation(s)]

ITEM 7
Chapter 16 STATIONARY POWER PLANTS, Section 1602.0, 1602.1, 1602.1.1, 1602.2

[The SFM proposed amendment adds liquid fueled engines and gas turbines to the subject matter of Section 1602.0]

The SFM proposed amendment is not a new requirement. California Mechanical Code Section 1602.0 and Subsections 1602.1 and 1602.2 address only gas engines. The SFM

amendment adds liquid fueled engines and gas turbines to the subject matter of Section 1602.0. Liquid fueled internal combustion engines are a common configuration used for the propulsion of stationary power plants; however, they are omitted from the scope of Section 1602.0. The SFM proposed amendment provides a reference to NFPA 37 for the installation of liquid fueled engines and gas turbines. Existing references to NFPA 37 are in Section 1602.1 and Section 1602.3. The proposed SFM amendment identifies that the installation of liquid fueled internal combustion engines and gas turbines must comply with NFPA 37. The SFM proposed amendment also coordinates existing provisions of California Building Code Section 442.1 and NFPA 110-2019 adopted by California Building Code Section 2702.1.3 and California Fire Code Section 1203.1.3. These sections require the installation of internal combustion engines and gas turbines comply with NFPA 37.

Incomplete information and references to inapplicable or incorrect information are a source of confusion for designers, owners and code officials. Completing such information and correcting such references assists with the interpretation and understanding of provisions of the code.

CAC Recommendation:

[Enter CAC recommendation(s), if any]

Agency Response:

[Enter the agency's response to CAC recommendation(s)]

ITEM 8
Chapter 17 REFERENCE STANDARDS

[Adopt the latest edition of ASHRAE 15 and 34 (2022)]

ASHRAE Standard 15 specifies requirements for the safe design, construction, installation, and operation of refrigeration systems. The 2022 edition is the largest update ever and includes major changes to the use of non-A1 refrigerants, new overpressure protection, new piping requirements, updated volume and refrigerant charge limit calculations, refrigerant detector/detection, and mitigation actions and more.

ASHRAE Standard 34 describes a shorthand way of naming refrigerants, and it assigns safety classifications and refrigerant concentration limits based on toxicity and flammability data. The 2022 edition of the standard adds safety designations for twenty new refrigerants, modernizes submission application requirements for new refrigerants, and is updated to capture flammability limits used for non-A1 refrigerant maximums.

CAC Recommendation:

[Enter CAC recommendation(s), if any]

Agency Response:

[Enter the agency's response to CAC recommendation(s)]

Chapter 17 REFERENCE STANDARDS

[Amend the 2018 edition of NFPA 37 reference sections]

The SFM proposed amendment is not a new requirement. Existing provisions of California Building Code Section 442.1 and NFPA 110-2019 that is adopted by California Building Code Section 2702.1.3 and California Fire Code Section 1203.1.3 require the installation of internal combustion engines and gas turbines including piping systems comply with NFPA 37. The proposed SFM amendment coordinates with proposed SFM amended provisions in Sections 1301.1 and 1602.2 that reference NFPA 37 for the installation of fuel piping systems serving internal combustion engines and gas turbines.

Incomplete information and references are a source of confusion for designers, owners, and code officials. Completing such information and correcting such references assists with the interpretation and understanding of provisions of the code.

CAC Recommendation:

[Enter CAC recommendation(s), if any]

Agency Response:

[Enter the agency's response to CAC recommendation(s)]

Chapter 17 REFERENCE STANDARDS

[Adopt the 2022 edition of NFPA 409]

NFPA 409 is the standard that dictates fire protection in aircraft hangars. And with California (and MANY other states) banning PFAS, PFOS, it’s been a huge challenge to find a suitable replacement.

The 2022 edition of NFPA 409 came out with a new provision that can be a huge help for Group II hangars. It allows sprinklers only with NO foam. It would be a huge help if this was adopted sooner than the next triennial to avoid having to file AM&Ms and “re-invent the wheel” since the new Standard now gives another option.

The 2022 edition of NFPA 409 was issued by the Standards Council on 2 October 2021 with an effective date of 22 October 2021. A particularly significant change in the 2022 edition was recognition by the Technical Committee supporting the removal of foam fire suppression systems in Group II hangars due to a multitude of issues including lack of historical data supporting the fuel spill hazard that foam suppression systems were intended to protect. Verbiage approved in NFPA 409 Section 9.1.5 (copied below) permits the use of closed-head automatic fire sprinkler systems for Group II hangars where hazardous operations are not performed:

9.1.5

For the protection of aircraft storage and servicing areas of Group II aircraft hangars where hazardous operations, including but not limited to fuel transfer, welding, torch cutting, torch soldering, doping, hot work (e.g., welding, cutting, brazing, grinding), spray painting, oxygen service, composite repairs, fuel system or fuel tank maintenance, aircraft cabling, wiring changes, or initial electrical system testing, are not performed, a closed-head automatic sprinkler system in accordance with Section **9.2** shall be permitted.

The committee's statement regarding this change was,

"…The requirements for foam in a Group II hangar have not kept pace with the current risk of fire in modern hangar operations and aircraft. The low risk of fuel spill fires in non-hazardous operations hangars warrants modified protection requirements…"

One of the major reasons for the change was based on this research.

University of Maryland report

Phase 1 – 2019 Review of Foam Fire Suppression System Discharges in Aircraft Hangars

Review of Foam Fire Suppression System Discharges in Aircraft

nata.aero/assets/Site_18/files/NFPA%20409/UMD%20Report%2011-12.pdf

Phase 2 – 2021 UMD Report Focuses on Foam Fire Suppression System Discharges in Aircraft Hangars

UMD Report Focuses on Foam Fire Suppression System Discharges in Aircraft Hangars

nata.aero/pressrelease/umd-report-focuses-on-foam-fire-suppression-system-discharges-in-aircraft-hangars

CAC Recommendation:

[Enter CAC recommendation(s), if any]

Agency Response:

[Enter the agency's response to CAC recommendation(s)]

Chapter 17 REFERENCE STANDARDS

[Adopt the 4th edition of UL 60335-2-40]

Several states have introduced measures curtailing use of these products, such as the California Air Resources Board (CARB) proposing a Global Warming Potential (GWP) limit of 750 starting January 1, 2023, for HVAC products, and January 1, 2024, for chillers, as well as additional requirements for refrigeration systems to go into effect in 2021. In response to these state government regulations, manufacturers are developing systems to use lower GWP refrigerant alternatives. The challenge in deploying alternatives to traditional HVAC/R refrigerants is that these lower GWP refrigerants typically exhibit more flammable properties than refrigerants designated as ASHRAE A1. The 4th Edition of this

standard has added additional refrigerant leak detection specifications while keeping the system designs optimal for implementing lower global warming potential refrigerants in air conditioning systems.

AB 209 (2021-2022) [Approved by Governor September 06, 2022. Filed with Secretary of State September 06, 2022.]:

This bill would require the Building Standards Commission, on or before July 1, 2023, to consider whether to adopt specified consensus safety standards. If the commission does not adopt the consensus safety standards, then the bill would prohibit a state or local building code from prohibiting the use of a refrigerant listed as acceptable under specified provisions of the federal Clean Air Act if the use is installed in accordance with specified standards, effective July 1, 2024.

SEC. 8.

Section 18944.21 is added to the Health and Safety Code, to read:

18944.21.

(a) Not later than July 1, 2023, the commission shall consider whether to adopt the most recent versions of the following consensus safety standards, to be codified and published in the California Building Standards Code: American Society of Heating, Refrigerating and Air-Conditioning Engineers (ASHRAE) Standard 15-2019; ASHRAE Standard 34-2019; Underwriters Laboratories (UL) 60335-2-89 2nd edition; and UL 60335-2-40 3rd edition.

(b) If the commission does not adopt all of the consensus safety standards listed in subdivision (a), then effective July 1, 2024, no state or local building code provision shall prohibit the use of a refrigerant listed as acceptable under Section 7671k of the federal Clean Air Act (42 U.S.C. Sec. 7401 et seq.), provided each use is installed in accordance with the most recent version of ASHRAE Standard 15 and the applicable listing standard, such as UL 60335-2-89 or UL 60335-2-40.

CAC Recommendation:

[Enter CAC recommendation(s), if any]

Agency Response:

[Enter the agency's response to CAC recommendation(s)]

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

This comprehensive 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.

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 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 cause elimination, of existing businesses 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 increase in cost of compliance with the proposed building 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.