FINDING EMERGENCY

FOR

PROPOSED EMERGENCY BUILDING STANDARDS

OF THE

OFFICE OF THE STATE FIRE MARSHAL

REGARDING THE 2010 CALIFORNIA BUILDING CODE

CALIFORNIA CODE OF REGULATIONS, TITLE 24, PART 2

ANTIFREEZE SOLUTIONS WITHIN RESIDENTIAL BUILDING APPLICATIONS

MODIFICATIONS TO NFPA 13, 13D AND 13R FIRE SPRINKLER STANDARDS

Government Code section 11346.1 mandates that any finding of emergency shall include a written statement which contains the information required by paragraphs (2) to (6), inclusive, of subsection (a) of Section 11346.5 and a description of the specific facts showing the need for immediate action.

FINDING OF EMERGENCY

The following information is evidence that the amendments to Title 24, Part 2, California Building Code (CBC), Part 2.5 California Residential Code (CRC) and Part 9 California Fire Code (CFC) – NFPA 13, 13D and 13R reference standards as proposed by the Office of the State Fire Marshal (OSFM) are necessary for the immediate preservation of the public peace, health and safety or general welfare of the public relating to the design and construction of Group R occupancies and other dwelling unit applications where automatic fire sprinkler systems utilizing antifreeze solutions.

At the February 28 – March 1, 2011 meeting of the National Fire Protection Association (NFPA) Standards Council meeting a final decision was made to issue the tentative interim agreements (TIA) 1015, 1012, and 1013 on NFPA 13, NFPA 13D and NFPA 13R, respectively to the use of antifreeze solutions within all NFPA 13D applications and within the dwelling unit portions of NFPA 13 and NFPA 13R sprinkler systems. The issuance of the TIAs was based on a detailed research project conducted by in the NFPA Research Foundation in conjunction with Underwriters Laboratories, Inc. The use of antifreeze additives to new residential fire sprinkler systems is estimated to only affect less than 5 percent of the total state-wide residential fire sprinkler installations.

The SFM concurs with the NFPA recommendations and is proposing the modifications contained in this proposed emergency rulemaking for installation of residential fire sprinklers in areas prone to prolong freezing conditions while maintaining the highest level of public safety through the installation of residential fire sprinklers. This emergency rulemaking would require that only pre-mixed antifreeze solutions in concentrations not to exceed 40% propylene glycol and concentrations of glycerin not exceeding 50% in residential occupancies and other dwelling units be permitted for the protection of sprinkler pipe in freezing conditions where no other alternative to freeze protection is available. The research did not test the performance of diethylene glycol-water or ethylene glycol-water mixtures. As no performance information is available through the research study, the SFM proposes prohibiting their use within dwelling unit portions of the sprinkler system.

These proposed building standards are being submitted to the California Building Standards Commission (CBSC) to continue the emergency adoption approved October 19, 2010 with the effective date of January 1, 2011, with additional modification. The emergency building standards will expire June 29, 2011 without continuation or completion of the certification of compliance submitted to the CBSC. With staff resources, timelines of the 2010 interim rulemaking cycle and the dedication of completing rulemaking packages for the 2010 California Building Standards Codes interim supplement, OSFM does not foresee the conclusion of the certification of compliance phase for the April 2011 CBSC meeting. Thus, the OSFM requests a re-approval and re-adoption on an emergency basis the SFM EF 01/10, 02/10 and 03/10 emergency rulemaking that was approved by the CBSC on October 19, 2010 with additional modification.

Furthermore, the SFM is providing modification to NFPA 13D Section 4.1.4.1.1 (TIA 1012) to maintain voluntary annual testing and inspection provisions. Until further research through the SFM Automatic Extinguishing Advisory Committee and statutory analysis is made, voluntary testing and maintenance for one- and two-family dwelling fire

sprinkler systems with antifreeze will be maintained. This modification has no change in regulatory effect and will not affect the testing and maintenance requirements for other residential occupancies or provisions found in the California edition of NFPA 25. The SFM recommends and encourages testing and inspection be done on a annual basis.

The SFM proposes where necessary to ensure that the regulations of the California Building Standards Code, establish and or maintain minimum requirements for the prevention of fire and for the protection of life and property against fire and panic in accordance with Health and Safety Code 13100.1 that foster, promote and develop ways and means of protecting life and property against fire and panic.

Background

Automatic fire sprinkler systems with antifreeze solutions have more than 60 years of successful use in commercial applications and an equally successful experience since they have been in use in residential applications. Most fire fatalities occur in the home, and when home sprinklers are present, the risk of dying in a home fire decreases by 83%. The Office of the State Fire Marshal supports and urges the expanded use of residential sprinkler systems as the most effective way to prevent fire injury and death in the home and other residential occupancies. While OSFM emphasizes that residential sprinkler systems are and remain reliable and effective, a recent fire incident involving a sprinkler system that contained a high concentration antifreeze solution has raised concerns about the combustibility of antifreeze solutions in residential sprinkler systems. The incident involved a grease fire in a kitchen where a sprinkler system with a reported 71.2% concentration of antifreeze deployed. The fire resulted in a single fatality and serious injury to another person. (Recently, NFPA received a report of another incident, this time in a living room, which may have been exacerbated by the presence of an antifreeze solution.) Following the first incident, NFPA initiated a research project with the Fire Protection Research Foundation (Foundation) and an initial set of fire tests was also conducted by Underwriters Laboratories. Based on information learned from these efforts, NFPA issued an interim safety alert and recommendations in July 2010 and began additional research to gain further information on antifreeze solution performance under various fire scenarios. The Foundation has completed this additional research in a report entitled "Antifreeze Solutions in Home Fire Sprinkler Systems: Phase II Research Interim Report" (2010), and NFPA is providing updated safety information and guidance based on the test results.

Key findings of fire tests:

- Both the 40% propylene glycol and 50% glycerin solutions demonstrated similar performance to that of water alone for fire control throughout the series of tests.
- Antifreeze solutions with concentrations of propylene glycol exceeding 40% and concentrations of glycerin exceeding 50% have the potential to ignite when discharged through automatic sprinklers.
- Based on the results of this research, antifreeze solutions of propylene glycol exceeding 40% and glycerin exceeding 50% are not appropriate for use in residential fire sprinkler systems.
- Consideration should be given to reducing the acceptable concentrations of these antifreeze solutions by an appropriate safety factor.

Based on the detailed evaluation of the NFPA research report, pre-mixed antifreeze solutions in concentration not to exceed 40% propylene glycol and concentration of glycerin not exceeding 50% and research showed that these concentrations performed in the same manner as water. The research did not test the performance of diethylene glycol-water or ethylene glycol-water mixtures. As no performance information is available through the study, the SFM proposes prohibiting their use within dwelling unit portions of the sprinkler system. The use of antifreeze solutions is one measure for the protection of residential sprinkler pipe in freezing conditions, shall only be used as a last method for protection, consideration given to recorded prolonged temperatures, and approved by the authority having jurisdiction.

Background and summary from NFPA Standards Council decision on Tentative Interim Amendments 1015 (NFPA 13), 1012 (NFPA 13D) and 1013 (NFPA 13R)

In August of 2010, the Standards Council voted to issue three Tentative Interim Amendments (TIAs), the effect of which, pending further technical committee consideration, was to prohibit the use of antifreeze within the dwelling unit portions of sprinkler systems. In doing so, the Council took the unusual step of issuing TIAs without the full support of the responsible sprinkler committees. This was because the Council was presented with an unusual and compelling situation in which the status quo in the existing sprinkler documents was no longer tenable, and in which the circumstances required emergency action. (See Standards Council Decision #10-10 [August 5, 2010]). In its decision, the Council stressed that its action was strictly an interim measure that would remain in place "unless and until the responsible technical committees, after due consideration and any correlation by the [Technical Correlating Committee], reach consensus on a different approach." The Council, moreover, stressed that "it is not undertaking to make any

final technical determination about the correct course of action that may eventually emerge. The technical issues concerning the content of NFPA codes and standards are generally for the responsible consensus-based technical committees to determine, and the same should be true in this case." In turning the matter back to the sprinkler committees, the Council noted that the TIAs all involved standards that address the design and installation of new sprinkler systems. It asked the technical committees to examine the important question of what should be done to address antifreeze in existing residential sprinkler systems. Finally, the Council noted that the TIAs did not address antifreeze in nonresidential commercial applications and suggested the need for further research and consideration of the treatment of nonresidential commercial applications as well. (See Standards Council Decision #10-10).

The sprinkler committees have now completed the review and consideration of the antifreeze issues as anticipated in Standards Council Decision #10-10. The technical committees have developed and reached consensus on three new TIAs related to the use of antifreeze in sprinkler systems that proposed to supersede the TIAs previously issued on an interim basis by the Council.

The new TIAs, which were presented to the Council at its meeting of February 28 – March 1, 2011 are: TIA Nos. 1015, 1012 and 1013 on the 2010 editions, respectively, of NFPA 13, Standard for the Installation of Sprinkler Systems, NFPA 13D, Standard for the Installation of Sprinkler Systems in One- and Two- Family Dwellings and Manufactured Homes, and NFPA 13R, Standard for the Installation of Sprinkler Systems in Residential Occupancies up to and Including Four Stories in Height. Also considered by the Council at the meeting was an appeal relating to the TIAs from Dana Haagensen, Massachusetts Department of Fire Services. The appeal requested that the Council not issue the new TIAs and that the three existing TIAs issued in Standards Council Decision D#10-10, and which would be superseded by the new TIAs, remain in place. The existing TIAs, for new installations, prohibit the use of antifreeze solutions within all NFPA 13D applications and within the dwelling unit portions of NFPA 13 and NFPA 13R sprinkler systems.

As suggested above, the new TIAs replace the complete prohibition on the use of antifreeze in the dwelling unit portions of new sprinkler systems. Described in general terms, TIA Nos. 1015, 1012 and 1013, taken together: limit the antifreeze solutions used in sprinkler systems to manufacturer premixed antifreeze solutions only; limit the use of antifreeze in sprinkler systems to specified volume concentrations based on one of the types of permitted solutions; provide additional provisions based on the type of sprinkler for NFPA 13 sprinkler systems; and provide additional requirements for NFPA 13D systems including provisions for annual testing and provisions based on whether the NFPA 13D system is new or existing. The TIAs do not address existing systems designed to NFPA 13 or 13R, however, another TIA on NFPA 25, Standard for the Inspection, Testing, and Maintenance of Water-Based Fire Protection Systems, that is being issued concurrently with these TIAs and that has not been the subject of an appeal, does address antifreeze concentrations for these systems. (See Minute Item 11-3-6, Standards Council Meeting of February 28-March 1, 2011; see also Minute Item 11-3-7, for another TIA on NFPA 25, which did not pass ballot and has not been appealed.) The individual TIAs must, of course, be consulted for the precise terms of the provisions they contain.

The three new TIAs were balloted through the responsible Technical Committees (TC) – the Technical Committee on Sprinkler System Installation Criteria for NFPA 13, and the Technical Committee on Residential Sprinklers for NFPA 13D and NFPA 13R – as well as the Technical Correlating Committee on Automatic Sprinkler Systems (the TCC). Balloting was completed in accordance with the NFPA Regulations Governing Committee Projects, to determine if it had the necessary three-fourths majority support on technical merit and emergency nature in favor of issuance. All three TIAs passed the ballots of the TCs and the TCC on both technical merit and emergency nature. One public comment was received.

The appeal requests that the Council overturn the action recommended by the NFPA codes and standards development process and not issue the TIAs. On appeal, the Standards Council accords great respect and deference to the codes and standards development process. In conducting its review, the Council will overturn the result recommended through that process, only where a clear and substantial basis for doing so is demonstrated. The Council has reviewed the entire record concerning this matter and has considered all the arguments raised in this appeal. In the view of the Council, this appeal does not present any clear and substantial basis on which to overturn the result recommended by the NFPA codes and standards development process. Accordingly, the Council has voted to deny the appeal and issue TIA Nos. 1015, 1012 and 1013.

As indicated above, the Council's previous action in limiting the use of antifreeze in sprinkler systems was intended as an interim measure to allow the sprinkler committees the time and opportunity to review the available information and research and make the final consensus determination about what should or should

not be contained in the sprinkler standards concerning the antifreeze issues. The sprinkler committees have now processed the issues and reached a consensus, meeting in each case the demanding threequarter majority vote. The committees have reviewed and considered the available information, including the research presented in the Fire Protection Research Foundation report, "Antifreeze Solutions in Home Fire Sprinkler Systems, Phase II Research Final Report" issued in 2010. Moreover, and importantly, the TIAs address the use of antifreeze in nonresidential commercial applications and in existing installations, subjects that were not able to be addressed in the previous TIAs. The committees have arrived at reasonable conclusions based on the available information and the many considerations that must be weighed in arriving at consensus judgments. Since absent compelling circumstances were not presented here, the Council must defer to the consensus judgments of the committees.

In voting to issue these TIAs, the Council stresses that the sprinkler committees' consideration of issues related to antifreeze is not at an end. The sprinkler standards are in the Annual 2012 revision cycle, and that the content of the new TIAs will be considered as Proposals during the process. The Fire Protection Research Foundation report discussed areas where future research might be needed, as, for example, in the area of commercial applications. It is anticipated that further research will be conducted and information developed that will aid the sprinkler committees in their continuing consideration of issues raised by the use of antifreeze in sprinkler systems. In the meantime, the Council is requesting, both in aid of the committees' work and for the Council's information, that the sprinkler committees, representatives of the relevant sprinkler industries, the Fire Protection Research Foundation, and any other parties with relevant information provide reports to the Council at its next meeting identifying research needs, planned or ongoing research, and any other activities or developments related to the use of antifreeze in sprinkler systems.

Council Member Roland Huggins recused himself during the deliberation and vote on the issue.

AUTHORITY AND REFERENCE

The CBSC proposes to adopt these building standards under the authority granted by Health and Safety Code Section 18949.2 (a)

The purpose of these building standards is to implement, interpret, and make specific the provisions of Health and Safety Code section 13100.1, 13108, 13113, 13143, 13210, 13211, 17921(b) and 18949.2(b) and (c).

Authority:

- Health and Safety Code Sections 13100.1, 13108, 13143, 13210, 13211, 17921(b), 18928(a), and 18949.2(b) and (c)

Reference:

- Health and Safety Code Sections 13108, 13113, 13211, 17921(b) and 18949.2(b) and (c)

INFORMATIVE DIGEST

Summary of Existing Laws

Health and Safety Code Section 13108 (a) The State Fire Marshal shall prepare and adopt building standards related to the means of egress, the installation of fire alarms and fire extinguishing systems in any state-owned building or in any state-occupied building.

Health and Safety Code Section 13113 A automatic sprinkler system shall be installed in all 24-hour institutional type occupancies, and homes for the care of aged or senile persons.

Health and Safety Code Section 13133(a) The State Fire Marshal shall develop and adopt regulations establishing new occupancy classifications and specific fire safety standards appropriate for residential facilities, and residential care facilities for the elderly. These fire safety standards shall apply uniformly throughout the state.

Health and Safety Code Section 13143 Existing law requires the State Fire Marshal to prepare and adopt regulations establishing minimum requirements for the prevention of fire and for the protection of life and property against fire and panic in any building or structure used or intended for use as an asylum, jail, mental hospital, hospital, home for the elderly, children's nursery, children's home or institution, school, or any similar occupancy of any capacity, and in any assembly occupancy where 50 or more persons may gather.

Health and Safety Code Section 13210 Existing law defines high-rise structures as: 1) "Existing high-rise structure" as a high-rise structure, of which is construction commenced or completed prior to July 1, 1974, 2) "High-rise structure" means every building of any type of construction or occupancy having floors used for human occupancy located more than 75 feet above the lowest floor level having building access, except buildings used as hospitals, as defined in Section 1250 and 3) "New high-rise structure" means a high-rise structure, the construction of which is commenced on or after July 1, 1974.

Health and Safety Code Section 13211 – Existing law requires the State Fire Marshal to prepare and have adopted regulations establishing minimum requirements for the prevention of fire and for the protection of life and property against fire and panic in high-rise structures.

Health and Safety Code Section 17921(b) The State Fire Marshal shall adopt, amend, or repeal and submit building standards for approval pursuant to the provisions of Chapter 4 (commencing with Section 18935) of Part 2.5, and the State Fire Marshal shall adopt, amend, and repeal other rules and regulations for fire and panic safety in all hotels, motels, lodging houses, apartment houses and dwellings, buildings, and structures accessory thereto. These building standards and regulations shall be enforced pursuant to Sections 13145 and 13146; however, this section is not intended to require an inspection by a local fire agency of each single-family dwelling prior to its occupancy.

Health and Safety Code Section 18928 (a) requires each state agency adopting or proposing adoption of a model code, national standards, or specification shall reference the most recent edition of applicable model codes, national standards, or specifications.

Health and Safety Code Section 18949.2 (b) – This law provides that the State Fire Marshal shall remain the state agency responsible for the developing building standards to implement the state's fire and life safety policy. (c) This section of Health and Safety Code § 18949.2 provides that the state's fire and life safety building standards, as developed by the State Fire Marshal and adopted by the Commission, shall be continued to be based on the state's fire and life safety policy goals and mandates.

Summary of Existing Regulations

The SFM currently amends and adopts through the California Building Standards Commission, California Code of Regulations, Title 24, Parts 2 CBC, Part 2.5 CRC and Part 9 CFC with NFPA 13, 13D and 13R referenced standards with SFM amendments relating to regulations that establish minimum requirements for the prevention of fire and for the protection of life and property against fire and in any building or structure used or intended for use as defined in each of the Health and Safety Code references shown above. These regulations contain provisions for automatic fire sprinkler systems required in such occupancies and the protection from system freeze in cold weather events.

Summary of Effect

These propose emergency regulations would require that only pre-mixed antifreeze solutions in concentrations not to exceed 40% propylene glycol or concentrations of glycerin not exceeding 50% in residential occupancies and other dwelling units be permitted for the protection of sprinkler pipe in freezing conditions where no other alternative to freeze protection is available.

Comparable Federal Statue or Regulation

The OSFM has determined that there are not comparable federal regulations or statutes that address these specific provisions found in the 2010 California Building Standards Code or the NFPA 13, 13D and 13R referenced standards.

Policy Statement Overview

The functions of the office shall be to foster, promote and develop ways and means of protecting life and property against fire and panic. The broad objective of these proposed emergency regulations are to establish minimum standards for installation of residential fire sprinklers in areas prone to prolong freezing conditions while maintaining the highest level of public safety through the installation of residential fire sprinklers.

The SFM further proposes where necessary to ensure that the regulations of the California Building Standards Code, establish and or maintain minimum requirements for the prevention of fire and for the protection of life and property against fire and in any building or structure used or intended for use as defined in each of the Health and Safety Code references shown above in the summary of existing laws.

MATTERS PRESCRIBED BY STATUTE APPLICABLE TO THE AGENCY OR TO ANY SPECIFIC REGULATION OR CLASS OF REGULATIONS

The SFM has determined that there are no other matters prescribed by statute applicable to the agency or to any specific regulation or class of regulation.

MANDATE ON LOCAL AGENCIES OR SCHOOL DISTRICTS

The SFM has determined that the proposed regulatory action would not impose a mandate on local agencies or public school districts.

FISCAL IMPACT STATEMENT

A. Cost or Savings to any state agency: **No**
B. Cost to any local agency required to be reimbursed under Part 7(commencing with Section 17500) of Division 4: **No**
C. Cost to any school district required to be reimbursed under Part 7 (commencing with Section 17500) of Division 4: **No**
D. Other non-discretionary cost or savings imposed on local agencies: **No**
E. Cost or savings in federal funding to the state: **No**