

**STATE OF MINNESOTA  
DEPARTMENT OF PUBLIC SAFETY  
FIRE MARSHAL DIVISION**

In the Matter of the Proposed Amendments to Rules  
of the State Department of Public Safety Governing  
the Minnesota Uniform Fire Code.

STATEMENT OF NEED AND  
REASONABLENESS

The proposed rules are amendments to the Minnesota Uniform Fire Code (MUFC). The MUFC was originally adopted October 3, 1975 by the State Department of Public Safety. The last time that the MUFC was amended was August 23, 1993.

Pursuant to Minnesota Statutes, section 299F.011, the Commissioner of Public Safety through the State Fire Marshal Division is charged with the responsibility of promulgating a statewide fire code. It is the duty of the commissioner to amend the MUFC to maintain the most up-to-date standards regarding minimum safeguards of life and property together with regulating and controlling the use and maintenance of buildings and structures.

The most recent version of the MUFC, effective August 23, 1993, Minnesota Rules, parts 7510.3290 to 7510.3480, adopted by reference the 1991 edition of the Uniform Fire Code (UFC) with certain amendments as a portion of the Minnesota Uniform Fire Code. The proposed rules contain amendments to the MUFC which adopt and include amendments to the 1997 Edition of the UFC as promulgated by the International Fire Code Institute (IFCI) of Whittier, California. The UFC is one of the four model fire prevention codes which presently exist in the United States.

The proposed MUFC establishes minimum uniform rules for the state of Minnesota by adopting the entire model code and making minor amendments to it in order to be consistent with Minnesota laws and rules, as well as to address fire safety concerns which are specific to the state of Minnesota.

A number of the amendments contained in these rules are made to conform to the State Building Code (SBC). The intent is to correlate the provisions of the MUFC with those in the SBC so that conflicts are eliminated. The intent of the International Fire Code Institute, which publishes the UFC, was that the Uniform Building Code (UBC) and the UFC correlate and be compatible. The UBC, as published by the International Conference of Building Officials, has been adopted by reference and amended as part of the SBC by the Commissioner of Administration pursuant to Minnesota Statutes, section 16B.61, subdivision 1.

Other amendments have been made at the request of the Minnesota State Fire Chiefs' Association Fire Code Committee in an effort to reduce the complexity of the fire code adoption process at the local level. Several amendments have been made which will help local units of government by making the fire code less complex and easier to enforce. In addition some of the amendments which are proposed are intended to assist local communities to address their unique fire safety concerns. This is consistent with Minnesota Statutes, section 299F.011, subdivision 4, which allows local units of government to adopt fire-safety regulations which are in addition to or more stringent than the MUFC as long as they are uniform for each type of building covered and do not exceed the applicable requirements of the SBC.

The State Fire Marshal has received input from affected parties in the development of these rules. The State Fire Marshal had originally intended to adopt the 1994 edition of the UFC. A Notice of Solicitation was published in

the July 24, 1995, State Register. During this time, public comments were received and the State Fire Marshal assessed the potential impact of including those comments and suggestions as part of the MUFC.

Beginning in July of 1995, a discussion draft of proposed rules was sent to the fire code representatives of the Minnesota State Fire Chiefs Association and the Fire Marshals Association of Minnesota for comments and suggestions. The State Fire Marshal's Division has also held discussions with school officials regarding the impact of the MUFC on schools. Further, the State Fire Marshal's Division has met with other interested parties to discuss issues affecting those parties. Those efforts have generated a number of comments and resulted in a number of modifications to the discussion draft to make the rules more workable for affected parties while still maintaining an acceptable level of fire safety.

Based on the time it took to satisfactorily resolve the comments and suggestions received, the State Fire Marshal decided in the Spring of 1997 to suspend efforts to adopt the 1994 edition of the UFC and instead adopt the 1997 edition. A Notice of Request for Comments was published in the August 18, 1997, State Register. To date, no outside suggestions or comments have been received.

#### Statutory Authority

Minnesota Statutes, section 299F.011, subdivision 1, states: "The commissioner of public safety through the division of fire marshal may promulgate a uniform fire code and make amendments thereto in accordance with the administrative procedure act in chapter 14." The Commissioner also has general rulemaking authority under Minnesota Statutes, section 299A.01, subdivision 6, "to promulgate such rules pursuant to chapter 14, as are necessary to carry out the [duties of the Commissioner]." The adoption of the UFC (as one of the nation's model fire prevention codes) satisfies additional language in Minnesota Statutes, section 299F.011, subdivision 1, which states: "The code and its amendments shall conform insofar as practicable to model fire codes generally accepted and in use throughout the United States, with consideration given to existing statewide specialty codes presently in use in the state of Minnesota."

#### Fees Imposed By The Rules

Since these rules do not fix or impose fees, Minnesota Statutes, section 16A.128, subdivisions 1a and 2a, do not apply.

#### Fiscal Impact

Many of the amendments being proposed by the State Fire Marshal Division are being done to lessen fiscal impact. The State Fire Marshal Division has carefully weighed the various requirements against the potential impact on business and governmental agencies and has attempted to use acceptable alternate means of compliance whenever possible to reduce fiscal impact while maintaining an acceptable level of fire and life safety. These will be addressed individually in the rule-by-rule analysis.

The purpose of the MUFC, and fire prevention in general, is to reduce the impact of fire on Minnesota citizens and property. A study conducted by the U.S. Department of Commerce a few years ago estimated that the total fiscal impact of fire annually was \$128 Billion. This included the direct losses due to fire, cost of insurance, cost of fire suppression, business interruptions and loss of tax base. When this national annual total is divided by 50 (the number of states), the average impact per state is \$2.56 Billion.

In 1995, total property loss due to fire in Minnesota exceeded \$131 Million; this is an average of approximately \$30.00 for every resident of the state. When the direct property losses are added to the costs for fire insurance and fire suppression operations, the fiscal impact to every citizen is in the hundreds of dollars annually. Clearly, fire has a significant fiscal impact and it follows that there will be some costs associated with preventing fire. The State Fire Marshal Division has attempted to lessen the fiscal impact of these rules whenever possible; it

should be noted that these rules are intended to prevent losses from occurring and it is difficult to do a cost/benefit analysis of an event which was prevented from happening.

There are three main goals of fire prevention: protection of lives (life safety), protection of property (dollar loss), and protection of the property's mission (maintaining the continuity of operations). According to national statistics most businesses which sustain a serious fire do not rebuild on that site and Minnesota State Law allows that property to be assessed taxes at a lower rate (similar to undeveloped land). Based on these considerations, other benefits of fire prevention are to prevent the erosion of local tax base and to keep employers operating within a community or within the state.

The issue of fiscal impact to the property owner vs. the taxpayer or community at large is another consideration which needs to be addressed when discussing the MUFC's fiscal impact. The MUFC does impose requirements which may be costly to the individual property owner in an effort to ultimately reduce the burden of fire protection on the community as a whole. The question becomes: Is it in the best interests of the community to require that a property owner provide sprinkler protection for its newly constructed building instead of having the taxpayers of the community pay for public enhancements to the city's infrastructure (more fire hydrants and larger water mains) and response capabilities (more fire apparatus, stations, and firefighters)? This is in line with the notion of individual and corporate responsibility for protecting ones self.

#### Persons Affected Who Will Bear the Costs of the Proposed Rules

Property owners and managers are those who most frequently bear the cost of fire code compliance. Due to the broad impact of the state fire code, it is impossible to identify all classes of persons who may be impacted from a cost standpoint. As indicated above, there has been a sincere attempt made to minimize the fiscal impact wherever possible while still maintaining an acceptable level of fire safety. Where a specific class of persons are expected to be impacted by a certain section, that class of persons is specifically identified in the rule-by-rule analysis.

The State Fire Marshal Division has identified persons who may be impacted by the proposed rules. The following persons, associations, organizations and agencies have received copies of the proposed rules, the Statement of Need and Reasonableness, and the Dual Notice of Intent to Adopt Rules:

- Care Providers of Minnesota
- Minnesota Multi-Housing Association
- Association of Residential Resources in Minnesota (ARRM)
- Minnesota Burglar and Fire Alarm Association
- National Fire Sprinkler Association
- Minnesota Propane Gas Association
- Minneapolis Building Owners and Managers Association
- American Institute of Architects – Minnesota Chapter – Code Committee
- REM Minnesota, Inc.
- MN Retail Merchants Association
- American Family Insurance Company
- Northern States Power Company
- Local building code officials
- Local fire code officials
- Property management companies
- Minnesota Petroleum Marketers Association
- Minnesota Department of Health – Facility and Provider Compliance
- Minnesota Building Officials – Code Committee

- State Building Codes and Standards Division (Department of Administration)

#### Persons Affected Who May Benefit from the Proposed Rules

Many of the classes of persons who may benefit from the rules could be considered from a "global" perspective. As identified earlier, the taxpayers and residents of a community benefit through the reduction of fire loss and related impact (higher taxes, loss of tax base, decay of community, etc.). The fire service benefits by being able to control their fire safety concerns through fire prevention.

The insurance industry potentially benefits through reduced fire losses; in the long term, these reductions can result in lower insurance premiums to the insured. The fire protection industry (sprinkler and alarm companies) has also been identified as benefiting from these rules.

The rules also benefit the design professionals (i.e. architects and engineers) by having a uniform set of design standards, as opposed to having to learn of each municipality's individual requirements. There is also some benefit to the construction industry who is often called upon to make the physical repairs which are required by the various requirements of the fire code.

Lastly, occupants, residents, and guests benefit from an enhanced level of fire and life safety in the various buildings where they frequent, live and stay.

Where a specific class of persons are expected to benefit by a certain section, that class of persons is specifically identified in the rule-by-rule analysis.

The Department of Public Safety's State Fire Marshal Division has been working with various organizations and associations on the development of these rules; including the following:

- Minnesota State Fire Chiefs Association
- Fire Marshals Association of Minnesota
- Minnesota Building Officials
- State Building Codes and Standards Division (Department of Administration).

#### Cost to Agencies and Anticipated Effect on State Revenues

There will be no additional costs to the State Fire Marshal Division (which is the primary state enforcement agency for these rules) due to the implementation and enforcement of the proposed rules. Due to the fact that these rules are adopting a nationally recognized fire prevention code, by reference, and making amendments to that code, the proposed rules typically lessen the cost of implementing and enforcing the proposed rules on the agency.

Other state agencies are impacted by the state fire code, particularly those that own or construct facilities, equipment or systems that are regulated by the code. As indicated earlier, most of the proposed rules are intended to lessen the impact of the code so these would not represent an increase in the cost to state agencies.

There is no anticipated effect on state revenues.

#### Determination of Less Costly or Less Intrusive Methods

Most of the proposed amendments to the model code are intended to lessen fiscal impact or be less intrusive. The specific reasons for each rule change are provided in the rule-by-rule analysis.

#### Alternate Methods Considered and Rejected

The State Fire Marshal received requests from the public asking for inclusions and amendments to the state fire code. These items were considered and discussed throughout the development and adoption processes for both the 1994 and 1997 editions of the UFC. The following is a synopsis of the requests received and the decision made:

- A church asked that the requirements for pre-recorded voice evacuation systems be eliminated in Assembly occupancies; this change was made (see Part 7510.3360, subpart 9).
- A nursing home administrator asked that the requirements for fire retardant waste baskets in resident rooms be eliminated in buildings which are non-smoking and sprinkler-protected. The requestor cited a \$12.00 increase in the cost of fire retardant wastebaskets vs. non-fire retardant wastebaskets. This change was not made due to concerns about the potentially rapid spread of these types of fires (prior to sprinklers activating) and difficulties in enforcement (different requirements in similar facilities).
- A manufacturer's representative asked that certain National Fire Protection Association (NFPA) standards dealing with spark detection and dust explosion control be adopted by reference as part of the state fire code. This change was not made due to the financial impact to municipalities who would need to purchase additional code books. Also, the language in the administrative section of the code allows the code official to use nationally recognized standards for unique situations where no applicable standards or requirements are set forth in the code (see Section 101.3).
- The Minnesota Propane Gas Association requested that the most current edition of NFPA 58 be adopted for the protection of liquefied petroleum (L.P.) gas. This change was made (see part 7510.3460).
- The Minnesota Department of Natural Resources (DNR) requested that certain requirements of the Uniform Fire Code dealing with open burning not be adopted as they conflict with certain DNR Open Burning Regulations. This change was made (see part 7510.3370, subpart 1).
- A local fire inspector requested several changes related to fire alarm installation, inspection and maintenance. Similar requests have been made to the model codes at a national level. These changes were not made for the following reasons: the changes would have required more frequent inspection and testing of fire alarm and sprinkler systems (substantial fiscal impact); they would have prescribed a minimum audibility level for fire alarm systems (no consensus of experts on this issue at this time); adopt the newest edition of the standard by reference (there was insufficient time to make a detailed analysis of the new standard).
- The Minnesota Building Officials Association (MNBO) requested that we delete an exception which had originally been proposed for the section dealing with pedestrian walkways; this change was made.
- MNBO also requested that we delete the proposal dealing with fire-rated exit corridors in sprinklered schools. This change was not made as it was felt that enforcement of these provisions, as presently written in the codes, is unrealistic (see part 7510.3580, subpart 5).
- The State Building Codes and Standards (SBCS) Division of the Department of Administration sent a letter of objection to 30 of the proposed amendments to the 1994 edition of the UFC. After meeting with SBCS in December of 1996, they dropped their objections to 23 of the items; 7 issues remained unresolved. Two of the issues are the same as those raised by MNBO. One of the items was deleted from the rules (prohibition of wood-burning stoves in attached garages). One of the concerns was addressed as a code change between the 1994 and 1997 editions of the UFC (smoke detectors in Group R-3 occupancies; see part 7510.3360, subpart 16). In meeting with the SBCS and MNBO Code Committee, language was developed to address one of the remaining issues: sprinkler system security, monitoring and alarms (Section 1003.3.1; see part 7510.3360, subpart 3b). The two remaining issues are as follows: sprinkler system interior alarm exception (Section 1003.3.2; see part 7510.3360, subpart 3b) and area separation walls in Group R-1 Occupancies not being a substitute for automatic sprinklers. In discussions with the SBCS, they acknowledged that they agreed with what was being proposed for these items but they objected to them being in the state fire code as opposed to the state building code. They also raised concerns that there would be inconsistencies between the two codes. After meeting with

representatives of the fire service organizations who have assisted in the development of these rules, it was the opinion of the State Fire Marshal not to further amend the proposals as it was felt that they were in the interest of fire safety and loss reduction.

#### Probable Costs of Complying

As discussed earlier in the section dealing with fiscal impact, there are costs associated with compliance with the state fire code. It is not always easy to assign a cost/benefit to preventing an incident from occurring. In an effort to comply with this requirement, we are again relying on the research conducted by the U.S. Department of Commerce, National Institute of Standards and Technology (NIST), Building and Fire Research Laboratory (BFRL). Of the \$128 Billion annual fire impact in the United States, \$20 Billion was for code compliance related to construction (building and fire code) and \$6.5 Billion was for maintenance of fire protection systems, devices and equipment.

We have found in previous research that Minnesota is close to an "average" state in terms of population and geographic area. By dividing the amounts which were estimated for construction and maintenance by 50 (the number of states), we find \$400 Million and \$130 Million spent, respectively.

In the construction category, the majority of the monies expended in this area are for fire protection for new construction and related to the building code. We used an estimate of 90% of this total for new construction (which are primarily building code requirements) and 10% for existing buildings (which are primarily fire code requirements). This would place the impact of fire code compliance at \$40 Million annually.

In the maintenance category, it is more difficult to assign a percentage. The state fire code has many requirements for maintenance of fire protection systems, devices and equipment. But certainly there are many situations where the work being performed is voluntary in nature (the owner initiates it as opposed to being "ordered" to by a fire official) or where the work is being required by a "third-party" interest, such as an insurance company requirement. For purposes of assigning a monetary amount to this category, 50% was used. Based on 50% of the maintenance work being related to the cost of fire code compliance, it is estimated that \$65 Million is being spent annually.

This would bring the total estimated cost of fire code compliance in Minnesota to \$105 Million (\$40 Million in construction costs and \$65 Million in maintenance costs). In an attempt to validate these estimates we looked at two additional factors: amount spent on public school fire safety improvements and the amount of fire sprinkler work which is performed in the state.

The State Fire Marshal works closely with the Department of Children, Family and Learning (DCFL) on fire safety improvements to public schools. Minnesota State Statutes allow for school districts to levy money for fire safety improvements when approved by DCFL. There is an aggressive program of statewide inspection and fire safety upgrades in public schools. At the present time DCFL is approving approximately \$21 Million (FY97) for fire and life safety improvements. This amount includes costs for both construction and maintenance.

The State Fire Marshal regulates and licenses the fire protection (fire sprinkler) industry. In 1996, the industry reported that \$52.5 Million was spent on fire sprinkler installation in Minnesota. This work is primarily being done in new construction but also reflects the work occurring in existing buildings (this amount only covers installation costs; it does not include maintenance and inspection).

It should be noted that Minnesota Statutes, section 299F.011, allows the State Fire Marshal to adopt a statewide fire code and that the code adopted should conform to national model codes. In essence, the State Fire Marshal could adopt by reference one of the model fire codes and make no amendments to it. The majority of the

amendments being proposed are being made to lessen the impact of the requirements which are in the model code.

Several years ago there was a study<sup>1</sup> conducted in an attempt to address the cost and effectiveness of fire code compliance. The study showed that the fire incident rates in cities that inspected their buildings annually were 1/3 to 1/2 less than those cities that did not conduct annual inspections. Based on this research, conservative estimates would indicate that the state would experience an increase of \$43.2 to 65.5 Million in direct property loss due to fire and several millions of dollars worth of indirect costs (increased cost of insurance, increased cost of fire department operations, etc.). Another study<sup>2</sup> showed that a 10% increase in fire prevention activities was associated with a 10% decrease in fire incidence in cities over 25,000 population.

We must also remember that all of this discussion has focused on the issue of cost of compliance. Clearly, the largest benefit of fire safety and fire prevention is the reduction of deaths and injuries due to fire. The track record of fire prevention in reducing deaths and injuries has been remarkable. In the mid-1970s, approximately 12,000 people were dying annually from fire. That total has dropped to less than 5,000 annual deaths due to the development and availability of smoke detectors and fire sprinkler systems.

Fire prevention efforts must be looked at as a long-term investment; comparisons can be made to seat-belt use and anti-smoking campaigns. Whereas it is difficult to always see an immediate decrease or reduction, one can notice trends over a period of time. The frequency of fire deaths has dropped and many disastrous fires have been prevented or their impact minimized due to the requirements of the state fire code.

#### Differences Between Proposed Rule and Existing Federal Regulations

There are no existing federal regulations which specifically address fire safety and fire prevention efforts within buildings which are privately owned. There are federal requirements for federally owned buildings and facilities that supersede state rules. In addition, there are some federal rules which preempt state laws and codes in the construction of manufactured homes and buildings. With these few exceptions, the federal government has historically regarded fire protection, including fire code enforcement efforts, as the role of state and local units of government.

#### Incorporations By Reference

A number of documents are incorporated into the rules by reference. The Revisor of Statutes has approved these incorporations by reference and has listed them on the title pages to the proposed rules.

#### Other Statutory Requirements

Minnesota Statutes, sections 115.43, subdivision 1, 116.07, subdivision 6, and 114A.29, subdivision 4, do not apply to these rules.

#### Witnesses

If the rules go to a public hearing, the witnesses listed below will be available to testify in support of the need for and reasonableness of the rules and to answer questions about the development and the content of the rules.

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<sup>1</sup> John R. Hall Jr. Fire Code Inspections and Fire Prevention: What Methods Lead to Success. Urban Institute (Washington, D.C.).

<sup>2</sup> Research Triangle Institute, International City Management Association, and the National Fire Protection Association, Municipal Fire Service Workbook, prepared for the National Science Foundation, Research Applied to National Needs (Washington, D.C.: Government Printing Office, 1977).

- Thomas Brace, State Fire Marshal, Fire Marshal Division, Minnesota Department of Public Safety, 444 Cedar Street, Suite 145, St. Paul, Minnesota 55101-5145.
- Jon Nisja, Bureau Chief, Fire Marshal Division, Minnesota Department of Public Safety, 444 Cedar Street, Suite 145, St. Paul, Minnesota 55101-5145.
- Robert Imholte, Supervisor, Fire Marshal Division, Minnesota Department of Public Safety, 444 Cedar Street, Suite 145, St. Paul, Minnesota 55101-5145.
- Kristine Hernandez, Rules Coordinator, Minnesota Department of Public Safety, 445 Minnesota Street, Suite 1000, St. Paul, Minnesota 55101-2156.
- Any other employee of the State Fire Marshal Division or the Minnesota Department of Public Safety.

#### Renumbering By Revisor

The existing MUFC adopts the 1991 UFC and then modifies it to be specific to Minnesota. The proposed MUFC does the same with the 1997 edition of the UFC. Because the existing rules and the proposed rules incorporate two similar but distinct codes, the existing rule parts have been amended and the Revisor of Statutes has recommended that the rule parts be renumbered.

A comparison of the rule part numbers for the existing and the proposed rules is found at the end of the proposed rules.

#### Rule-By-Rule Analysis

The need for and reasonableness of each substantive rule is described in the following paragraphs. For ease of understanding, the existing rule parts are identified along with the new rule part designations following the renumbering instructions by the Revisor of Statutes (the proposed rule part numbers are in parenthesis following the rule part).

With the exception of part 7510.3480, subpart 2 (proposed part 7510.3710, subp. 2), all of the rules contain changes. Many of the changes are minor renumbering changes due to a reformat and renumbering of the code. Whereas these rules are primarily "editorial" in nature and contain no new requirements, the need for and reasonableness of these rules are not addressed in any great detail, other than to identify the affected section(s). These rules are:

7510.3300	7510.3370, Subpart 1a
7510.3310	7510.3410
7510.3320	7510.3420, Subpart 1
7510.3330, Subparts 1, 4	7510.3430, Subparts 1, 2
7510.3340	7510.3460
7510.3350, Subparts 2, 4, 5, 6, 7, 8, 10 & 11	7510.3470
7510.3360, Subpart 1	

Many of the other amendments being proposed are due to a change in the incorporations by reference. In previous code adoptions, the State Fire Marshal Division has included the adoption of the National Fire Protection Association's (NFPA) Life Safety Code as part of the state fire code. The Life Safety Code is still being adopted as part of the code but its use is being limited to certain situations to prevent conflicts with other state codes, particularly the State Building Code (SBC), adopted pursuant to Minnesota Statutes, section

16B.61, subd. 1. Although these amendments appear as new language in the proposed rules, these are not new requirements. They have been in previous editions of the Life Safety Code and a part of the state fire code. Whereas these are not new requirements, they are not being addressed in any great detail, other than to identify the affected section(s). These rules are:

7510.3370, subparts 3, 4, 5, 6, 7, 8 (proposed: 7510.3570, subparts 4, 5, 6, 7, 8, 9)

7510.3580, subparts 1, 2, 4, 5, 6, 8

7510.3680

7510.3480, subpart 8b (proposed: 7510.3710, subpart 10)

**7510.3310. Rules And Standards Adopted By Reference.** (Proposed: 7510.3510). The 1997 edition of the UFC, a nationally recognized model code, is adopted to replace the existing 1991 edition. Minnesota Statutes, section 299F.011, subdivision 1, specifies that the state fire code shall conform insofar as practicable to model fire codes generally accepted and in use throughout the United States. This most current edition of the UFC utilizes recent technological advances, including newly developed products and materials as well as new applications of existing products and materials. It also recognizes modern building design and construction features dealing with the occupancy and/or use of the building and addresses potential hazards and/or benefits which accompany those factors. Changes have also been made in this edition of the UFC which provide clarification of code requirements from previous editions and certain provisions have been deleted when it has been found that those provisions are ineffective or obsolete. In addition the UFC is designed as a "companion" document to the Uniform Building Code which has been adopted by the Commissioner of Administration as the state building code pursuant to Minnesota Statutes, section 16B.61.

**7510.3320. Article 1. - Administration.** (Proposed: 7510.3520, subpart 1). Article 1 is a grouping of Articles 1, 2, 3, and 4 from the 1991 edition of the MUFC. The only change is due to the reformat and renumbering of the code; it contains no new requirements.

**7510.3330. Article 1.** (Proposed: 7510.3520, subparts 2, 3, 4 and 7510.3700, subpart 2). Subparts 1, 4 and 6 are being changed due to the reformat and renumbering of the code; they contain no new requirements. Subpart 3a contains language intended to clarify the State Fire Marshal Division's variance procedure and appeals process. Minnesota Statutes, section 299F.011, subdivision 3, allows the commissioner to adopt rules as may be necessary to administer the code. Minnesota Statutes, section 299F.011, subdivisions 5 and 5b, establish variance and appeals processes and considerations but do not provide a mechanism for their implementation, administration and application.

Subpart 3a lays out the conditions under which a fire code variance or appeal can be heard and a procedure for accepting variance or appeal requests (in writing prior to the expiration of any orders issued). Subpart 3a also states that any time extensions given by the state fire marshal are not to be considered expired orders, consistent with Minnesota Statutes, section 299F.011, subdivision 6 ("...the person shall have been given...reasonable time to comply."). This subpart also specifies that the state fire marshal cannot accept variance applications after criminal action for non-compliance has been initiated. It has been the State Fire Marshal's experience that the court system does not desire to prosecute fire code violators until all other options have been exhausted. This language is intended to provide guidance for prosecuting attorneys and judges involved in fire code issues along with fire code officials.

Subparts 2, 3, 5, 7, 8 and 9 are proposed to be repealed.

**7510.3340. Article 1 - Permits.** (Proposed: 7510.3520, subparts 5 and 6). These changes are due to the reformat

and renumbering of the code; they contain no new requirements.

**7510.3350. Article 2 - Definitions and Abbreviations.** (Proposed: 7510.3530). Article 2 replaces Article 9 of the 1991 edition of the MUFC. The definition changes listed below give more clarity, consistency, and simplification to the MUFC. It also aids in the consensus of definitions between the MUFC and other laws, codes, and rules in use in the state of Minnesota.

Subpart 1 has added a definition to Article 2 for "adult day care center". The addition of this term provides consistency with what the Department of Human Services uses for its definition of "adult day care center." The term is also used in Article 8 of the MUFC, which prescribes certain requirements for adult day care centers. Also included in Subpart 1 are new definitions for "aisle" and "automatic fire detector" and an amended definition for "authority having jurisdiction".

A definition for "aisle" is necessary as the term is used in the UFC and it is a critical element of the building's exit system (see also "corridor" and "room"). No definition is provided in the UFC for this term. Without a definition, property owners, design professionals, and code officials have no guidance as to what an aisle is. This creates the need for case-by-case interpretation which causes inconsistency and confusion.

The phrase "authority having jurisdiction" is being modified slightly. The intent of the definition is not changing; the change is a technical modification. The phrase "automatic fire detector" is being added; this phrase is also used in the UFC, however no definition is provided.

The definition of "building code" in subpart 2 is being modified slightly by removing some superfluous wording.

In subpart 3, the definition of "chief" is being modified; the phrase "or chief of the fire department" is being removed as it is no longer used in the code. It also changes the reference to the state fire marshal in the definition of "chief" and specifies that, for purposes of enforcement of the MUFC, the chief and state fire marshal have concurrent jurisdiction. The previous definition stated that the term "chief" included the state fire marshal. Without this change, the definition could have been interpreted to mean that the state fire marshal had the authority to run a municipal fire department which was clearly not the intent.

A definition for "corridor" is being added to subpart 3. Similar to the terms "aisle" and "room", corridors are critical elements of the exit system which are not specifically defined in the code. This definition is needed for consistency and uniformity.

The definition of "family day care home" in subpart 4 is being amended by adding "at any one time" to clarify the fire safety concerns of these facilities are based on the number of occupants that could be present in the building at any one time as opposed to the total number of children who may be enrolled at a particular facility but only attend for limited periods of time. An example could be where a day care provider has twelve children attending the day care; four are there all day, four others are only there in the morning and the other four are only there in the afternoon. Without this change to the definition, it could be interpreted that there were twelve children when actually there would only be eight.

In subpart 5 the definition of "group family day care" remains unchanged. The definition of "guest room" is being modified to be consistent with the definition of guest room in the state building code.

The changes to the definitions of "jurisdiction" and "jurisdictional area" in subpart 6 are due to the renumbering

and reformatting of the code.

The definition of "mechanical code" in subpart 7 is amended to remove superfluous language. The changes to "municipality" are due to the renumbering and reformatting of the code.

Subpart 8 contains several changes to the definitions of the various types of occupancies. Many of these changes are intended to remove exceptions to the definitions which were found in the previous rules. Definitions were changed to positive statements (i.e. what they are) rather than exceptions (i.e. what they are not). In addition, some of the previous definition contained code requirements. These changes will also refer to the appropriate code section or rule part for the code requirements. These changes are consistent with Department of Human Services rules and the state building code.

The definition of "power tap" is amended in subpart 9. The definition in the UFC requires that a power tap must have a cord. There are now commercially available power taps which plug directly into an electrical outlet and have no cord; without this change, these types of devices would not be allowed. Both types of power taps (with or without cords) are tested and listed to the same criteria so it is reasonable to allow either type to be used.

In subpart 10 the definition of "required by the chief" is amended due to the renumbering and reformatting of the code. A new definition of "room" is added for consistency and uniformity purposes. As stated earlier, rooms, aisles and corridors are related and critical exit components which need to be defined. The definition being used was taken from a definition in the Uniform Building Code for "rooms" in educational occupancies. Language is being added to clarify that aisles, corridors and rooms are separate and distinct components of the building and should not be used as interchangeable terms. Another sentence is added to refer the code user to a specific section of the code dealing with rooms used for flammable and combustible liquids.

The definition of "state fire marshal" in subpart 11 is the same as in previous rules; the only change is due to the renumbering and reformatting of the code. The definitions of "supervised living facilities" are being amended to be consistent with state statute (see MN § 144.50, subdivision 6, Department of Human Services rules and the state building code. This phrase is used in the occupancy definitions and in Article 8 (proposed part 7510.3540) of the MUFC, which describes certain requirements for supervised living facilities.

**7510.3540. Article 8 - Adult Day Care Centers and Supervised Living Facilities.** (New Article). This is a new article that pertains to requirements for adult day care centers and supervised living facilities. The requirements are not new; they used to be part of the definitions of adult day care center and supervised living facility in the 1991 MUFC. The requirements were removed from the definitions for clarity in defining the terms. The new article is added for the ease of the user when dealing with these requirements, which are consistent with the requirements found in Department of Human Services rules and Minnesota Statutes, section 144.50.

**7510.3360. Article 9 - Fire Department Access and Water Supplies.** (Proposed 7510.3550). Subpart 1 adds a new section 904 to the article, which deals with marking and obstruction of fire lanes. This is the same language that was found in the 1991 edition of the MUFC (see existing part 7510.3360, subpart 1) but has been relocated to Article 9, due to the reformatting of the UFC.

**7510.3360. Article 10 - Fire-Protection Systems and Equipment.** (Proposed: 7510.3560). Subpart 3 adopts the 1996 edition of the National Fire Protection Association (NFPA) Standard #13, entitled *Standard for the Installation of Sprinkler Systems*, for the use in design and installation of sprinkler systems. This replaces the language in the UFC which references UBC Standard 9-1. Standard 9-1 is essentially a reprint of NFPA

Standard #13. NFPA Standard #13 is a nationally developed consensus document which is used throughout the country and in other countries of the world. This standard is used by design professionals, insurance representatives and code officials for sprinkler system design and installation.

This subpart has five exceptions; three of the exceptions are existing language from the UFC which are being renumbered and the other two are new exceptions. The first exception allows sprinkler systems to be installed in accordance with UBC Standard 9-1. This gives flexibility to property owners by allowing either installation standard (NFPA #13 or UBC Standard 9-1) to be used. Exceptions 2, 3, and 4 remain as written in the UFC where they appear as exceptions 1, 2 and 3.

Exception 5 was added to deal with the issue of sprinkler systems in areas where there is a limited water supply. It allows the fire official to modify the hose stream requirements found in NFPA #13 and UBC Standard 9-1 in these situations. Without this modification, the code official does not have discretionary language to accept anything other than what is required by the code. This change is being made in an effort to make the installation of automatic sprinkler systems more cost-effective, particularly for schools, businesses and multi-tenant residential buildings.

This change will allow the fire chief to modify the requirements for hose streams which are found in the standards. These requirements were originally developed so that a fire department connecting to a hydrant system would not take water away from the sprinkler system. In many situations the water demand for hose streams is almost as much as is needed for the sprinkler system. This can force the property owner to have to install expensive on-site water storage systems, such as a water tank and/or fire pump. In some cases, this causes a genuine financial hardship and will cause the property owner to seek alternate, and less effective, means of fire protection.

Subpart 3a adds language to clarify the requirements for automatic sprinkler systems in Group R, Division 1 occupancies. These are buildings used as multiple residential structures, such as apartments, hotels, and motels. This language states that area separation walls (i.e. two-hour fire walls) cannot be used to exempt sprinkler system installation in newly constructed buildings of this type. This language is consistent with long-standing practices and interpretations of the State Fire Marshal Division and State Building Codes and Standards Division. It is also consistent with language that is found in the 97 UFC, Section 1007.2.1.2, dealing with fire alarm systems and MN Rules, part 1306.0100, subp. 3 (State Building Code Rules) dealing with sprinkler system installation.

This section also adds an exception for buildings constructed with four-hour fire-rated walls; if so constructed, the sprinkler protection required by this section of the code would not have to be provided. Four-hour fire-rated walls are typically constructed of brick, block, clay tile or poured concrete. This type of construction is readily available and commonly used. When this exception is used, the construction walls would create separate and distinct buildings, even though they may be connected or under the same roof. The proposed language would not allow these walls to have any openings or penetrations. If constructed in this manner, it is not anticipated that a fire would spread from one building or section to another.

Subpart 3b adds requirements for the installation of electrically monitored water flow switches for sprinkler systems having 20 or more sprinklers. An exception was added to allow existing systems having less than 100 sprinklers to not have to be monitored. The threshold for this requirement in previous code editions was 100 sprinklers.

An advantage to this requirement is that it will decrease the water damage done by a sprinkler system that has activated, extinguished the fire and went unnoticed. (i.e. activated sprinkler systems that continue to flow over a

weekend when typically nobody is occupying the building).

The amendment to this section deals with new sprinkler technology, particularly extended coverage sprinkler heads which can cover significantly greater area than standard sprinklers. This amendment is also consistent with proposed language in the International Building Code (which is being developed to replace the three model building codes presently in use in the United States).

Section 1003.3.2 of subpart 3b adds an exception for audible flow alarms in sprinklered buildings. The UFC, as written, now adds a requirement for interior occupant notification of sprinkler system water flow. In theory, we agree with this concept but in practical application, it is somewhat more complex. Sprinkler systems are required in more types of occupancies than in the past, many of these buildings do not have trained staff on duty nor would the occupants know what action to take if they were aware of the sprinkler system activation.

Fire departments, on the other hand, deal with sprinkler systems on a regular basis. Therefore, an exception is being added that an interior audible alarm is not required if the sprinkler system is electrically monitored and the alarm systems are monitored by an approved monitoring location. Standard operating procedures for alarm monitoring companies is for immediate fire department notification of sprinkler water flow activation.

Section 1003.3.3 of subpart 3b adds a requirement for locking of valves that control water supplies for automatic sprinkler systems. The cost for compliance with this requirement is very minimal to the property owner (i.e. the cost of a light weight chain and/or lock). As an option, the exception allows the space or room where the valve is located to be secured with access only to essential personnel. This requirement is being added to prevent unwanted tampering with sprinkler systems that could render the system inoperative. Fire departments can either cut the chain (all fire departments carry bolt cutters) or can have the owner unlock the chain upon their arrival.

Subpart 3c adds three new locations where sprinklers may be omitted. The first was at the top of elevator shafts. Fires that occur in elevator shafts typically develop in the pit, at the bottom of the shaft. Since the elevator car is blocking the sprinkler head at the top, it makes that sprinkler head ineffective in containing a fire in the pit.

The second item eliminates sprinkler heads directly above swimming pools. There has not been a problem with fires developing in swimming pools. Also, the chlorine used in swimming pools corrodes sprinkler heads; which greatly reduces their effective operation and requires them to be replaced frequently with additional cost to the property owner(s).

The third item eliminates sprinkler heads in the machine rooms of traction type elevators. These machine rooms are typically located in penthouses on top of buildings and consist of cable and drum arrangements which raise and lower the elevator car. This item is being added for a number of reasons; first of all, there is not a history of fires originating in these spaces. In addition, these spaces are often unheated which makes the installation of standard sprinkler protection somewhat more difficult. Also, these rooms are typically constructed of non-combustible materials.

These rooms are located on top of buildings, so the threat from fire is minimized (convective heat and smoke travels upward, not down in the building). There are also legitimate safety concerns that water from sprinklers could interfere with the elevator car's safety braking and electrical controls, which could allow the car to go out of control. This amendment should help reduce the cost of fire extinguishing systems and elevator installation to the property owner(s.)

Subpart 3d adds Section 1004.1.3 concerning modification to standards regarding standpipes. There are three

classifications of standpipe systems: Class I, II, and III. Class I and III standpipes are designed and intended for fire department use, having 2 1/2 inch hose connections for fire department hoselines. Class I standpipe systems are typically "dry" standpipes (i.e. they contain no water) and are commonly installed in open or unheated structures where freezing is a concern. Class II standpipes are designed and intended for occupant use and are typically equipped with 1 1/2 inch hoselines for occupant firefighting.

Section 1004.1.2 of the UFC refers to UBC Standard 9-1 for installation requirements (this is an editorial error, it should be UBC Standard 9-2). Section 5-7 of UBC Standard 9-2 requires a minimum pressure at the topmost standpipe hose outlet of 100 P.S.I. for Class I and III systems and a minimum of 65 P.S.I. for Class II systems. Often times, the standpipe and sprinkler systems are integrated together and the standpipes are used to supply water to the sprinklers.

The pressure requirements specified in UBC Standard 9-2 often necessitates the installation of a fire pump to achieve the minimum P.S.I. specified. Class I and Class III standpipes are intended to supplement fire department operations and are capable of being supplemented by fire apparatus outside the building. If the building is sprinklered, the need for immediate use of standpipes for firefighting operations is greatly diminished. Typical fire pump installations begin at \$40,000 - 50,000 (based on a 500 GPM pump; including the cost of the pump, dedicated electrical service, structural requirements, acceptance testing, and labor).

In addition to the cost of installation, fire pumps require a great deal of maintenance which is an on-going expense to the property owner. Also, many fire officials prefer to have operational control of the fire protection systems during fire emergencies. Fire pumps do not permit this; they are either off or running at full speed. Based on these factors, the installation of a fire pump and related equipment in a sprinklered building simply to meet these minimum pressure requirements is excessive. The cost for installation and on-going maintenance for fire pumps to the property owner is not justified given these circumstances. This amendment is aimed at buildings that are four stories or less in height; taller buildings (i.e. mid-rise and high-rise buildings) would still be required to provide the minimum pressure requirements as these buildings rely on the interior fire department standpipes as an integral part of their fire protection scheme.

Subpart 5 substantially modifies Table 1004-A dealing with where standpipe systems are required in buildings. Standpipes can be eliminated in many sprinklered occupancies, thus promoting sprinklers and providing cost savings to property owner(s).

The requirements for Class II (occupant use) standpipes are eliminated in most situations, except where the facility has an established fire brigade. This was done because the presence of Class II standpipes encouraged untrained individuals to use the fire hose in emergency situations; causing injuries to the individuals and causing a delay in the notification of the fire department. Also, fire departments do not typically utilize Class II standpipes or the attached fire hose as this equipment is considered unreliable.

Table 1004 is also amended by increasing the square footage of 5,000 to 12,000 in Group A, Division 2.1 Occupancies for standpipe requirements. This was done because it would have included many school gyms and similar occupancies where standpipes are not desirable. These occupancy classifications are considered to be no more than a fire hazard than Group M Occupancies, which are not required to have standpipes installed until they reach 20,000 square feet. This is a substantial cost savings to the property owner(s) including the state's taxpayers, as many of these types of buildings are publicly owned.

Subpart 7 deletes the language requiring the installation of basement pipe inlets; they are rarely used and seldom, if ever, required by code officials. See a related change in Article 10 (part 7510.3360, subpart 2).

Subpart 8 adds an exception to the requirement for automatic fire alarm equipment. The exception allows the omission of automatic heat detectors in sprinklered buildings. Both sprinklers and heat detectors are activated by temperature; therefore heat detection in sprinklered buildings is redundant.

Subpart 9 amends the requirements for fire alarm systems in assembly occupancies with an occupant load of 300 or more. The UFC, as written, requires a manual fire alarm system with a prerecorded voice evacuation message in these types of occupancies. The first change (in Section 1007.2.2.1) requires an automatic fire alarm system; Section 1007.2.2.2 (see subpart 10) lists the areas where automatic detection devices are required. The State Fire Marshal believes that automatic fire alarm systems are preferable to manual fire alarm systems, as they require no human intervention and are much less prone to false alarms, particularly those of a malicious nature.

Three exceptions are added to the requirements for an automatic fire alarm system. The first exception exempts churches and similar worship areas due to the limited life loss history from fire in these occupancies.

The second exception exempts the requirements for an automatic fire alarm system if the building is sprinklered. The State Fire Marshal strongly believes in the effectiveness of sprinkler protection, and feels that they can be used in the place of a fire alarm system in these types of occupancies, particularly given the limited life loss history.

The third exception appears in the UFC as exception #2; it is merely being renumbered.

There are also fiscal concerns about the requirements for prerecorded voice evacuation systems; they are very expensive, as they incorporate virtually all of the same provisions of a fire alarm system plus the voice evacuation feature. The State Fire Marshal has heard increased cost estimates of \$10,000 - \$40,000 for this feature.

Another concern is the scope of these provisions; Group A, Division 1, 2, and 2.1 Occupancies are those buildings having over 300 occupants. These are very common and represent a wide range of buildings. Examples would include bars, restaurants, meeting halls, clubs, large meeting rooms, theaters, churches, food courts, health clubs, community centers, and airport terminals. The State Fire Marshal questions whether activation of a voice evacuation announcement is proper in all types of these assembly buildings.

Subpart 10 gives specific location requirements for fire detectors in Group A occupancies. These are the areas where fires typically start or which are not occupied and where fires can grow undetected.

Subpart 11 deletes Section 1007.2.2.3 of the UFC. This was done because when Sections 1007.2.2.1 and 1007.2.2.2 were rewritten, references to Section 1007.2.2.3 were eliminated.

Subpart 12 amends Section 1007.2.4.1 dealing with fire alarm system requirements in schools. The first change requires both manual and automatic functions in the fire alarm system. This change is consistent with rules which have been in effect for a number of years in the MUFC and SBC for manual and automatic fire alarm systems in schools.

Two exceptions have been added to Section 1007.2.4.1; both exceptions delete manual pull stations. In the first exception, manual pull stations can be eliminated if the building is protected with a sprinkler system. Requirements to maintain manual pull stations at specific locations for staff activation are maintained.

The second exception allows the examination of manual pull stations at several locations if the building has automatic smoke detection throughout the exit system. Manual pull stations would still be required for certain

areas having an increased fire hazard, such as shops, labs, and kitchens.

Automatic sprinklers and automatic detection are preferable to manual pull stations, as they typically operate sooner and do not require human intervention. It is the position of the State Fire Marshal that manual fire alarm pull stations are a somewhat archaic means of fire protection which are only appropriate in schools which have no other fire protection systems. This belief is shared by many fire officials and school districts who are concerned with the number of false fire alarms and the associated costs and disruption.

As more schools are moving toward automatic sprinklers and automatic detection, this change represents a cost saving to the school and to taxpayers by reducing alarm installation costs and eliminating false alarms with fire department response. There will still be manual pull stations in the facility (usually in the administration office and custodial area) for staff activation and conducting fire drills in accordance with the requirements found in Minnesota Statutes, section 299F.30.

Subpart 13 specifies the location for automatic detection in schools; these are typically the areas where fires occur or where fires can grow undetected. Sections 1007.2.4.2.1 and 1007.2.4.2.2 are identical to the language found in the UFC; they are being shown here to correlate with the changes to Section 1007.2.4.2.

Subpart 14 specifies the locations of fire detectors in hospitals and nursing homes. These are typically the areas where fires start or can grow undetected.

Subpart 15 specifies the locations of fire detectors in detention and correctional facilities. These are typically the areas where fires start or can grow undetected.

Subpart 16 amends the requirements for power sources for smoke detectors in existing buildings. It allows smoke detectors in existing homes constructed prior to August 1, 1989 to be battery-operated. For buildings constructed on or after August 1, 1989, smoke detectors must be "hard-wired" (i.e. operate from the building's electrical power). This is consistent with the requirements in Minnesota Statutes, section 299F.362, subdivisions 3 and 3a.

**7510.3370. Article 11 - General Safety Precautions.** (Proposed: 7510.3570). Subpart 1 deletes Sections 1102 (except Section 1102.4), because the state mechanical code and/or the Department of Natural Resources (DNR) already have rules which cover these items. Section 1102.4, recreational fires, was left in for local fire officials that have authority in their community over these types of permissible fires.

Subpart 1a adds an exception which refers to Section 1103.3.3.7 for specific language dealing with Christmas trees; these requirements are found in subpart 2 below. Without this exception, the use or display of Christmas trees would not be permitted in many types of occupancies.

Subpart 2 adds a section that specifically deals with the use, display, and storage of Christmas trees. The requirements are the same as past amendments; the language was changed due to the reformatting and renumbering of the UFC and the change to the occupancy classifications.

Subpart 3 is added to eliminate the use of unvented room heaters in areas where people are asleep. Unvented fuel heaters burn liquid or gas fuels (such as kerosene or LP gas) and give off carbon monoxide into the room because they are not vented to the exterior as other heating appliances are.

Subparts 4 and 5 have requirements for fire resistive construction. These sections require that certain fire

protection elements related to construction features must be installed and maintained in conformance with the SBC. Although these represent changes to the UFC, they do not add requirements to the code, as similar requirements have been in previous state fire codes. Previously, these requirements were found in the NFPA 101 *Life Safety Code*, which was adopted by reference as part of the state fire code.

Subpart 6 adds a new section dealing with guardrails. It specifies where guardrails are required and references that they be installed and maintained in conformance with the SBC. An exception is added which allows existing guardrails which conformed to previous codes to remain. Once again, this section does not represent new requirements; similar requirements were found in previous editions of the MUFC when NFPA 101 was adopted by reference.

Subparts 7 and 8 deal with specific fire safety concerns which are found in a limited number of buildings. Subpart 7 deals with atria requirements; subpart 8 address mezzanines. Both subparts require that these features conform to requirements of the building code. Previous editions of the MUFC had similar requirements in NFPA 101 which was adopted by reference.

**7510.3580. Article 12 – Means of Egress and Emergency Escapes.** (New Amendments). Subpart 1 deals with special exiting provisions for younger students; this change is intended to be consistent with Minnesota Statutes, section 123.36, subdivision 15, and Minnesota Rules, part 1300.5100 (state building code rules).

Subpart 2 amends Section 1206 by renumbering the existing paragraph and by adding a new Section 1206.2 that describes requirements and exceptions for egress windows from sleeping rooms. This is another amendment which was added because NFPA 101 was not adopted by reference in its entirety into this edition of the MUFC.

The first exception was added because an exterior door is sufficient to provide escape during a fire. The second exception was added because egress windows that were installed when previous editions of the code were in effect are governed under that code, to be in conformance. The third exception is added to acknowledge the use of automatic sprinkler systems that have been proven to be valuable life safety protection during a fire.

The fourth exception deals with rooms which have two existing exits from the room. These existing exits are allowed to pass through one adjacent room and must be independent (i.e. one fire could not block both ways out of the room). An example of this arrangement would be a bedroom which exited into a living room that led directly to an exit that went outside. Exceptions one through four were all arrangements which are accepted in NFPA 101 which was previously adopted by reference.

The fifth exception is added to recognize existing resort structures that were built prior to the adoption of the fire code in the state of Minnesota. This exception allows the continued use of existing egress windows which do not meet the present requirements of the building code. These would only be permitted to be used in existing one-story resort buildings. The State Fire Marshal has done extensive research and is comfortable with the ability of occupants to use these existing substandard windows in single-story buildings.

All five of these exceptions are intended to minimize the financial impact while maintaining an acceptable level of fire and life safety. Code officials have used these exceptions as a matter of past practice.

Subpart 3 amends Section 1207.3 with the addition of four exceptions (exceptions 3, 4, 5 and 6). Exceptions 1 and 2 utilize language presently found in the UFC. Exception three adds language permitting egress control devices to be installed and requiring them to be maintained in conformance with the SBC (see Minnesota Rules, part 1300.4900). This amendment will refer the code official and design professionals to the building code,

where requirements can be found for these types of devices. This eliminates the need for a previous state fire code amendment (see part 7510.3480, subpart 10).

The fourth exception was added to acknowledge the need for locking of doors in buildings where the occupants are restrained, such as jails and prisons. Without this amendment, the MUFC would not permit the use of locked doors in these detention and correctional facilities.

The fifth exception addresses the need for special locking arrangements in institutional occupancies, such as hospitals and nursing homes. It is common in these types of facilities to have a need to secure exit doors for the safety of patients and staff. Common examples include psychiatric areas in hospitals and nursing homes with Alzheimer or dementia patients. This exception allows existing locking arrangements which conform to Appendix II-L to remain. Newly installed arrangements are addressed in the SBC (see Minnesota Rules, part 1305.1019).

Exception #6 allows special locking arrangements in spaces which are used for "time-out" rooms and behavior modification. This exception has many requirements that must be complied with to use the exception (see specific requirements in subpart 4).

Subpart 4 addresses the specific requirements which must be met to use the special locking arrangements permitted by exception #6 of Section 1207.3. These requirements are added safety factors for individuals who are being restrained for safety or security reasons. The locking devices are designed to "fail" in the open (unlocked) position under emergency situations such as activation of a fire protection device or loss of electrical power.

These rooms must be protected by quick-response sprinklers, which are documented to activate much faster than standard sprinklers. The rooms and adjacent exit areas to the room must be protected by automatic smoke detection. The rooms must have a minimum one-hour fire-resistive construction and have doors that have a 20 minutes fire-rating. The interior finish of the room or space must be resistant to flame spread.

The locking devices must be tested at least monthly. The Fire Marshal Division believes that these requirements will help ensure that those individuals who are detained in such places will have adequate protection and exiting opportunities in the event of a fire.

Subpart 5 amends Section 1209 (and renumbers it to 1209.1) and adds two new sections: 1209.2 and 1209.3. Section 1209.1 is amended by adding two exceptions. The first exception refers to Appendix I-A for the corridor requirements for existing buildings which were constructed prior to the adoption of the first fire code (October 3, 1975).

The second exception deals with corridor openings within Group E Occupancies. It relaxes the requirements for self-closing or automatic closing doors between corridors and classrooms or offices when automatic sprinkler protection and smoke detection are used. This change is being made for two reasons; the first being that corridor doors within these occupancies are commonly propped open with objects, thus creating a breach of the fire-rated corridor.

This amendment is consistent with other exceptions found in the SBC for other types of occupancies. It is also consistent with an exemption from protecting corridors in hospitals and nursing homes found in Minnesota Statutes, section 16B.61, subd. 3(c). There are many similarities between these occupancies (schools, hospitals and nursing homes): the staff is trained, fire exit drills are required, the buildings are typically of non-combustible construction, and the occupants rely on staff for their safety.

Fire experience at three high school fires in Minnesota - Burnsville, Edina and Minnetonka - taught the value of automatic fire sprinklers in these types of buildings. In the unsprinklered Burnsville High School, fire traveled down the exit corridor system and spread into adjacent rooms where corridor doors were propped open. This fire spread continued until the fire encountered four sprinklers which were installed in a newer section of the building.

In the Edina and Minnetonka High Schools, fires were started in offices which were adjacent to the exit corridor system (in the Minnetonka case, the corridor door was even propped open before the fire). There was no significant smoke or fire spread into the corridor system in either of these two fires.

The State Fire Marshal recognizes that by their very nature, school corridor doors are going to be propped open. Typically this occurs because teachers do not want the disruption of the door opening and closing several times during each class period and they have liability concerns about what is said or done in a classroom which cannot be monitored if the door is closed. In addition, many of the older school buildings have inefficient heating and ventilation systems which make climate control in the room difficult and which can cause air quality concerns.

The proposal also requires that automatic smoke detection be installed throughout the exit corridor system. This is based on the building code which intends that corridor fire-ratings be intended to resist the passage of smoke and allow sufficient time for egress (that is why 20-minute fire-ratings are required as opposed to 1 hour fire-ratings which are more typically required).

Another benefit to this proposal is to encourage "active" fire suppression systems (i.e. automatic sprinklers) as opposed to "passive" means of protection (doors and walls). Although both methods can be effective means of limiting fire spread, the State Fire Marshal clearly has found sprinklers to be superior. This is evidenced by the fire loss experienced in these fires: Burnsville High School's dollar loss was \$12,000,000 (based on original estimates; the final loss was in excess of \$15 Million). Combined, the dollar loss at Edina and Minnetonka High Schools was only \$150,000 and those buildings were usable the same day as the fire. Automatic sprinkler protection not only helps ensure that fires are contained quickly, but is a substantial savings to the taxpayers when compared to the cost for repair of unsprinklered buildings which have fires.

Section 1209.2 restricts clothing and personal effects from being stored within corridors of Group E Occupancies. School corridors are a leading area of fire origin so means must be taken to help protect these corridors from rapid fire spread. Two exceptions are added: one which allows clothing storage if the corridors are protected with sprinklers. The second exception allows the storage of clothing within metal or non-combustible lockers within corridors; which is a common arrangement in schools. These exceptions are intended to give the school several options for clothing storage. Often the least expensive method is sprinkler protection; at about \$100 per sprinkler, the cost is substantially less than installing lockers which cost about \$80 each.

Section 1209.3 addresses the issue of the artwork and teaching materials which are commonly displayed within corridors of Group E Occupancies (i.e. schools). Neither Sections 1209.2 or 1209.3 represent new requirements; both requirements were found in the previous edition of NFPA 101 *Life Safety Code*, which was adopted by reference as part of the state fire code.

Subpart 6 requires the removal of snow from exit discharge areas, such as the landings and sidewalks outside of a building. This is intended to provide a safe exit path for the building's occupants.

Subpart 7 deals with pedestrian walkways; these are links or connections between buildings, such as a skyway.

This section is needed to give the fire official the authority to maintain the protection of the pedestrian walkway that is required by the building code.

Subpart 8 is amended by adding a new section, 1215, that is consistent with the SBC in regards to escalators and their use as an exit. The second sentence requires that escalator enclosures be installed and maintained in conformance with the building code. Escalator enclosures consist of a perimeter draft curtain with closely spaced sprinkler protection around the floor opening of the escalator. This is not a new requirement; it was found in previous editions of NFPA 101 which was adopted by reference.

**7510.3590. Article 13 - Emergency Procedures.** (New Amendment). Subpart 1 adds a new section 1302.4 concerning the reporting of fire alarm signals. This section is being added at the request of some fire officials who wish to be notified of fire alarm activations within their jurisdiction. This change is reasonable based on Minnesota Statutes, section 299F.011, subdivision 4, which allow local units of government to be more restrictive than the state fire code. Whereas the language in this amendment is discretionary, it allows response and resource decision-making and allocations to be made by the local fire official.

Subpart 2 adds requirements for fire drills in schools. This section states that school staff members are responsible for ensuring that all occupants have left the room and follow the emergency evacuation plans which have been developed. In addition staff are responsible for closing the doors to the room to prevent fire spread in or out of the room. These changes are necessary to ensure that students are evacuated when a fire occurs or the alarm sounds. The requirement for closing doors is consistent with requirements of fire drills in other occupancies. There has also been substantial fire experience where a fire door being kept closed kept the fire from spreading. Examples of this experience include the Burnsville High School fire in 1994 and the Norwest Bank fire in Minneapolis in 1982.

**7510.3410. Article 26 - Resurfacing and Refinishing.** (Proposed: 7510.3570) Subparts 1, 2, 3, 4, and 5 are editorial changes to the numbers. The wording and the meaning of the sections do not change from the 91 MUFC; only the numbers change due to the reformatting of the 97 UFC.

**7510.3610. Article 52 - Motor Vehicle Fuel Dispensing** (New Article) This is a new article in this edition of the UFC that groups all types of motor vehicle fuel-dispensing operations into a single article. Subpart 1 amends the requirements for State Fire Marshal plan review of dispensing installations. This was done to eliminate the requirement for plan reviews of underground tanks containing Class I and II liquids by the State Fire Marshal's office. There has been no history of fires occurring in underground tanks, although there has been a history of leakage with the potential for fire. Because the Minnesota Pollution Control Agency (MPCA) now regulates the installation of underground tanks by licensing the installers, it is redundant to have additional reviews by the State Fire Marshal.

Subpart 2 is language that was carried forward from the 91 MUFC. It describes requirements for the use of signs at such locations. The wording and the meaning have not changed; only the numbers have changed due to the reformatting of the UFC.

Subpart 3 is language that was carried forward from the 91 MUFC. It prohibits dispensing of fuel by persons under the age of sixteen. The wording and the meaning have not changed; only the numbers have changed due to the reformatting of the UFC.

Subpart 4 adds an exception to Section 5202.3.1 allowing aboveground dispensing in accordance with Section 5202.4.1 of the UFC (see part 7510.3440, subpart 5).

**7510.3420. Article 61 - Oil-Burning Equipment.** (Proposed: 7510.3620). Subpart 1 changes the numbers due to the format changes to the newer edition of the UFC. The wording and the meaning do not change, only the numbers.

Subpart 2 adds a new section concerning quantities of fuel oil storage which are permitted inside a building. This was done to simplify the requirements and to make the code more "user-friendly". In previous editions of the MUFC, the user was required to refer to the Uniform Mechanical Code (UMC) and then to NFPA Standard #31 to find the correct quantity limits.

**7510.3430. Article 77 - Explosive Materials.** (Proposed: 7510.3630). Subparts 1 and 2 are amended due to the number changes and reformatting of the 97 UFC.

**7510.3640. Article 78 - Fireworks & Pyrotechnic Special Effects Material.** (New amendment). Subpart 1 requires a permit for fireworks displays and also requires that a certified pyrotechnic operator supervise fireworks displays. An exception is added so that permits are optional if they involve the use of smoke pots, flash pots or theatrical flash powder as part of a ceremonial, theatrical or musical production.

Subpart 2 is added to acknowledge the use of new methods for fireworks operations. It allows the use of high density polyethylene (HDPE) mortars, which is accepted for use in NFPA 1123 *Code for Fireworks Displays*.

Subpart 3 adds limits on the use of HDPE mortars permitted by subpart 2. This change was requested by the fireworks industry to help ensure and promote the safe use of such devices.

**7510.3440. Article 79 - Flammable and Combustible Liquids.** (Proposed: 7510.3650). Subparts 1, 3, 6 and 7 are repealed.

Subpart 2 adds a section that pertains to the State Fire Marshal Division for reviewing plans for installation of aboveground flammable liquid tanks. Although this has always been previously done, it deletes the previous requirements for reviewing underground flammable liquid tanks. Underground fuel storage tanks are an environmental hazard when they leak, but pose a very limited fire safety hazard. The MPCA several years ago instituted a program of licensing tank installers. This has, in our opinion, increased the quality of tank installation and reduces the need for the State Fire Marshal to conduct plan reviews for underground tanks.

Aboveground tanks do pose a fire safety risk as a leak or accident can cause a release of product to the atmosphere that could easily be ignited. See the related change in Article 52 (part 7510.3610, subp. 1).

Subpart 3a amends the code to allow Class II or Class III-A liquids to be transferred from a tank vehicle into 55 gallon drums. This is a common industry practice in the delivery of kerosene, solvent, and motor oil to vehicle repair garages and industrial occupancies. It still does not permit this for Class I liquids, as they are much more flammable and ignite easier.

Subpart 4 adds an exception for supplying fuel to motor vehicles. It gives specific requirements for tank vehicle operations designed to transport and dispense fuel into motor vehicles. This includes, but is not limited to, refueling of fire department vehicles when they are involved in fire suppression operations and cannot leave to go and refuel. It is essentially the same requirements which were found in the previous MUFC; a minor change was made to clarify the intent of the distance between the bulk fueling vehicle and the vehicle being fueled.

Subpart 5 has numerous changes dealing with the protection requirements for aboveground tanks. This section

is being moved to the new Article 52 of the UFC. Many of the changes are due to the reformatting and renumbering of the code.

Section 5202.4.1 gives three options for aboveground dispensing; two of the options are permitted by other sections of the code. The third exception is an option which is being carried forward from the previous two editions of the MUFC. There were few substantive changes made to the requirements for this type of installation; the majority of the changes reflect renumbering or reformatting.

Section 5202.4.1.1.2 is amended to increase the tank size for Class II liquids, such as diesel fuel and fuel oil. Previous code editions had identical requirements for tanks capacity for both Class I (such as gasoline) and Class II liquids. The increased size is justified due to the lesser fire hazard of Class II liquids and economic impacts dealing with the size of delivery tankers which fill these tanks (10,000 gallons is a common tanker load size).

Section 5202.4.1.1.7 is amended by adopting by reference a newer standard for lightning protection. This amendment adopts the 1994 edition of NFPA 780, *Lightning Protection Code*.

Section 5202.4.1.1.8 adds an exception to tank location because of a change in Minnesota Statute 299F.19. Exception 1 was added to deal with relatively small dispensing operations which are found at resorts for fueling of boats and similar marine craft. Exception 4 was added to address new technology in this industry; a number of manufacturers, including several Minnesota-based companies, have developed two-hour fire-protected tanks which offer significant fire-safety improvements over bare steel tanks.

Subpart 8 deletes the reference to "special type dispensers"; the code, as written, imposes some additional requirements on these types of devices. "Special type dispensers" include devices such as coin-operated, currency-operated, or credit card-operated dispensers. With the improvements in technology, these types of dispensers present no more of a fire safety threat than any other type of dispenser commonly in use.

**7510.3660. Article 81 - High-Piled Combustible Storage.** (New Amendment). Subpart 1 changes the requirements concerning limited quantities of high-piled storage. The UFC, as written, requires that all of the protection features of Article 81 be applied if any high-piled combustible storage occurs within a building. Many new retail configurations have a "warehouse" look to them, such as Cub Foods, Home Depot, Sportmart, Office Max, and Sam's Club. This exception allows limited high-piled combustible storage areas (up to 2,500 sq. ft. or 5% of the building) if the building is protected with sprinklers (which is common in these types of buildings).

Subpart 2 adds two exceptions to the requirements for smoke and heat venting. Exception #1 allows the fire official to require a mechanical smoke removal system. This is desirable as a tactical fireground decision as it eliminates having to assign firefighting personnel to go on the roof to open manual smoke and heat vents or to cut holes in the roof for the purposes of venting hot smoke and fire gases. In addition many of the smoke and heat vents used in this application are spring-loaded devices which will not operate when substantial amounts of snow and ice accumulate on the roof.

Exception #2 is not changed from what is written in the code.

Exception #3 allows the use of an engineered smoke removal system and prescribes the design criteria for the system. This exception can only be used with Early-Suppression Fast-Response (ESFR) sprinklers. ESFR is a new technology sprinkler protection which discharges more water and does so more quickly than standard

sprinkler systems. The design of ESFR sprinklers not only contains the fire, but also extinguishes it. ESFR sprinkler technology was principally developed by Factory Mutual Research Corporation which is a division of Factory Mutual Insurance Company. Factory Mutual is an insurer of high value property, often of a commercial, manufacturing or storage nature; this type of insurance company is known as an HPR - highly protected risk - company.

In the research that Factory Mutual conducted, they found that the spacing of the ESFR sprinklers was very crucial to their effective operation. They also found that certain provisions which were commonly found in storage occupancies, especially automatic heat vents on the roof and draft curtains near the ceiling had an adverse effect on their operation. Factory Mutual strongly recommends that ESFR not be used with heat-activated roof vents or draft curtains. Property owners receive insurance premium reductions if the systems comply with the insurance company requirements.

From a fire safety standpoint, there is a need to assist with smoke removal in these types of buildings where high-piled storage occurs. A commonly accepted method is with a mechanical smoke removal system. These systems are controlled by the fire department and are an "active" system as opposed to a "passive" heat vent system which merely opens a hole in the roof for smoke to escape from. There are design criteria for these smoke control systems in the UBC, which is referenced in the language. Typically mechanically-engineered smoke removal systems represent a substantial reduction in the amount of smoke and heat venting required. This represents a substantial cost reduction to the property owner(s), although some of the cost would be offset by a higher cost for the sprinkler installation.

**7510.3460. Article 82 - Liquefied Petroleum Gases.** (Proposed: 7510.3670). These amendments delete Article 82 of the UFC and replace it with the 1995 edition of NFPA Standard 58, *Storage and Handling of Liquefied Petroleum Gases*. The requirements have not changed; the changes were due to the reformatting and renumbering of the UFC and NFPA Standard 58.

**7510.3680. Article 84 - Motion Picture Projection.** (New Amendment). Section 8406 is added to provide ventilation in motion projection rooms in accordance with the building code. This is needed as NFPA 101 is not being adopted by reference. These do not represent new requirements.

**7510.3470. Article 85 - Electrical Equipment and Wiring.** (Proposed: 7510.3690). Section 8510 is added to require that electrical appliances or fixtures be listed for their intended use. This change is similar to previous amendments which required that they be "approved". The amendment clarifies the role of the code enforcement official which is to verify that equipment is listed, not to have to approve all installations of electrical appliances or equipment.

**7510.3700. Article 90 - Standards.** (New Article). Subpart 1 is added to Article 90 due to the reformatting of the code. This section used to be found in Article 2, Section 2.304 in the 91 MUFC (see part 7510.3330, subp. 9).

Subpart 2 deletes the reference to UFC Standard 82-1; the 97 MUFC uses NFPA 58 as the standard for LP Gas installation so the reference to UFC Standard 82-1 would be contradictory if not deleted. This amendment was also made in the previous edition of the MUFC (see part 7510.3330, subp. 6). This section is renumbered according to the State Revisor's renumbering instructions.

**7510.3480. Amendments To Appendices.** (Proposed: 7510.3700). Subpart 1 adopts several of the appendix chapters; no major changes from the previous MUFC are being made to this section. The changes being made

represent renumbering of the appendix chapters and adoption of a new appendix chapter which allows aboveground motor vehicle fuel dispensing.

Subparts 2, 6, and 8 are being carried forward from the 91 edition of the MUFC. The only change was due to the reformatting of the 97 UFC. The wording and the meaning have not changed.

Subpart 3 amends Appendix I-A in numerous places. It adds a statement to Section 1.1, Purpose, which describes the intent of the section. The statement references existing buildings in Minnesota that were built prior to the adoption of the fire code, October 3, 1975. Buildings which were constructed after October 3, 1975 were required to have complied and maintained protection as specified in the appropriate fire code in effect at the time they were constructed (see UFC Section 102.1). This subpart also adds requirements for Group R-3 occupancies to comply with Sections 2, 6, and 7, not just Section 6 as written in the UFC.

Section 1.2 is modified to describe standards for existing Group I Occupancies. These occupancies are required to be in accordance with NFPA 101. These are not new requirements; they are being relocated from a different section of the previous MUFC (see part 7510.3330, subparts 8 and 9). Group I Occupancies must meet NFPA standard 101 to receive federal Medicare and Medicaid financing. Group I, Division 3 Occupancies must also meet NFPA Standard 101 to be accredited by the American Correctional Association.

Section 1.3 is added to clarify when the exit requirements of the Appendix are applicable and when the exit requirements of Article 12 are applicable.

Subpart 4 is repealed.

Subpart 5 amends Section 2.1 to be consistent with the SBC regarding the number of exits required; it changes the exception allowing one exit from "ten or less" to "less than 10". This will also eliminate confusion and give clarity to the user of the code.

Subpart 6a deletes exception #2 of the Section 3; this option is very rarely used in Minnesota and does not adequately protect the building and its occupants from vertical fire spread. It also adds an exception that exempts Group R, Division 3 Occupancies (i.e. single family homes) from complying with the vertical protection requirements of this section.

Subpart 7 amends Appendix I-A, Section 4 by increasing the square footage from 1,500 sq. ft. to 2,500 sq. ft., makes it applicable only to basements, and makes this section applicable only to certain types of occupancies which pose a life safety threat. This change is consistent with the requirements which were in effect when the code was first adopted in 1975 and which remained in effect until 1983 (when the 1982 edition of the UFC was adopted). This section is being amended to minimize financial impact to businesses in Minnesota. If this section were not amended it would impose requirements on all "window-less" buildings in excess of 1,500 sq. ft. in size. Many small businesses and government-owned buildings would fall into this section and would be required to provide exterior wall openings (windows and doors) or sprinkler protection.

Subpart 8a replaces the requirements for smoke detectors in Appendix I-A with the language in section 1007.2.9.2 (see part 7510.3360, subp.15).

Subpart 8b amends Section 7 of Appendix I-A to require both occupancy separations and hazardous-area separations. Section 7.1 addresses occupancy separations and the language is identical to the UFC; except that a number of exceptions are added to reduce financial impact and provide an equivalent level of safety. These exceptions have commonly been used by fire code officials for a number of years to address the hazards of mixed occupancy buildings. Exception #4 is consistent with language found in the Life Safety Code for this type

of situation. Conformance with a nationally recognized standard is consistent with the direction given by the legislature in Minnesota Statutes, section 299F.011, subd. 1.

The first exception allows one-hour fire separations to be omitted when automatic sprinklers are provided. Automatic sprinklers are commonly used as an alternative one-hour fire-rated construction. The second exception allows a fire alarm system with automatic smoke detection to be provided in lieu of fire separations between Group A and Group R, Division 1 Occupancies. This separation is commonly found to be lacking in existing multiple residential buildings (hotels, motels and apartments) that have an assembly area (such as a pool or party room) surrounded with the individual dwelling units or guest rooms. The dwelling units typically have a balcony with single pane patio door that opens to the assembly area. Since this would not comply with the one-hour separation requirement an exception had to be added for such instances. If there was no exception the cost to the property owner(s) for modifications would be extremely high.

The third exception references Group A and Group R, Division 1 Occupancy separation requirements also. Under this exception, existing smoke-tight opening protection could be allowed to continue if the opening was also protected with sprinklers. This is something of a "hybrid" option of exceptions 1 and 2 above. This is another option to the property owner(s) that is justified by the same circumstances that were discussed in exception #2.

Exception #4 exempts occupancy separations in buildings of mixed occupancy when the building meets the requirements for the more restrictive occupancy. Exception #5 is intended to address smaller residential-type buildings which have retail or business occupancies in them. Examples would be "bed and breakfasts" and family-owned resort operations. These are buildings where the number of sleeping occupants is limited and interconnected smoke detectors are required.

A new Section 7.2 is added; it requires that the hazardous areas of certain occupancies must be fire-separated. These are not new requirements; they previously appeared in NFPA 101 which was adopted as part of the MUFC. Three exceptions are added; the first and second exceptions are identical to the SBC requirements for separations. The third exception is added to recognize sprinkler protection as a alternative to one-hour fire walls.

Subpart 10 deals with special locking arrangements for Group I Occupancies which are permitted in Section 1207.3, exception 5 of the UFC (see part 7510.3570, subp. 3). This section outlines the requirements for special locking arrangements in existing hospitals and nursing homes. These requirements have been developed based on past practice and guidelines used by the State Fire Marshal. The justification for the use of these types of systems is the same as found in part 7510.3570, subp. 3.

### Conclusion

Based on the foregoing, the Department of Public Safety-State Fire Marshal Division's proposed rules are both necessary and reasonable.

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Date

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Don Davis, Commissioner  
Department of Public Safety

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Date

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Thomas R. Brace, State Fire Marshal