



## Public Comment No. 153-NFPA 101-2022 [ Section No. 32.2.3.5.2 ]

### 32.2.3.5.2\*

In conversions, sprinklers shall not be required in small board and care homes serving eight or fewer residents when all occupants have the ability as a group to move reliably to a point of safety within 3 minutes.

In conversions, an automatic sprinkler system installed in accordance with NFPA 13D shall be provided

### Statement of Problem and Substantiation for Public Comment

In Florida a "Certificate of Occupancy" is required before occupants can occupy the structure, therefore the 3 minute threshold is not reasonable, nor the ability to move 8 people having little to no self-preservation due in part to Florida's elderly population and combustible construction type used mostly in single family home conversions

#### Related Item

- PI

### Submitter Information Verification

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**Submittal Date:** Thu May 26 13:04:09 EDT 2022  
**Committee:** SAF-BCF

### Committee Statement

**Committee Action:** Rejected but held  
**Resolution:** The proposed requirement is considered new material. It's unclear to the committee if the existing text is being removed.



## Public Comment No. 212-NFPA 101-2022 [ Section No. 32.2.3.5.3.1 ]

### **32.2.3.5.3.1\***

In buildings four or fewer stories in height and not exceeding 60 ft (18.3 m) in height above grade plane, systems in accordance with NFPA 13R shall be permitted. All habitable areas, closets, roofed porches, roofed decks, and roofed balconies shall be sprinklered, and exterior projections exceeding 4 ft (1.2 m) in width shall be sprinklered.

### **A.32.2.3.5.3.1**

Exterior projections are defined by NFPA 13 as follows: an extension beyond an exterior wall capable of collecting heat below. The reference to NFPA 13 applies to location of sprinklers only.

### **32.2.3.5.3.1.1\***

Sprinklers shall be permitted to be omitted from below exterior projections in accordance with NFPA 13.

### **A.32.2.3.5.3.1.1**

NFPA 13, in sections 9.2.3.1, 9.2.3.2 and 9.2.3.3 outlines situations where sprinklers can be omitted from below exterior projections. The reference to NFPA 13 applies to location of sprinklers only.

## Statement of Problem and Substantiation for Public Comment

During the First Draft meeting, several public inputs were submitted with the intent further defining the width of the roof above porches, decks, and balconies. These areas are required to be provided with sprinklers (beyond the requirements of NFPA 13R) by this section. In the 2022 edition of NFPA 13 and NFPA 13R, a minimum roof depth of 4 ft was adopted to requires sprinklers below. Additionally, a new definition of exterior projections was added to the installation standards.

A task group was formed to address these public inputs (PI-196 and PI-197). The task group agreed with the concept of applying the terminology “exterior projection” and the minimum roof width of 4 ft. Additionally the task group felt that as the requirement of this section goes beyond those of NFPA 13R and NFPA 13D and as NFPA 13 outlines situations where sprinkler protection is not required under these projection, NFPA 101 should also allow the same omission as does NFPA 13.

## Related Public Comments for This Document

<u>Related Comment</u>	<u>Relationship</u>
Public Comment No. 216-NFPA 101-2022 [Section No. 32.2.3.5.3.2]	

### Related Item

- PI-196 and PI-197

## Submitter Information Verification

**Submitter Full Name:** Roland Asp  
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**Street Address:**  
**City:**

**State:**

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**Submittal Date:** Tue May 31 13:12:56 EDT 2022

**Committee:** SAF-BCF

### Committee Statement

**Committee Action:** Rejected but see related SR

**Resolution:** [SR-6618-NFPA 101-2022](#)

**Statement:** NFPA 13R already sufficiently addresses exterior projections.

The pointer to NFPA 13R was replaced with 9.7.1.1(3) to align with the Correlating Committee direction on NFPA 13 references.



## Public Comment No. 216-NFPA 101-2022 [ Section No. 32.2.3.5.3.2 ]

### **32.2.3.5.3.2\***

An automatic sprinkler system with a 30-minute water supply, and complying with all of the following requirements and with NFPA 13D shall be permitted:

- (1) All habitable areas, closets, ~~roofed porches, roofed decks, and roofed balconies~~ and exterior projections exceeding 4 ft (1.2 m) in width shall be sprinklered.
- (2) Facilities with more than eight residents shall be treated as two-family dwellings with regard to water supply.

### **32.2.3.5.3.2.1\***

Sprinklers shall be permitted to be omitted from below exterior projections in accordance with NFPA 13.

### **A.32.2.3.5.3.2.1**

NFPA 13, in sections 9.2.3.1, 9.2.3.2 and 9.2.3.3 outlines situations where sprinklers can be omitted from below exterior projections. The reference to NFPA 13 applies to location of sprinklers only.

## Statement of Problem and Substantiation for Public Comment

During the First Draft meeting, several public inputs were submitted with the intent further defining the width of the roof above porches, decks, and balconies. These areas are required to be provided with sprinklers (beyond the requirements of NFPA 13R) by this section. In the 2022 edition of NFPA 13 and NFPA 13R, a minimum roof depth of 4 ft was adopted to requires sprinklers below. Additionally, a new definition of exterior projections was added to the installation standards.

A task group was formed to address these public inputs (PI-196 and PI-197in NFPA 101 and PI-92 and PI-93 in NFPA 5000). The task group agreed with the concept of applying the terminology “exterior projection” and the minimum roof width of 4 ft. Additionally the task group felt that as the requirement of this section goes beyond those of NFPA 13R and NFPA 13D and as NFPA 13 outlines situations where sprinkler protection is not required under these projection, NFPA 101 should also allow the same omission as does NFPA 13.

Note an additional PI was submitted to annex section A32.2.3.5.3.2.

## Related Public Comments for This Document

<u>Related Comment</u>	<u>Relationship</u>
Public Comment No. 212-NFPA 101-2022 [Section No. 32.2.3.5.3.1]	
Public Comment No. 217-NFPA 101-2022 [Section No. A.32.2.3.5.3.2]	

### Related Item

- PI-196, PI-197

## Submitter Information Verification

**Submitter Full Name:** Roland Asp

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**Affiliation:** NFPA BCF Task Group - Sprinklers

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**City:****State:****Zip:****Submittal Date:** Tue May 31 13:45:46 EDT 2022**Committee:** SAF-BCF

### Committee Statement

**Committee Action:** Rejected but see related SR**Resolution:** [SR-6619-NFPA 101-2022](#)**Statement:** The committee felt it was more appropriate to use language from NFPA 13R regarding exterior projections. This revision ensures the requirement when using an NFPA 13D system is no more stringent than when using a 13R system.

The pointer to NFPA 13D was replaced with 9.7.1.1(2) to align with the Correlating Committee direction on NFPA 13 references.



## Public Comment No. 209-NFPA 101-2022 [ New Section after 32.2.3.5.7.2 ]

### 32.2.3.5.7.3

The provisions of 32.2.3.5.7.1 and 32.2.3.5.7.2 shall be permitted to be applied separately to portions of the attic separated by partitions having a minimum 1/2-hour fire resistance rating and extend from the ceiling to the underside of the floor or roof deck above.

### Statement of Problem and Substantiation for Public Comment

During the First draft meeting, several public inputs were submitted with the intent of separating the portion of an attic that contains fuel-fired equipment or storage and allow the portion not used for living purpose, storage or fuel-fired equipment to follow the provisions of 32.2.3.5.7.2 and allow the separated portion that is used for storage or contains fuel fired storage to be equipped with sprinklers in accordance with 32.2.3.5.7.1.

A task group was formed to address these public inputs (PI-104, PI-106, PI 198, PI-205, PI-94). The task group agreed with the concept of applying the protection requirements separately when the attic is property separated and determined that a partition (wall to ceiling) with ½ hour fire resistance rating would be adequate.

### Related Public Comments for This Document

<u>Related Comment</u>	<u>Relationship</u>
Public Comment No. 210-NFPA 101-2022 [New Section after 33.2.3.5.7.2]	
<u>Related Item</u>	
• PI-104, PI-106, PI 198, PI-205	

### Submitter Information Verification

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**Submission Date:** Tue May 31 11:06:23 EDT 2022  
**Committee:** SAF-BCF

### Committee Statement

**Committee Action:** Rejected but see related SR  
**Resolution:** [SR-6616-NFPA 101-2022](#)  
**Statement:** During the First draft meeting, several public inputs were submitted with the intent of separating the portion of an attic that contains fuel-fired equipment or storage and allow the portion not used for living purpose, storage or fuel-fired equipment to follow the provisions of 32.2.3.5.7.2 and allow the separated portion that is used for storage or

contains fuel fired storage to be equipped with sprinklers in accordance with 32.2.3.5.7.1.

A task group was formed to address these public inputs (PI-104, PI-106, PI 198, PI-205, PI-94). The task group agreed with the concept of applying the protection requirements separately when the attic is properly separated and determined that a partition (wall to ceiling) with ½ hour fire resistance rating would be adequate.



## Public Comment No. 190-NFPA 101-2022 [ New Section after 32.2.3.5.8.15 ]

### **32.2.3.5.9 Portable Fire Extinguishers.**

Portable fire extinguishers shall be provided in accordance with Section 9.9.

### **Statement of Problem and Substantiation for Public Comment**

A 2013 NFPA Report: “U.S. Experience with Sprinklers” reports that there were 48,460 reported structure fires annually in buildings equipped with sprinkler systems between 2007-2011, and 40,440 (83 percent) never grew large enough to activate the system. Based on this report alone, it’s clear that people are reacting to small fires and extinguishing them prior to sprinkler activation. Limiting a fire to the smallest area within a building is a sensible aspiration.

To avoid addressing fires in their earliest stages is counter-intuitive, and studies have shown that people will almost always attempt to extinguish a fire if it’s small and they believe they can mitigate the hazard. Thus, it is important to give the public the intelligently designed and placed tools intended for their use and not the necessarily firefighters. If a fire extinguisher is not available, people have (and will continue to) use makeshift means to try to extinguish the fire, which is far less safe than using a portable extinguisher that is designed for safe and effective use by novices. (Ref: An Evaluation of the Role of Fire Extinguishers by David Wales)

The Technical Committee should note that by adding this requirement, the committee is not requiring an individual to stay in a building and fight a fire but, is providing an everyday tool for an individual to utilize in the event that a fire is discovered in its incipient stages and allows for the protection of not only life but also the preservation of property. A portable fire extinguisher is an item which allows for small fires to be tackled by members of the public and it is important to appreciate that while different to official assumptions, research shows the public’s priorities and judgment for fight or flight are rational and appropriate.

Under the Scope of the Life Safety Code, Subsection 1.1.2 entitled, “Danger to Life from Fire,” the Code states the following: “The Code addresses those construction, protection, and occupancy features necessary to minimize danger to life from the effects of fire, including smoke, heat, and toxic gases created during a fire.” Further, it states in Subsection 1.1.4 entitled, “Other Fire-Related Considerations,” the following: “The Code addresses other considerations that are essential to life safety in recognition of the fact that life safety is more than a matter of egress. The Code also addresses protective features and systems, building services, operating features, maintenance activities, and other provisions in recognition of the fact that achieving an acceptable degree of life safety depends on additional safeguards to provide adequate egress time or protection for people exposed to fire.”

Studies of building fires indicate that occupants typically exhibit altruistic behavior toward others. Human response to a threatening situation might follow one of a variety of behaviors. Individuals might choose to investigate, sound an alarm, assist with rescue, seek help, or flee. Such actions constitute normal behavior, even when taken collectively. Most people avoid direct contact with a fire while undertaking another action.

There is a fundamental discrepancy between official/policy assumptions and the public in relation to priorities in the event of a fire. Government and professionals focus on avoiding injuries and see that as the sole aspiration, in the pursuit of which everything else is secondary. In contrast, the public have a wide and largely unrecognized range of priorities when encountering a fire, based on their individual circumstances. These include: the avoidance of embarrassment/inconvenience; mitigating the impact of damage to the property, e.g. avoiding the risk of being unable to remain in their place of business; and their concern for the wellbeing of other people. Each are invested by different aspirations in the fire safety ecosystem.

A desire to achieve their self-appointed tasks is a strong motivation for the public's behavior when encountering a fire. For most, this will involve an active response of on average five actions, although for some it will be as many as 11. This includes investigating the initial cues and tackling the fire, often using improvised means. They are usually successful in doing so, with 70% to 80% of fires dealt with by the public without requiring professional assistance. It is important to note that in doing so, they are willingly acting against official advice and are not being coerced into this. The evidence shows the public to be effective and capable in tackling fires, even in the absence of any professional support, or often without specialized equipment. This is supported by the pioneering studies of the public experience of dwelling fires undertaken by Bryan (1977) and Wood (1972) in the USA and UK, respectively. Their studies supported by their findings that the public did undertake a range of self-appointed tasks including investigating and tackling fires. Recent studies have confirmed similar findings and these behaviors appear consistent over time.

The evidence further identifies that the public is willing and will accept minor consequences in their pursuit of achieving personal humanistic priorities and instinct. Concern for people, pets and possessions are strong and established drivers of behavior in the event of a fire. Therefore, this should be no surprise to see it as an influential feature of most individual's response to a fire.

A 2003 UK survey found that across all categories of location, extinguishers were successful in extinguishing 79.9% of fires. Note: Private houses accounted for only 3.3% of extinguisher use. It reported that 58.6% were operated by trained staff, 36.4% were operated by untrained staff and in 5% of incidents, this was unknown.

Data from the National Association of Fire Equipment Distributors (NAFED) provides even more robust validation of the influence of fire extinguishers as used by 'ordinary civilians. Their research and data indicate, "Of 13,221 fire incidents reported, portable fire extinguishers successfully extinguished 12,505 fires (95%)." (NAFED 2010: 2) The combined results of the 34 years of data are based on the performance of 32,756 fire extinguishers used on 13,453 incidents.

Fortunately, most people encountering a fire will avoid any injury or will be exposed to a low, and often considered risk of a minor injury at worst. This is not a matter of luck but due to a combination of their own abilities and to the low level of risk presented by most fires individuals would choose to fight at the incipient stage. A 2015 study identified that there was a disconnect between the fire service/government and the public in terms of what they referred to as 'risk tolerance'. This was most evident in attitude to injuries. Official policy seems to place avoidance of any injury as its highest priority and assumes this to also be the public's main motivation and enough to dictate any response to the discovery of a fire. However, the same study found that almost all those who incurred a minor injury accepted it as a reasonable cost in relation to pursuing or achieving their personal priorities. Further, they stated, in hindsight, they would do the same again.

It should be noted that numerous every day and discretionary activities carry similar or higher levels of risk to those resulting from using an extinguisher. Do-It-Yourself and sport for example are frequently responsible for injuries or even fatalities. In response, the government and industry seek to help make products safer or provide advice. This is preferred to denying people the option to participate in either activity by withdrawing public access to tools or sports equipment. The benefits achieved by the public using extinguishers are significant, given the potential for a fire to otherwise lead to detrimental and life-changing outcomes. A low and calculated level of personal risk willingly accepted by an individual tackling a fire can avoid, or reduce, a much higher risk to others should they ignore the fire and allow it to develop. Where current guidance discourages the provision of extinguishers in public spaces, this policy is neither supported by the evidence or justifiable through a consensus from the public. Rather it is imposed on them and is inconsistent with other approaches to public health.

The fire service's response time to structure fires has increased significantly over the past 25 years for several reasons like traffic, infrastructures, and lately staffing. Hence, the ability for the early interventions of the public are likely to be the most significant determinant of the outcome of a fire event. Most people do respond appropriately, and the literature confirms that they do not panic. Typically, most people are at risk of a minor injury at worst, due to the low risk from the fire and their own ability to assess and act in accordance with the situation.

A significant amount of data has been collected to support the requirement for portable extinguishers,

including: WPI/EKU Study: "Ordinary People and the Effective Operation of Fire Extinguishers", which clearly showed that the vast majority of people who have never used an extinguisher can operate one safely and effectively. This willingness of the public to accept minor injuries to protect individuals, the facility or their personal property is supported by literature and data and shows these to be well established behaviors which policy makers need to work with, rather than against.

Reflecting official policy, national and local fire safety messaging has, for some time, urged the public, on discovering a fire in the home, to "Get out, stay out", "Don't put yourself at risk" and 'Leave it to the professionals.' This paternalistic messaging confirms the government policy makers and fire services' belief that a professional response is the only intervention capable of safely tackling fires. Again, this starkly contrasts with the reality that between 70% and 80% of dwelling fires are tackled effectively and at low risk, by the public. The policy also fails to accord with the public who have been shown to be tolerant, or accepting, of the incurrence of minor injuries in pursuit of their personal priorities.

Surveys from the National Association of Fire Equipment Distributors (NAFED) in America reveals the same trend of public firefighting, with even higher percentages not needing the fire service. "In both the 1979 and 1985 surveys, the fire department was only called for 13% of the reported fires. In the 1996 survey, the fire department was called in 24% of the reported fires. However, in the 2010 survey the number dropped to 17% of the time'. And 'These results are not unique to NAFED surveys. A 1978 publication by the U.S. Department of Commerce stated that about 90% of fires in households are not reported, based on their survey of 33,000 fires." (NAFED, 2010: 9)

The public are likely to encounter a fire that is relatively small and often contained to the item first ignited. They are often the ones present when fire starts. In summary, there is a significant difference between official assumptions/guidance and actual public behavior. However, the government and FRS seek to deter this behavior, and, in singularly promoting there, "Get out' message," and remove the simple yet potential life saving devices in sprinklered buildings.

A recent study also showed that the public do not just get out, with 49% never leaving the property during the fire. While this may surprise or concern many professionals, it is likely to be explained by a difference between the fire as perceived by professionals and the lived experience of the public. There is nothing to suggest that the public routinely take unnecessary risks. A more likely explanation is that the fire was small and not sufficiently well-developed to pose an imminent injury or life threat. As such, they were able to remain in the premises safely and relatively comfortably, which is supported by the evidence in relation to the majority of fires not spreading beyond the item first ignited or the room of origin. Inclement weather or other factors may also make remaining in the premises a safer or more comfortable option. Fires, like other emergencies, must also be understood in human terms.

The concept of trading off portable extinguishers in sprinklered buildings has been largely abandoned by fire protection principles. NFPA 10 states in subsection 5.1.2, "The selection of extinguishers shall be independent of whether the building is equipped with automatic sprinklers, standpipe and hose, or other fixed protection equipment." Other codes, and other occupancy chapters have abandoned this concept in recognition of the fact that portable extinguishers are a valuable, cost-effective layer of fire protection, and are intended for a different purpose than sprinklers. Recognition of the valuable role of extinguishers came from a 2003 report which concluded, 'Fire extinguishers are designed to prevent relatively minor incidents becoming major conflagrations.' It is, of course, difficult to prove how many and which fires would have developed to pose a serious risk if not tackled and contained early on. Events such as the Grenfell fire are a reminder of the consequences when this happens.

The National Fire Codes of both NFPA and the ICC require portable fire extinguishers in all occupancy classes including storage which addresses property protection and property loss as well as, the safety of the building occupants. Fire safety is grounded in the engineering discipline which brings many strengths to codes requirements, but it is insufficient, and fire safety effectiveness is limited by ignoring the social sciences of human behavior. It is important to appreciate that while different to official assumptions and desire for evacuation, research shows the public's priorities to be rational and appropriate. The public's experience of fire is vastly different to that of the professionals involved in the planning for and responding to fire.

Official policy and attitudes of the Technical Committee are most singularly directed at avoiding the risk when the public encounters a fire. This is well meaning but the research has shown that this DOES NOT I REPEAT DOES NOT align with the public's attitude or the ability of the general public. The belief that 'undesirable' behavior can be changed by advice, campaigns or other measures has been

shown to be inaccurate. The paternalistic approach by which government and the building safety regulatory sector seek to change human behavior by removing proven and effective appliances such as portable fire extinguishers is WRONG. However, the building safety regulatory sector continues this approach despite the evidence that public behaviors are safe, effective, and largely unaltered by current guidance and campaigns rather than providing appropriate safety devices for use by the public. A portable fire extinguisher is an effective item of fire protection which allows for small fires to be tackled by the occupants of a building and saves 100s of thousands of dollars in property loss.

Concerns have been indicted regarding the requirement for training. Training in the use of extinguishers is an important issue and one in which opinion appears more influential than the evidence. Whether purchased for a private dwelling or provided through regulatory processes, there is no mandatory requirement for training to use an extinguisher, and studies do not reveal training to be a requirement for their safe or effective use. In fact, the available data and studies demonstrate the opposite to be the case.

The Technical Committee should also note that portable fire extinguishers are designed for the novice user. Although, training is recommended for proper use and technique and is wide available through a variety of resources including at online training; there are no specified training requirements even under OSHA unless that is an assigned duty employee by the employer. The proposed requirement is intended as a provision for layered fire protection for the general public and employees for general safety.

Although there is limited data available related to extinguisher use since the removal of portable fire extinguishers in the NIFRS data field, there is little to no data supporting the removal of portable fire extinguishers and sole reliance on building fire sprinkler systems. Limiting a fire to the smallest area within a building is a sensible aspiration.

Cost has been another point of contention. A study by Richard Bukowski in 2014, the life cycle cost of portable fire extinguishers was determined to be between one and a half and four cents per foot annually; if coverage could be maximized to that allowable by code, the cost drops to between a half cent and one cent per foot annually. It's unlikely that any other layer of fire protection is so cost-effective.

To avoid addressing fires in their earliest stages is counter-intuitive, and studies have shown that people will almost always attempt to extinguish a fire if it's small and they believe they can mitigate the hazard. Thus, it is important to give the public the intelligently designed and placed tools intended for their use and not the necessarily firefighters. If a fire extinguisher is not available, people have (and will continue to) use makeshift means to try to extinguish the fire, which is far less safe than using a portable extinguisher that is designed for safe and effective use by novices. (Ref: An Evaluation of the Role of Fire Extinguishers by David Wales)

The Technical Committee should note that by adding this requirement, the committee is not requiring an individual to stay in a building and fight a fire but, is providing an everyday tool for an individual to utilize in the event that a fire is discovered in its incipient stages and allows for the protection of not only life but also the preservation of property. A portable fire extinguisher is an item which allows for small fires to be tackled by members of the public and it is important to appreciate that while different to official assumptions, research shows the public's priorities and judgment for fight or flight are rational and appropriate.

#### Related Item

- Public Input No. 372-NFPA 101-2021

## Submitter Information Verification

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**Affiliation:** The National Association of State Fire Marshals, The International Fire Marshal's Association - Georgia Chapter / The Georgia Fire Prevention Association and Fire Equipment Manufacturers' Association

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**Submittal Date:** Sat May 28 18:03:09 EDT 2022

**Committee:** SAF-BCF

### Committee Statement

**Committee Action:** Rejected

**Resolution:** The focus of the Life Safety Code should be on evacuation and should not encourage occupants, especially staff, to use extinguishers in lieu of assisting residents with evacuation.



## Public Comment No. 191-NFPA 101-2022 [ New Section after 32.2.3.5.8.15 ]

### **32.2.3.5.9 Portable Fire Extinguishers.**

Portable fire extinguishers shall be provided in accordance with Section 9.9, unless permitted by the following:

- (1) Access to portable fire extinguishers shall be permitted to be locked.
- (2) Portable fire extinguishers shall be permitted to be located at staff locations only.

### **Statement of Problem and Substantiation for Public Comment**

A 2013 NFPA Report: "U.S. Experience with Sprinklers" reports that there were 48,460 reported structure fires annually in buildings equipped with sprinkler systems between 2007-2011, and 40,440 (83 percent) never grew large enough to activate the system. Based on this report alone, it's clear that people are reacting to small fires and extinguishing them prior to sprinkler activation. Limiting a fire to the smallest area within a building is a sensible aspiration.

To avoid addressing fires in their earliest stages is counter-intuitive, and studies have shown that people will almost always attempt to extinguish a fire if it's small and they believe they can mitigate the hazard. Thus, it is important to give the public the intelligently designed and placed tools intended for their use and not the necessarily firefighters. If a fire extinguisher is not available, people have (and will continue to) use makeshift means to try to extinguish the fire, which is far less safe than using a portable extinguisher that is designed for safe and effective use by novices. (Ref: An Evaluation of the Role of Fire Extinguishers by David Wales)

The Technical Committee should note that by adding this requirement, the committee is not requiring an individual to stay in a building and fight a fire but, is providing an everyday tool for an individual to utilize in the event that a fire is discovered in its incipient stages and allows for the protection of not only life but also the preservation of property. A portable fire extinguisher is an item which allows for small fires to be tackled by members of the public and it is important to appreciate that while different to official assumptions, research shows the public's priorities and judgment for fight or flight are rational and appropriate.

Under the Scope of the Life Safety Code, Subsection 1.1.2 entitled, "Danger to Life from Fire," the Code states the following: "The Code addresses those construction, protection, and occupancy features necessary to minimize danger to life from the effects of fire, including smoke, heat, and toxic gases created during a fire." Further, it states in Subsection 1.1.4 entitled, "Other Fire-Related Considerations," the following: "The Code addresses other considerations that are essential to life safety in recognition of the fact that life safety is more than a matter of egress. The Code also addresses protective features and systems, building services, operating features, maintenance activities, and other provisions in recognition of the fact that achieving an acceptable degree of life safety depends on additional safeguards to provide adequate egress time or protection for people exposed to fire."

Studies of building fires indicate that occupants typically exhibit altruistic behavior toward others. Human response to a threatening situation might follow one of a variety of behaviors. Individuals might choose to investigate, sound an alarm, assist with rescue, seek help, or flee. Such actions constitute normal behavior, even when taken collectively. Most people avoid direct contact with a fire while undertaking another action.

There is a fundamental discrepancy between official/policy assumptions and the public in relation to priorities in the event of a fire. Government and professionals focus on avoiding injuries and see that as the sole aspiration, in the pursuit of which everything else is secondary. In contrast, the public have a wide and largely unrecognized range of priorities when encountering a fire, based on their individual

circumstances. These include: the avoidance of embarrassment/inconvenience; mitigating the impact of damage to the property, e.g. avoiding the risk of being unable to remain in their place of business; and their concern for the wellbeing of other people. Each are invested by different aspirations in the fire safety ecosystem.

A desire to achieve their self-appointed tasks is a strong motivation for the public's behavior when encountering a fire. For most, this will involve an active response of on average five actions, although for some it will be as many as 11. This includes investigating the initial cues and tackling the fire, often using improvised means. They are usually successful in doing so, with 70% to 80% of fires dealt with by the public without requiring professional assistance. It is important to note that in doing so, they are willingly acting against official advice and are not being coerced into this. The evidence shows the public to be effective and capable in tackling fires, even in the absence of any professional support, or often without specialized equipment. This is supported by the pioneering studies of the public experience of dwelling fires undertaken by Bryan (1977) and Wood (1972) in the USA and UK, respectively. Their studies supported by their findings that the public did undertake a range of self-appointed tasks including investigating and tackling fires. Recent studies have confirmed similar findings and these behaviors appear consistent over time.

The evidence further identifies that the public is willing and will accept minor consequences in their pursuit of achieving personal humanistic priorities and instinct. Concern for people, pets and possessions are strong and established drivers of behavior in the event of a fire. Therefore, this should be no surprise to see it as an influential feature of most individual's response to a fire.

A 2003 UK survey found that across all categories of location, extinguishers were successful in extinguishing 79.9% of fires. Note: Private houses accounted for only 3.3% of extinguisher use. It reported that 58.6% were operated by trained staff, 36.4% were operated by untrained staff and in 5% of incidents, this was unknown.

Data from the National Association of Fire Equipment Distributors (NAFED) provides even more robust validation of the influence of fire extinguishers as used by 'ordinary civilians. Their research and data indicate, "Of 13,221 fire incidents reported, portable fire extinguishers successfully extinguished 12,505 fires (95%)." (NAFED 2010: 2) The combined results of the 34 years of data are based on the performance of 32,756 fire extinguishers used on 13,453 incidents.

Fortunately, most people encountering a fire will avoid any injury or will be exposed to a low, and often considered risk of a minor injury at worst. This is not a matter of luck but due to a combination of their own abilities and to the low level of risk presented by most fires individuals would choose to fight at the incipient stage. A 2015 study identified that there was a disconnect between the fire service/government and the public in terms of what they referred to as 'risk tolerance'. This was most evident in attitude to injuries. Official policy seems to place avoidance of any injury as its highest priority and assumes this to also be the public's main motivation and enough to dictate any response to the discovery of a fire. However, the same study found that almost all those who incurred a minor injury accepted it as a reasonable cost in relation to pursuing or achieving their personal priorities. Further, they stated, in hindsight, they would do the same again.

It should be noted that numerous every day and discretionary activities carry similar or higher levels of risk to those resulting from using an extinguisher. Do-It-Yourself and sport for example are frequently responsible for injuries or even fatalities. In response, the government and industry seek to help make products safer or provide advice. This is preferred to denying people the option to participate in either activity by withdrawing public access to tools or sports equipment. The benefits achieved by the public using extinguishers are significant, given the potential for a fire to otherwise lead to detrimental and life-changing outcomes. A low and calculated level of personal risk willingly accepted by an individual tackling a fire can avoid, or reduce, a much higher risk to others should they ignore the fire and allow it to develop. Where current guidance discourages the provision of extinguishers in public spaces, this policy is neither supported by the evidence or justifiable through a consensus from the public. Rather it is imposed on them and is inconsistent with other approaches to public health.

The fire service's response time to structure fires has increased significantly over the past 25 years for several reasons like traffic, infrastructures, and lately staffing. Hence, the ability for the early interventions of the public are likely to be the most significant determinant of the outcome of a fire event. Most people do respond appropriately, and the literature confirms that they do not panic.

Typically, most people are at risk of a minor injury at worst, due to the low risk from the fire and their own ability to assess and act in accordance with the situation.

A significant amount of data has been collected to support the requirement for portable extinguishers, including: WPI/EKU Study: "Ordinary People and the Effective Operation of Fire Extinguishers", which clearly showed that the vast majority of people who have never used an extinguisher can operate one safely and effectively. This willingness of the public to accept minor injuries to protect individuals, the facility or their personal property is supported by literature and data and shows these to be well established behaviors which policy makers need to work with, rather than against.

Reflecting official policy, national and local fire safety messaging has, for some time, urged the public, on discovering a fire in the home, to "Get out, stay out", "Don't put yourself at risk" and 'Leave it to the professionals.' This paternalistic messaging confirms the government policy makers and fire services' belief that a professional response is the only intervention capable of safely tackling fires. Again, this starkly contrasts with the reality that between 70% and 80% of dwelling fires are tackled effectively and at low risk, by the public. The policy also fails to accord with the public who have been shown to be tolerant, or accepting, of the incurrence of minor injuries in pursuit of their personal priorities.

Surveys from the National Association of Fire Equipment Distributors (NAFED) in America reveals the same trend of public firefighting, with even higher percentages not needing the fire service. "In both the 1979 and 1985 surveys, the fire department was only called for 13% of the reported fires. In the 1996 survey, the fire department was called in 24% of the reported fires. However, in the 2010 survey the number dropped to 17% of the time'. And 'These results are not unique to NAFED surveys. A 1978 publication by the U.S. Department of Commerce stated that about 90% of fires in households are not reported, based on their survey of 33,000 fires." (NAFED, 2010: 9)

The public are likely to encounter a fire that is relatively small and often contained to the item first ignited. They are often the ones present when fire starts. In summary, there is a significant difference between official assumptions/guidance and actual public behavior. However, the government and FRS seek to deter this behavior, and, in singularly promoting there, "Get out' message," and remove the simple yet potential life saving devices in sprinklered buildings.

A recent study also showed that the public do not just get out, with 49% never leaving the property during the fire. While this may surprise or concern many professionals, it is likely to be explained by a difference between the fire as perceived by professionals and the lived experience of the public. There is nothing to suggest that the public routinely take unnecessary risks. A more likely explanation is that the fire was small and not sufficiently well-developed to pose an imminent injury or life threat. As such, they were able to remain in the premises safely and relatively comfortably, which is supported by the evidence in relation to the majority of fires not spreading beyond the item first ignited or the room of origin. Inclement weather or other factors may also make remaining in the premises a safer or more comfortable option. Fires, like other emergencies, must also be understood in human terms.

The concept of trading off portable extinguishers in sprinklered buildings has been largely abandoned by fire protection principles. NFPA 10 states in subsection 5.1.2, "The selection of extinguishers shall be independent of whether the building is equipped with automatic sprinklers, standpipe and hose, or other fixed protection equipment." Other codes, and other occupancy chapters have abandoned this concept in recognition of the fact that portable extinguishers are a valuable, cost-effective layer of fire protection, and are intended for a different purpose than sprinklers. Recognition of the valuable role of extinguishers came from a 2003 report which concluded, 'Fire extinguishers are designed to prevent relatively minor incidents becoming major conflagrations.' It is, of course, difficult to prove how many and which fires would have developed to pose a serious risk if not tackled and contained early on. Events such as the Grenfell fire are a reminder of the consequences when this happens.

The National Fire Codes of both NFPA and the ICC require portable fire extinguishers in all occupancy classes including storage which addresses property protection and property loss as well as, the safety of the building occupants. Fire safety is grounded in the engineering discipline which brings many strengths to codes requirements, but it is insufficient, and fire safety effectiveness is limited by ignoring the social sciences of human behavior. It is important to appreciate that while different to official assumptions and desire for evacuation, research shows the public's priorities to be rational and appropriate. The public's experience of fire is vastly different to that of the professionals involved in the planning for and responding to fire.

Official policy and attitudes of the Technical Committee are most singularly directed at avoiding the risk when the public encounters a fire. This is well meaning but the research has shown that this DOES NOT I REPEAT DOES NOT align with the public's attitude or the ability of the general public. The belief that 'undesirable' behavior can be changed by advice, campaigns or other measures has been shown to be inaccurate. The paternalistic approach by which government and the building safety regulatory sector seek to change human behavior by removing proven and effective appliances such as portable fire extinguishers is WRONG. However, the building safety regulatory sector continue this approach despite the evidence that public behaviors are safe, effective, and largely unaltered by current guidance and campaigns rather than providing appropriate safety devices for use by the public. A portable fire extinguisher is an effective item of fire protection which allows for small fires to be tackled by the occupants of a building and saves 100s of thousands of dollars in property loss.

Concerns have been indicted regarding the requirement for training. Training in the use of extinguishers is an important issue and one in which opinion appears more influential than the evidence. Whether purchased for a private dwelling or provided through regulatory processes, there is no mandatory requirement for training to use an extinguisher, and studies do not reveal training to be a requirement for their safe or effective use. In fact, the available data and studies demonstrate the opposite to be the case.

The Technical Committee should also note that portable fire extinguishers are designed for the novice user. Although, training is recommended for proper use and technique and is wide available through a variety of resources including at online training; there are no specified training requirements even under OSHA unless that is an assigned duty employee by the employer. The proposed requirement is intended as a provision for layered fire protection for the general public and employees for general safety.

Although there is limited data available related to extinguisher use since the removal of portable fire extinguishers in the NIFRS data field, there is little to no data supporting the removal of portable fire extinguishers and sole reliance on building fire sprinkler systems. Limiting a fire to the smallest area within a building is a sensible aspiration.

Cost has been another point of contention. A study by Richard Bukowski in 2014, the life cycle cost of portable fire extinguishers was determined to be between one and a half and four cents per foot annually; if coverage could be maximized to that allowable by code, the cost drops to between a half cent and one cent per foot annually. It's unlikely that any other layer of fire protection is so cost-effective.

To avoid addressing fires in their earliest stages is counter-intuitive, and studies have shown that people will almost always attempt to extinguish a fire if it's small and they believe they can mitigate the hazard. Thus, it is important to give the public the intelligently designed and placed tools intended for their use and not the necessarily firefighters. If a fire extinguisher is not available, people have (and will continue to) use makeshift means to try to extinguish the fire, which is far less safe than using a portable extinguisher that is designed for safe and effective use by novices. (Ref: An Evaluation of the Role of Fire Extinguishers by David Wales)

The Technical Committee should note that by adding this requirement, the committee is not requiring an individual to stay in a building and fight a fire but, is providing an everyday tool for an individual to utilize in the event that a fire is discovered in its incipient stages and allows for the protection of not only life but also the preservation of property. A portable fire extinguisher is an item which allows for small fires to be tackled by members of the public and it is important to appreciate that while different to official assumptions, research shows the public's priorities and judgment for fight or flight are rational and appropriate.

This proposal is to provide for the Technical Committee the ability to at a minimum place the requirement for portable fire extinguishers into hazardous areas only or to be placed in locked cabinets.

#### Related Item

- Public Input No. 372-NFPA 101-2021

### Submitter Information Verification

**Submitter Full Name:** Marvin Garriss  
**Organization:** Synergy Consortium Group, LLC  
**Affiliation:** The National Association of State Fire Marshals, The International Fire Marshal's Association - Georgia Chapter / The Georgia Fire Prevention Association and Fire Equipment Manufacturers' Association  
**Street Address:**  
**City:**  
**State:**  
**Zip:**  
**Submittal Date:** Sat May 28 18:08:57 EDT 2022  
**Committee:** SAF-BCF

### Committee Statement

**Committee Action:** Rejected  
**Resolution:** The focus of the Life Safety Code should be on evacuation and should not encourage occupants, especially staff, to use extinguishers in lieu of assisting residents with evacuation.



## Public Comment No. 210-NFPA 101-2022 [ New Section after 33.2.3.5.7.2 ]

### 33.2.3.5.7.3

The provisions of 33.2.3.5.7.1 and 33.2.3.5.7.2 shall be permitted to be applied separately to portions of the attic separated by partitions having a minimum 1/2-hour fire resistance rating and extend from the ceiling to the underside of the floor or roof deck above.

### Statement of Problem and Substantiation for Public Comment

During the First Draft meeting, several public inputs were submitted with the intent of separating the portion of an attic that contains fuel-fired equipment or storage and allow the portion not used for living purpose, storage or fuel-fired equipment to follow the provisions of 33.2.3.5.7.2 and allow the separated portion that is used for storage or contains fuel fired storage to be equipped with sprinklers in accordance with 33.2.3.5.7.1.

A task group was formed to address these public inputs (PI-104, PI-106, PI 198, PI-205, PI-94). The task group agreed with the concept of applying the protection requirements separately when the attic is property separated and determined that a partition (wall to ceiling) with ½ hour fire resistance rating would be adequate.

### Related Public Comments for This Document

<u>Related Comment</u>	<u>Relationship</u>
Public Comment No. 209-NFPA 101-2022 [New Section after 32.2.3.5.7.2]	
<u>Related Item</u>	
• PI-104, PI-106, PI 198, PI-205, PI-94	

### Submitter Information Verification

**Submitter Full Name:** Roland Asp  
**Organization:** National Fire Sprinkler Association  
**Affiliation:** NFPA BCF Task Group (BCF-1B)  
**Street Address:**  
**City:**  
**State:**  
**Zip:**  
**Submittal Date:** Tue May 31 11:32:04 EDT 2022  
**Committee:** SAF-BCF

### Committee Statement

**Committee Action:** Rejected but see related SR  
**Resolution:** [SR-6617-NFPA 101-2022](#)  
**Statement:** During the First Draft meeting, several public inputs were submitted with the intent of separating the portion of an attic that contains fuel-fired equipment or storage and allow the portion not used for living purpose, storage or fuel-fired equipment to follow the

provisions of 33.2.3.5.7.2 and allow the separated portion that is used for storage or contains fuel fired storage to be equipped with sprinklers in accordance with 33.2.3.5.7.1.

A task group was formed to address these public inputs (PI-104, PI-106, PI 198, PI-205, PI-94). The task group agreed with the concept of applying the protection requirements separately when the attic is properly separated and determined that a partition (wall to ceiling) with ½ hour fire resistance rating would be adequate.



## Public Comment No. 192-NFPA 101-2022 [ New Section after 33.2.3.5.8.15 ]

### **33.2.3.5.9 Portable Fire Extinguishers.**

Portable fire extinguishers shall be provided in accordance with Section 9.9.

### **Statement of Problem and Substantiation for Public Comment**

A 2013 NFPA Report: "U.S. Experience with Sprinklers" reports that there were 48,460 reported structure fires annually in buildings equipped with sprinkler systems between 2007-2011, and 40,440 (83 percent) never grew large enough to activate the system. Based on this report alone, it's clear that people are reacting to small fires and extinguishing them prior to sprinkler activation. Limiting a fire to the smallest area within a building is a sensible aspiration.

To avoid addressing fires in their earliest stages is counter-intuitive, and studies have shown that people will almost always attempt to extinguish a fire if it's small and they believe they can mitigate the hazard. Thus, it is important to give the public the intelligently designed and placed tools intended for their use and not the necessarily firefighters. If a fire extinguisher is not available, people have (and will continue to) use makeshift means to try to extinguish the fire, which is far less safe than using a portable extinguisher that is designed for safe and effective use by novices. (Ref: An Evaluation of the Role of Fire Extinguishers by David Wales)

The Technical Committee should note that by adding this requirement, the committee is not requiring an individual to stay in a building and fight a fire but, is providing an everyday tool for an individual to utilize in the event that a fire is discovered in its incipient stages and allows for the protection of not only life but also the preservation of property. A portable fire extinguisher is an item which allows for small fires to be tackled by members of the public and it is important to appreciate that while different to official assumptions, research shows the public's priorities and judgment for fight or flight are rational and appropriate.

Under the Scope of the Life Safety Code, Subsection 1.1.2 entitled, "Danger to Life from Fire," the Code states the following: "The Code addresses those construction, protection, and occupancy features necessary to minimize danger to life from the effects of fire, including smoke, heat, and toxic gases created during a fire." Further, it states in Subsection 1.1.4 entitled, "Other Fire-Related Considerations," the following: "The Code addresses other considerations that are essential to life safety in recognition of the fact that life safety is more than a matter of egress. The Code also addresses protective features and systems, building services, operating features, maintenance activities, and other provisions in recognition of the fact that achieving an acceptable degree of life safety depends on additional safeguards to provide adequate egress time or protection for people exposed to fire."

Studies of building fires indicate that occupants typically exhibit altruistic behavior toward others. Human response to a threatening situation might follow one of a variety of behaviors. Individuals might choose to investigate, sound an alarm, assist with rescue, seek help, or flee. Such actions constitute normal behavior, even when taken collectively. Most people avoid direct contact with a fire while undertaking another action.

There is a fundamental discrepancy between official/policy assumptions and the public in relation to priorities in the event of a fire. Government and professionals focus on avoiding injuries and see that as the sole aspiration, in the pursuit of which everything else is secondary. In contrast, the public have a wide and largely unrecognized range of priorities when encountering a fire, based on their individual circumstances. These include: the avoidance of embarrassment/inconvenience; mitigating the impact of damage to the property, e.g. avoiding the risk of being unable to remain in their place of business; and their concern for the wellbeing of other people. Each are invested by different aspirations in the fire safety ecosystem.

A desire to achieve their self-appointed tasks is a strong motivation for the public's behavior when encountering a fire. For most, this will involve an active response of on average five actions, although for some it will be as many as 11. This includes investigating the initial cues and tackling the fire, often using improvised means. They are usually successful in doing so, with 70% to 80% of fires dealt with by the public without requiring professional assistance. It is important to note that in doing so, they are willingly acting against official advice and are not being coerced into this. The evidence shows the public to be effective and capable in tackling fires, even in the absence of any professional support, or often without specialized equipment. This is supported by the pioneering studies of the public experience of dwelling fires undertaken by Bryan (1977) and Wood (1972) in the USA and UK, respectively. Their studies supported by their findings that the public did undertake a range of self-appointed tasks including investigating and tackling fires. Recent studies have confirmed similar findings and these behaviors appear consistent over time.

The evidence further identifies that the public is willing and will accept minor consequences in their pursuit of achieving personal humanistic priorities and instinct. Concern for people, pets and possessions are strong and established drivers of behavior in the event of a fire. Therefore, this should be no surprise to see it as an influential feature of most individual's response to a fire.

A 2003 UK survey found that across all categories of location, extinguishers were successful in extinguishing 79.9% of fires. Note: Private houses accounted for only 3.3% of extinguisher use. It reported that 58.6% were operated by trained staff, 36.4% were operated by untrained staff and in 5% of incidents, this was unknown.

Data from the National Association of Fire Equipment Distributors (NAFED) provides even more robust validation of the influence of fire extinguishers as used by 'ordinary civilians. Their research and data indicate, "Of 13,221 fire incidents reported, portable fire extinguishers successfully extinguished 12,505 fires (95%)." (NAFED 2010: 2) The combined results of the 34 years of data are based on the performance of 32,756 fire extinguishers used on 13,453 incidents.

Fortunately, most people encountering a fire will avoid any injury or will be exposed to a low, and often considered risk of a minor injury at worst. This is not a matter of luck but due to a combination of their own abilities and to the low level of risk presented by most fires individuals would choose to fight at the incipient stage. A 2015 study identified that there was a disconnect between the fire service/government and the public in terms of what they referred to as 'risk tolerance'. This was most evident in attitude to injuries. Official policy seems to place avoidance of any injury as its highest priority and assumes this to also be the public's main motivation and enough to dictate any response to the discovery of a fire. However, the same study found that almost all those who incurred a minor injury accepted it as a reasonable cost in relation to pursuing or achieving their personal priorities. Further, they stated, in hindsight, they would do the same again.

It should be noted that numerous every day and discretionary activities carry similar or higher levels of risk to those resulting from using an extinguisher. Do-It-Yourself and sport for example are frequently responsible for injuries or even fatalities. In response, the government and industry seek to help make products safer or provide advice. This is preferred to denying people the option to participate in either activity by withdrawing public access to tools or sports equipment. The benefits achieved by the public using extinguishers are significant, given the potential for a fire to otherwise lead to detrimental and life-changing outcomes. A low and calculated level of personal risk willingly accepted by an individual tackling a fire can avoid, or reduce, a much higher risk to others should they ignore the fire and allow it to develop. Where current guidance discourages the provision of extinguishers in public spaces, this policy is neither supported by the evidence or justifiable through a consensus from the public. Rather it is imposed on them and is inconsistent with other approaches to public health.

The fire service's response time to structure fires has increased significantly over the past 25 years for several reasons like traffic, infrastructures, and lately staffing. Hence, the ability for the early interventions of the public are likely to be the most significant determinant of the outcome of a fire event. Most people do respond appropriately, and the literature confirms that they do not panic. Typically, most people are at risk of a minor injury at worst, due to the low risk from the fire and their own ability to assess and act in accordance with the situation.

A significant amount of data has been collected to support the requirement for portable extinguishers,

including: WPI/EKU Study: "Ordinary People and the Effective Operation of Fire Extinguishers", which clearly showed that the vast majority of people who have never used an extinguisher can operate one safely and effectively. This willingness of the public to accept minor injuries to protect individuals, the facility or their personal property is supported by literature and data and shows these to be well established behaviors which policy makers need to work with, rather than against.

Reflecting official policy, national and local fire safety messaging has, for some time, urged the public, on discovering a fire in the home, to "Get out, stay out", "Don't put yourself at risk" and 'Leave it to the professionals.' This paternalistic messaging confirms the government policy makers and fire services' belief that a professional response is the only intervention capable of safely tackling fires. Again, this starkly contrasts with the reality that between 70% and 80% of dwelling fires are tackled effectively and at low risk, by the public. The policy also fails to accord with the public who have been shown to be tolerant, or accepting, of the incurrence of minor injuries in pursuit of their personal priorities.

Surveys from the National Association of Fire Equipment Distributors (NAFED) in America reveals the same trend of public firefighting, with even higher percentages not needing the fire service. "In both the 1979 and 1985 surveys, the fire department was only called for 13% of the reported fires. In the 1996 survey, the fire department was called in 24% of the reported fires. However, in the 2010 survey the number dropped to 17% of the time'. And 'These results are not unique to NAFED surveys. A 1978 publication by the U.S. Department of Commerce stated that about 90% of fires in households are not reported, based on their survey of 33,000 fires." (NAFED, 2010: 9)

The public are likely to encounter a fire that is relatively small and often contained to the item first ignited. They are often the ones present when fire starts. In summary, there is a significant difference between official assumptions/guidance and actual public behavior. However, the government and FRS seek to deter this behavior, and, in singularly promoting there, "Get out' message," and remove the simple yet potential life saving devices in sprinklered buildings.

A recent study also showed that the public do not just get out, with 49% never leaving the property during the fire. While this may surprise or concern many professionals, it is likely to be explained by a difference between the fire as perceived by professionals and the lived experience of the public. There is nothing to suggest that the public routinely take unnecessary risks. A more likely explanation is that the fire was small and not sufficiently well-developed to pose an imminent injury or life threat. As such, they were able to remain in the premises safely and relatively comfortably, which is supported by the evidence in relation to the majority of fires not spreading beyond the item first ignited or the room of origin. Inclement weather or other factors may also make remaining in the premises a safer or more comfortable option. Fires, like other emergencies, must also be understood in human terms.

The concept of trading off portable extinguishers in sprinklered buildings has been largely abandoned by fire protection principles. NFPA 10 states in subsection 5.1.2, "The selection of extinguishers shall be independent of whether the building is equipped with automatic sprinklers, standpipe and hose, or other fixed protection equipment." Other codes, and other occupancy chapters have abandoned this concept in recognition of the fact that portable extinguishers are a valuable, cost-effective layer of fire protection, and are intended for a different purpose than sprinklers. Recognition of the valuable role of extinguishers came from a 2003 report which concluded, 'Fire extinguishers are designed to prevent relatively minor incidents becoming major conflagrations.' It is, of course, difficult to prove how many and which fires would have developed to pose a serious risk if not tackled and contained early on. Events such as the Grenfell fire are a reminder of the consequences when this happens.

The National Fire Codes of both NFPA and the ICC require portable fire extinguishers in all occupancy classes including storage which addresses property protection and property loss as well as, the safety of the building occupants. Fire safety is grounded in the engineering discipline which brings many strengths to codes requirements, but it is insufficient, and fire safety effectiveness is limited by ignoring the social sciences of human behavior. It is important to appreciate that while different to official assumptions and desire for evacuation, research shows the public's priorities to be rational and appropriate. The public's experience of fire is vastly different to that of the professionals involved in the planning for and responding to fire.

Official policy and attitudes of the Technical Committee are most singularly directed at avoiding the risk when the public encounters a fire. This is well meaning but the research has shown that this DOES NOT I REPEAT DOES NOT align with the public's attitude or the ability of the general public. The belief that 'undesirable' behavior can be changed by advice, campaigns or other measures has been

shown to be inaccurate. The paternalistic approach by which government and the building safety regulatory sector seek to change human behavior by removing proven and effective appliances such as portable fire extinguishers is WRONG. However, the building safety regulatory sector continues this approach despite the evidence that public behaviors are safe, effective, and largely unaltered by current guidance and campaigns rather than providing appropriate safety devices for use by the public. A portable fire extinguisher is an effective item of fire protection which allows for small fires to be tackled by the occupants of a building and saves 100s of thousands of dollars in property loss.

Concerns have been indicted regarding the requirement for training. Training in the use of extinguishers is an important issue and one in which opinion appears more influential than the evidence. Whether purchased for a private dwelling or provided through regulatory processes, there is no mandatory requirement for training to use an extinguisher, and studies do not reveal training to be a requirement for their safe or effective use. In fact, the available data and studies demonstrate the opposite to be the case.

The Technical Committee should also note that portable fire extinguishers are designed for the novice user. Although, training is recommended for proper use and technique and is widely available through a variety of resources including online training; there are no specified training requirements even under OSHA unless that is an assigned duty employee by the employer. The proposed requirement is intended as a provision for layered fire protection for the general public and employees for general safety.

Although there is limited data available related to extinguisher use since the removal of portable fire extinguishers in the NIFRS data field, there is little to no data supporting the removal of portable fire extinguishers and sole reliance on building fire sprinkler systems. Limiting a fire to the smallest area within a building is a sensible aspiration.

Cost has been another point of contention. A study by Richard Bukowski in 2014, the life cycle cost of portable fire extinguishers was determined to be between one and a half and four cents per foot annually; if coverage could be maximized to that allowable by code, the cost drops to between a half cent and one cent per foot annually. It's unlikely that any other layer of fire protection is so cost-effective.

To avoid addressing fires in their earliest stages is counter-intuitive, and studies have shown that people will almost always attempt to extinguish a fire if it's small and they believe they can mitigate the hazard. Thus, it is important to give the public the intelligently designed and placed tools intended for their use and not the necessarily firefighters. If a fire extinguisher is not available, people have (and will continue to) use makeshift means to try to extinguish the fire, which is far less safe than using a portable extinguisher that is designed for safe and effective use by novices. (Ref: An Evaluation of the Role of Fire Extinguishers by David Wales)

The Technical Committee should note that by adding this requirement, the committee is not requiring an individual to stay in a building and fight a fire but, is providing an everyday tool for an individual to utilize in the event that a fire is discovered in its incipient stages and allows for the protection of not only life but also the preservation of property. A portable fire extinguisher is an item which allows for small fires to be tackled by members of the public and it is important to appreciate that while different to official assumptions, research shows the public's priorities and judgment for fight or flight are rational and appropriate.

#### Related Item

- Public Input No. 366-NFPA 101-2021

### Submitter Information Verification

**Submitter Full Name:** Marvin Garriss

**Organization:** Synergy Consortium Group, LLC

**Affiliation:** The National Association of State Fire Marshals, The International Fire Marshal's Association - Georgia Chapter / The Georgia Fire Prevention Association and Fire Equipment Manufacturers' Association

**Street Address:**

**City:**

**State:**

**Zip:**

**Submittal Date:** Sat May 28 18:20:33 EDT 2022

**Committee:** SAF-BCF

### Committee Statement

**Committee Action:** Rejected

**Resolution:** The focus of the Life Safety Code should be on evacuation and should not encourage occupants, especially staff, to use extinguishers in lieu of assisting residents with evacuation.



## Public Comment No. 193-NFPA 101-2022 [ New Section after 33.2.3.5.8.15 ]

### **33.2.3.5.9 Portable Fire Extinguishers.**

Portable fire extinguishers shall be provided in accordance with Section 9.9, unless permitted by the following:

- (1) Access to portable fire extinguishers shall be permitted to be locked.
- (2) Portable fire extinguishers shall be permitted to be located at staff locations only.

### **Statement of Problem and Substantiation for Public Comment**

A 2013 NFPA Report: "U.S. Experience with Sprinklers" reports that there were 48,460 reported structure fires annually in buildings equipped with sprinkler systems between 2007-2011, and 40,440 (83 percent) never grew large enough to activate the system. Based on this report alone, it's clear that people are reacting to small fires and extinguishing them prior to sprinkler activation. Limiting a fire to the smallest area within a building is a sensible aspiration.

To avoid addressing fires in their earliest stages is counter-intuitive, and studies have shown that people will almost always attempt to extinguish a fire if it's small and they believe they can mitigate the hazard. Thus, it is important to give the public the intelligently designed and placed tools intended for their use and not the necessarily firefighters. If a fire extinguisher is not available, people have (and will continue to) use makeshift means to try to extinguish the fire, which is far less safe than using a portable extinguisher that is designed for safe and effective use by novices. (Ref: An Evaluation of the Role of Fire Extinguishers by David Wales)

The Technical Committee should note that by adding this requirement, the committee is not requiring an individual to stay in a building and fight a fire but, is providing an everyday tool for an individual to utilize in the event that a fire is discovered in its incipient stages and allows for the protection of not only life but also the preservation of property. A portable fire extinguisher is an item which allows for small fires to be tackled by members of the public and it is important to appreciate that while different to official assumptions, research shows the public's priorities and judgment for fight or flight are rational and appropriate.

Under the Scope of the Life Safety Code, Subsection 1.1.2 entitled, "Danger to Life from Fire," the Code states the following: "The Code addresses those construction, protection, and occupancy features necessary to minimize danger to life from the effects of fire, including smoke, heat, and toxic gases created during a fire." Further, it states in Subsection 1.1.4 entitled, "Other Fire-Related Considerations," the following: "The Code addresses other considerations that are essential to life safety in recognition of the fact that life safety is more than a matter of egress. The Code also addresses protective features and systems, building services, operating features, maintenance activities, and other provisions in recognition of the fact that achieving an acceptable degree of life safety depends on additional safeguards to provide adequate egress time or protection for people exposed to fire."

Studies of building fires indicate that occupants typically exhibit altruistic behavior toward others. Human response to a threatening situation might follow one of a variety of behaviors. Individuals might choose to investigate, sound an alarm, assist with rescue, seek help, or flee. Such actions constitute normal behavior, even when taken collectively. Most people avoid direct contact with a fire while undertaking another action.

There is a fundamental discrepancy between official/policy assumptions and the public in relation to priorities in the event of a fire. Government and professionals focus on avoiding injuries and see that as the sole aspiration, in the pursuit of which everything else is secondary. In contrast, the public have

a wide and largely unrecognized range of priorities when encountering a fire, based on their individual circumstances. These include: the avoidance of embarrassment/inconvenience; mitigating the impact of damage to the property, e.g. avoiding the risk of being unable to remain in their place of business; and their concern for the wellbeing of other people. Each are invested by different aspirations in the fire safety ecosystem.

A desire to achieve their self-appointed tasks is a strong motivation for the public's behavior when encountering a fire. For most, this will involve an active response of on average five actions, although for some it will be as many as 11. This includes investigating the initial cues and tackling the fire, often using improvised means. They are usually successful in doing so, with 70% to 80% of fires dealt with by the public without requiring professional assistance. It is important to note that in doing so, they are willingly acting against official advice and are not being coerced into this. The evidence shows the public to be effective and capable in tackling fires, even in the absence of any professional support, or often without specialized equipment. This is supported by the pioneering studies of the public experience of dwelling fires undertaken by Bryan (1977) and Wood (1972) in the USA and UK, respectively. Their studies supported by their findings that the public did undertake a range of self-appointed tasks including investigating and tackling fires. Recent studies have confirmed similar findings and these behaviors appear consistent over time.

The evidence further identifies that the public is willing and will accept minor consequences in their pursuit of achieving personal humanistic priorities and instinct. Concern for people, pets and possessions are strong and established drivers of behavior in the event of a fire. Therefore, this should be no surprise to see it as an influential feature of most individual's response to a fire.

A 2003 UK survey found that across all categories of location, extinguishers were successful in extinguishing 79.9% of fires. Note: Private houses accounted for only 3.3% of extinguisher use. It reported that 58.6% were operated by trained staff, 36.4% were operated by untrained staff and in 5% of incidents, this was unknown.

Data from the National Association of Fire Equipment Distributors (NAFED) provides even more robust validation of the influence of fire extinguishers as used by 'ordinary civilians. Their research and data indicate, "Of 13,221 fire incidents reported, portable fire extinguishers successfully extinguished 12,505 fires (95%)." (NAFED 2010: 2) The combined results of the 34 years of data are based on the performance of 32,756 fire extinguishers used on 13,453 incidents.

Fortunately, most people encountering a fire will avoid any injury or will be exposed to a low, and often considered risk of a minor injury at worst. This is not a matter of luck but due to a combination of their own abilities and to the low level of risk presented by most fires individuals would choose to fight at the incipient stage. A 2015 study identified that there was a disconnect between the fire service/government and the public in terms of what they referred to as 'risk tolerance'. This was most evident in attitude to injuries. Official policy seems to place avoidance of any injury as its highest priority and assumes this to also be the public's main motivation and enough to dictate any response to the discovery of a fire. However, the same study found that almost all those who incurred a minor injury accepted it as a reasonable cost in relation to pursuing or achieving their personal priorities. Further, they stated, in hindsight, they would do the same again.

It should be noted that numerous every day and discretionary activities carry similar or higher levels of risk to those resulting from using an extinguisher. Do-It-Yourself and sport for example are frequently responsible for injuries or even fatalities. In response, the government and industry seek to help make products safer or provide advice. This is preferred to denying people the option to participate in either activity by withdrawing public access to tools or sports equipment. The benefits achieved by the public using extinguishers are significant, given the potential for a fire to otherwise lead to detrimental and life-changing outcomes. A low and calculated level of personal risk willingly accepted by an individual tackling a fire can avoid, or reduce, a much higher risk to others should they ignore the fire and allow it to develop. Where current guidance discourages the provision of extinguishers in public spaces, this policy is neither supported by the evidence or justifiable through a consensus from the public. Rather it is imposed on them and is inconsistent with other approaches to public health.

The fire service's response time to structure fires has increased significantly over the past 25 years for several reasons like traffic, infrastructures, and lately staffing. Hence, the ability for the early interventions of the public are likely to be the most significant determinant of the outcome of a fire

event. Most people do respond appropriately, and the literature confirms that they do not panic. Typically, most people are at risk of a minor injury at worst, due to the low risk from the fire and their own ability to assess and act in accordance with the situation.

A significant amount of data has been collected to support the requirement for portable extinguishers, including: WPI/EKU Study: "Ordinary People and the Effective Operation of Fire Extinguishers", which clearly showed that the vast majority of people who have never used an extinguisher can operate one safely and effectively. This willingness of the public to accept minor injuries to protect individuals, the facility or their personal property is supported by literature and data and shows these to be well established behaviors which policy makers need to work with, rather than against.

Reflecting official policy, national and local fire safety messaging has, for some time, urged the public, on discovering a fire in the home, to "Get out, stay out", "Don't put yourself at risk" and 'Leave it to the professionals.' This paternalistic messaging confirms the government policy makers and fire services' belief that a professional response is the only intervention capable of safely tackling fires. Again, this starkly contrasts with the reality that between 70% and 80% of dwelling fires are tackled effectively and at low risk, by the public. The policy also fails to accord with the public who have been shown to be tolerant, or accepting, of the incurrence of minor injuries in pursuit of their personal priorities.

Surveys from the National Association of Fire Equipment Distributors (NAFED) in America reveals the same trend of public firefighting, with even higher percentages not needing the fire service. "In both the 1979 and 1985 surveys, the fire department was only called for 13% of the reported fires. In the 1996 survey, the fire department was called in 24% of the reported fires. However, in the 2010 survey the number dropped to 17% of the time'. And 'These results are not unique to NAFED surveys. A 1978 publication by the U.S. Department of Commerce stated that about 90% of fires in households are not reported, based on their survey of 33,000 fires." (NAFED, 2010: 9)

The public are likely to encounter a fire that is relatively small and often contained to the item first ignited. They are often the ones present when fire starts. In summary, there is a significant difference between official assumptions/guidance and actual public behavior. However, the government and FRS seek to deter this behavior, and, in singularly promoting there, "Get out' message," and remove the simple yet potential life saving devices in sprinklered buildings.

A recent study also showed that the public do not just get out, with 49% never leaving the property during the fire. While this may surprise or concern many professionals, it is likely to be explained by a difference between the fire as perceived by professionals and the lived experience of the public. There is nothing to suggest that the public routinely take unnecessary risks. A more likely explanation is that the fire was small and not sufficiently well-developed to pose an imminent injury or life threat. As such, they were able to remain in the premises safely and relatively comfortably, which is supported by the evidence in relation to the majority of fires not spreading beyond the item first ignited or the room of origin. Inclement weather or other factors may also make remaining in the premises a safer or more comfortable option. Fires, like other emergencies, must also be understood in human terms.

The concept of trading off portable extinguishers in sprinklered buildings has been largely abandoned by fire protection principles. NFPA 10 states in subsection 5.1.2, "The selection of extinguishers shall be independent of whether the building is equipped with automatic sprinklers, standpipe and hose, or other fixed protection equipment." Other codes, and other occupancy chapters have abandoned this concept in recognition of the fact that portable extinguishers are a valuable, cost-effective layer of fire protection, and are intended for a different purpose than sprinklers. Recognition of the valuable role of extinguishers came from a 2003 report which concluded, 'Fire extinguishers are designed to prevent relatively minor incidents becoming major conflagrations.' It is, of course, difficult to prove how many and which fires would have developed to pose a serious risk if not tackled and contained early on. Events such as the Grenfell fire are a reminder of the consequences when this happens.

The National Fire Codes of both NFPA and the ICC require portable fire extinguishers in all occupancy classes including storage which addresses property protection and property loss as well as, the safety of the building occupants. Fire safety is grounded in the engineering discipline which brings many strengths to codes requirements, but it is insufficient, and fire safety effectiveness is limited by ignoring the social sciences of human behavior. It is important to appreciate that while different to official assumptions and desire for evacuation, research shows the public's priorities to be rational and appropriate. The public's experience of fire is vastly different to that of the professionals involved in the planning for and responding to fire.

Official policy and attitudes of the Technical Committee are most singularly directed at avoiding the risk when the public encounters a fire. This is well meaning but the research has shown that this DOES NOT I REPEAT DOES NOT align with the public's attitude or the ability of the general public. The belief that 'undesirable' behavior can be changed by advice, campaigns or other measures has been shown to be inaccurate. The paternalistic approach by which government and the building safety regulatory sector seek to change human behavior by removing proven and effective appliances such as portable fire extinguishers is WRONG. However, the building safety regulatory sector continue this approach despite the evidence that public behaviors are safe, effective, and largely unaltered by current guidance and campaigns rather than providing appropriate safety devices for use by the public. A portable fire extinguisher is an effective item of fire protection which allows for small fires to be tackled by the occupants of a building and saves 100s of thousands of dollars in property loss.

Concerns have been indicted regarding the requirement for training. Training in the use of extinguishers is an important issue and one in which opinion appears more influential than the evidence. Whether purchased for a private dwelling or provided through regulatory processes, there is no mandatory requirement for training to use an extinguisher, and studies do not reveal training to be a requirement for their safe or effective use. In fact, the available data and studies demonstrate the opposite to be the case.

The Technical Committee should also note that portable fire extinguishers are designed for the novice user. Although, training is recommended for proper use and technique and is wide available through a variety of resources including at online training; there are no specified training requirements even under OSHA unless that is an assigned duty employee by the employer. The proposed requirement is intended as a provision for layered fire protection for the general public and employees for general safety.

Although there is limited data available related to extinguisher use since the removal of portable fire extinguishers in the NIFRS data field, there is little to no data supporting the removal of portable fire extinguishers and sole reliance on building fire sprinkler systems. Limiting a fire to the smallest area within a building is a sensible aspiration.

Cost has been another point of contention. A study by Richard Bukowski in 2014, the life cycle cost of portable fire extinguishers was determined to be between one and a half and four cents per foot annually; if coverage could be maximized to that allowable by code, the cost drops to between a half cent and one cent per foot annually. It's unlikely that any other layer of fire protection is so cost-effective.

To avoid addressing fires in their earliest stages is counter-intuitive, and studies have shown that people will almost always attempt to extinguish a fire if it's small and they believe they can mitigate the hazard. Thus, it is important to give the public the intelligently designed and placed tools intended for their use and not the necessarily firefighters. If a fire extinguisher is not available, people have (and will continue to) use makeshift means to try to extinguish the fire, which is far less safe than using a portable extinguisher that is designed for safe and effective use by novices. (Ref: An Evaluation of the Role of Fire Extinguishers by David Wales)

The Technical Committee should note that by adding this requirement, the committee is not requiring an individual to stay in a building and fight a fire but, is providing an everyday tool for an individual to utilize in the event that a fire is discovered in its incipient stages and allows for the protection of not only life but also the preservation of property. A portable fire extinguisher is an item which allows for small fires to be tackled by members of the public and it is important to appreciate that while different to official assumptions, research shows the public's priorities and judgment for fight or flight are rational and appropriate.

This proposal is to provide for the Technical Committee the ability to at a minimum place the requirement for portable fire extinguishers into hazardous areas only or to be placed in locked cabinets.

#### Related Item

- Public Input No. 366-NFPA 101-2021

## Submitter Information Verification

**Submitter Full Name:** Marvin Garriss

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**Affiliation:** The National Association of State Fire Marshals, The International Fire Marshal's Association - Georgia Chapter / The Georgia Fire Prevention Association and Fire Equipment Manufacturers' Association

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**Submittal Date:** Sat May 28 18:26:38 EDT 2022

**Committee:** SAF-BCF

## Committee Statement

**Committee Action:** Rejected

**Resolution:** The focus of the Life Safety Code should be on evacuation and should not encourage occupants, especially staff, to use extinguishers in lieu of assisting residents with evacuation.



## Public Comment No. 175-NFPA 101-2022 [ New Section after 33.3.3.4.8.3 ]

### **33.3.3.4.9 Carbon Monoxide Detection**

**33.3.3.4.9.1** Carbon monoxide detectors in accordance with Section 9.12 and 33.3.3.4.9 shall be provided where any of the following conditions exist:

(1) Where facilities have communicating attached garages, unless otherwise exempted by 33.3.3.4.9.3

(2) Where fuel-burning appliances or fuel-burning fireplaces are in the facility

**33.3.3.4.9.2** Where required by 33.3.3.4.9.1, carbon monoxide detectors shall be installed in all of the following locations:

(1) Within rooms containing fuel-burning appliances or fuel-burning fireplaces, unless otherwise exempted by 33.3.3.4.9.4

(2) Centrally located within occupiable spaces served by the first supply air register from a fuel-burning HVAC system

(3) On every occupiable level

(4) Within adjacent communicating occupiable spaces to an attached garage, unless otherwise exempted by 33.3.3.4.9.3

**33.3.3.4.9.3** Carbon monoxide detectors as specified in 33.3.3.4.9.1(1) shall not be required in the following locations:

(1) In garages

(2) Within facilities with communicating attached garages that are open parking structures as defined by the building code

(3) Within facilities with communicating attached garages that are mechanically ventilated in accordance with the mechanical code

**33.3.3.4.9.4** Within resident units containing fuel-burning appliances or fuel-burning fireplaces, carbon monoxide alarms shall be permitted to be used.

### **Statement of Problem and Substantiation for Public Comment**

Existing board and care occupancies currently lack requirements for CO detection in buildings with known CO hazards, including fuel-burning appliances. A CO source in any building that is not monitored by installed CO detection devices is a life safety hazard to occupants. The addition of these requirements will prevent deaths and injuries to occupants in the event of high level CO release within the building.

This public comment is submitted in support of committee action taken in the first revision phase to develop CO detection requirements for existing facilities. The proposed revision being resubmitted is identical to the requirement that is currently in place for new board and care occupancies. If this proposed revision has been "deemed to be excessive," the committee is urged to develop what it considers to be an adequate requirement for existing buildings.

With regard to installation cost, primary consideration must be given to the unique nature of CO exposure and the inability of occupants to sense when they are being exposed. To avoid injury and death, there is no safe alternative to installed CO detection devices.

Existing buildings arguably carry the highest risk of exposure due to aging gas appliances and exhaust systems.

“The lack of an operating alarm can be seen in several of these case studies. Carbon monoxide is colorless and odorless. Its early onset symptoms are not unique or severe, which leads to mistaking them for something else or thinking there is not a serious problem. These symptoms can quickly escalate to severe symptoms, which usually revolves around the victim becoming unconscious. People do not self-rescue when they are able, because they do not realize that they should. If someone does realize there is problem, it is most likely too late. This common sequence combined with CO’s toxicity, and a general negligence, makes CO a very dangerous problem that can happen almost anywhere. Detection is the only safeguard against this problem.”

<https://www.nfpa.org/News-and-Research/Data-research-and-tools/Detection-and-Signaling/Carbon-Monoxide-Detection-and-Alarm-Requirements-Literature-Review>

#### Related Item

- PI 221 CO Detection

### Submitter Information Verification

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**Submittal Date:** Sat May 28 13:09:53 EDT 2022

**Committee:** SAF-BCF

### Committee Statement

**Committee Action:** Rejected

**Resolution:** The language presented by the submitter is equal to that for new residential board and care occupancies and is deemed to be excessive. The TC recommends that the submitter revise the language to be more feasible for existing large residential board and care occupancies . The requirement for detection on every floor might not be justified in all cases. CO alarms might be a reasonable alternative to detectors in large facilities. The TC formed a task group that submitted PC-168 in Chapter 43 to add CO detectors and alarms when rehabilitation work is undertaken.



## Public Comment No. 217-NFPA 101-2022 [ Section No. A.32.2.3.5.3.2 ]

### A.32.2.3.5.3.2

The decision to permit the use of the criteria from NFPA 13D in these occupancies is based on the following:

- (1) The desire to obtain a level of fire suppression and control approximately equivalent to that delivered by residential facilities protected by such systems (see A.1.1 in NFPA 13D)
- (2) The fact that potential fire exposure and challenge to the suppression system in a small board and care facility are of the same nature and are no more severe than those found in residences

Chapter 32 permits the use of NFPA 13D, and NFPA 13R outside of their scopes. This permission is based on a review of the occupancy and a recognition that the fires in board and care facilities are similar to those of other residential occupancies and that the level of protection is appropriate. The requirements of NFPA 13D and NFPA 13R have been supplemented with requirements for additional water supplies to compensate for the special needs of the board and care occupancy.

NFPA 13D contains additional requirements for a piping system serving both sprinkler and domestic needs.

Exterior projections are defined by NFPA 13 as follows: an extension beyond an exterior wall capable of collecting heat below. The reference to NFPA 13 applies to location of sprinklers only.

## Statement of Problem and Substantiation for Public Comment

This revised annex note goes along with PI-216

## Related Public Comments for This Document

<u>Related Comment</u>	<u>Relationship</u>
<u>Public Comment No. 216-NFPA 101-2022 [Section No. 32.2.3.5.3.2]</u>	
<u>Related Item</u>	
• PI-197	

## Submitter Information Verification

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**Submittal Date:** Tue May 31 14:19:41 EDT 2022  
**Committee:** SAF-BCF

## Committee Statement

**Committee** Rejected

**Action:**

**Resolution:** The proposed addition is unnecessary as the term "exterior projection" was not added in the corresponding mandatory section.