

AFX 2025.ai



## ***NFPA Updates, including NFPA 72 and Activities from the Fire Protection Research Foundation***

Victoria Lutz | Senior Research Project Manager | **Research Foundation**

Shawn Mahoney | Senior Technical Services Engineer | **NFPA**

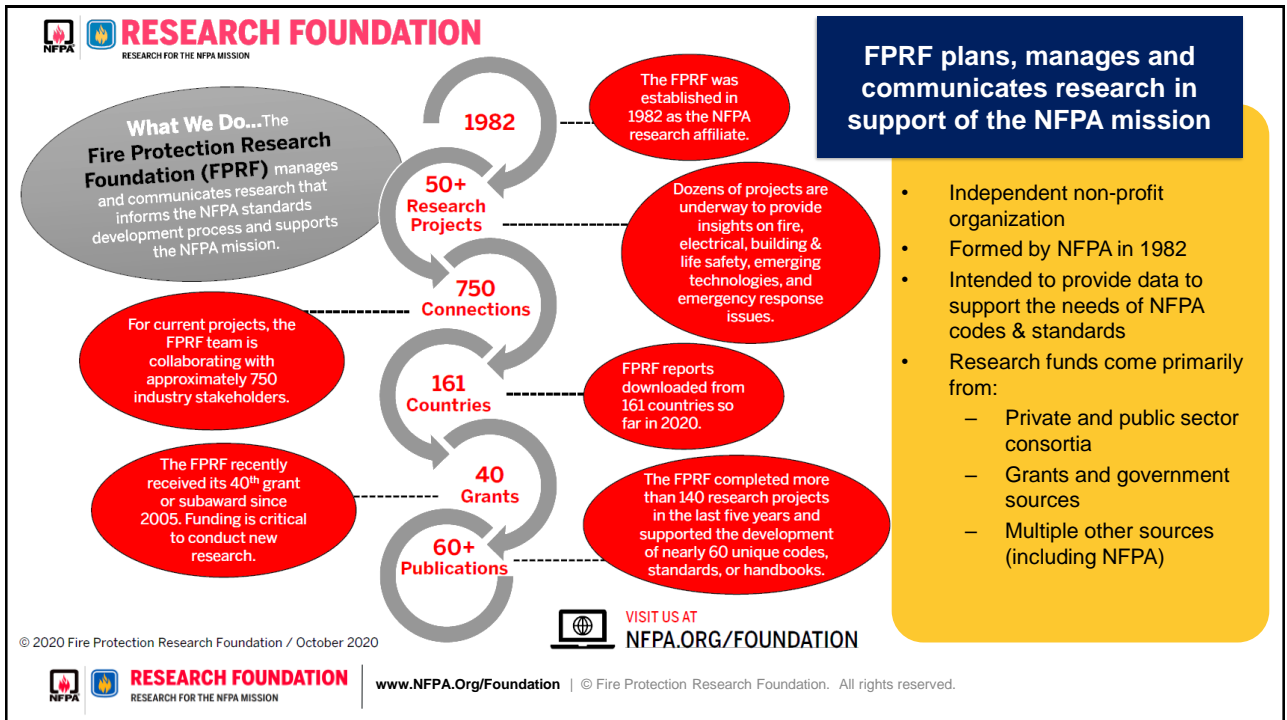
Patrick Bakaj | Senior Fire Protection Engineer | **NFPA**



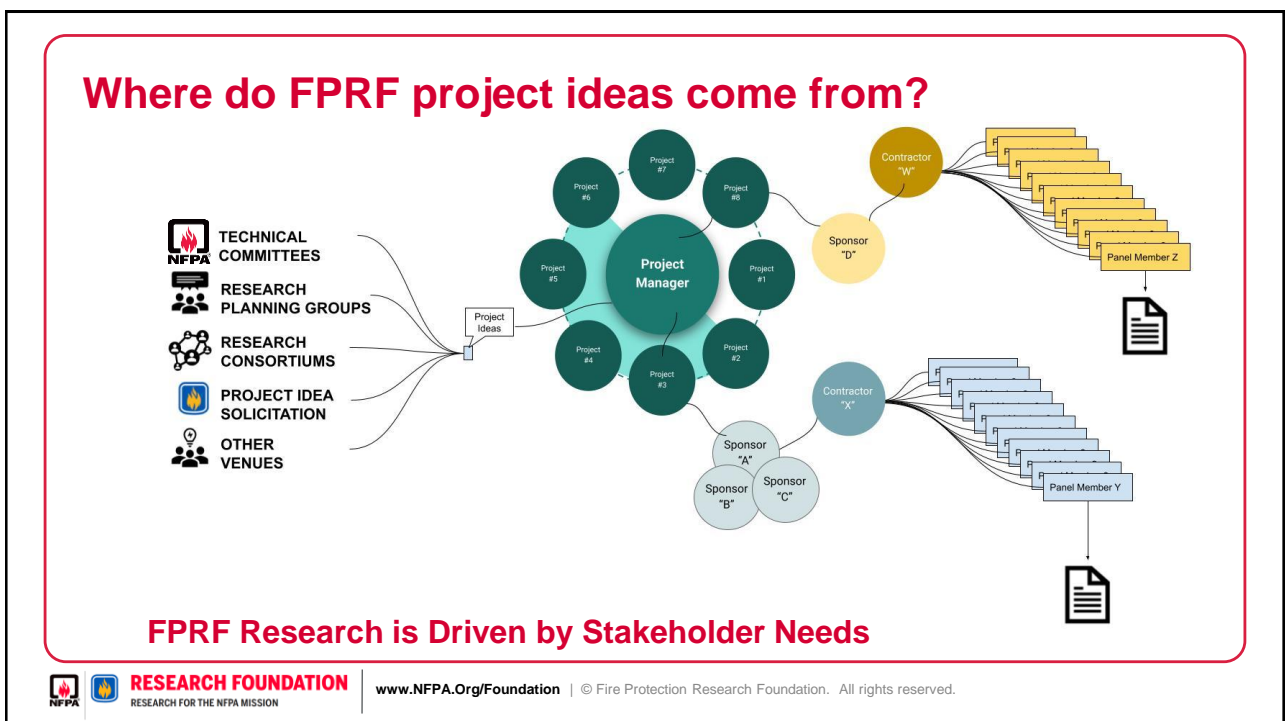
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FPRF Updates

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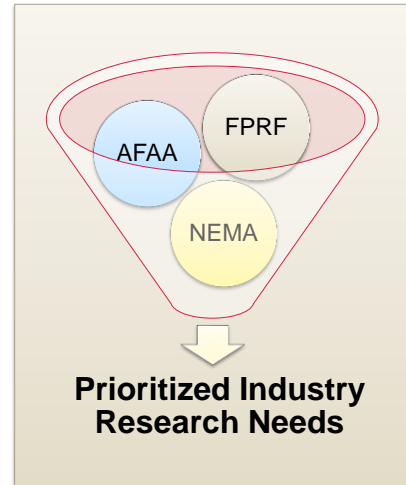
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## Detection & Signaling Research Planning Council

- **History:** First planning council at the Foundation; formed in 2004
- **Mission:** To advance the implementation of detection and alarm system technology through research and communication programs, closely tied to the needs of NFPA Technical Committees.
- **Membership:** Open to all with an interest in furthering the mission, strong connection to NFPA 72 Technical Committees – 91 members
  - Started collaborating with AFAA and NEMA to broaden input on industry needs
- **Activities:**
  - Identify needs and inform FPRF research priorities
  - Resource for advisory panels
  - Support communication of results



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## General Portfolio Topics

### Detection

- General
- Technology Performance
- Installation Criteria
- Special Applications
- ITM

### Signaling & Emergency Communication

- Waking effectiveness
- Visual signaling
- Voice

Driven significant changes in NFPA 72  
over the years



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## Recent Publications Supported by the Council



2019

2020

2021

2022

2023

2024

2025

RESEARCH FOUNDATION

**Door Messaging Strategies: Implication for Detection and Notification**

FINAL REPORT BY:  
Robert B. Dwyer, Ph.D.  
Michael J. Kester, Ph.D.  
Fire Protection Research Foundation  
Quincy, MA, USA  
March 2022

**Evaluation of the Responsiveness of Occupants to Fire Alarms in Buildings: Phase 1**

FINAL REPORT BY:  
Robert B. Dwyer, Ph.D.  
Michael J. Kester, Ph.D.  
Fire Protection Research Foundation  
Quincy, MA, USA  
March 2022

RESEARCH FOUNDATION

**Carbon Monoxide Detection and Alarm Requirements Literature Review**

FINAL REPORT BY:  
Michael J. Kester, Ph.D.  
Fire Protection Research Foundation  
Quincy, MA, USA  
February 2022

**Review of Alarm Technologies for Deaf and Hard of Hearing Populations**

FINAL REPORT BY:  
Robert B. Dwyer, Ph.D.  
Michael J. Kester, Ph.D.  
Fire Protection Research Foundation  
Quincy, MA, USA  
August 2022

RESEARCH FOUNDATION

**A Review of Dynamic Detection of Fast-Spread Fire: Challenges & Perspectives**

FINAL REPORT BY:  
Hui Xie, Ph.D., Yuan Zhang, Ph.D., Stephen Huang, Ph.D.  
Fire Protection Research Foundation  
Quincy, MA, USA  
December 2022

RESEARCH FOUNDATION

**Smoke Detector Signal in High Ceiling Spaces: Phase 1**

FINAL REPORT BY:  
Hui Xie, Ph.D., Yuan Zhang, Ph.D., Stephen Huang, Ph.D.  
Fire Protection Research Foundation  
Quincy, MA, USA  
December 2022

RESEARCH FOUNDATION

**Carbon Monoxide Alarm Usability**

FINAL REPORT BY:  
Robert B. Dwyer, Ph.D.  
Michael J. Kester, Ph.D.  
Fire Protection Research Foundation  
Quincy, MA, USA  
March 2022



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Carbon Monoxide

Pathway Survivability

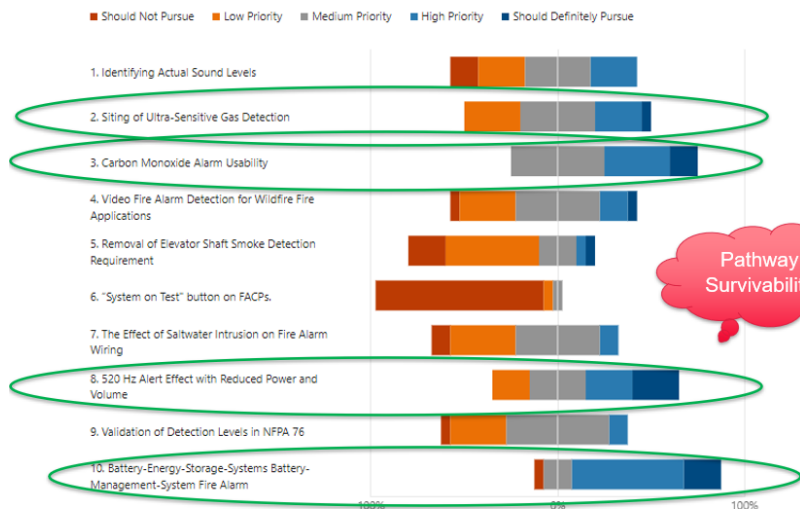
Gas Detection  
(e.g., NFPA 715)Smart & Connected  
Technologies and AI

Low Frequency Alarms

Vulnerable Populations

Detection & Signaling  
for Energy Transition  
Technologies

## 2024/2025 Prioritized Projects



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## Recent FPRF Research on Carbon Monoxide

**Goal:** Summarize the existing requirements for installation of CO detectors & capture data

### Findings:

- Several cases of CO incidents outside areas currently required to have CO detection
- CO regulation is inconsistent across US
- Lack of comprehensive, coordinated data for CO poisoning incidents
- Midwest region disproportionately has more issues with CO incidents
- Fuel burning appliances/engine driven tools are consistently associated with CO incidents.
- Awareness remains an issue.

### COMPLETED

#### Findings SEARCH FOUNDATION

- Data shows occurrence of CO incidents in commercial occupancies. Limited data does not allow for:
  - a national-level appreciation of CO incident frequencies.
  - a comprehensive view of injuries and deaths resulting from CO exposure by occupancy type.
- The frequency of injuries occurring in commercial occupancy types: **unknown**
- No dataset details the location of the victim relative to the CO source.
- No way to determine, using these datasets alone, if current CO detection placement criteria, e.g., detector in space with CO source, is adequate.

### ACTIVE

CO alarm/detector thresholds are based on COHb (Carboxyhemoglobin) levels in the blood, based on an equation developed in 1965 for **young healthy adults**.

**Goal: Determine the levels of CO exposure that are potentially dangerous for vulnerable populations.**

- Literature Review
- Gap Analysis
- Future Research Plan

### PROPOSED

There are many questions about how CO alarms operate and what info is provided to users. Goal is to help answer the following questions:

- Do consumers understand temporal-4?
- Should voice annunciation be required?
- Should visual displays be required?
- How information should be conveyed?
- What accuracy of concentration shall be displayed?
- How is sensor end-of-life communicated?
- What should the markings on the CO alarm be?

2021

2022

2025


2025



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**Need to provide consumers and fire safety professionals more information about CO alarms and CO safety.**

- ✓ **CO alarm awareness is lacking**  
45% of households do not have CO alarms  
61% of households feel they know "nothing at all" or only "a little" about CO alarms
- ✓ **Most households don't test their CO alarms as often as recommended.**
- ✓ **Most likely the homeowner will not install CO alarm if the home did not already have a CO alarm.**

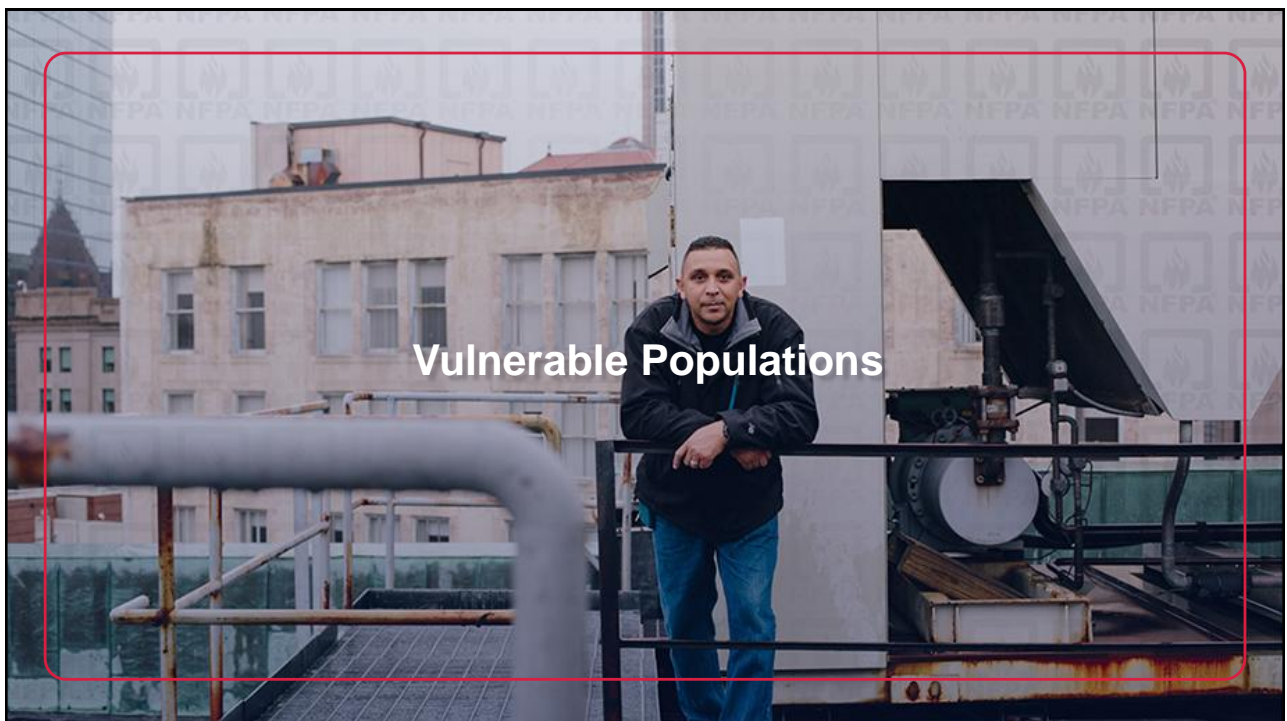
## CPSC Smoke & CO Alarm Survey

- Nearly all U.S. households have smoke alarms (99%) but almost half are missing CO alarms.
- Only 55% of U.S. households had CO alarms installed.
- Estimated 88% of single-family US households own a fuel-burning appliance (potential CO source)

24 Metropolitan Areas	214 Tracts	1060 Households by Region	1060 Households by Metro Size
5 Midwest	193 in metro areas (90%)	137 Midwest (13%)	875 One million or more residents (82%)
4 Northeast		155 Northeast (15%)	93 Less than one million residents (9%)
9 South	21 in non-metro areas (10%)	355 South (33%)	
6 West		321 West (30%)	92 Non-metro (9%)
		92 Non-metro (9%)	


**Initiated project: 2016 | Completed survey: 2024**

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**Student Project - Request for Qualifications**

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**Effects of Emergency Repetitive Audible Stimuli on At Risk Communities**

The Fire Protection Research Foundation is seeking request for qualifications for this student project. The submissions are limited to academic institutions (i.e. faculty advisors working with undergraduate students or graduate students).

**Background**

People with disabilities are sometimes not given the consideration they are entitled to under law, when emergency evacuation plans are being established. While it is argued that emergency planning must be supportive of the majority, The National Council on Disability publication, Effective Emergency Management: Making Improvements for Communities and People with Disabilities, found "People with disabilities should not be viewed as one more special interest group that drains resources from the common pool. Accommodating this large group often translates into being better equipped to serve all people. Anyone, at any moment, can incur a disability, particularly during emergencies." (Kates and Enders 2006, p. 13).

Members of the autistic community are one of the most obvious examples of people who may respond to audible stimuli in unpredictable ways. Autistics may run in a random direction, refuse to move at all, or hide. With clear directives and gentle coaxing, many autistics may be able to calm their nervous system and respond appropriately to instructions that were given, or a care giver who is assisting them to evacuate. However, a new round of loud tones and announcements may easily reactivate an over-stimulated nervous system and reinforce undesirable behaviors during an emergency. While it is understood that disabled people have a higher rate of injury and death in a fire, the fact is often not adequately considered when codes and standards are being created, due to the lack of cohesive supportive strategies being made available to the code writers.

It is not clear that research into the effects of continuously repeated emergency messaging on at risk communities has been conducted. However, by gathering any relevant research together in a common document will elevate the importance of emergency planning that encompasses our vulnerable populations. It will be utilized by code writers as a source of effective mitigation strategies that may help shape the way emergency directives are communicated.

**Research Goal**  
Gather information to characterize the impact of continual message sounding on the ability of vulnerable populations to effectively evacuate.



**Research sponsored by**  
The National Fire Protection Association (NFPA)

## Effects of Emergency Repetitive Audible Stimuli on At-Risk Communities

**Problem:**

- People with disabilities are sometimes not given the consideration they are entitled to under law, when emergency evacuation plans are being established.
- Members of the autistic community are one of the most obvious examples of people who may respond to audible stimuli in unpredictable ways.
- However, a new round of loud tones and announcements may easily reactivate an over-stimulated nervous system and reinforce undesirable behaviors during an emergency.
- While it is understood that disabled people have a higher rate of injury and death in a fire.

**Goal:** Gather info to characterize the impact of continual message sounding on the ability of vulnerable populations to effectively evacuate – through literature review & survey.

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# Review of Smart Features of Buildings & Systems Impacting Fire, Electrical & Life Safety



## Background

- SFPE Grand Challenges Initiative focused on Digitalization, Artificial Intelligence, & Cybersecurity launched in 2022 to develop comprehensive research and outreach strategy.
- The published GCI Whitepaper highlighted need for a full understanding of the landscape of smart and connected devices and systems with respect to fire and life safety and affiliated systems.
- This project is intended to address this specific gap.

**Problem:** The addition of smart technology to fire and life safety building systems presents many benefits, however, this connectivity may also introduce new security or reliability concerns.

**Goal:** To systematically characterize the landscape of smart or connected devices, technologies, systems or features as they relate to fire, electrical and life safety, to provide a technical basis for guidance and updates to applicable codes and standards.



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## High Level Findings

### Smart Detection Systems

- **Types of detectors:**
  - Smoke and heat detectors (photoelectric, ionization, split-spectrum).
  - Gas leak detectors (infrared, electrochemical).
  - Carbon monoxide (CO) detectors
- **Smart Features:**
  - Real-time notifications via apps.
  - IoT-enabled predictive maintenance.
  - Enhanced sensitivity and false alarm reduction.

### Integration with Building Management Systems

- **Enhanced evacuation safety:**
  - Automatic HVAC shutdown to prevent smoke spread.
  - Emergency lighting and voice guidance systems.
- **Smart connectivity:**
  - Cloud-based monitoring.
  - IoT integration for centralized control.

### Key Innovations Driving the Market

- **Advanced Sensing Technologies:**
  - AI-driven predictive fire detection.
  - Quantum-based smoke detection.
- **Sustainability Features:**
  - Low-power consumption.
  - Recyclable materials.
- **Specialized Applications:**
  - Modular and portable sensors.
  - UAV-integrated flame detection.

### Future Trends

- AI
- Sustainability
- IoT expansion

**Report to be published end of April 2025**



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## Upcoming Research (fundraising)

CO Alarm Usability  
Siting of Ultra-Sensitive Gas Detectors

## Submit Research Ideas

Have a research need  
or project idea?

Go to [www.nfpa.org/foundation](http://www.nfpa.org/foundation) and  
use our research project idea online  
submission form

All reports freely available at:  
[www.nfpa.org/foundation](http://www.nfpa.org/foundation)



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## How to get involved?

### Submit a research idea to FPRF

- Visit [www.nfpa.org/foundation](http://www.nfpa.org/foundation)
- Submit research idea via online submission portal

### FPRF Research Consortiums

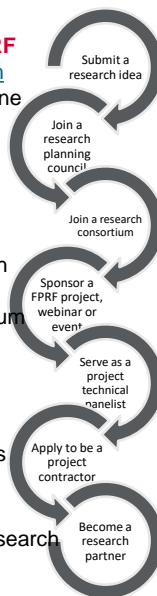
- Energy Storage Research Consortium
- Property Insurance Research Group
- Facilities Research Consortium

### Serve on a project technical panel

Let FPRF know your areas of expertise and interest in being considered as a future panelists

### Partner with FPRF

Partner with FPRF on future research through our advisory services program



### FPRF Research Planning Councils

- Detection and Signaling Research Council
- Automatic Sprinkler Research Council
- Electrical Safety Research Advisory Council

### Sponsor FPRF projects, webinars, or events

- Provide input on project scope and direction
- Provide input over the course of the project
- Get early access to results
- Brand visibility

### Apply to be the research lead for FPRF Projects

Bid on FPRF "Requests for Proposals" to have the opportunity to become a contractor on FPRF projects

Contact me:  
Victoria Lutz | [vlutz@nfpa.org](mailto:vlutz@nfpa.org)



Automatic Fire Alarm Association

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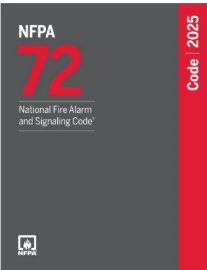
## NFPA 72, National Fire Alarm and Signaling Code 2025 Edition Updates

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## Where Can You Find All Changes?

[www.NFPA.org/72](http://www.NFPA.org/72)

- First Draft Reports
- Second Draft Report
- Tech Session Minutes



### NFPA 72

**National Fire Alarm and Signaling Code®**

Status: Active ⓘ | Notify Me About Document Updates ›

NFPA 72 provides the latest safety provisions to meet society's changing fire detection, signaling, and emergency communications demands. In addition to the core focus on fire alarm systems, the Code includes requirements for mass notification systems used for weather emergencies; terrorist events; biological, chemical, and nuclear emergencies; and other threats.

Current Edition: 2025

[Purchase Options](#)
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[Ask a Technical Question](#) ⓘ

Current & Prior Editions

Next Edition

Technical Committee



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# Where Can You Find All Changes?

## Archived Revision Information

### First Draft

TYPE	DOCUMENT	
First Draft	First Draft Report	<a href="#">View</a>

### Second Draft

TYPE	DOCUMENT	
Second Draft	Second Draft Report	<a href="#">View</a>



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The screenshot shows the NFPA 72 Public Reports page. On the left is a navigation menu with links to various chapters. The main content area displays a table of revisions for the 'Restricted Audible Mode Operation (RAMO) Notification' section (18.4.8). The table includes columns for 'Revision', 'Description', and 'Effective Date'. The revisions listed are 18.4.7.5.2, 18.4.8.1, 18.4.8.1.1, 18.4.8.1.2, 18.4.8.1.3, 18.4.8.1.4, 18.4.8.2, and 18.4.8.3. Each revision entry includes a brief description of the change and a link to the full report.

Revision	Description	Effective Date
18.4.7.5.2	The sound pressure level of the audible tone signal shall exceed the masked threshold in one or more one-third octave bands by at least 13 dB in the one-third octave band under consideration.	
18.4.8.1	Where maximum sound pressure levels are required for a protected space, this operation shall be referred to as RAMO. The requirements of 18.4.8.1.1 through 18.4.8.1.4 shall apply where RAMO is required either by the risk analysis of a notification zone or by the authority having jurisdiction, governing laws, codes, or standards, or other parts of this Code.	
18.4.8.1.1	RAMO areas shall be indicated on the project drawings.	
18.4.8.1.2	RAMO shall be permitted to be used only where there is constantly trained, awake, and mobile staff are present in the notification zone.	
18.4.8.1.3	RAMO shall not be used in protected areas where people could be sleeping without constantly awake and mobile staff. All audible signals within a RAMO notification zone shall comply with 18.4.6.3.	
18.4.8.1.4	Where required by the AHJ, the RAMO system shall be designed, installed, and maintained such that the sound pressure level produced by the RAMO notification appliances throughout the protected space is at least 5 dB above the maximum sound pressure level having a duration of at least 60 seconds, and not more than 20 dB above the average ambient sound pressure level, measured at 5 ft (1.5 m) above the finished floor in the protected space. The requirements of 18.4.5 shall apply to all RAMO notification zones.	
18.4.8.2	Audible All audible notification appliances for signals in a RAMO notification zone shall be listed for a minimum of 45 dBA at 10 ft (3 m) on axis synchronized in accordance with 18.4.2.5.	
18.4.8.3	All visual notification signals in a RAMO notification zone shall be synchronized in accordance with 18.5.5.7.2.	



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NFPA 72... Print Save as Word Reload Page Close

**18.4.4.8.4.1**  
Revisions in the public-made sound pressure level of a protected space shall be recorded in system documentation.

**18.4.4.8.4.2**  
Each area where the public-made sound pressure level has been reduced shall be reviewed annually to determine if the application has changed.

**Supplemental Information**

File Name	Description	Approved
<a href="#">Open</a> Chapter_18_18.4.1.8_SR-5055.docx	Chapter_18_18.4.1.8_SR-5055.docx	

**Submitter Information Verification**

Committee: SIG-NAS  
 Submittal Date: Thu Jul 20 16:45:44 EDT 2023

**Committee Statement and Meeting Notes**

**Committee Statement:** The revision provides the designer with guidance within NFPA 72 for options in areas with Autism Spectrum Disorder individuals, Neurodiverse individuals, and other occupants with sensitivity to sound, light, or other stimuli. RAMO addresses the characteristics of the occupants where ADS addresses the characteristics of the space. Chapter 18 references Chapter 14 for inspection, testing, and maintenance of notification systems. The section was relocated to 18.4.8 to align with other notification mode requirements.

**Response Message:** SR-5055-NFPA 72-2023

**Committee Notes:**

Date	Submitted By	
Jul 21, 2023	Patrick Bakaj	Relocate section 18.4.1.8 to 18.4.8, renumber existing 18.4.8 Exit Marking Audible Notification Appliance Requirements to 18.4.9 and renumber subsequent sections. See attached word document Chapter_18_18.4.1.8_SR-5055.

[Public Comment No. 208-NFPA 72-2023 \[Section No. 18.4.1.8\]](#)  
[Public Comment No. 197-NFPA 72-2023 \[Section No. A.18.4.1.8.1\]](#)  
[Public Comment No. 195-NFPA 72-2023 \[Sections 18.4.1.8, 18.4.1.9\]](#)

[Close](#)



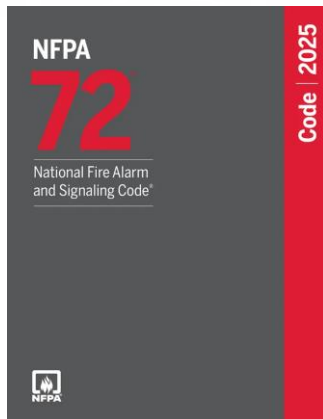
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## Where Can You Find All Changes?

Shaded text = Revisions.  $\Delta$  = Text deletions and figure/table revisions. • = Section deletions. **N** = New material.



**N 18.4.8\* Restricted Audible Mode Operation (RAMO) Notification.**

**N 18.4.8.1** The requirements of 18.4.8.1.1 through 18.4.8.1.4 shall apply where RAMO is required either by the risk analysis of a notification zone or by the authority having jurisdiction, governing laws, codes, or standards, or other parts of this Code.

**N 18.4.8.1.1** RAMO areas shall be indicated on the project drawings.

**N 18.4.8.1.2** RAMO shall be permitted to be used only where trained, awake, and mobile staff are present in the notification zone.

**N 18.4.8.1.3\*** All audible signals within a RAMO notification zone shall comply with 18.4.6.3.

**N 18.4.8.1.4\*** The requirements of 18.4.5 shall apply to all RAMO notification zones.

**N 18.4.8.2** All audible notification signals in a RAMO notification zone shall be synchronized in accordance with 18.4.2.5.

**N 18.4.8.3** All visual notification signals in a RAMO notification zone shall be synchronized in accordance with 18.5.5.7.2.

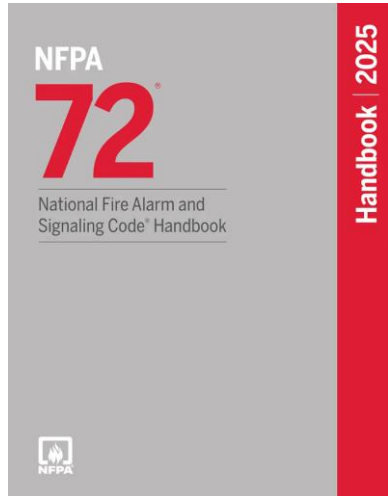


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# Where Can You Find All Changes?



## NFPA 72® Summary of Technical Changes: 2022 to 2025

This table provides an overview of major code changes from the 2022 to the 2025 edition of *NFPA 72®, National Fire Alarm and Signaling Code®*. Purely editorial and formatting changes are not included. For more information about the reasons for each change, visit [www.nfpa.org/72](http://www.nfpa.org/72). The first revision (FR), first correlating revision (FCR), second revision (SR), and second correlating revision (SCR) numbers are given in the third column for reference to the official documentation of the technical committee's actions.

Section	Comments	FR/FCR/SR/SCR Reference
<b>Chapter 1 Administration</b>		
1.4.1	Clarified that the requirements in <i>NFPA 72</i> are not to be applied to existing facilities unless called out elsewhere in the Code.	FR-5002 SCR-2
<b>Chapter 2 Referenced Publications</b>		
<b>Chapter 3 Definitions</b>		
3.3.39	Added definition for <i>carbon monoxide source</i> .	FR-5258
3.3.79.1	Added definition of <i>acoustic leak detector</i> .	FR-5347 SR-5030
3.3.79.11	Added definition of <i>fuel gas detector</i> .	SR-5011
3.3.79.26	Added definition of <i>thermal image fire detector</i> .	FR-5332
3.3.146	Updated reference from <i>NFPA 1721</i> to <i>NFPA 1720</i> .	FR-5260



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# Where Can You Find All Changes?



- Annex A – Explanatory Material
- Annex B – Engineering Guide for Automatic Fire Detector Spacing
- Annex C – System Performance and Design Guide
- Annex D – Speech Intelligibility
- Annex E – Sample Ordinance Adopting NFPA 72
- Annex F – Wiring Diagrams and Guide for Testing Fire Alarm Circuits
- Annex G – Guidelines for Emergency Communication Strategies for Buildings and Campuses
- Annex H – Carbon Monoxide
- Annex I – Color-Coded Tagging Program

2025 NFPA-72 > Chapter 18 – Notification Appliances

**18.4.8\* Restricted Audible Mode Operation (RAMO) Notification.**

ENHANCED CONTENT Expand

**18.4.8.1**  
The requirements of **18.4.8.1.1** through **18.4.8.1.4** shall apply where RAMO is required either by the risk analysis of a notification zone or by the authority having jurisdiction, governing laws, codes, or standards, or other parts of this Code.

**18.4.8.1.1**  
RAMO areas shall be indicated on the project drawings.

**18.4.8.1.2**  
RAMO shall be permitted to be used only where trained, awake, and mobile staff are present in the notification zone.

**18.4.8.1.3\***  
All audible signals within a RAMO notification zone shall comply with **18.4.6.3**.

**18.4.8.1.4\***

**Prior Text**

This content was not in the previous edition.

**CHANGE SUMMARY** Expand

Last Updated on 2024/10/1 at 11:03 AM by Irene Harbilly Published



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## NFPA 72, National Fire Alarm and Signaling Code 2025 Major Changes

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### Listed Batteries

ENHANCED CONTENT

Expand

#### [10.6.10.1.3\\*](#)

Rechargeable batteries used for secondary power supplies shall be listed or component recognized by a nationally recognized testing laboratory.

#### 10.6.10.2 Arrangement.

ENHANCED CONTENT

Expand

#### 10.6.10.2.1

Storage batteries shall comply with the requirements of Article 480 of *NFPA 70*.



#### Prior Text

*Text from previous edition:*

#### [10.6.10.1.3\\*](#)

Effective January 1, 2024, rechargeable batteries for the secondary power supply used in control units, devices, and accessories shall be listed or component recognized by a nationally recognized testing laboratory.

#### CHANGE SUMMARY

Collapse

The effective date is removed because it will be past when the standard is issued. The text is revised to clarify that the paragraph refers to all rechargeable batteries used as secondary power throughout this Code. [FR-5095]



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## Battery Minimum Shelf-Life



(2) Primary (dry cell) batteries other than those used in low-power radio (wireless) systems in accordance with Chapter 23

X

Semiannual

Ensure a minimum of 50 percent shelf life is remaining based on the use-by date printed on the battery. Record the installed date on the battery. Replace if alarm equipment/battery manufacturer's replacement date has been exceeded. Replacement date not to exceed 12 months from the installed date. Verify tightness of connections. Inspect for corrosion or leakage. Replace any battery cell/unit if corrosion or leakage is observed.



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## Cybersecurity



### ▼ Chapter 11 – Cybersecurity

- 11.1 Cybersecurity Provisions.
- 11.2\* Network Connectable Equipment Software Development and Production Environments.
- 11.3\* Security Levels for Network Connectable Equipment.
- 11.4\* Interconnecting Conductors, Cables, or Other Physical Pathways.
- 11.5 Network Connectable Equipment Using Shared Pathways.
- 11.6 Unused Physical Data Ports.
- 11.7\* Data Connections to External Networks.
- 11.8 Network Connectable Equipment Cybersecurity Software Updates.
- 11.9 Notification of Termination of Cybersecurity Update Support.
- 11.10 Cybersecurity for System Support Tools.
- 11.11 Evidence of Compliance.
- 11.12 Documentation.



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# Spacing on High Ceilings

## 17.7.4.2.3

On smooth ceilings, spacing for spot-type smoke detectors shall be in accordance with **17.7.4.2.3.1** through **17.7.4.2.3.4**.

### 17.7.4.2.3.1\*

In the absence of specific performance-based design criteria, detectors on ceilings up to 40 ft (12.2 m) in height shall be spaced in accordance with either of the following:

(1) The detectors shall comply with the following:

- The distance between detectors shall not exceed a nominal spacing of 30 ft (9.1 m).
- There shall be detectors within a distance of one-half the nominal spacing, measured at right angles from all walls or partitions extending upward to within the top 15 percent of the ceiling height.

(2)\* All points on the ceiling shall have a detector within a distance equal to or less than 0.7 times the nominal 30 ft (9.1 m) spacing (0.7S).

ENHANCED CONTENT

Expand ↕

## Prior Text

Text from previous edition:

### 17.7.4.2.3.1\*

In the absence of specific performance-based design criteria, one of the requirements shall apply:

(1)

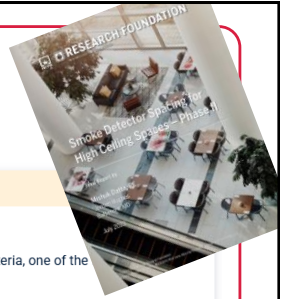
The distance between smoke detectors shall not exceed a nominal spacing of 30 ft (9.1 m) and there shall be detectors within a distance of one-half the nominal spacing, measured at right angles from all walls or partitions extending upward to within the top 15 percent of the ceiling height.

(2)\* All points on the ceiling shall have a detector within a distance equal to or less than 0.7 times the nominal 30 ft (9.1 m) spacing (0.7S).

## CHANGE SUMMARY

Collapse ✕

Clarified that the detector spacing is to a maximum height of 40 ft (12.2 m). After 40 ft (12.2 m) performance-based design must be used. [FR-5296, SR-5025]



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# Fuel Gas Detection / Alarms

N

## 17.10.1.1

Fuel gas detector and warning equipment shall be installed in accordance with NFPA 715.

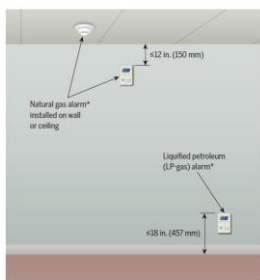
ENHANCED CONTENT

Expand ↕

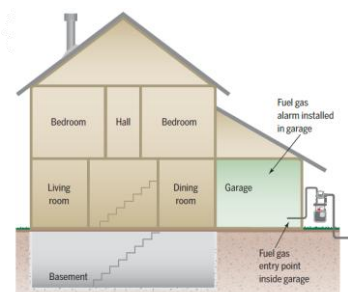
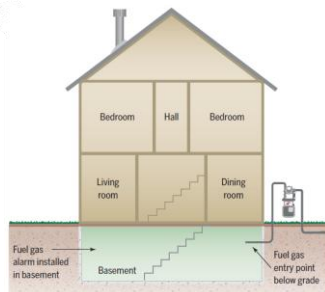
N

## 29.1.2

Fuel gas detection and warning equipment shall be installed in accordance with NFPA 715.



\*Combination carbon monoxide (CO) fuel alarms installed with requirements for the fuel gas being detected.



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# New Detection Technologies

## 17.11 Acoustic Leak Detection.

### ENHANCED CONTENT

Collapse X

Section 17.11 is new in the 2025 edition of the Code. These requirements clarify that acoustic leak detectors are not meant to detect the presence of a gas; instead, they are meant to detect the ultrasonic sound generated when high-pressure gas is released from a choked flow orifice.

### 17.11.1 General.

N

#### 17.11.1.1

The design documentation for an acoustic leak detector shall state the required performance objective of the system.

N

#### 17.11.1.2

The purpose and scope of Section 17.11 shall be to provide requirements for the selection, location, and spacing of acoustic leak detectors.

## 17.12 Thermal Image Fire Detection.

### ENHANCED CONTENT

Collapse X

Section 17.12 is new in the 2025 edition of the Code. These requirements relate to thermal image fire detectors and their unique characteristics that differ from video image detectors and radiant energy detectors.

### 17.12.1

Thermal image fire detection systems and all the components thereof, including hardware and software, shall be listed for the purpose of fire detection.

### 17.12.2

Thermal image fire detection systems shall comply with the applicable requirements of Chapters 1, 10, 11, 14, 17, and 23.



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# Carbon Monoxide

### ENHANCED CONTENT

Expand



#### 17.14.1\*

Where carbon monoxide protection of a building is required by laws, codes, or standards, carbon monoxide detectors shall be sited in accordance with all of the following unless a performance-based design in accordance with Section 17.3 is used:

- (1)\* On the ceiling or on the wall with the top of the detector within 12 in. (300 mm) of the ceiling, where installed in the same room as the permanently installed carbon monoxide source
- (2)\* Centrally located in every HVAC zone of the areas required by laws, codes, or standards
- (3) Outside of each separate sleeping area, guest room, and guest suite within 21 ft (6.4 m) of any door to a sleeping room, with the distance measured along a path of travel
- (4)\* Other locations where required by applicable laws, codes, or standards
- (5) In accordance with the manufacturer's published instructions

### Prior Text

Text from previous edition:

#### 17.14.1\*

Where carbon monoxide protection of a building is required, carbon monoxide detectors shall be installed in accordance with all of the following, unless a performance-based design in accordance with Section 17.3 is used:

- (1)\* On the ceiling in the same room as permanently installed fuel-burning appliances
- (2)\* Centrally located on every habitable level and in every HVAC zone of the building
- (3) Outside of each separate dwelling unit, guest room, and guest suite sleeping area within 21 ft (6.4 m) of any door to a sleeping room, with the distance measured along a path of travel
- (4)\* Other locations where required by applicable laws, codes, or standards

### CHANGE SUMMARY

Collapse X

The installation requirements for carbon monoxide detectors have been updated to correlate with the requirements of the model codes and are based on the 2007 FPRF report "Development of a Technical Basis for Carbon Monoxide Detector Siting." The annex language removes conflicts between the model codes and NFPA 72. [FR-5333]



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# Dry Pipe Pressure Signal

## 17.19.2.2.2\* Dry Pipe and Preaction Sprinkler Systems.

ENHANCED CONTENT

Expand

(A)

A pressure supervisory-signal-initiating device shall indicate both high- and low-pressure conditions.

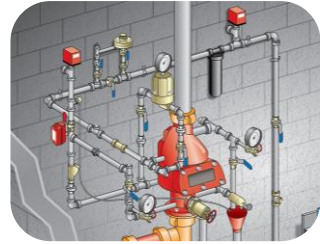
(B)

Unless otherwise permitted by the dry pipe or preaction valve manufacturer's published installation instructions, the off-normal signal shall be initiated in accordance with NFPA 13.

ENHANCED CONTENT

Expand

## 17.19.2.2.3 Steam Pressure.



### Prior Text

Text from previous edition:

#### 17.17.2.2.2(B)

Unless otherwise permitted by the manufacturer's published installation instructions, the off-normal signal shall be initiated when the pressure increases or decreases by 10 psi (70 kPa).

### CHANGE SUMMARY

Revised the off-normal signal for dry pipe and preaction systems to be in accordance with NFPA 13. [SR-5016]



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# Voltage Drop Calculations

## 18.3.7\* Notification Appliance Circuits.

ENHANCED CONTENT

Expand

### 18.3.7.1

DC-power-sourced notification appliance circuits shall be designed and installed in accordance with 18.3.7.1 and 18.3.7.3 through 18.3.7.6.

N

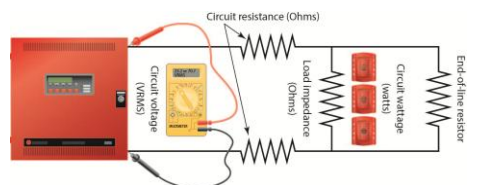
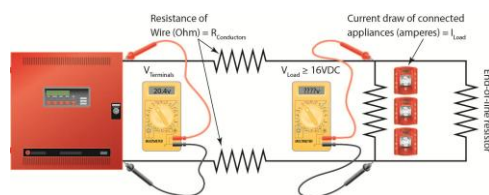
### 18.3.7.2 AC-Power-Sourced Notification Appliance Circuits.

N

#### 18.3.7.2.1\*

AC-power-sourced notification appliance circuits with loudspeakers connected to them shall comply with the following:

- (1) AC-power-sourced notification appliance circuits shall be designed for a maximum of 1.0 dB electrical loss.
- (2) AC-power-sourced notification appliance circuit design and installation shall consider all electrical adjustments (loss or gain) from the primary audio source, through all circuit wiring, from any control unit (CU) circuitry, and from any control module (CM) circuitry to the last loudspeaker on the circuit.
- (3) AC-power-sourced notification appliance circuits shall be designed and installed in accordance with 18.3.7.2 through 18.3.7.6.



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# RAMO Notification

## 18.4.8\* Restricted Audible Mode Operation (RAMO) Notification.

### ENHANCED CONTENT

Expand



#### 18.4.8.1

The requirements of 18.4.8.1.1 through 18.4.8.1.4 shall apply where RAMO is required either by the risk analysis of a notification zone or by the authority having jurisdiction, governing laws, codes, or standards, or other parts of this Code.



#### 18.4.8.1.1

RAMO areas shall be indicated on the project drawings.



#### 18.4.8.1.2

RAMO shall be permitted to be used only where trained, awake, and mobile staff are present in the notification zone.



#### 18.4.8.1.3\*

All audible signals within a RAMO notification zone shall comply with 18.4.6.3.



#### 18.4.8.1.4\*

The requirements of 18.4.5 shall apply to all RAMO notification zones.



#### 18.4.8.2

All audible notification signals in a RAMO notification zone shall be synchronized in accordance with 18.4.2.5.



#### 18.4.8.3

All visual notification signals in a RAMO notification zone shall be synchronized in accordance with 18.5.5.7.2.



Fire Alarm Restricted Audible Mode Operation (RAMO) Notification NFPA 72\*



### CHANGE SUMMARY

Collapse

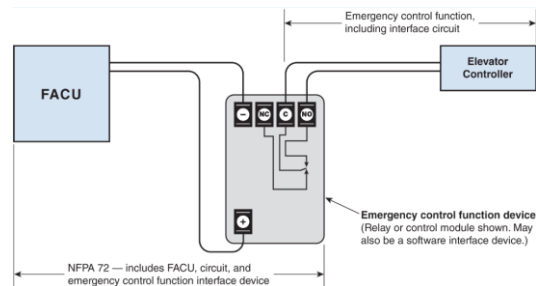
Added new subsection on reduced audible mode operation intended to be used where populations might be sensitive to suddenly on, loud alarm signals. The revision provides the designer with guidance within NFPA 72 for options in areas with Autism Spectrum Disorder individuals, neurodiverse individuals, and other occupants with sensitivity to sound, light, or other stimuli. RAMO addresses the characteristics of the occupants where ADS addresses the characteristics of the space. [FR-5352, SR-5065]



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# Emergency Control Interface Protection



## 21.2.4.1

Emergency control function interface devices shall be located as follows:

- (1) Within 3 ft (0.9 m) of the component controlling the emergency control function where conductors are not installed in metal raceway or metal armored cables
- (2) Within 20 ft (6 m) of the component controlling the emergency control function where conductors are installed in metal raceway or metal armored cables

### ENHANCED CONTENT

Collapse

New to the 2025 edition of the Code is the allowance for emergency control function interface devices to be installed up to 20 ft (6 m) from the component controlling the emergency control function provided the conductors are installed in metal raceway or metal armored cables. This increase is permitted because the conduit or armored cables provide additional protection for the wires to limit the risk of damage to the unsupervised portion of the circuit.



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# Auxiliary Service Providers

## 26.2.11 Auxiliary Service Providers (ASPs).

### 26.2.11.1

Where an auxiliary service provider (ASP) is used, the requirements of 26.2.11.2 through 26.2.11.3 shall be met.

### 26.2.11.2

ASPs shall include the services listed in 26.2.11.2.1 through 26.2.11.2.7.

### 26.2.11.2.1\*

All communication pathways from the protected premises, through the ASP, to the supervising station shall be supervised in accordance with Section 26.6.

### 26.2.11.2.2

Failure of any communication pathway between the ASP and the supervising station shall be detected and reported to the supervising station within 90 seconds.

### 26.2.11.2.3

All alarm, supervisory, and trouble signals received by an ASP shall be transmitted to the supervising station within 90 seconds. Added new subsection on auxiliary service providers. Auxiliary service providers are being used to communicate fire protection signals from the protected premises to the supervising stations. Requirements were added to ensure that when these signals pass through the intermediary service providers servers, they are processed in a reliable manner. [FR-5108, SR-5150]

CHANGE SUMMARY

Collapse

CLINK



Fire Alarm Auxiliary Service Providers (ASPs) - NFPA 72

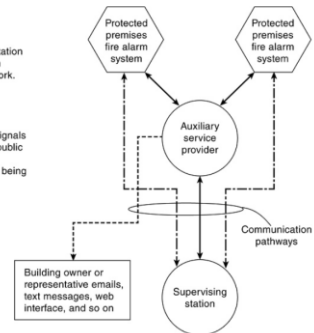
Fire Alarm Auxiliary Service Providers (ASPs) - NFPA 72



**Standard Arrangement:**  
Priority bidirectional fire alarm system signals transmitted to the supervising station via private or public (telecommunication service providers) communication network.

**ASP Arrangement:**  
Priority bidirectional fire alarm system signals directed/rerouted to ASP via private or public (telecommunication service providers) communication network prior to signals being received by the supervising station.

**Auxiliary Services Example:**  
Fire alarm signal information transmitted via private or public (telecommunication service providers) communication network for convenience or other business purposes (i.e., not regulated by NFPA 72).



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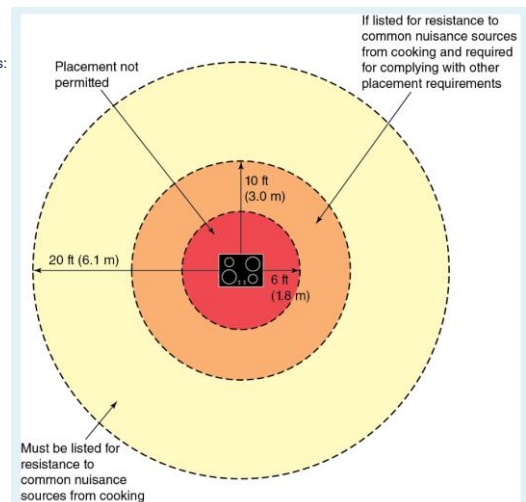
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# Resistance to Nuisance Sources

## 29.11.3.4 Specific Location Requirements.

The installation of smoke alarms and smoke detectors shall comply with the following requirements:

- (4)\* Smoke alarms and smoke detectors shall not be installed between 10 ft (3.0 m) and 20 ft (6.1 m) along a horizontal flow path from a stationary or fixed cooking appliance unless the devices are listed for resistance to common nuisance sources from cooking in accordance with UL 217, *Smoke Alarms*, or UL 268, *Smoke Detectors for Fire Alarm Systems*.
- (5) Smoke alarms and smoke detectors shall not be installed within an area of exclusion determined by a 10 ft (3.0 m) radial distance along a horizontal flow path from a stationary or fixed cooking appliance except as permitted in 29.11.3.4(6).
- (6)\* Where the 10 ft (3.0 m) area of exclusion would prohibit the placement of a smoke alarm or smoke detector required by other sections of this Code, and where the kitchen or cooking area and adjacent spaces have no clear interior partitions or headers, smoke alarms and smoke detectors shall be permitted to be installed at a radial distance between 6 ft (1.8 m) and 10 ft (3.0 m) from any stationary or fixed cooking appliance if the devices are listed for resistance to common nuisance sources from cooking in accordance with UL 217 or UL 268.




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## NFPA LiNK Updates

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- ✓ Side-by-Side Reference Panel View

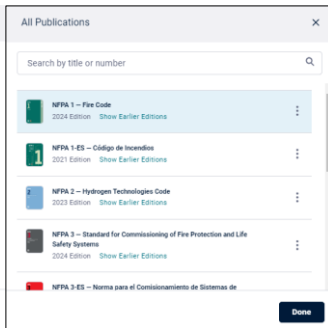
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# NFPA LiNK® Content

## Publications

### 1500 publications available within LiNK

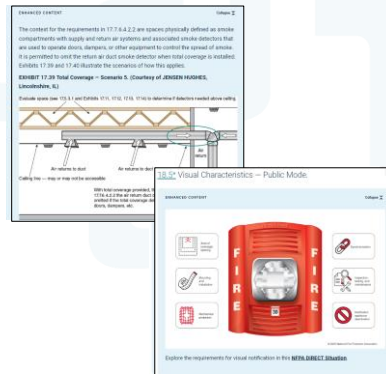
- Five editions of each NFPA code and standard
- First access to newly released editions
- Growing library of our publications



## Enhanced In-Line

### Expert commentary and visual aids in-line with the code

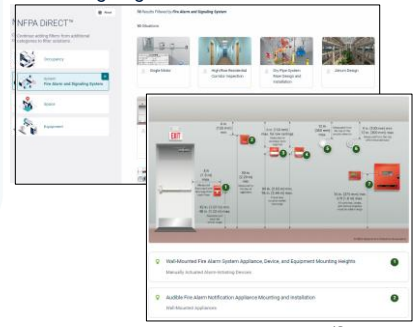
- Includes our most popular handbook content
- Enhanced content, created by NFPA subject matter expert, being added on an ongoing basis



## Enhanced DiRECT®

### Situational content filtered by occupancy, system, space, and equipment

- Navigate to content based on real-life situations
- Aggregated code information with accompanying visual aids
- New content being added on an ongoing basis



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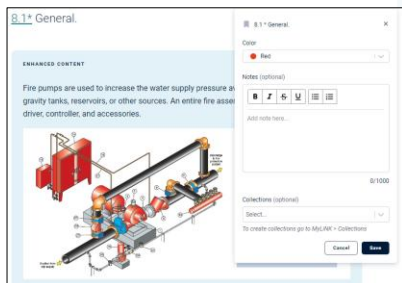
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# NFPA LiNK® Features

## Bookmarks / Notes

### Organize and add notes to frequently used content

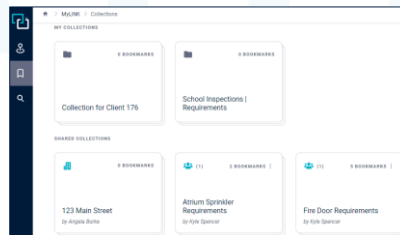
- Create personal notes, create bookmarks and assign colors
- Bookmarks persist across all editions so no need to start over when new editions are released



## Collections

### Organize and collaborate through use of collections

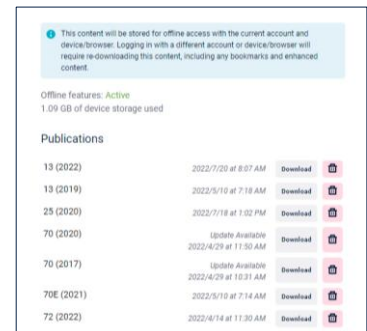
- Create custom collections and aggregate content to save time and streamline your workflows
- With team subscriptions, collaborate with your peers to share relevant project notes through team collections



## Offline Access

### Access important content when in a remote location

- Easily store publications with enhanced content, notes and bookmarks to your device for access when offline
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# NFPA LiNK® Features

## Sharing

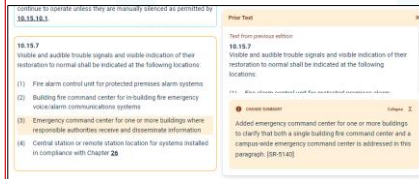
**Share code and standard requirements with users without a subscription**

- With the handy LiNK share feature you can send code content to customers, clients or colleagues

## Interactive Changes

**New interactive change indicators throughout the codes and standards**

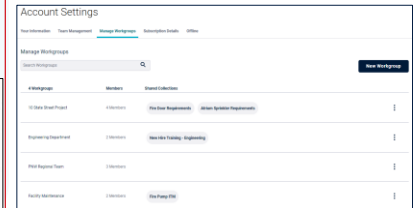
- Quickly identify exactly what has changed from the prior edition in a side-by-side comparison
- Change Summaries offer expert insight into revisions.
- TIA Change Indicators inform you of any code amendments that have been made since the publication was released.



## Team Management

**Manage your team and control permissions within the application**

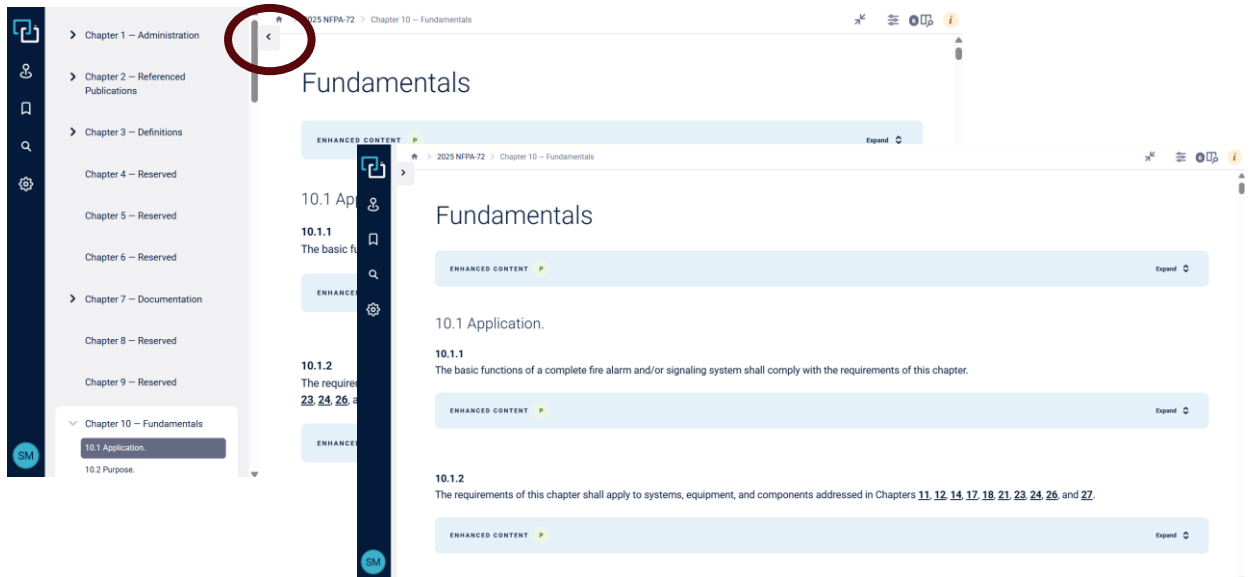
- Add and remove team users, as well as assign account admins
- New workgroups feature allows admins to control sharing permissions and account-wide custom collections



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# NFPA LiNK® Features



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# NFPA LiNK® Features

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# NFPA LiNK® Features

**LEGEND**

- text Shaded revisions
- T** TIA (Tentative Interim Amendment)
- N** New material
- Δ** Text deletions and figure/table revisions
- Section deletions



# NFPA LiNK® Features

2021

**NFPA 1-FL**

Fire Code with Florida Amendments, 8th Edition, 2023

[Change Edition](#)

Origins

Committee Personnel

- > Chapter 1 – Administration
- > Chapter 2 – Referenced Publications
- > Chapter 3 – Definitions
- > Chapter 4 – General Requirements
- > Chapter 5 – Performance-Based Option

**Important note about the revision symbols in NFPA codes and standards with jurisdictional changes**

When viewing amended codes in NFPA LiNK®, the revision symbols displayed within the margins have a slightly different meaning. Within jurisdictional codes, you are not viewing changes from edition year to edition year (ex. changes from 2020 to 2023). Instead, they are identifying changes from the NFPA version that was released to the version for that city/state (same edition year).

**Next**

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# NFPA LiNK® Features

Chapter 5 – Reserved

Chapter 6 – Reserved

> Chapter 7 – Documentation

Chapter 8 – Reserved

Chapter 9 – Reserved

> Chapter 10 – Fundamentals

- 10.1 Application.
- 10.2 Purpose.
- 10.3 Equipment.
- 10.4 Design and Installation.
- 10.5 Personnel Qualifications.
- 10.6 Power Supplies.**
- 10.7 Signal Priority.
- 10.8 Detection and Signaling of Conditions.
- 10.9 Responses.

2025 NFPA-72 > Chapter 10 – Fundamentals

**10.6.10.3 Battery Charging.**

**10.6.10.3.1**  
Battery charging equipment shall be provided to keep the battery fully charged under normal conditions.

**10.6.10.3.2**  
Battery charging equipment shall be provided to recharge batteries within 48 hours after fully charged batteries have been subject to a single discharge cycle as specified in **10.6.7.2**.

**10.6.10.3.3**  
The battery charging equipment operation shall not damage the

**10.6.7.2 \* Capacity.**

**10.6.7.2.1**  
The secondary power supply for the protected premises system shall have sufficient capacity to operate the system under quiescent load (system operating in a nonalarm condition) for a minimum of 24 hours.

**10.6.7.2.2**  
At the end of the period in **10.6.7.2.1**, the secondary power supply shall be capable of operating all alarm notification appliances used for evacuation or to direct aid to the location of an emergency for 5 minutes, unless otherwise permitted or required by

REFERENCES 7/7

NFPA 72 – NATIONAL FIRE ALARM AND SIGNALING CODE® (2025)

**Go to Item**

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## Building Fire Safety Systems – Membership Section

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## NFPA Member Sections

NFPA members are invited to maximize their membership benefits by joining one or more of our Member Sections focused on topics and job roles invested in fire, electrical, and building and life safety.

- Architects, Engineers, and Building Officials
- **Building Fire Safety Systems**
- Electrical
- Electrical Inspection
- Fire and Emergency Services
- Fire and Life Safety Education
- Fire Science and Technology Educators
- Health Care
- Industrial Fire Protection
- International Fire Marshals Association
- Metropolitan Fire Chiefs

# BFSS Membership Meeting @ C&E

## Monday June 16<sup>th</sup> 12:15-1:15

[www.nfpa.org/membership](http://www.nfpa.org/membership)



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# Questions

