NFPA®

1730

Standard on Organization and Deployment of Fire Prevention Inspection and Code Enforcement, Plan Review, Investigation, and Public Education Operations

2019

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NFPA® 1730

Standard on

Organization and Deployment of Fire Prevention Inspection and Code Enforcement, Plan Review, Investigation, and Public Education Operations

2019 Edition

This edition of NFPA 1730, *Standard on Organization and Deployment of Fire Prevention Inspection and Code Enforcement, Plan Review, Investigation, and Public Education Operations*, was prepared by the Technical Committee on Fire Prevention Organization and Deployment. It was acted on by NFPA at its June Association Technical Meeting held June 11-14, 2018, in Las Vegas, NV. It was issued by the Standards Council on August 14, 2018, with an effective date of September 3, 2018, and supersedes all previous editions.

This edition of NFPA 1730 was approved as an American National Standard on September 3, 2018.

Origin and Development of NFPA 1730

The 2016 edition was the first edition of NFPA 1730. The initial request for a document dealing with staffing a fire prevention office was submitted by the NFPA Southern Regional Fire Code Development Committee. This standard addresses the organization and deployment of a fire prevention organization, which includes code enforcement, plans examination, investigation, and public education.

The 2019 edition of NFPA 1730 incorporates updates to comply with the most recent edition of the *Manual of Style for NFPA Technical Committee Documents* as well as minor reorganization to enhance the ease of use of the standard. Other changes were made to better correlate with other NFPA documents, such as changing all instances of the word *juvenile* to *youth* as in NFPA 1035, and adding a reference to NFPA 921 in relation to fire investigation evidence handling.

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NOTE: Membership on a committee shall not in and of itself constitute an endorsement of the Association or any document developed by the committee on which the member serves.

Committee Scope: This Committee shall have primary responsibility for documents on the organization, operation, deployment, and evaluation of code enforcement, public fire and life safety education, plan review, and fire investigation operations. They shall also have responsibility for documents related to developing the process to conduct Community Risk Assessments and Reduction Programs.

Contents

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Standard on

Organization and Deployment of Fire Prevention Inspection and Code Enforcement, Plan Review, Investigation, and Public Education Operations

2019 Edition

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NOTICE: An asterisk (*) following the number or letter designating a paragraph indicates that explanatory material on the paragraph can be found in Annex A.

A reference in brackets [ ] following a section or paragraph indicates material that has been extracted from another NFPA document. As an aid to the user, the complete title and edition of the source documents for extracts in mandatory sections of the document are given in Chapter 2 and those for extracts in informational sections are given in Annex D. Extracted text may be edited for consistency and style and may include the revision of internal paragraph references and other references as appropriate. Requests for interpretations or revisions of extracted text shall be sent to the technical committee responsible for the source document.

Information on referenced publications can be found in Chapter 2 and Annex D.

Chapter 1   Administration

1.1 Scope.

1.1.1* This standard contains minimum requirements relating to the organization and deployment of fire prevention inspection and code enforcement, plan review, investigation, and public education operations.

1.1.2 The requirements address functions and objectives of fire prevention organization (FPO) service delivery, capability, and resources.

1.1.3 This standard contains the minimum requirements of a community risk assessment (CRA), adequate program selection, management of resources, records management, training, communications, and health and safety.

Δ **1.1.4** This standard addresses the strategic and policy issues involving the organization and deployment of fire prevention programs and does not address methods for carrying out specific fire prevention services, activities, and programs.

1.2 Purpose.

1.2.1 The purpose of this standard is to specify the minimum criteria addressing the effectiveness and efficiency of the FPO functions of fire prevention inspection and code enforcement, plan review, investigation, and public education operations by fire departments and other organizations based on an approved community risk reduction (CRR) plan.

1.2.2 Nothing herein is intended to restrict any jurisdiction from exceeding these minimum requirements.

1.3 Conflicts. The provisions of this standard shall not be deemed to nullify any provisions of local, state, provincial, tribal, or federal law.

1.4 Equivalency. Nothing in this standard is intended to prohibit the use of systems, methods, or approaches equivalent or superior to those prescribed by this standard. Technical documentation shall be submitted to the authority having jurisdiction to demonstrate equivalency.

Chapter 2   Referenced Publications

2.1 General. The documents or portions thereof listed in this chapter are referenced within this standard and shall be considered part of the requirements of this document.

Δ **2.2 NFPA Publications.** National Fire Protection Association, 1 Batterymarch Park, Quincy, MA 02169-7471.

NFPA 1021, *Standard for Fire Officer Professional Qualifications,* 2014 edition.
NFPA 1031, *Standard for Professional Qualifications for Fire Inspector and Plan Examiner,* 2014 edition.
NFPA 1033, *Standard for Professional Qualifications for Fire Investigator,* 2014 edition.
NFPA 1035, *Standard on Fire and Life Safety Educator, Public Information Officer, Youth Firesetter Intervention Specialist, and Youth Firesetter Program Manager Professional Qualifications,* 2015 edition.
NFPA 1037, *Standard on Fire Marshal Professional Qualifications,* 2016 edition.

2.3 Other Publications.

2.3.1 ASTM Publications. ASTM International, 100 Barr Harbor Drive, P.O. Box C700, West Conshohocken, PA 19428-2959.

ASTM E860, *Standard Practice for Examining and Preparing Items That Are or May Become Involved in Criminal or Civil Litigation,* 2007 (2013).

ASTM E1188, *Standard Practice for Collection and Preservation of Information and Physical Items by a Technical Investigator,* 2011.

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N **2.3.2 Other Publications.**

Merriam-Webster's Collegiate Dictionary, 11th edition, Merriam-Webster, Inc., Springfield, MA, 2003.

2.4 References for Extracts in Mandatory Sections. (Reserved)

Chapter 3   Definitions

3.1 General. The definitions contained in this chapter shall apply to the terms used in this standard. Where terms are not defined in this chapter or within another chapter, they shall be defined using their ordinarily accepted meanings within the context in which they are used. *Merriam-Webster's Collegiate Dictionary,* 11th edition, shall be the source for the ordinarily accepted meaning.

3.2 NFPA Official Definitions.

3.2.1* Approved. Acceptable to the authority having jurisdiction.

3.2.2* Authority Having Jurisdiction (AHJ). An organization, office, or individual responsible for enforcing the requirements of a code or standard, or for approving equipment, materials, an installation, or a procedure.

3.2.3 Shall. Indicates a mandatory requirement.

3.2.4 Should. Indicates a recommendation or that which is advised but not required.

3.2.5 Standard. An NFPA Standard, the main text of which contains only mandatory provisions using the word "shall" to indicate requirements and that is in a form generally suitable for mandatory reference by another standard or code or for adoption into law. Nonmandatory provisions are not to be considered a part of the requirements of a standard and shall be located in an appendix, annex, footnote, informational note, or other means as permitted in the NFPA Manuals of Style. When used in a generic sense, such as in the phrase "standards development process" or "standards development activities," the term "standards" includes all NFPA Standards, including Codes, Standards, Recommended Practices, and Guides.

3.3 General Definitions.

3.3.1* Critical Infrastructure. The assets, systems, and networks, whether physical or virtual, that are so vital to the community that their damage or destruction would have a debilitating effect.

3.3.2 Fire Prevention Organization (FPO). The organization having authority to provide fire prevention, inspection and code enforcement, plan review, investigation, and fire and life safety education.

3.3.3 Occupancy.

3.3.3.1* *High-Risk Occupancy.* An occupancy that has a history of high frequency of fires, high potential for loss of life or economic loss, or that has a low or moderate history of fires or loss of life but the occupants have a high dependency on the built-in fire protection features or staff to assist in evacuation during a fire or other emergency.

3.3.3.2* *Low-Risk Occupancy.* An occupancy that has a history of low frequency of fires and minimal potential for loss of life or economic loss.

3.3.3.3* *Moderate-Risk Occupancy.* An occupancy that has a history of moderate frequency of fires or a moderate potential for loss of life or economic loss.

Chapter 4   Organization

4.1 Fire Prevention Organizational Statement.

4.1.1 The authority having jurisdiction (AHJ) shall maintain a written statement or policy that establishes the following:

(1) Existence of the FPO
(2) Services that the FPO will provide
(3) Basic organizational structure
(4) Expected number of FPO members
(5) Functions that FPO members are expected to perform

Δ **4.1.2** The FPO organizational statement shall provide service delivery objectives, including specific objectives for fire prevention inspection and code enforcement, plan review, investigation, and public education.

4.2 Organizational Structure.

4.2.1 The FPO shall have a leader and an organizational structure that facilitates efficient and effective management of its resources to carry out its mandate.

4.2.2* The FPO shall have an organizational structure of the size and complexity required to accomplish its mission.

4.3 Management Information Systems (MIS).

4.3.1 The FPO shall develop an MIS.

4.3.2 An MIS shall be maintained to support the management of the FPO by providing the leaders with data that indicate the effectiveness of the organization in its programs and procedures.

4.3.3 Incident records shall be reviewed each year.

4.3.4 The MIS shall provide a means of measuring performance outcomes and trends for each area established through the organizational statement.

4.4 Finance.

4.4.1 Responsibility for the functions of budget control shall fall under the direction of the FPO leader.

4.4.2 The FPO budgetary system shall reflect and support the organization's goals, objectives, and expected outcomes.

4.4.3 The FPO shall have a system of accounts for financial administration that includes a record of funds received and expended.

4.4.4 The FPO shall follow generally accepted accounting practices (GAAP) or similar financial operating practices required by the AHJ.

4.5 Records.

4.5.1 Applicable record-keeping practices shall be developed, instituted, and maintained in accordance with nationally recognized standards, as well as federal, state or provincial, and local requirements.

4.5.2 The FPO's records on purchases shall be sufficiently detailed to permit the FPO leader to have data available for the actual cost estimates needed for planning and budgeting

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purposes and specifications for purchases shall be based on applicable standards.

4.5.3 The FPO shall publish an annual report.

4.6 Community Risk Assessment (CRA).

4.6.1 The FPO shall conduct a CRA *(see Chapter 5).*

4.6.2 The CRA shall be reviewed at a minimum of once every 5 years or more frequently when changes take place that affect the original assessment.

4.6.3 The CRA shall be distributed to agencies, departments, and employees having responsibilities designated in the community risk reduction (CRR) plan established in accordance with 5.3.8(1).

4.6.4 A record shall be kept of all holders of the CRA.

4.6.5 A system shall be implemented for issuing all changes to or revisions of the CRA to all holders.

4.7 Personnel.

4.7.1* The resources and personnel required to provide the level of service(s) outlined in 4.1.1 shall be determined by the FPO or by the AHJ.

4.7.2* The FPO shall examine opportunities to utilize all personnel for activities within the standard.

4.8 Training.

4.8.1* The FPO shall have training and education programs and policies to ensure that personnel are trained and that competency is maintained in order to effectively, efficiently, and safely execute all responsibilities.

4.8.2 The FPO leader shall coordinate training, maintain training records, and assist in evaluating the effectiveness of the program.

4.9 Authority Having Jurisdiction. The AHJ shall develop, establish, and implement policies and procedures to ensure compliance with this standard.

Chapter 5   Community Risk Assessment

5.1* Scope. This chapter establishes a process to identify and analyze community risks that impact the services of the FPO as outlined in 4.1.1. *(See Annex B for additional information.)*

5.2* Purpose. The purpose of that process is to assist in the development and implementation of a community risk reduction (CRR) plan and programs to reduce, mitigate, or eliminate the community's risks.

5.3 Administration.

5.3.1 The FPO shall conduct a CRA to identify the needs and the circumstances of the community and to establish the level of fire prevention activities.

5.3.2* The CRA shall be conducted every 5 years or more frequently based on community need. An annual review of the FPO's loss and injury statistics shall be conducted to identify emerging trends that could impact the current CRR plan and risk reduction programs.

5.3.3* The CRA shall include the following profiles to describe the community:

(1)   Demographics
(2)   Geographic overview
(3)   Building stock
(4)   Fire experience
(5)   Responses
(6)   Hazards
(7)   Economic profile

5.3.4 The FPO shall analyze the profile data and identify risks facing the community.

5.3.5 The FPO shall identify and seek out stakeholders and employ an inclusive process to solicit input on the risks facing the community, and shall revise the identified risks as necessary in accordance with the input process.

5.3.6* The FPO shall categorize the risks based on their probability and impact.

5.3.7* The FPO shall conduct a needs analysis on the risks and identify strategies to include in a CRR plan.

5.3.8 The FPO shall carry out the following:

(1)   Develop a CRR plan that identifies program and resource priorities that will reduce a community's risks consistent with 4.1.1
(2)   Obtain required approval of the CRR plan
(3)   Develop the risk reduction programs
(4)   Allocate resources for risk reduction programs

5.3.9 The FPO shall assess the performance of the risk reduction programs on an ongoing basis to evaluate efficiency and effectiveness and modify the programs accordingly.

Chapter 6   Fire Prevention Inspection and Code Enforcement Activities in Existing Occupancies

6.1 Scope. This chapter establishes the organization and deployment of fire prevention resources for fire prevention inspection and code enforcement activities in existing occupancies. New construction and renovation inspections are contained in Chapter 7.

6.2 Purpose. The purpose of this chapter is to specify the minimum frequencies for fire prevention and code enforcement inspections and the minimum staff necessary to perform those inspections in existing occupancies.

6.3 General Requirements.

6.3.1 Fire prevention inspection and code enforcement services, including department personnel, equipment, and all support and resources, shall be structured to meet the organizational objectives required by Chapter 4.

6.3.2 Fire prevention inspection and code enforcement shall be conducted to ensure compliance with adopted codes and standards.

6.4 Risk Assessment. The CRA shall be the basis for the development of the fire prevention inspection and code enforcement program per Chapter 5.

6.5 Qualifications of Personnel. Personnel responsible for fire prevention and code enforcement activities shall meet the job performance requirements in NFPA 1031 for the inspection duties they perform.

6.6* Required Personnel. The AHJ shall determine the minimum resources, personnel, and equipment levels necessary to perform code enforcement and inspection activities.

Δ **6.7 Minimum Inspection Frequency.** Existing occupancy fire prevention inspection and code enforcement inspection frequencies shall not be less than those specified in Table 6.7.

Δ **Table 6.7 Minimum Inspection Frequency**

Occupancy Risk Classification	Frequency
High	Annually
Moderate	Biennially
Low	Triennially
Critical infrastructure	Per AHJ

Chapter 7   Plan Review

7.1 Scope.

7.1.1 This chapter establishes the organization and deployment for plan reviews and field acceptance inspections for new construction and renovation of existing buildings. Code enforcement inspection in existing occupancies is contained in Chapter 6.

7.1.2 This chapter identifies the tasks necessary to complete initial plan reviews through to the certificate of occupancy.

7.2 Purpose. The purpose of this chapter is to establish the organization and deployment for the FPO as it relates to plan review for emergency vehicle access, water supply, new construction, change of occupancy use, renovations, change or addition of fire and life safety systems, and associated acceptance field inspections.

7.3 General Requirements. Plan reviews and new construction fire inspection services, including department personnel, equipment, and all support and resources, shall be structured to meet the organizational objectives required by Chapter 4.

7.4 Risk Assessment. The FPO shall evaluate and incorporate the CRA as referenced in Chapter 5 when establishing the plan reviews and field acceptance inspections.

7.5 Qualifications of Personnel. Personnel who perform plan reviews or field acceptance inspections shall meet the job performance requirements in NFPA 1031.

7.6 Required Personnel.

7.6.1 The FPO shall determine the minimum resources, personnel, and equipment levels necessary to perform plan reviews and field acceptance inspections.

7.6.2* Plan review times can be determined based on the area of the structure or facility and the life safety complexity of different occupancy classifications or hazardous processes.

7.6.3* Plan review services times can be calculated based on the number of sprinkler heads in a sprinkler protection system, the number of fire alarm devices in a fire alarm system, and other defined times for special extinguishing systems.

7.6.4* Field inspection times can be determined by doubling the plan review times that are defined in the plan review process.

7.7 Minimum Plan Review Elements.

7.7.1* Initial Fire Protection Environmental Impact (Feasibility Study). The developer and the FPO shall conduct a preliminary review of the project.

7.7.2 Water Supply and Fire Flow. A site plan review shall be conducted to ensure that the water supply meets jurisdiction requirements.

7.7.3* Emergency Vehicle Access. A review of emergency vehicle access shall be conducted to ensure that it meets jurisdictional requirements.

7.7.4* Construction Building Plans Related to Fire Protection Features. A review of plans shall be conducted to verify compliance with applicable codes and standards for fire protection features.

7.7.5* Certificate of Occupancy Inspections. Certificate of occupancy inspections shall be conducted to ensure compliance with applicable codes and standards and approved plans.

7.7.6* Hazardous Materials and Processes. A hazardous materials and processes review shall be conducted to ensure compliance with applicable codes and standards.

7.7.7* Fire Protection System Plans. A fire protection system plan review shall be conducted to ensure compliance with applicable codes and standards.

7.7.8* Fire and Life Safety Systems Field Acceptance Inspections. A fire and life safety system field acceptance inspection shall be conducted to ensure compliance with applicable codes and standards.

7.7.9 Certificate of Occupancy Issued. After the certificate of occupancy has been issued, the FPO shall notify the responsible party for fire prevention and code enforcement inspections.

Chapter 8   Investigations

8.1* Scope. This chapter establishes the organization and deployment of investigation activities.

8.2* Purpose. The purpose of this chapter is to establish the organization and deployment of the FPO as it relates to the origin, cause, and circumstances of any fire, explosion, hazardous materials incident, or other hazardous condition.

8.3 General Requirements. (Reserved)

8.4 Risk Assessment. Data collected as a result of investigations conducted in accordance 8.7.1 and recorded in accordance with 8.8.1 shall be used as the basis for the CRA.

8.5 Qualifications of Personnel.

8.5.1 All personnel conducting the investigation of the origin, cause, and circumstances of any fire, explosion, hazardous materials incident, or other hazardous condition shall be trained and qualified commensurate with the duties they are expected to perform.

8.5.1.1 A training, education, and professional development program with a goal of preventing occupational deaths, injuries, and illnesses shall be provided.

8.5.2* Personnel assigned to investigation activities shall comply with the job performance requirements of NFPA 1033.

8.5.2.1* All fire officers determining the preliminary origin, cause, and circumstances of any fire, explosion, hazardous materials incident or other hazardous condition; securing the incident scene; and protecting evidence or potential evidence from damage or destruction shall meet the job performance requirements of NFPA 1021.

8.6 Required Personnel — Staffing Levels.

8.6.1* The resources and personnel required to provide the level of service required by this chapter shall be determined by the AHJ in accordance with this standard.

8.6.1.1 The FPO shall have a standard operating guideline (SOG) for the staffing levels for fire scene examination.

8.6.1.2 The time necessary to conduct investigation activities under this chapter shall be evaluated as follows:

(1) On scene: Time spent on activities conducted at a fire scene
(2) Off scene: Time spent on activities conducted away from the fire scene
(3) Travel time: Total travel time related to an activity
(4) Court appearance: Time required to attend or testify in court
(5) Preparation time: Time required to prepare for testimony
(6) Report writing: Time spent generating reports
(7) Telephone/Email: Time spent on calls and emails attributed to the fire investigation
(8) Process reports: Time spent entering, approving, formatting, distributing, copying
(9) Data entry: Time spent by administrative staff to enter data
(10) Data search: Time spent searching and retrieving data
(11) Filing: Time spent by administrative staff for general filing
(12) Human resources (HR): Time spent by administrative staff for general HR duties
(13) Financial: Time spent on general budget and accounting duties
(14) Legal/disclosure: Time spent copying or preparing disclosure
(15) Cost recovery: Time spent on cost recovery

8.7 Authority.

8.7.1 The FPO shall investigate or shall cause to be investigated the origin, cause, and circumstances of any fire, explosion, hazardous materials incident, or other hazardous condition that occurs in its legal jurisdiction.

8.7.1.1 Where the FPO does not have the authority or jurisdiction to investigate criminal matters, and when evidence of criminal activity is detected or suspected, the FPO shall notify the appropriate law enforcement agency.

8.7.2 The policies of the FPO shall set forth the requirement for post-incident investigations.

8.7.3 Post-incident investigation activities shall be organized to ensure that the investigation capabilities include personnel, equipment, and resources to meet the activities required by Chapter 4.

8.7.4 Evidence.

8.7.4.1 The FPO shall have the authority to take custody of or cause custody to be taken of all physical evidence related to the cause of a fire, explosion, hazardous materials incident, or other hazardous condition in accordance with local laws, policies, and procedures.

8.7.4.2* The FPO shall have an SOG for the collection, examination, testing, preservation, and storage of evidence in accordance with ASTM E860, *Standard Practice for Examining and Preparing Items That Are or May Become Involved in Criminal or Civil Litigation*, and ASTM E1188, *Standard Practice for Collection and Preservation of Information and Physical Items by a Technical Investigator*.

8.7.5 Procedure.

8.7.5.1* The investigation shall follow a systematic approach in the investigation of the origin, cause, and circumstances of any fire, explosion, hazardous materials incident, or other hazardous condition.

8.7.5.2* The investigation shall identify or shall cause to be identified any violations of fire or building legislation/codes or other conditions that could have caused or contributed to the cause or spread of fire or any injuries or fatalities, including both civilians and fire personnel.

8.7.5.3* The FPO shall have an SOG for investigation scene safety, including the need for site-specific plans.

8.7.5.4* Complex Investigations. The FPO shall have an SOG for conducting and participating in a complex investigation.

8.7.6 Limiting Access. The FPO shall have the authority to limit access to emergencies or other similar conditions.

8.8 Reporting.

8.8.1* The FPO shall fully report or shall cause to be fully reported all investigations of the origin, cause, and circumstances of any fire, explosion, hazardous materials incident, or other hazardous condition as required by local law and for the purpose of determining community risk.

8.8.2 Investigation programs shall be adequately evaluated to determine whether they are appropriate, effective, and efficient. Evaluation shall include formative, process, impact, and outcome phases.

8.8.3 Trade Secret. Information that could be related to trade secrets or processes shall not be made part of the public record except as could be directed by a court of law.

8.8.4 Youth Information.

8.8.4.1 Information that could be related to the identification of youths shall not be made part of the public record except when directed by a court of law.

8.8.4.2 Youths determined to be involved in fires shall be referred to the appropriate programs or authorities.

Chapter 9   Public Education Programs

9.1 Scope. This chapter establishes the organization and deployment of the FPO for public education activities.

9.2 Purpose. The purpose of this chapter is to establish the [organization and deployment for the FPO as it relates to] public education programs that reduce the community's risks, demonstrate the value of public education activities, and implement appropriate prevention and intervention activities.

9.3 General Requirements. (Reserved)

9.4 Risk Assessment. The FPO shall evaluate and incorporate the applicable components of the CRR plan required by 5.3.8(1) when developing and revising public education programs.

9.5 Qualification of Personnel.

9.5.1 Personnel assigned to public education activities shall comply with the job performance requirements in NFPA 1035.

9.5.2 Personnel assigned to deliver public education programs established and designed for delivery shall meet the Level I job performance requirements in NFPA 1035.

9.5.3 Personnel assigned to develop and evaluate specific public education programs shall meet the Level II job performance requirements in NFPA 1035.

9.5.4 Personnel assigned to manage the public education programs of this standard shall meet the Level III job performance requirements in NFPA 1035.

9.5.5* The FPO shall be permitted to approve other individuals to deliver specific public education programs when those individuals demonstrate expertise in the programs to be delivered.

9.5.5.1 Educators from organizations outside the FPO shall meet all additional criteria based on the audience or specific venue where the program is delivered.

9.6* Required Personnel. Public education functions shall be organized to ensure that the FPO public education capability includes personnel, equipment, and resources to meet the activities required by Chapter 4.

Δ **9.7* Responsibility.** The FPO shall have a system to accomplish the requirements of Section 9.1 that include program development, implementation, evaluation, and revision.

9.8 Public Education Program Development/Revision.

9.8.1 Educational programs shall be developed based on the CRR plan established in accordance with Chapter 5.

9.8.2* Development of specific programs shall be based on measures demonstrating the risks associated with a specific population, demographic, or geographic region.

9.8.3 The FPO shall partner with other private, public, or nonprofit organizations as appropriate to develop new programs or revise existing programs based on the CRA.

9.8.4* Programs developed by other organizations with learning objectives that support the CRR plan of the FPO shall be considered for delivery within the community.

9.8.5* Programs developed under this standard shall be reviewed for appropriate program content based upon instruc-

tional methodology, age levels, abilities, developmental needs, and cultural or social differences of the target audience.

9.8.6* Educational programs developed under this standard shall have defined course objectives that address identified fire and injury causes as identified by the CRA required by Chapter 5.

9.8.7 The FPO shall identify process and impact measures that support the outcome goals and measures of each educational program.

9.9 Public Education Program Delivery.

9.9.1 The FPO shall partner with other private, public, or nonprofit organizations as appropriate to deliver programs to reduce injury and fire loss in the community identified in the CRA.

9.9.2 The FPO shall select the delivery mechanisms most appropriate for the target audience.

9.9.3 Educational programs shall be delivered to the audiences identified in the CRA.

9.9.4 Evaluation.

9.9.4.1 Educational program delivery shall be evaluated to determine the most effective frequency, mechanism, format, and venue based on identified process measures.

9.9.4.2 Data for the evaluation of process measures shall be collected with each educational program delivery.

9.10 Public Education Program Evaluation.

9.10.1 All programs shall be evaluated to verify that the program is reaching the target audience and achieving the desired impacts and outcomes identified in Section 9.2.

9.10.2 Process and impact evaluation from educational program deliveries shall be compiled by the FPO not less than annually.

9.10.3 Outcome measures shall be evaluated with the CRA.

9.10.3.1 Outcome measures shall be evaluated more frequently or prior to the next scheduled CRA based on the level of activity and the desired outcome timeline of the specific educational program.

9.10.4 Results of educational program evaluations shall be presented to the chief executive responsible for fire prevention not less than annually.

9.10.5 Educational program evaluation shall include recommended changes to programs in order to improve impact, process, and outcome measures of the program.

9.10.6 Educational program instructors shall be evaluated to ensure adherence to program objectives and their individual effectiveness at achieving the learning objectives of the programs delivered.

9.10.7 Each instructor's delivery of the educational program shall be evaluated for effectiveness and adherence to professional qualifications and be conducted within the scope of the instructor's training, education, and experience.

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9.11 Programs.

9.11.1 Daycare, Preschool, and Pre-K Through 12 School Fire and Life Safety Educational Programs.

9.11.1.1 Educational programs for school-age target audiences shall be developed based on the CRR plan developed in accordance with Chapter 5.

9.11.1.2 Educational programs under this chapter shall be developed for students in daycare, preschool, pre-kindergarten, and education levels K–12.

9.11.1.3* Educational programs shall be developed based on age and developmentally appropriate content and delivery method for the targeted audience.

9.11.1.4 All educational programs shall comply with applicable regional and state educational requirements.

9.11.1.5* Educational programs shall also include training or materials for adult caregivers of the students.

9.11.2 Higher Education Fire and Life Safety Education Programs.

9.11.2.1 Educational programs for students in higher education shall be developed based on the CRR plan developed in accordance with Chapter 5.

9.11.2.2 Programs shall be targeted at postsecondary education students enrolled in college, university, community college, technical school or any postsecondary formal educational programs.

9.11.2.3 Educational programs shall be developed for the specific housing needs of students as defined by their on-campus dormitory, off-campus housing, or private and learning institution–sponsored, or fraternity/sorority housing status.

9.11.2.4* Educational programs shall be developed for any other defined risk in the higher education status.

9.11.2.5 Educational programs shall be permitted to be an integral part of the student orientation or other institution-sponsored educational effort.

9.11.2.6 Educational programs shall also include enhanced training for dormitory student managers and fraternity/sorority leadership.

9.11.2.7 Educational programs shall include enhanced training for off-campus housing organizations and landlords.

9.11.2.8 Educational programs for institutional staff shall be conducted in accordance with Section 9.11.

9.11.3 Independent Senior Adult Fire and Life Safety Educational Programs.

9.11.3.1 Educational programs for independent senior adults shall be developed based on the CRR plan developed in accordance with Chapter 5.

9.11.3.1.1 Independent senior adult education programs shall be targeted at those community members over the age of 55 who live independently or as determined by the FPO.

9.11.3.2 Educational programs shall be permitted to be associated with other independent senior-based outreach programs and organizations to maximize the delivery and outreach of the program.

9.11.3.3* Independent senior educational programs shall also include training or materials for adult caregivers of seniors.

9.11.4 Adult and Community-Wide Public Educational Programs.

Δ **9.11.4.1** Adult and community-wide educational programs shall be developed based on the CRR plan developed in accordance with Chapter 5.

9.11.4.2* Adult and community-wide education programs shall be targeted at adults and the communities in which they live.

9.11.5 Workplace Fire and Life Safety Education.

9.11.5.1 Workplace educational programs shall be developed based on the CRR plan developed in accordance with Chapter 5.

9.11.5.2* Workplace education programs are targeted at employees, managers, and owners of businesses, nonprofit organizations, and government organizations in the community, with a focus on fire prevention and safety in the workplace and home.

9.11.5.3 All programs shall be developed and delivered with consideration to specific workplace needs, processes, and activities in the workplace.

9.11.6 Youth Firesetter Educational Programs.

9.11.6.1* Youth firesetter educational programs shall be developed based on the CRR plan developed in accordance with Chapter 5.

9.11.6.2 Youth firesetter educational programs shall be targeted at youths who exhibit behaviors associated with setting fires.

9.11.6.3* Youth firesetter educational programs shall include the availability of mental and social counseling services.

9.11.6.4* Youth firesetter programs shall have defined course objectives that address specific firesetting behaviors exhibited by the participating student(s) or identified by local or nationally recognized objectives for the target audience.

9.11.6.5* State and local requirements of record keeping, reporting, and confidentiality associated with youth shall be followed.

9.11.7 Home Safety Education Programs.

Δ **9.11.7.1** Home safety education programs shall be developed based on the CRR plan developed in accordance with Chapter 5.

9.11.7.2* Home safety education programs shall be targeted at homeowners, owners of condominium units, tenants of single-family dwellings, and tenants of multifamily housing units.

9.11.7.3 Home safety program management shall address all state and local regulations concerning mandated reporting requirements of other crimes and violations of the law as well as applicable confidentiality requirements.

N **9.11.8 Wildfire Safety Educational Programs.**

N **9.11.8.1** Educational programs for wildfire prevention and preparedness shall be developed based on the CRR plan developed in accordance with Chapter 5.

N **9.11.8.2** Educational programs under this chapter shall be developed for residents and visitors of communities within wildland urban interface areas.

N **9.11.8.3** Educational programs shall cover relevant topics, including, but not limited to, wildfire prevention, defensible space, home hardening, emergency planning, and evacuations.

N **9.11.8.4** Wildfire cause data shall be analyzed periodically and used to develop key educational messages for the public.

9.12 Alternative Educational Messaging.

9.12.1* Alternative education materials and messages shall be developed based on the CRR plan developed in accordance with Chapter 5.

9.12.2 The FPO shall develop media communications strategies that support educational programs consistent with 5.4.3 and 5.4.4 of NFPA 1037.

9.12.3 FPO shall develop social media communications strategies that support public education programs where appropriate.

Annex A   Explanatory Material

Annex A is not a part of the recommendations of this NFPA document but is included for informational purposes only. This annex contains explanatory material, numbered to correspond with the applicable text paragraphs.

A.1.1.1 The committee considered different approaches to determine the number of required personnel for code enforcement/inspection activities, including population, number of buildings, risk within occupancies, occupancy types within the community, the potential for economic and life loss within the community, and a variety of other factors. The AHJ is the best source to determine the number of hours and personnel needed to meet the specific code enforcement/inspection activities required under this standard because each community has a different number and types of occupancies, populations, and critical infrastructure. Any attempt to determine an across-the-board number using only one or a few of the factors described in this standard would not take into account the unique nature of each community and would result in inadequate or surplus personnel.

A.3.2.1 Approved. The National Fire Protection Association does not approve, inspect, or certify any installations, procedures, equipment, or materials; nor does it approve or evaluate testing laboratories. In determining the acceptability of installations, procedures, equipment, or materials, the AHJ may base acceptance on compliance with NFPA or other appropriate standards. In the absence of such standards, said authority may require evidence of proper installation, procedure, or use. The AHJ may also refer to the listings or labeling practices of an organization that is concerned with product evaluations and is thus in a position to determine compliance with appropriate standards for the current production of listed items.

A.3.2.2 Authority Having Jurisdiction (AHJ). The phrase "authority having jurisdiction," or its acronym AHJ, is used in NFPA documents in a broad manner, since jurisdictions and approval agencies vary, as do their responsibilities. Where public safety is primary, the AHJ may be a federal, state, local, or other regional department or individual such as a fire chief; fire marshal; chief of a fire prevention bureau, labor department, or health department; building official; electrical inspector; or others having statutory authority. For insurance purposes, an insurance inspection department, rating bureau, or other insurance company representative may be the AHJ. In many circumstances, the property owner or his or her designated agent assumes the role of the AHJ; at government installations, the commanding officer or departmental official may be the AHJ.

A.3.3.1 Critical Infrastructure. Examples of critical infrastructures could include water treatment plant, special structures, public safety buildings, and power plants.

Δ **A.3.3.3.1 High-Risk Occupancy.** Examples of high-risk occupancies could include multiple-family dwellings, high-rise buildings, hotels, dormitories, lodging and rooming, assembly, child care, detention, educational, health care, and industrial.

A.3.3.3.2 Low-Risk Occupancy. Examples of low-risk occupancies could include storage, mercantile, and business.

A.3.3.3.3 Moderate-Risk Occupancy. Examples of moderate-risk occupancies could include ambulatory health care and industrial occupancies that do not maintain, store, use, or handle hazardous materials in excess of exempt amounts.

A.4.2.2 See A.4.7.1 for a methodology to determine the adequate size for an FPO.

A.4.7.1 One model for analyzing the personnel needed to achieve the level of service(s) outlined in 4.1.2 is an analysis consisting of a process in which the scope of services and duties, along with their time requirements, is combined to determine the total hours required. In many communities, one person or a few perform all the functions of code enforcement, plan examination, fire investigation, and public education. To determine personnel levels in these instances, each function should be evaluated for time and then those times added up.

Step 1. Scope of Services, Duties, and Desired Outputs. Identify the services and duties that are performed within the scope of the organization. Outputs should be specific, measurable, reproducible, and time limited. Among the elements can be the following:

(1) Administration
(2) Data collection and analysis
(3) Delivery
(4) Authority/responsibility
(5) Roles/responsibilities
(6) Local variables
(7) Budgetary considerations
(8) Impact of risk assessment

Step 2. Time Demand. Quantify the time necessary to develop, deliver, and evaluate various services and duties identified in Step 1 *[see Table A.4.7.1(a)]*, taking into account the following:

(1) Local nuances
(2) Resources that affect personnel needs

Table A.4.7.1(a) Sample Form for Required Personnel Hours

Task	Time per Task	Total Time Required

Step 3. Required Personnel Hours. Based on Step 2 and historical performance data, convert the demand for services to annual personnel hours required for each program *[see Table A.4.7.1(b)].* Add any necessary and identifiable time not already included in the total performance data, including the following:

(1) Development/preparation
(2) Service
(3) Evaluation
(4) Commute
(5) Prioritization

Table A.4.7.1(b) Sample Form for Average Personnel Hours

Task	#Task	Time per Task*	Task Commute Time	Other†	Total

*Includes preparation, site, research, follow-up, and report.
†Includes personnel functions, administrative functions, interruption time, and prioritization.

Step 4. Personnel Availability and Adjustment Factor. Average personnel availability should be calculated *(see Table A.4.7.1(c)],* taking into account the following:

(1) Holiday
(2) Jury duty
(3) Military leave
(4) Annual leave/vacation
(5) Training
(6) Sick leave
(7) Fatigue, delays, other

Step 5. Calculate Total Personnel Required. Division of the unassigned personnel hours by the adjustment factor will determine the amount of personnel (persons/year) required. Any fractional values can be rounded up or down to the next integer value. Rounding up provides potential reserve capacity; rounding down means potential overtime or assignment of additional services conducted by personnel. (Personnel can include personnel from other agencies within the entity, community, private companies, or volunteer organizations.)

Correct calculations are based on the following:

(1) Budgetary validation
(2) Rounding up/down
(3) Determining reserve capacity
(4) Impact on personnel of nonpersonnel resources (materials, equipment, vehicles)

The following equation is used to calculate the number of necessary personnel positions:

[A.4.7.1]

$$\frac{\text{Total demand hours}}{\text{Adjustment factor}} = \text{Personnel positions}$$

A.4.7.2 There are various opportunities for the utilization of fire fighters in career, combination, and volunteer fire departments to participate in fire prevention activities. The use of on-duty fire fighters for fire prevention activities such as delivering public education to school children and conducting home fire-safe inspections, including the installation and testing of smoke alarms and carbon monoxide alarms and providing education on home escape planning, improves the efficiency and effectiveness of fire departments. These examples can be found in the Tri-Data Reports on "Global Concepts in Residential Fire Safety" and Vision 20/20, "National Strategies for Fire Loss Prevention."

A.4.8.1 Certification programs are widely available even in jurisdictions that do not offer or require their own certification programs. As an example, NFPA Fire Inspector I, Fire Inspector II, and Fire Plans Examiner I are available from NFPA. In addition, certification is also available from the International Code Council for Fire Inspector I, Fire Inspector II, Fire Plans Examiner, and Fire Marshal.

A.5.1 Conducting a risk assessment is a practical data gathering and analyzing exercise.

A.5.2 There are numerous methodologies and approaches for identifying community risks. See Annex B for guidance on conducting a CRA.

A.5.3.2 The assessment is a critical piece of FPO management. This process is necessary to properly identify targets of opportunity for program development and overall community risk reduction.

A.5.3.3 The demographic profile describes the composition of the community's population using various categories such as age, gender, cultural backgrounds, language barriers, educational attainment, socioeconomic makeup, transient populations, and other considerations specific to a local community.

The geographic profile describes the physical features of the community. Consider the nature and placement of features such as waterways, highways, canyons, railroads, wildland-urban interface, landforms, and bridges.

The building stock profile describes the various occupancy classification types and number of buildings, including mixed occupancies, in the community to classify their hazard risk category.

The fire profile describes the community's fire experience and trends and how the community's experience compares to

Table A.4.7.1(c) Sample Form for Average Personnel Availability

___ Annual hours at 100% availability	(___ hours/week × 52 weeks/year) (hours per year per person) ___
___ Less annual leave and holiday	(___ days per year at ___ hours per day) ___
___ Less estimated sick leave	(average ___ days per year at ___ hours per day) ___
___ Less annual training	(___ days per year at ___ hours per day) ___
Personnel hours subtotal (hours per year per person) ___	
___ Times uncertainty factor at ___% × ___ = _____	
Total available hours (hours per year per person) _____	

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statewide and national trends. Data on fire deaths, injuries, cause, and dollar loss are important components of a fire profile. State and national statistics can assist in providing data.

The response profile describes the types of emergencies to which the organization responds.

The hazard profile describes the natural, human-caused, and technological hazards. This also includes the organization's resources available for response and their performance.

The economic profile describes the economic sectors affecting the community that are critical to its financial sustainability.

A.5.3.6 A risk assessment matrix classifies a community's risks based on probability and impact *(see Figure A.5.3.6)*. This tool can be used to create a visual representation of the risks in the community.

A.5.3.7 The needs analysis consists of the following:

(1) Characteristic factors, such as existing resources, competencies, and performance levels, of the current FPO programs
(2) A list of factors required to reduce, eliminate, or mitigate the identified risks
(3) Identification of the gaps that exist and need to be filled

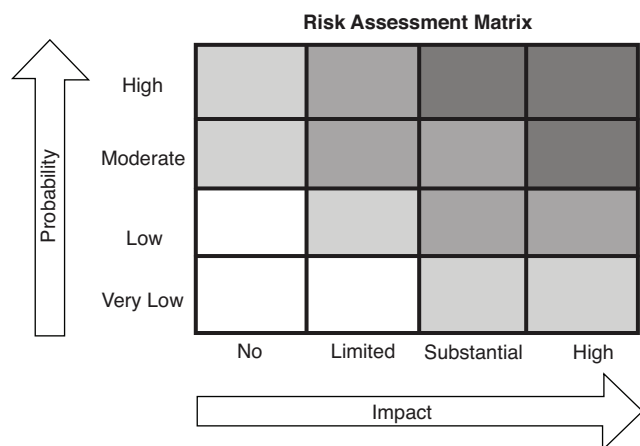**A.6.6** See A.4.7.1 for a methodology to determine the adequate size for an FPO.

Risk Assessment Matrix

FIGURE A.5.3.6   Example of a Risk Assessment Matrix.

A.6.7 The minimum inspection frequency requirement for low occupancy risk classification can be met by a self-inspection program at the discretion of the AHJ.

A.7.6.2 See Table A.7.6.2(a) and Table A.7.6.2(b).

A.7.6.3 See Table A.7.6.3(a) through Table A.7.6.3(e).

A.7.6.4 In addition to time spent reviewing the approved plans during the field inspection process, time for travel to the site, field tests, documentation, and follow-up inspections needs to be considered for field inspection times. *[See Table A.7.6.2(a) for plan review times based upon average times derived from a national survey.]*

A.7.7.1 Accessibility to existing fire stations, travel distances/ response times for fire services and EMS, first responder communication capabilities, hydrant and fire main specifications, and alternative or equivalent fire protection need to be identified.

A.7.7.3 Alternative surfaces for emergency vehicle access need to be reviewed and vehicular travel routes verified as to sufficient width, operating room, load-bearing capacity, turn-arounds, and dead ends.

A.7.7.4 A review that building plans submitted by the architect, contractor, owner, or building representative meet jurisdictional requirements would include the following:

(1) Verification of compliance with adopted building codes and local standards, compliance with adopted policies, and utilization of forms and documents related to the permitting process
(2) Review of plans for building occupancy classification and determination of required fire protection and life safety systems, interior finishes, fire resistance ratings, means of egress, special hazards (including fire-prone lands and hazardous materials) and other fire-related requirements as determined by the AHJ
(3) Review and approval of alternative means of compliance with regard to structural hazards for emergency response personnel, including, but not limited to unprotected openings and roof obstructions
(4) Review of other special structures, temporary or permanent, including but not limited to seasonal occupancies, telecommunications battery sites, high-piled rack storage, and alternative energy systems as they relate to fire prevention and fire protection

Table A.7.6.2(a) Plan Review Time

	Occupancy Group																		
	A	**B**	**E**	**F**	**H-1**	**H-2**	**H-3**	**H-4**	**H-5**	**I-1**	**I-2**	**I-3**	**I-4**	**R-1**	**R-2**	**R-3**	**R-4**	**S**	**U**
Area (ft²)																			
1–10,000	1.00	0.50	1.00	0.75	1.50	1.50	1.00	0.75	0.75	1.50	1.50	1.50	0.75	0.75	0.75	0.75	0.50	0.75	0.50
10,000–25,000	1.50	0.75	1.50	1.00	2.00	2.00	1.25	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00	1.00	0.75	1.00	0.75
25,000–50,000	2.00	1.00	2.00	1.25	2.50	2.50	1.50	1.25	1.25	2.50	2.50	2.50	1.25	1.25	1.25	1.25	1.00	1.25	1.00
50,000–75,000	2.50	1.25	2.50	1.50	3.00	3.00	1.75	1.50	1.50	3.00	3.00	3.00	1.50	1.50	1.50	1.50	1.25	1.50	1.25
75,000–100,000	3.00	1.50	3.00	1.75	3.50	3.50	2.00	1.75	1.75	3.50	3.50	3.50	1.75	1.75	1.75	1.75	1.50	1.75	1.50
100,000–250,000	3.50	1.75	3.50	2.00	4.00	4.00	2.25	2.00	2.00	4.00	4.00	4.00	2.00	2.00	2.00	2.00	1.75	2.00	1.75
250,000–500,000	4.00	2.00	4.00	2.25	4.50	4.50	2.50	2.25	2.25	4.50	4.50	4.50	2.25	2.25	2.25	2.25	2.00	2.25	2.00
500,000–750,000	4.50	2.25	4.50	2.50	5.00	5.00	2.75	2.50	2.50	5.00	5.00	5.00	2.50	2.50	2.50	2.50	2.25	2.50	5.25
750,000–1,000,000	5.00	2.50	5.00	2.75	5.50	5.50	3.00	2.75	2.75	5.50	5.50	5.50	2.75	2.75	2.75	2.75	2.50	2.75	2.50
Over 1,000,000	5.50	2.75	5.50	3.00	6.00	6.00	3.25	3.00	3.00	6.00	6.00	6.00	3.00	3.00	3.00	3.00	2.75	3.00	2.75

For SI units, 1 ft² = 0.093 m².

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Δ **Table A.7.6.2(b) Type Construction Factors**

Calculation	1A	1B	2A	2B	3A	3B	4	5A
Multiply hour given in Table A.7.6.2(a) by factor	1.30	1.20	1.10	1.00	1.20	1.10	1.20	1.10

Note: See Table A.7.6.3(d) for occupancy classification comparison between model codes.

A.7.7.5 Certificate of occupancy inspections can include mechanical, electrical, plumbing, planning/zoning, health, and accessibility (ADA) requirements for all buildings under the duty of the AHJ. Review of final plans for classification use, occupant load, interior finishes, egress components includes but is not limited to exit and emergency lighting and/or evacuation plans.

A.7.7.6 Review of plans for compliance and permitting with appropriate federal, state, and local codes, standards, statutes, or requirements with emphasis on hazardous materials storage, processes, compatibility, secondary containment, release reporting, emergency planning, and fire protection and life safety systems associated with the hazardous materials or hazardous process includes but is not limited to the following:

(1) Underground storage tanks
(2) Aboveground storage tanks
(3) Compressed gas storage tanks
(4) Spray booths
(5) Dust collection systems
(6) Methane mitigation systems
(7) Dry cleaning operations
(8) Store of cellulose nitrate/plastics
(9) Battery systems
(10) Storage of explosives
(11) Dip tank operations
(12) Fumigation

A.7.7.7 Review of plans for compliance and permitting with appropriate federal, state, and local codes, standards, statutes, or requirements for fire protection to ensure fire fighter and occupant safety and structure protection. Fire and life safety systems include but are not limited to the following:

(1) Smoke control systems
(2) Stairwell pressurization
(3) Elevator recall
(4) Emergency voice/alarm communications
(5) Fire alarms
(6) Automatic fire sprinklers
(7) Fire pumps
(8) Standpipe systems
(9) Special extinguishing systems
(10) First responder radio coverage
(11) Commercial cooking hoods

A.7.7.8 Field inspection of emergency vehicle access, water supply, new construction, change of occupancy use, renovations, and change or addition of fire and life safety systems are to be completed to ensure installation according to plans and proper operability, proper coverage of devices, and functionality to ensure fire fighter and occupant safety and structure protection.

Δ **Table A.7.6.3(a) Plan Review Times for Fire Protection Sprinkler Systems**

Area (ft²)	All except H-1, H-2 & H-3	H-1	H-2	H-2
1–10,000	0.50	0.75	0.75	0.75
10,000–25,000	0.75	1.00	1.00	1.00
25,000–50,000	1.00	1.25	1.25	1.25
50,000–75,000	1.25	1.50	1.50	1.50
75,000–100,000	1.50	1.75	1.75	1.75
100,000–250,000	1.75	2.00	2.00	2.00
250,000–500,000	2.00	2.25	2.25	2.25
500,000–750,000	2.25	2.50	2.50	2.50
750,000–1,000,000	2.50	2.75	2.75	2.75
Over 1,000,000	2.75	3.00	3.00	3.00

For SI units, 1 ft² = 0.093 m².
Note: Time factors were developed from research of over 60 fire and building officials from across the United States using averages from their local data in plan review times.

Table A.7.6.3(b) Fire Alarm Systems

No. of Devices	Same for All Occupancies
1–25	0.50
25–50	0.75
50–100	1.00
100–250	1.25
250–500	1.50
500–750	1.75
750–1000	2.00
Over 1000	2.25

Table A.7.6.3(c) Hood and Other Systems

No. of Devices/Nozzles	Same Across All Uses
1–25	0.50
25–50	1.00
50–100	1.50
over 100	2.00

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

Δ **Table A.7.6.3(d) Occupancy Classification Comparisons Between Model Codes**

NFPA	IBC	National/Canada
Assembly	A	A
Educational	E	A
Day care	I	A
Health care	I	B
Health care-ambulatory	B	B
Detention/correctional	I	B
Lodging/rooming	R	C
Hotels/dormitories	R	C
Apartments	R	C
Residential board/care	R	B
Mercantile	M	E
Business	B	D/E
Industrial	F/H	F
Storage	S	D/E/F
Other	U	

A.8.1 Fire investigations identify factors useful in reducing the number of fires that might occur in the future. Fire investigations are a necessary practice to determine, develop, and validate current fire prevention services. Information gained through investigations is a valuable tool in developing an effective fire prevention program, including needed code revisions, public education programs, product safety, and planning for future fire protection needs.

A.8.2 Various approaches can be employed to undertake the investigation of fire and explosions, including but not limited to full-time investigators, part-time investigators, company officers, law enforcement agencies, state fire marshal offices, task forces, and private contract. The individuals involved can be strictly fire investigators, while others might have law enforcement powers. Local regulations, conditions, and resources will dictate the most effective and appropriate approach. When multiple agencies are involved, the development and use of interagency agreements are recommended.

It is through efficient and accurate determination of the cause and responsibility that future fire incidents can be avoided. Several sources of information that can assist in the investigative process can be found in NFPA 921.

A.8.5.2 At a minimum, the investigator should have and maintain an up-to-date basic knowledge of the following topics at a postsecondary education level as set forth in NFPA 1033:

(1) Fire science
(2) Fire chemistry

(3) Thermodynamics
(4) Thermometry
(5) Fire dynamics
(6) Explosion dynamics
(7) Computer fire modeling
(8) Fire investigation
(9) Fire analysis
(10) Fire investigation methodology
(11) Fire investigation technology
(12) Hazardous materials
(13) Failure analysis and analytical tools
(14) Fire protection systems
(15) Evidence documentation, collection, and preservation
(16) Electricity and electrical systems

A.8.5.2.1 In many instances, the initial — and sometimes the only — investigation undertaken will be the responsibility of the Fire Officer as set forth in NFPA 1021. NFPA 1021 establishes job performance requirements specific to fire investigation. The Fire Officer is often among the first fire personnel on the scene and is in the best position to observe critical information. The Fire Officer is often also the person who decides when overhaul operations should be delayed. For Fire Officer I, the individual should be able to perform a fire investigation to determine preliminary origin and cause, secure the incident scene, and protect evidence or potential evidence from damage or destruction. A Fire Officer II should be able to determine the point of origin and preliminary cause and be knowledgeable of the methods used by arsonists, common causes of fire, basic origin and cause determination, fire growth and development, and the documentation of preliminary fire investigative procedures. An SOG should be established to address the conditions or circumstances in which it may be necessary or required for the Fire Officer to refer the incident for additional analysis or investigation.

A.8.6.1 Resources and personnel should include items such as canines, youth firesetter services, fire protection engineering, and administrative support staff.

A.8.7.4.2 The importance of the collection, storage, and preservation of evidence is significant in conducting fire investigations. Depending on the scope of the investigation, evidence might be of interest to other investigators such as insurance investigators, engineers, or manufacturer's representatives for civil litigation and subrogation. Further information can be obtained in NFPA 921 regarding evidence collection.

Δ **Table A.7.6.3(e) Cross Reference of Building Construction Types**

Code Source NFPA 220	I (443)	I (332)	II (222)	II (111)	II (000)	III (211)	III (200)	IV (2HH)	V (111)	V (000)
B/NBC	1A	1B	2A	2B	2C	3A	3B	4	5A	5B
IBC	—	IA	IB	IIA	IIB	IIIA	IIIB	IV	VA	VB
SBC	I	II	—	IV 1 hr	IV UNP	V 1 hr	V UNP	III	VI 1 hr	VI UNP
UBC	—	I FR	II FR	II 1 hr	II N	III 1 hr	III N	IV HT	V 1 hr	V N

B/NBC: *BOCA/National Building Code*. FR: Fire resistive. HT: Heavy timber. *IBC*: *International Building Code*. N: Nonrequirement. *SBC*: *Standard Building Code*. *UBC*: *Uniform Building Code*. UNP: Unprotected.

A.8.7.5.1 To be effective, fire and explosion investigation and analysis must be conducted in a systematic manner. The systematic approach recommended for fire investigation, as contained in NFPA 921, is that set forth in the scientific method, as follows:

(1) *Recognize the Need.* First, it should be determined that a problem exists. In this case, a fire or explosion has occurred and the cause should be determined and listed so that future, similar incidents can be prevented.

(2) *Define the Problem.* Having determined that a problem exists, the investigator or analyst should define the manner in which the problem can be solved. In this case, a proper origin and cause investigation should be conducted. This is done by an examination of the scene and by a combination of other data collection methods, such as the review of previously conducted investigations of the incident, the interviewing of witnesses or other knowledgeable persons, and the results of scientific testing.

(3) *Collect Data.* Facts about the fire incident are collected by observation, experiment, or other direct data-gathering means. The data collected are called empirical data because they are based on observation or experience and are capable of being verified or are known to be true.

(4) *Analyze the Data (Inductive Reasoning).* The scientific method requires that all data collected be analyzed. This is an essential step that must take place before the formation of the final hypothesis. The identification, gathering, and cataloging of data do not equate to data analysis. Analysis of the data is based on the knowledge, training, experience, and expertise of the individual doing the analysis. If the investigator lacks expertise to properly attribute meaning to a piece of data, then assistance should be sought. Understanding the meaning of the data will enable the investigator to form hypotheses based on the evidence rather than on speculation.

(5) *Develop a Hypothesis.* Based upon the data analysis, the investigator produces a hypothesis or group of hypotheses. The hypothesis must be based solely on the empirical data that the investigator has collected.

(6) *Test the Hypothesis (Deductive Reasoning).* To be valid, a hypothesis must be able to stand the test of careful and serious challenge. Testing of the hypothesis is done by the principle of deductive reasoning, in which the investigator compares his or her hypothesis to all the known facts as well as the body of scientific knowledge associated with the phenomena relevant to the specific incident. A hypothesis can be tested either physically, by conducting experiments, or analytically, by applying scientific principles in "thought experiments." When relying on experiments or research of others, the investigator must ensure that the conditions and circumstances are sufficiently similar. When the investigator relies on previously conducted research, references to the research relied upon should be noted. If the hypothesis cannot be supported, it should be discarded and alternative hypotheses should be developed and tested. This can include the collection of new data or the re-analysis of existing data. The testing process needs to be continued until all feasible hypotheses have been tested and one is determined to be uniquely consistent with the facts and with the principles of science. If no hypothesis can withstand an examination by deductive reasoning, the issue should be considered "undetermined."

(7) *Select Final Hypothesis.*

A.8.7.5.2 To properly identify and address matters involving building and fire code issues pertinent to the incident, the investigative team might consist of fire investigators, law enforcement personnel, and code enforcement personnel.

A.8.7.5.3 NFPA 1500 requires that the incident commander makes sure fire investigators or other members who enter an immediately dangerous to life or health (IDLH) atmosphere or hazardous area use personal protective equipment and respiratory protection as appropriate for risks that might be encountered.

Additional requirements for safety are detailed in NFPA 921.

A.8.7.5.4 Complex investigations generally include multiple simultaneous investigations and involve a significant number of interested parties. These types of investigations can arise from an incident that involves circumstances such as fatalities or injuries; fire in high-rise buildings, large complexes, or multiple buildings; or fires and explosions in industrial or commercial properties.

Due to the complexity of this type of investigation and to ensure that all known interested parties are afforded an opportunity to investigate the incident and protect their respective interests, understandings or agreements should be developed as early as possible. Items on which the parties might wish to have a common understanding or agreement include safety and environmental hazards, control of and access to site, cost sharing, scheduling, communication, logistics, protocols, evidence processing and handling, evidence testing, interviewing, and sharing of information.

Additional information can be found in NFPA 921.

A.8.8.1 It is critical that all incidents and investigations be fully and accurately documented and reported. Proper determination of fire origin and cause is also essential for meaningful compilation of fire statistics. Accurate fire incident data are necessary to correctly identify and address a community's fire experience. Accurate statistics form part of the basis of fire prevention codes, standards, and training. Fire loss data and investigation reports are necessary to document fire origins and causes, arrests, and clearance rates, as well as to provide input into the development and maintenance of building and fire codes and fire protection technology. Such data are also critical in assessing the fire protection and fire safety of the community and departmental operations. Accurate data are necessary in applying for and utilizing many grants and other funding programs. Reporting systems such as the National Fire Incident Reporting System (NFIRS) and Bomb Arson Tracking System (BATS), available through the Bureau of Alcohol, Tobacco and Firearms (ATF), can also be helpful in data collection and analysis.

A.9.5.5 Qualified individuals can be utilized to present specific public safety educational programs when they have specific expertise in the topic but do not meet the job performance requirements of NFPA 1035. Examples include certified trainers from other organizations, school teachers who present public safety educational materials, and other public safety professionals.

A.9.6 A formal workload analysis will determine the staffing levels for each FPO. The total number of full-time equivalents (FTEs) required to deliver each program must be determined

to identify the total number of FTEs required for the FPO to effectively deliver public education programs to the community.

A.9.7 Organizational staffing and resources will dictate the methods by which FPOs develop, deliver, evaluate, and revise programs. The AHJ has the authority to establish position-specific job responsibilities within the organization. The management of the FPO should be clearly defined in position-specific job duties and responsibilities.

A.9.8.2 In the evaluation of measures, outcome measures should also be developed based upon the actual risks identified in the CRA.

The process of program development, with example outputs, is shown in Figure A.9.8.2.

The process shown in Figure A.9.8.2 is explained as follows:

(1) **Collect Data:** This is the step in the process in which incident data are collected from the jurisdiction served. These data are formatted in such a way that the risks associated with the community can be identified. Data are also collected to determine any regional, state, or national trends that can be compared to the local data. The sources of data can be fire reporting systems, state data collection points, national data collection points, or local health departments or agencies.

(2) **Compare Data:** Following data collection, the data are analyzed to determine specific common or frequently occurring incidents. The analysis should also identify geographic, socio-economic, and demographic factors that impact the frequency or severity of these incidents. This analysis should also examine relevant regional, state, or national data to compare local issues and incidents to the larger population to determine if the specific problems are unique to the locality.

(3) **Identify Risks:** Following the analysis, specific risks are identified based on the findings. These identified risks will become the basis for public education program development or other strategies to reduce or mitigate the identified risk.

(4) **Identify Root Causes:** This is a more detailed analysis of the specific risks identified in Step 3 and is conducted in the development of the CRR plan. These causes should be the basis for development of the goals and objectives of the risk reduction strategy.

(5) **Define Goals and Objectives:** Based on the root causes, goals and objectives for performance measures should be developed based on the identified risks. The effort should be focused on the measurements collected and analyzed in the CRA.

(6) **Develop Strategic Partners**: Other public and private organizations that have complementary resources should be explored to improve efficiencies for the development and presentation of programs.

(7) **Develop Programs**: The programs should implement strategies to reduce the risks identified. The development process is outlined in Section 9.5.

(8) **Implement Programs**: This is the actual delivery of the progress developed.

(9) **Evaluate Process and Impact Measures**: This step evaluates the interim measures of the programs as they are presented or implemented and determines if the program is reaching the target audience individuals and numbers of contacts.

(10) **Modify as Needed:** The program should be reviewed in the initial deliveries and modified as needed. The program development should be reviewed to ensure that all the objectives are being met and that any changes implemented improve the program to achieve its goals and objectives.

A.9.8.4 FPOs are encouraged to utilize proven or previously developed programs that are available from commercial, nonprofit, or other FPO organizations to meet the needs of the community within the scope of legal and copyright privileges.

FPOs are also encouraged to share effective programs they develop with other FPOs to enhance the delivery of fire safety programs in other jurisdictions or organizations.

Resources where FPOs can obtain effective prevention programs previously developed include but are not limited to the following:

(1) National Fire Protection Association
(2) Safe Kids Worldwide
(3) Vision 20/20 Models in Fire Prevention (http://www.strategicfire.org/page.cfm/go/seminars-and-workshops)
(4) National Fire Academy
(5) Fire safety equipment manufacturers' associations
(6) Insurance companies
(7) The Center for Campus Fire Safety

Education messages should conform to the current Educational Messages Advisory Committee document published by NFPA. These guidelines provide consistent messaging for those identified fire prevention programs.

A.9.8.5 Program content and delivery should be developed based on risks identified in the CRA and the following:

(1) The age of the target audience
(2) Language differences within the target audience
(3) Cultural demographics of the target audience
(4) Literacy levels within the target audience
(5) Physical capabilities or requirements of the target audience
(6) The cognitive abilities of the target audience

A.9.8.6 Local fire risks and losses can be unique to a specific community, and national trends might not reflect the actual risks and losses in the community served by the FPO. The CRA is critical in clearly defining what the risks are to the community. Local risks and losses can be compared to national trends for benchmarking, but national trends should be avoided as the basis for the development of local public education programs. The CRA should always be the priority method for identifying educational programs needed in the local community.

A.9.11.1.3 Examples of programs that can be targeted at preschool-/kindergarten-age children include but are not limited to the following:

(1) Response to smoke, fire, and CO alarms
(2) "Hot/Not Hot" programs
(3) Stop, Drop, and Roll
(4) Emergency Drills in the Home (EDITH)
(5) "Tools, Not Toys" programs
(6) Firefighter—A Community Helper

Shaded text = Revisions. Δ = Text deletions and figure/table revisions. • = Section deletions. *N* = New material.
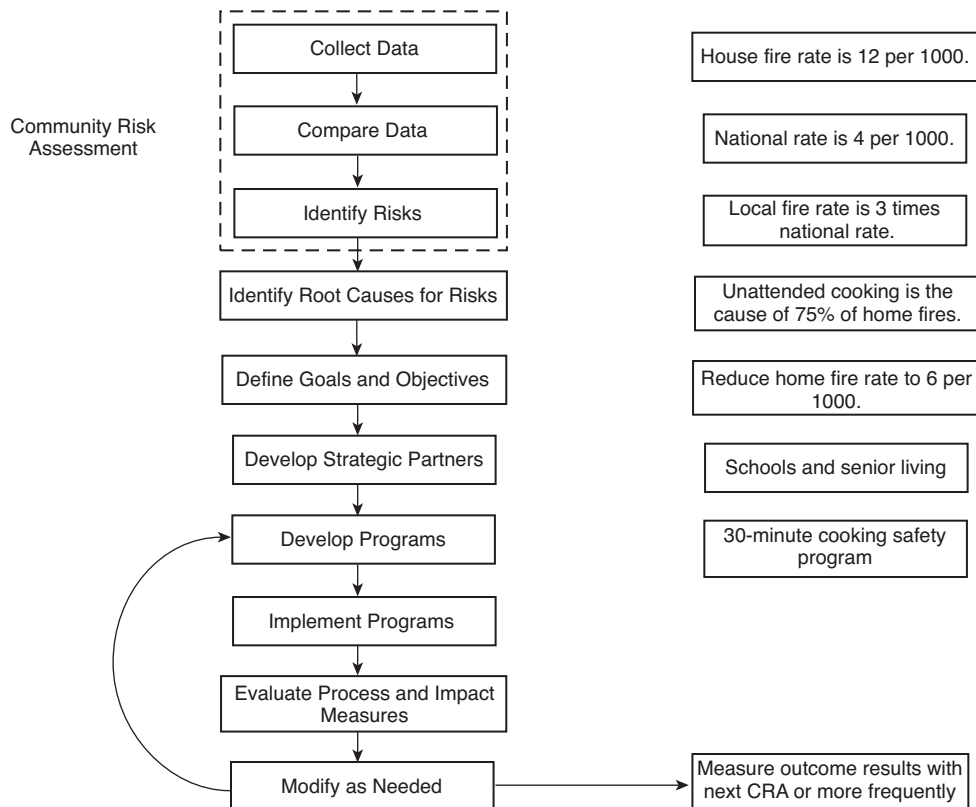
FIGURE A.9.8.2   Program Development Process.

Examples of programs that can be targeted at school-age children can focus on the following:

(1)   Presence, location, and maintenance of smoke alarms
(2)   Presence, location, and maintenance of carbon monoxide alarms
(3)   Residential sprinkler benefits
(4)   Emergency Drills in the Home (EDITH) planning
(5)   Preventing common home fires
(6)   Prevention common home injuries
(7)   Fire extinguishers (depending on maturity of the students)
(8)   Poison prevention
(9)   Proper actions in an emergency: calling 911/staying safe
(10) Disaster preparedness
(11) Youth firesetter prevention

A.9.11.1.5 These programs can be independent or integrated into the student education program.

A.9.11.2.4 Examples of educational programs that can be targeted at special hazard locations or risks include the following:

(1)   Laboratories
(2)   Theater, sporting, and festival facilities and events
(3)   High-rise specific settings
(4)   High-hazard equipment and activities
(5)   Nightclubs

Examples of educational programs that can be targeted at students in higher education include the following:

(1)   Presence, location, and maintenance of smoke alarms
(2)   Presence, location, and maintenance of carbon monoxide alarms
(3)   Residential sprinkler benefits
(4)   Common fire causes and prevention
(5)   Fire extinguishers
(6)   Disaster preparedness
(7)   Emergency drills and escape planning
(8)   Off-campus housing risks

A.9.11.3.3 These programs can be independent programs or integrated into the senior education program. Examples of educational programs that can be targeted independent senior adults include the following:

(1)   Presence, location, and maintenance of smoke alarms (hearing impaired and traditional)
(2)   Presence, location, and maintenance of carbon monoxide alarms
(3)   Residential sprinkler benefits
(4)   Common fire causes and prevention
(5)   Fire extinguishers (based on physical ability)
(6)   Disaster preparedness
(7)   Slip, trip, and fall hazards and risk reduction
(8)   Automobile/driving safety
(9)   Medication safety
(10) Emergency evacuation plans and planning

A.9.11.4.2 Community-based programs are those that are directed to the community at large rather than a specific targeted audience. Examples of community-wide programs include the following:

(1) Fire station open houses
(2) County fairs and festivals
(3) Safety fairs at local businesses

Specific adult education programs include those programs with a specific defined audience. Examples of these programs include the following:

(1) Rotary and other community service club presentations
(2) Homeowners' associations
(3) Religious organizations
(4) Parent-teacher associations

Examples of educational programs that can be targeted adults and the community include the following:

(1) Presence, location, and maintenance of smoke alarms
(2) Presence, location, and maintenance of carbon monoxide alarm
(3) Residential sprinkler benefits
(4) Common fire causes and prevention
(5) Fire extinguishers
(6) Disaster preparedness
(7) Slip, trip, and fall hazards and risk reduction
(8) Water/pool safety
(9) Hazardous materials handling
(10) Poisoning and poison prevention
(11) Emergency Drills in the Home (EDITH) planning
(12) Hotel fire safety

A.9.11.5.2 These educational programs deliver fire prevention and safety programs to employees, volunteers in the workplace, contractors of a specific business, government office, church, or other organization or facility within the community. This can include specific building types such as high rises or specific business types such as restaurants and health care facilities.

Examples of workplace fire and life safety education include the following:

(1) Common fire causes and prevention
(2) Fire extinguishers
(3) Disaster preparedness
(4) Employee and customer safety
(5) Emergency planning and evacuation
(6) Elevator safety and use
(7) Importance and purpose of built-in fire protection features
(8) Home fire safety

A.9.11.6.1 Youths receiving this program can be identified through local law enforcement, fire service personnel, youth justice services, mental health professionals, or the public.

A.9.11.6.3 Youth fire-setting behaviors can be caused by complex mental, emotional, or social reactions that must be identified in order to correct the fire-setting behaviors. The inclusion of mental health and social services counseling is an integral part of a comprehensive youth firesetter program.

A.9.11.6.4 The specific delivery format of a youth firesetter program is dictated by the nature of the fire-setting event. Group settings for these programs can be appropriate in certain situations where one-on-one education is most appropriate for other behaviors. Evaluation of each individual refer-

red to a youth firesetter program will dictate the type and scope of program that should be delivered in each situation.

A.9.11.6.5 When state and local regulations permit, FPOs are encouraged to develop regional- or state-level data collection and sharing. This provides other FPOs the ability to identify repeat offenders from other jurisdictions.

A.9.11.7.2 Examples of some home safety program topics include the following:

(1) Presence, location, and maintenance of smoke alarms
(2) Presence, location, and maintenance of carbon monoxide alarms
(3) Residential sprinkler benefits
(4) Smoke alarm/CO alarm installation programs
(5) Home escape planning
(6) Fire extinguisher location and use
(7) Common fire causes and prevention
(8) Smoking habits and safety in and around the home
(9) Home heating appliances—safe use and maintenance
(10) Home pool and spa safety
(11) Poisoning
(12) Cooking safety
(13) Residential sprinklers
(14) Firearms safety
(15) Home numbering
(16) Wildfire-urban interface

A.9.12.1 Emerging risks that might not be captured between formal CRAs can be addressed in a more timely and effective method using ad hoc or alternative strategies such as the following:

(1) Focused media messages
(2) Social networking resources: Facebook, Twitter, Foursquare, websites
(3) Door-to-door campaigns
(4) Community group education
(5) Local newsletters and publications

Annex B   Community Risk Assessment Guide

This annex is not a part of the requirements of this NFPA document but is included for informational purposes only.

B.1 Introduction. Conducting a community risk assessment (CRA) is the first step toward management of risk based on local needs and circumstances. It is intended to collect and analyze data to make decisions about programs and resources necessary for the implementation of the community risk reduction (CRR) plan.

A CRA must be undertaken to determine and establish the CRR plan and programs to eliminate, reduce, and mitigate risks. Any significant risks identified through the analysis should be addressed. For example, if the risk assessment indicates a significant life or fire loss in multi-unit residential buildings, a program that will adequately improve fire safety, such as routine inspections, might be appropriate to address that specific need of the community.

This annex is based on *Public Fire Safety Guidelines,04-40A-03* — Simplified Risk Assessment, published by the Ontario Office of the Fire Marshal and Emergency Management, and is used with permission.

B.2 Categories of Data. Conducting a CRA is a practical data gathering and analyzing exercise intended to create community risk profiles. The following categories of data are important to consider when developing a CRA: demographic profile, geographic profile, building stock profile, fire profile, response profile, hazard profile, and economic profile.

Δ **B.2.1 Demographic Profile.** The demographic profile describes the composition of the community's population, as follows:

(1) Age
(2) Gender
(3) Educational attainment
(4) Socioeconomic makeup
(5) Vulnerable individuals or occupancies
(6) Ethnic and cultural considerations (e.g., language and customs)
(7) Transient population shifts in tourist areas, mobile home and manufactured home communities, university/college locales, and so forth
(8) Other considerations specific to the community

Example: A community that is vulnerable to tornadoes and has developed an audible early warning system should take into account the language in which the message should be delivered and devise ways to make the warning system more effective by providing a bilingual or multilingual broadcast.

B.2.2 Geographic Profile. The geographic profile describes the physical features of the community, as follows:

(1) Waterways
(2) Highways
(3) Canyons and other landforms
(4) Railroads
(5) Wildland-urban interface
(6) Bridges
(7) Other features specific to the community

Example: A community is adjacent to a heavily forested wildland-urban interface. There are several thousand homes and several hundred high-tech businesses in the adjacency. Identifying the geographic concerns of the area is important for various planning, education, and mitigation activities, including awareness, evacuation, vegetation management, hardening of structures, and possible ordinance or inspection activities.

B.2.3 Building Stock Profile. The building stock profile describes occupancies in the community, as follows:

(1) Building density (core areas)
(2) Building code occupancy classifications
(3) Age of building stock
(4) Potential high–fire risk occupancies (e.g., industrial, commercial, residential)
(5) Potential high–life safety risk occupancies (e.g., hospitals, nursing homes, detention centers, group homes, residential care facilities, retirement homes)
(6) Historic or culturally important buildings or facilities
(7) Other building stock specific to the community

Example: An area with heavily populated commerce areas might include a convention center with various hotels in the same core or location. Understanding how many people and or businesses could be potentially affected by an incident can provide significant information on various strategies for education, protection, or other workarounds.

B.2.4 Fire Profile. The fire profile describes the community's past fire experience, as follows:

(1) Fires by occupancy or property type
(2) Fire deaths and injuries by occupancy or property type
(3) Fire deaths and injuries by age and gender of victims
(4) Fire loss ($) by occupancy or property type
(5) Fire cause
(6) Smoke alarm status
(7) Fire suppression system status
(8) Other fire types specific to the community

Example: A community identifies a trend in residential fires that shows careless cooking and smoking as the causes of many fires and that alcohol often plays a significant role. Public education programs should be targeted to address those specific causes and contributing factors.

B.2.5 Response Profile. The response profile describes the type of call(s) for service, as follows:

(1) Medical
(2) Carbon monoxide alarms
(3) Motor vehicle accidents
(4) Rescue
(5) Other response types specific to the community

Example: High-volume medical calls to specific nursing homes or care facilities can identify a need for better education, program augmentation, and delivery to help the facility do a better job of meeting their responsibilities.

B.2.6 Hazard Profile. The hazard profile describes hazards that affect the community, as follows:

(1) Human-caused hazards (e.g., hazardous materials spills, the presence of military installations and other facilities that present opportunities for terrorism)
(2) Technological hazards (e.g., service interruptions caused by computers, electrical controls, processes, or other devices that malfunction)
(3) Natural hazards (e.g., earthquakes, volcanoes, landslides, droughts, floods, forest fires, hurricanes, cyclones, tornadoes)

Example: A community's power generation and transmission might be automatically controlled by complex computers and software applications. A hacker or terrorist infiltrating the utility provider's network could result in complete loss of the power grid, paralyzing the community for an undetermined amount of time.

B.2.7 Economic Profile. The economic profile describes those facilities and activities within the community that are critical to its financial vitality and sustenance, as follows:

(1) Infrastructure
(2) Employers
(3) Industries
(4) Institutions
(5) Events
(6) Attractions

Example: A sawmill located in the community employs a large percentage of the community's workforce. If the sawmill experiences a fire and is unable to reopen, tax revenues decline, other businesses experience a loss of revenue, demand for social service programs increases, and people move out of the community to seek employment elsewhere.

B.3 Analyzing the Data. The data gathered in each profile category must be analyzed to identify community risks. In communities where data are not available, state, provincial, or national reports should be consulted.

Use the risk assessment worksheets provided in this annex to analyze the data and identify community risks.

B.3.1 Demographic Risk Assessment. On the worksheet in Table B.3.1, identify vulnerable groups and associated occupancies, transient populations and associated occupancies, and cultural groups and languages in the community. Then list the community's risks relating to demographics.

B.3.2 Geographic Risk Assessment. List the community's geographic makeup, including large bodies of water, forested areas, canyons, highways, railroads, and so forth, then list the community's risks relating to geographics.

B.3.3 Building Stock Risk Assessment. On the worksheet in Table B.3.3, identify the various types and numbers of buildings and occupancies in the community. It is important to identify high-risk occupancies and those that, if damaged or destroyed, would have a devastating impact on the community. This type of information is intended to provide a detailed inventory of the overall potential structure and occupancy-related risks within the community. It is best to collect building stock data that can be closely categorized in accordance with a standard incident reporting property classification system. Then list the community's risks relating to building stock.

△ Table B.3.1 Age Distribution Worksheet

Ages of Population	# of People	Percent of Population
0–4		
5–9		
10–14		
15–19		
20–24		
25–29		
30–34		
35–39		
40–44		
45–49		
50–54		
55–59		
60–64		
65–69		
70–74		
75–79		
80–84		
85 and over		

Table B.3.3 Building Stock Risk Assessment Worksheet

Occupancy Classification	# of Occupancies
Assembly	
Educational	
Day care	
Health care	
Ambulatory health care	
Residential	
One- and two-family dwelling unit	
Lodging or rooming house	
Hotel	
Dormitory	
Apartment building	
Residential board and care	
Mercantile	
Business	
Industrial	
Storage	
Other occupancies (identify each)	
Total buildings	
Total # of mixed occupancy buildings	

B.3.4 Fire Profile Data. Fire deaths and injuries are important components of a risk assessment. However, most communities do not experience fire fatalities on a regular basis, so local records do not always permit an effective analysis. In such cases, state statistics can assist in determining the types of occupancies in which fire deaths most commonly occur, the most vulnerable age groups affected, and the status of smoke alarms in those occurrences. In Table B.3.4(a) and Table B.3.4(b), list the community's risks relating to its fire experience.

B.3.5 Response Risk Assessment. On the worksheet in Table B.3.5, categorize response by incident type, then list the community's risks relating to responses.

B.3.6 Hazards Risk Assessment. On the worksheet in Table B.3.6, list the local hazards (natural, human-caused, and technological) that could affect your community, then list the community's risks relating to natural, human-caused, and technological hazards. Use the risk matrix in Annex A to categorize and prioritize the hazards *(see Figure A.5.3.6).*

B.3.7 Economic Risk Assessment. On the worksheet in Table B.3.7, identify the infrastructure, employers, industries, institutions, events, attractions, and other organizations in the community that are critical to its financial sustainability, then list the risks relating to those items.

Table B.3.4(a) Fire Risk Assessment Worksheet: Community Fire Deaths and Injuries

Occupancy classification	Year		Year		Year	
	Death	**Injuries**	**Death**	**Injuries**	**Death**	**Injuries**
Assembly						
Educational						
Day care						
Health care						
Ambulatory health care						
Residential						
One- and two-family dwelling unit						
Lodging or rooming house						
Hotel						
Dormitory						
Apartment building						
Residential board and care						
Mercantile						
Business						
Industrial						
Storage						
Other occupancies (identify each)						
Total deaths and injuries						

Table B.3.4(b) Fire Risk Assessment Worksheet: Community Property Dollar Loss

Occupancy Classification	Year		Year		Year		
	No. of Fires	**$ loss**	**No. of fires**	**$ loss**	**No. of fires**	**$ loss**	**% of loss**
Assembly							
Educational							
Day care							
Health care							
Ambulatory health care							
Residential							
One- and two-family dwelling unit							
Lodging or rooming house							
Hotel							
Dormitory							
Apartment building							
Residential board and care							
Mercantile							
Business							
Industrial							
Storage							
Other occupancies (identify each)							
Total dollar loss							

Table B.3.5 Response Risk Assessment Worksheet

Response Type	# of responses	% of Total Responses
CO alarms		
Total Responses		

Table B.3.6 Hazards Risk Assessment Worksheet

Hazard	Natural	Human-Caused	Technological

Table B.3.7 Economic Risk Assessment

Type	Risks
Infrastructure	
Employers	
Industries	
Institutions	
Events	
Attractions	
Other	

Annex C Sample Staffing Exercise

This annex is not a part of the requirements of this NFPA document but is included for informational purposes only.

C.1 Five-Step Process. This annex shows a sample of the five-step process outlined in A.4.7.1. It has been filled out using a fictitious FPO so the user can see how all the steps and activities are compiled into a single staffing exercise.

C.2 Sample Exercise.

C.2.1 Step 1: Scope of Services, Duties, and Desired Outputs. Identify the services and duties that are performed within the scope of the organization. Outputs should be specific, measurable, reproducible, and time limited. Among the elements can be the following:

(1)   Administration
(2)   Data collection, analysis
(3)   Delivery
(4)   Authority/responsibility
(5)   Roles and responsibilities
(6)   Local variables
(7)   Budgetary considerations
(8)   Impact of risk assessment

The services provided by the FPO include fire prevention inspection and code enforcement, plan review, investigation, and public education. The specifics of the items in the preceding list have not been detailed here, but that would need to be done for proper performance of the exercise.

Δ **C.2.2 Step 2: Time Demand.** Using the worksheets in Table C.2.2(a) through Table C.2.2(d), quantify the time necessary to develop, deliver, and evaluate the various services and duties identified in Step 1, taking into account the following:

(1)   Local nuances
(2)   Resources that affect personnel needs

Plan Review

Refer to Plan Review Services Table A.7.6.2 to determine Time Demand.

Δ **C.2.3 Step 3:Required Personnel Hours.** Based on Step 2 and historical performance data, convert the demand for services to annual personnel hours required for each program *[see Table C.2.3(a) through Table C.2.3(e)]*. Add any necessary and identifiable time not already included in the total performance data, including the following:

(1)   Development/preparation
(2)   Service
(3)   Evaluation
(4)   Commute
(5)   Prioritization

C.2.4 Step 4: Personnel Availability and Adjustment Factor. Average personnel availability should be calculated, taking into account the following:

(1)   Holiday
(2)   Jury duty
(3)   Military leave
(4)   Annual leave/vacation
(5)   Training
(6)   Sick leave
(7)   Fatigue/delays/other

Example. Average personnel availability is calculated for holiday, annual, and sick leave per personnel member *(see Table C.2.4).*

Table C.2.2(a) Time Demands Worksheet

Task	Time per Task	Total Time Required

Δ **Table C.2.2(b) Fire Prevention Inspection and Code Enforcement Worksheet**

Task Name	Average Task Time (hours)	Average Administration Time (hours)	Average Commute Time (hours)	Other, Average (hours)	Average Total Task Time (hours)
Assembly	1.5	1	0.5	0.25	3.25
Business	1	0.5	0.5	0.25	2.25
Institutional	12	3	0.5	1.5	17
Mercantile	0.75	0.25	0.25	0.25	1.5
Water treatment plant (CI)	4	1	0.5	0.25	5.75
Apartment (high rise)	4	1.5	0.5	8	14

Table C.2.2(c) Investigation Worksheet

Task	Time per Task	Total Time Required
On scene	8	
Off scene	16	
Travel time	0.5	
Court appearance	8	
Preparation time	24	
Report writing	8	
Telephone/emails	2	
Process reports	2	
Data entry	2	
Data search	1	
Filing	0.5	
HR	0.5	
Financial	0.1	
Legal/disclosure	1	
Cost recovery	0.5	
	74.1	74.1

Table C.2.2(d) Public Education Worksheet

Task	Time per Task	Total Time Required
Program 1 development	40	40
Program 1 travel	1	1
Program 1 prep	0.75	0.75
Program 1 presentation	2	2
Program 2 development	20	20
Program 2 travel	1	1
Program 2 prep	0.75	0.75
Program 2 presentation	1	1
Program 3 development	20	20
Program 3 travel	1	1
Program 3 prep	1	1
Program 3 presentation	2	2

Δ Table C.2.3(a) Required Personnel Hours Worksheet

Task	No. of Tasks	Time per Task*	Task Commute Time	Other†	Total

*Includes preparation, site, research, follow-up, and report.
†Includes personnel functions, administrative functions, interruption time, and prioritization.

Δ Table C.2.3(b) Fire Prevention Inspection and Code Enforcement

Occupancy Use Group	Number of Facilities in Use Group	Total Task Time (Hours)	Frequency (Times per Year)	Total Inspection Time Required per Occupancy Type
Apartment building	40	14	1	560
Assembly	25	3.25	1	71.25
Business	10	2.25	0.3	6.75
Institutional	5	17	1	85
Mercantile	50	1.5	0.3	25
Special structures (water treatment plant)	1	5.75	2	11.5
Permit inspections				
Complaint follow-up				
Licensing inspections				
Total Hours Annually				759.5

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