# NFPA 113000

Standard on Community Risk Assessment and Community Risk Reduction Plan Development



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ISBN: 978-145592348-9 (PDF)

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### NFPA® 1300

### Standard on

### Community Risk Assessment and Community Risk Reduction Plan Development

### 2020 Edition

This edition of NFPA 1300, Standard on Community Risk Assessment and Community Risk Reduction Plan Development, was prepared by the Technical Committee on Fire Prevention Organization and Deployment. It was issued by the Standards Council on April 28, 2019, with an effective date of May 18, 2019.

This edition of NFPA 1300 was approved as an American National Standard on May 18, 2019.

### Origin and Development of NFPA 1300

The 2020 edition is the first edition of NFPA 1300. The initial request for this document on standardizing the process for developing a community risk reduction (CRR) plan was submitted by the Vision 20/20 Project and was strongly supported by the Technical Committee on Fire Prevention Organization and Deployment.

The request was timely as there has been a significant increase in interest in CRR at the national level. Since NFPA 1730, Standard on Organization and Deployment of Fire Prevention Inspection and Code Enforcement, Plan Review, Investigation, and Public Education Operations, already required users to perform a community risk assessment (CRA), the technical committee determined that a separate standard to cover both the CRA and CRR plan would be necessary to provide a sufficient level of guidance for users to conduct these processes.

Assigning these processes their own standard also allowed the scope to expand beyond fire risks and encompass all hazards. This standard addresses the steps required to complete a CRA and to create, implement, and evaluate a CRR plan. Additionally, it includes how to assemble a CRR organization and committee, form strategic partnerships, and use data to complete a CRA as well as evaluate CRR activities.

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**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.

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### **NFPA 1300**

### Standard on

# Community Risk Assessment and Community Risk Reduction Plan Development

### 2020 Edition

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

### Chapter 1 Administration

- **1.1 Scope.** This standard shall have primary responsibility for requirements on the process to conduct a community risk assessment (CRA) and to develop, implement, and evaluate a community risk reduction (CRR) plan.
- **1.1.1\*** Conducting a CRA and developing a CRR plan involve a community as defined by the authority having jurisdiction (AHJ).
- **1.1.2** This standard contains minimum requirements for conducting a CRA, developing and implementing a CRR plan, and the ongoing evaluation of the CRR plan.
- **1.1.3** This standard identifies strategic and policy issues involving the organization and deployment of a CRR program.

### 1.2 Purpose.

**1.2.1** The purpose of this standard is to identify minimum requirements and components for conducting a CRA, develop-

ing and implementing a CRR plan, and the ongoing evaluation of the 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 supersede 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 that are equivalent or superior to those prescribed by this standard. Technical documentation shall be submitted to the AHJ 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.
- 2.2 NFPA Publications. (Reserved)
- 2.3 Other Publications.

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

### 2.4 References for Extracts in Mandatory Sections.

NFPA 1730, Standard on Organization and Deployment of Fire Prevention Inspection and Code Enforcement, Plan Review, Investigation, and Public Education Operations, 2019 edition.

### **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\*** Acceptable Level of Risk. Level of human and/or material injury or loss that is considered to be tolerable by a community or authorities in view of the social, political, and economic cost-benefit analysis.
- **3.3.2 Community Risk.** Risk that pertains to the community, including the aggregate potential of loss or damage to critical infrastructure, individual properties, or stakeholders that could have a significant detrimental impact on the overall community.
- **3.3.3 Community Risk Assessment.** A comprehensive evaluation that identifies, prioritizes, and defines the risks that pertain to the overall community.
- **3.3.4\* Community Risk Reduction.** A process to identify and prioritize local risks, followed by the integrated and strategic investment of resources to reduce their occurrence and impact.
- **3.3.5** Community Risk Reduction Organization (CRRO). An organization, group, governmental body, office, or individual responsible for creating, implementing and maintaining a community risk reduction plan.
- **3.3.6 Community Risk Reduction Plan.** A document that outlines the goals, objectives, programs, and resources used to reduce the risks identified by the community risk assessment.
- **3.3.7\* 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. [1730, 2019]
- **3.3.8 Hazard.** A condition, situation, or behavior that presents the potential for harm or damage to people, property, or the environment.
- **3.3.9\* Jurisdiction.** A governmental, corporate, contractual, or other legally defined boundary.
- **3.3.10 Partner.** Party with which an agreement is reached for sharing of physical, financial, and/or intellectual resources in achievement of defined common objectives.
- **3.3.11 Risk.** A measure of the probability and severity of adverse effects that result from exposure to a hazard.
- **3.3.12\* Stakeholder.** Any individual, group, or organization that might affect or be affected by the community risk assessment (CRA) or the community risk reduction (CRR) plan.

### Chapter 4 General

- **4.1 The CRA.** The purpose of the community risk assessment (CRA) is to evaluate a community's risks prior to the development and implementation of a community risk reduction (CRR) plan and programs to reduce, mitigate, or eliminate the community's risks.
- **4.2 The CRR Plan.** The AHJ shall develop, coordinate, and update the CRR plan and ensure that the plan reflects a community's current risks.

- **4.2.1** A CRR plan shall include strategies to prevent or mitigate identified risks as well as a timeline for implementation of the plan.
- **4.2.2** A CRR plan shall specify which organizations or other community partners are tasked with meeting specific risk reduction objectives on the timeline.
- **4.2.3** Strategies for risk reduction shall be placed into the following categories:
- (1) Avoid: eliminate the hazard.
- (2) Mitigate: reduce probability or impact of the risk.
- (3) Accept: take no actions.
- (4) Transfer: transfer the risk to another party.
- **4.2.4** The AHJ shall submit the CRR plan for administrative approval, and the approved plan shall be distributed to agencies, departments, and employees having responsibilities designated in the plan.
- **4.2.5** The CRR plan shall contain a specific timeline for regular evaluation.
- **4.2.6** The CRR plan shall include the most current risk assessment from Chapter 5 and the impact and outcome matrices identified in Chapter 7.
- **4.3 Loss Database.** The AHJ shall develop and maintain a historical loss database.

### Chapter 5 Community Risk Assessment

- **5.1 Scope.** This chapter establishes the process to identify and analyze community risks.
- **5.2\* Purpose.** The purpose of the CRA is to evaluate a community's risks prior to the development and implementation of a CRR Plan.
- **5.3 Frequency.** The CRA shall be conducted every 5 years or more frequently based on community need.
- **5.3.1** In addition, an annual review of the CRA shall be conducted to identify emerging trends that could impact the current CRR plan and risk reduction programs.
- **5.3.2\*** The CRA shall include, but not be limited to, the following profiles to describe the community:
- (1) Demographic
- (2) Geographic
- (3) Building stock
- (4) Public safety response agencies
- (5) Community service organizations
- (6) Hazards
- (7) Economic
- (8) Past loss/event history
- (9) Critical infrastructure systems
- **5.3.3** Collected data shall be incorporated into the CRA.
- **5.3.4** Stakeholders shall be identified, and an inclusive process shall be employed to solicit input on the risks facing the community.
- **5.3.5** The identified risks shall be categorized based on their probability and impact.
- **5.4 Analysis.** The analysis of the risk assessment shall be incorporated into the CRR plan in accordance with Chapter 6.

- **5.5 Evaluation of Performance.** The performance of the risk reduction programs shall be evaluated on an ongoing basis in accordance with Chapter 7.
- **5.6\* Basic Methodology.** An objective, systematic approach shall be used to conduct a CRA and shall include the following steps:
- Recognize the need to conduct a CRA and develop a community risk reduction plan based on the CRA.
- (2)\* Define the problem by identifying the potential risks and their root causes, and develop programs that are appropriate to mitigate the identified risks that fall within the available resources.
- (3)\* Collect empirical data (capable of being verified or known to be true) regarding the community's demographics, building stock profile, geography, past loss history, and potential likelihood or anticipated future events.
- (4)\* Analyze the data.
- Identify gaps, areas where actual conditions vary from desired outcomes.
- (6) Validate the CRA by comparing the findings of the CRA with the available data, to ensure they are consistent with the community's level of acceptable risk, capabilities, and resources. All risks considered in the CRA might not be addressed in the CRR plan.

### Chapter 6 Community Risk Reduction Plan Development

- **6.1 Scope.** This chapter establishes the necessary components, processes, and programs for developing a community risk reduction (CRR) plan based on the risks identified in the community risk assessment (CRA).
- **6.2 Purpose.** The purpose of this chapter is to provide a framework to develop a CRR plan by defining goals and objectives and developing strategies that address the risks identified in the CRA.
- **6.3 Community Risk Reduction (CRR) Plan.** The AHJ shall develop, coordinate, and update the CRR plan regularly and ensure that the plan reflects a community's current risks and includes strategies for risk reduction as well as a timeline for implementation of the plan.
- **6.3.1** Before developing a CRR plan, the AHJ shall accomplish the following:
- (1) Identify a lead person or organization
- (2) Choose CRR committee members
- **6.3.2 Lead Person or Organization.** The lead person or organization shall perform the following tasks:
- (1) Support the development of the CRR plan
- (2) Provide necessary resources to support the CRR committee
- (3) Obtain administrative approval
- (4) Review, evaluate, and update the CRR plan as needed

### 6.3.3 CRR Committee Members.

- **6.3.3.1** The lead person or organization shall identify the stakeholders that make up the committee to assist in development of the CRR plan.
- 6.3.3.2 The CRR committee shall be responsible for the following:

- Prioritizing risks. Based on risks identified in the CRA, prioritize according to the probability, impact, community needs, expectations, resource availability, and legal requirements.
- (2) Addressing root causes. Evaluate the risks and root causes identified in the CRA and determine the best risk reduction strategies.
- (3)\* Identifying strategic partners. Use the CRA and root cause evaluations to identify possible strategic partners and select them based on common interests, available resources, and skill sets in order to formulate the goals, objectives, and strategies.
- (4)\* Establishing goals and objectives. Develop goals and objectives based on the prioritized risks, the root causes, and the resources and skill sets of the strategic partners.
- (5) Developing strategies. Create strategies to accomplish goals and objectives by doing the following:
  - (a) Designate individuals, strategic partners, and agencies responsible for accomplishing each strategy.
  - (b) Determine an overall timeline to accomplish the goals, objectives, and strategies.
- (6) Obtaining administrative approval. Arrange for lead person or organization to submit a recommended plan for administrative approval.
- (7) Reviewing, evaluating, and updating the plan. Update the plan to include the most current risk assessment and an outline for regular plan evaluation in accordance with Chapter 7.

## Chapter 7 Community Risk Reduction Plan Implementation and Evaluation

- **7.1 Scope.** This chapter establishes the process to implement and evaluate a community risk reduction (CRR) plan as outlined in Chapter 6.
- **7.2 Purpose.** The purpose of this chapter is to provide methodologies to implement and evaluate a CRR plan.

### 7.3 Implementation.

- **7.3.1** The approved plan shall be distributed to all partners having designated responsibilities in the plan.
- **7.3.2** An implementation strategy shall be developed that includes the following:
- (1) Identification of organizations and individuals responsible for development and delivery of programs associated with the CRR plan
- (2) Identification of organizations and individuals responsible for coordinating efforts of partners and stakeholder groups involved in the implementation and delivery of programs identified within the CRR plan
- (3) Timelines as required by 7.3.4
- (4) Methods of data collection and analysis
- (5) Methods of communication
- **7.3.3 Partnerships.** Partners shall be identified and recruited to assist in program implementation and delivery.
- **7.3.4 Timeline.** Implementation, evaluation, and ongoing review and revision of the CRR plan shall be accomplished on a predetermined timeline based on goals and objectives outlined in the plan developed in accordance with Chapter 6.

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- **7.3.5\* Resources.** The AHJ shall assign resources as needed to implement specific programs identified in the CRR plan.
- **7.3.6\* Communications and Marketing.** A strategy shall be developed identifying the method and frequency of communications to partners, stakeholders, and administrators. Specific programs addressing a risk reduction strategy identified in the CRR plan shall be communicated or marketed to the target audience identified for each program.

### 7.4 Data Collection.

- **7.4.1\* Collection.** A strategy shall be developed to obtain statistically significant data, which will be used to evaluate the effectiveness of the CRR plan and specific programs.
- **7.4.2\* Frequency.** Data shall be collected in a frequency and quantity to obtain a statistically relevant evaluation of the plan or program.

### 7.5 Evaluation.

- **7.5.1 Basis.** The CRR plan and programs shall be evaluated based on goals specified in the plan.
- **7.5.2\* Evaluation Plan.** Data collection and evaluation planning shall be defined prior to implementation and delivery of any program identified by the CRR plan.
- **7.5.3\* Data Analysis.** Both quantitative and qualitative data shall be considered during CRR plan evaluation.

### 7.5.4\* Process Evaluation Data.

- **7.5.4.1** Process evaluation shall monitor program activity level and performance.
- **7.5.4.2** Data shall be collected to evaluate the frequency, quantity, and quality of functions performed.
- **7.5.4.3\*** Data shall be evaluated on a predetermined cycle and compared to the target goal(s) outlined in the CRR Plan. When process data do not meet the goal(s) of the plan, adjustments in implementation shall be made.

### 7.5.5 Impact Evaluation Data.

- **7.5.5.1\*** Impact evaluation shall be conducted on a predetermined cycle and conditions that existed prior to program delivery compared with those present after program completion.
- **7.5.5.2** Impact data shall be collected to evaluate changes in learning, behaviors, and actions as a result of a specific CRR plan goal or objective.
- 7.5.5.3 Collected data shall be compared to the goal(s) outlined in the CRR plan.
- **7.5.5.4\*** Where impact data do not meet the desired goal(s) for the plan, adjustments in plan implementation shall be made.

### 7.5.6\* Outcome Evaluation Measurements.

- **7.5.6.1** Data shall be collected to evaluate the effectiveness of the CRR plan on a predetermined cycle.
- **7.5.6.2\*** Collected data shall be compared to the goals outlined in the CRR Plan.
- **7.5.6.3** Where outcome data does not meet the desired goal(s) for the plan, adjustments in plan implementation shall be made.

**7.6\* Reporting.** An annual report of the CRR plan, including implementation, and evaluation of the specific programs shall be prepared and shall be presented for review to the appropriate agencies, departments, and employees having designated responsibilities in the plan.

**7.7\* Community Risk Reduction Plan Modification.** Once analyzed, the CRR plan shall be modified as needed based on the outcome measurements.

### Annex A Explanatory Material

Annex A is not a part of the requirements 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** A community can be defined as a social group of any size whose members reside in a specific locality, share a government, have a common cultural and historical heritage, or rely on the same critical infrastructure systems. Communities can vary in size and description and can form an entire state, county, city, or any size geographic service area for the AHJ.
- **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 authority having jurisdiction 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 authority having jurisdiction 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 authority having jurisdiction 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 authority having jurisdiction. In many circumstances, the property owner or his or her designated agent assumes the role of the authority having jurisdiction; at government installations, the commanding officer or departmental official may be the authority having jurisdiction.
- A.3.3.1 Acceptable Level of Risk. A community standard for the acceptable level of risk that citizens and government can tolerate and afford is enhanced when the level of risk is well-defined. This involves community engagement in the discussions and decision making by those affected by the risk the people in the community. Potential challenges to the process exist when there is lack of involvement in the process by key community leaders and officials, competing agendas among community representatives and AHJs, and lack of experience with consensus processes.

When a community allocates resources, it is making recommendations concerning the acceptable level of risk it believes should be tolerated within the community. It is much easier to arrive at this recommendation if a formal risk assessment has been conducted. This involves obtaining comprehensive information about hazards, vulnerabilities, groups affected, frequency, severity, duration, capacity and more. Reviewing historical loss data as well as considering potential problems for the community is also required. Community and political leaders, members of the populations affected by risks, agency representatives, and other stakeholders should collaborate to determine the community's acceptable level of risk.

**A.3.3.4 Community Risk Reduction.** The resources referenced in 3.3.4 might include, but are not limited to, education, prevention, mitigation, emergency response, and economic incentives.

**A.3.3.7 Critical Infrastructure.** Examples of critical infrastructures could include water treatment plant, special structures, public safety buildings, and power plants. [1730, 2019]

**A.3.3.9 Jurisdiction.** Any governmental unit or political division or subdivision including, but not limited to, township, village, borough, parish, city, county, state, commonwealth, province, freehold, district, or territory over which the governmental unit exercises power and authority.

**A.3.3.12 Stakeholder.** Stakeholders should represent a diverse group of individuals from both inside and outside the CRRO who can provide varied experiences, perspectives, and resources. Stakeholders should be defined in the CRA and the CRR plan. Examples of stakeholders include, but are not limited to, members of the risk reduction agency, code officials, local government representatives, members of the general public, strategic partners, community leaders, populations affected by the risk, and faith-based representatives/leaders.

**A.5.2** Risk assessment is the first and most critical step toward identifying and prioritizing a community's risks and targeting populations for action. The CRA is a fact-based study of local risks. The CRA is the first step in developing the CRR Plan. A good assessment will accomplish the following:

- (1) Identify specific risks affecting a community
- Locate hidden, hard-to-reach, or underserved populations
- Identify high-risk occupancies, populations, behaviors, and neighborhoods
- (4) Build a foundation for the development of goals, objectives, and strategies

In the absence of staff and sufficient resources to conduct an in-depth risk assessment, at a minimum an analysis should be conducted of the local data to identify more prevalent incidents. These prevalent incidents would then be ranked on a risk matrix to identify probability and impact.

While quantitative data are preferable to anecdotal data, an organization can use an anecdotal risk analysis.

One component of conducting a CRA is to identify specific target hazards within a service area. These targets are sometimes referred to as "critical facilities." Examples of critical facilities might include the following:

- (1) Hospitals
- (2) Assisted living centers
- (3) Community shelters

- (4) Schools
- (5) Airports
- (6) Important government offices
- (7) Emergency operations centers
- (8) Hazardous materials sites
- (9) Roadways
- (10) Railroad (freight and passenger)
- (11) Municipal utilities
- (12) Large capacity public assembly facilities and events
- (13) Terrorism soft targets (*Soft target* is a tactical term that refers to an unarmed or undefended position or target. A soft target can be a structure, school, mall, or an assembly of people.)
- (14) Marine (recreational, passenger, cargo)
- (15) Industrial facilities
- (16) Agricultural storage and handling facilities
- (17) Communications systems
- (18) High-risk neighborhoods or homes

**A.5.3.2** A demographic profile describes the composition of the community's population using various categories such as population size and dispersion, age, gender, cultural backgrounds, language barriers, educational attainment, socioeconomic makeup, transient populations, and other considerations specific to a local community.

A geographic profile describes the physical features of the community: the nature and placement of features such as waterways, highways, canyons, railroads, wildland interface, landforms, and bridges.

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

A public safety response profile describes the types of incidents to which organizations respond and should include a description of the capabilities of the responders.

A community service profile describes the types of historical services provided by community and nongovernmental partners and should include the service capabilities of those partners. Examples include senior citizens advocacy groups, mental health organizations, faith based charities, and the Red Cross.

A hazard profile describes the natural, human-caused, and technological hazards.

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

A past loss/event history profile describes the community's past experience and trends and how the community's experience compares to local, regional, and national trends. It is critical to develop and maintain a historical database. Data on deaths, injuries, causation, and dollar loss are important components of a profile. Local, regional, and national statistics can assist in providing data.

**A.5.6** A CRA is a compilation and analysis of data that should be accomplished objectively, truthfully, and without expectation, bias, preconception, or prejudice. A range of methods can be used to complete a risk assessment; the most appropriate method for a given application will likely be dictated by the availability of data and stakeholder objectives. In all cases, however, a systematic approach is required. The scientific

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method is one systematic approach that can be applied to CRAs.

**A.5.6(2)** Root causes contributing to the risks can be physical, economic, environmental, demographic, natural, and behavioral. Examples of analysis include a fishbone (cause and effect) diagram [see Figure A.5.6(2)]; and a "5 whys" analysis (see Example B).

### Example B: The 5 Whys

The "5 whys" approach to root cause analysis is a process that involves repeatedly asking "Why?" Usually, one can determine the root cause by asking "Why?" five times, although it could take more or less.

For example, say there is a rise in individuals suffering firerelated injuries. If you ask "why?" the answer might be that the smoke alarms are not providing early detection and warning.

Why? Because the batteries are missing.

Why? Because people are taking the batteries out of the alarms.

Why? Because the alarms are causing nuisance warnings.

Why? Because the alarms are installed in the wrong loca-

Based on that analysis, it can be determined that the root cause of the rise in fire-related injuries is smoke alarms installed in the wrong locations. Therefore, the strategy for risk reduction is to reinstall the alarms in correct locations.

Solution: Strategy for risk reduction. Example strategy: Install the alarms in the correct locations.

**A.5.6(3)** Quantitative data can be measured and can include National Fire Incident Reporting System (NFIRS) and locally collected response data from fire, law enforcement, and emergency service and management agencies, including data from hospitals, Department of Public Health, and EMS providers, and results of vulnerable assessments of critical infrastructure by law enforcement. Sources of data for the community's demographics, building stock profile, geography, and similar areas might include GFIS, census data, community development agencies, Chamber of Commerce, Community Action Council, housing authority, planning commissions, and local universities.

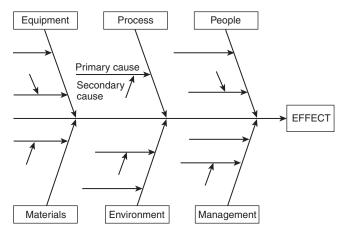


FIGURE A.5.6(2) Example A: Fishbone Diagram.

Qualitative data are observable and can include valuable anecdotal information that can be obtained at the community level through in-person, face-to-face contact. Anecdotal information is especially effective at locating potentially hidden, hard-to-reach, and underserved populations.

**A.5.6(4)** Data analysis is a critical component to developing the CRR plan. The purpose of analyzing the data is to establish the risk or potential risk that might exist from a variety of hazards. Risk is a product of the hazard and the frequency at which the specific hazard might occur. It measures the likelihood and impact of an event

A CRA helps to establish an acceptable or tolerable level of risk. A risk analysis provides quantitative, measurable factors, including dollar loss, injuries, lost time, and interrupted business.

A risk assessment matrix classifies a community's risks based on probability and impact. This matrix is a tool that can be used to create a visual representation of the risks in the community. Risk assessment matrixes are available from a variety of sources and provide specific definitions for probability and risk. Figure A.5.6(4) is an example of a risk assessment matrix.

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

**A.6.3.3.2(3)** Strategic partners could include other AHJs with overlapping jurisdiction, industry and commercial entities within the community, professional associations, medical providers, charities, nonprofit associations, community groups and individuals, elected and appointed officials, and others with complementary resources and common interests. The partners can vary as the needs of the plan change.

Relationships with strategic partners should be continuous and include discussions of risks, goals, objectives, and the needs of the community as viewed by the partners as well as the AHJ. Each strategic partner might have its own goals and objectives as well as priority of risks that should be considered as the goals and objectives are prioritized and the plan is created. They should also be engaged in implementing the plans based upon mutual interests and resources.

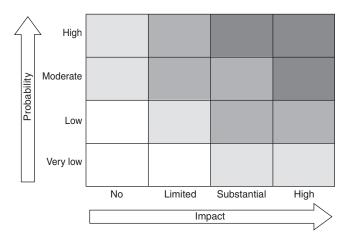


FIGURE A.5.6(4) Risk Assessment Matrix.

**A.6.3.3.2(4)** For additional information on the material presented here, see www.strategicfire.org. One method for developing goals and objectives includes the "5 Es" framework, as shown in Figure A.6.3.3.2(4) (a). The "5 Es" framework looks at emergency response, engineering, education, economic incentives, and enforcement and asks the following questions:

- (1) Engineering: Are there engineering/technology solutions that could help?
- (2) Enforcement: Is stronger enforcement required?
- (3) Education: Would educating the public help? If so who, what, when, how?
- (4) Economic incentives: Could economic incentives improve compliance and/or raise awareness?
- (5) Emergency response: Would changes in emergency response protocols help?

For some risks, work in all those areas might be called for (although not necessarily feasible); for others, work in only one or two areas might be necessary. In addition, policy advocacy or legislative work might be needed. Also, are there mandates, model codes, tax differentials, appropriations, or penalties/fees that would enable the fire department to better use the five Es to mitigate risk?

Goals should include educational, engineering, enforcement, economic, and emergency response strategies to mitigate or eliminate each prioritized risk and root cause, as shown in the example Figure A.6.3.3.2(4)(b).

An example of a program chart is shown in Table A.6.3.3.2(4).

One tool for determining goals and objectives is the S.M.A.R.T. method. This tool assists with establishing goals and objectives that are Specific, Measurable, Attainable, Relevant,

and Time-based (S.M.A.R.T.). Another tool is the Fire Safety Concepts Tree, as shown in Figure A.6.3.3.2(4)(c).

**A.7.3.5** Resources committed to accomplish the goal(s) of the CRR plan include, but are not limited to, the following:

- (1) Funding
- (2) Staffing
- (3) Technology
- (4) Equipment
- (5) Real property
- (6) Mutual aid or other agreements

**A.7.3.6** Routine communications should occur between the managers of specific programs and the following organizations and individuals:

- (1) AHJ or other administrators: status and progress reports
- (2) Local elected officials: programs' successes and progress
- (3) Partners in the delivery of specific programs: process and impact performance
- (4) Stakeholders affected by specific programs: impact and outcome performance
- (5) Media (print and broadcast): promotion of programs and successes

**A.7.4.1** Methods of data collection will vary depending on the CRR plan component or program being delivered. Typical data collection methods include, but are not limited to, the following:

- (1) Counting numbers of attendees of a program
- (2) Counting numbers of inspections conducted
- (3) Pre- and post-test comparisons
- (4) Random quality assessment surveys
- (5) Customer or participant surveys
- (6) Presenter evaluations from attendees

Table A.6.3.3.2(4) Program Chart

Goal	Objective	Strategy	Activities
Root cause reduction	Use S.M.A.R.T. Tools	Specific actions to accomplish objectives	Services to meet strategy
Reduce fires due to unattended cooking	Increase knowledge causes of cooking fires	Public education campaign	Presentation to 300 residents
Reduce carbon monoxide exposure	Increase the number of residents with working CO alarms	Public education and door-to-door campaign	Home safety inspection and install carbon monoxide alarms

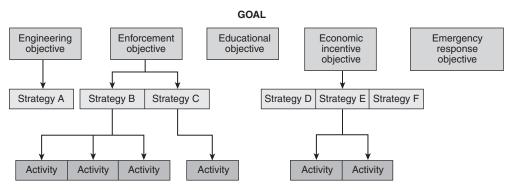
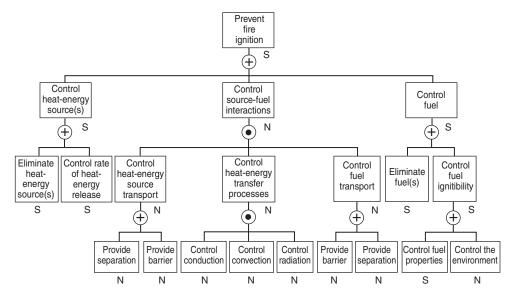


FIGURE A.6.3.3.2(4)(a) The Five E's Framework.

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FIGURE A.6.3.3.2(4)(b) Goal Example.



Key: S = Standard N = Nonexistent

FIGURE A.6.3.3.2(4)(c) "Prevent Fire Ignition" Branch of the Fire Safety Concepts Tree. [550:Figure 4.4.1]

**A.7.4.2** Any survey or statistical analysis that analyzes a sample that is too small could be faulty due to excessive margins of error caused by limited sample size. Careful evaluation of the plans and programs will ensure there is an adequate sample size to eliminate bias and errors.

**A.7.5.2** The evaluation of the CRR plan is an ongoing process that involves short-term, continual evaluation of process and impact measures during the term of the plan, as well as long-term outcome evaluation. The CRR plan will outline interim and final evaluation steps for the overall plan and specific programs. The model illustrated in Figure A.7.5.2 details the evaluation process.

**A.7.5.3** There are two ways to collect and analyze data: quantitative analysis and qualitative analysis. Quantitative analysis

assesses statistics and counts. Qualitative analysis assesses anecdotal information and testimonials.

Based on the total number of programs presented, a sample can be evaluated to determine the overall condition in the entire population of the sample. Free web-based software can be used to calculate the sample needed in order to obtain a statistically significant assessment.

The frequency of data collection and analysis for any aspect of the CRR plan will be accomplished on a predetermined cycle based on the intensity of the program or activity presented. For example, a program that conducts 100 inspections each month will have process and impact evaluation more frequently than a senior fall prevention program delivered on a quarterly basis.

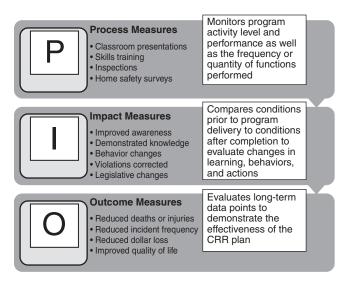


FIGURE A.7.5.2 Evaluation Process.

**A.7.5.4** Process evaluation typically will include the percentage or total number of a target audience reached with a specific effort or program, as well as staff and participation satisfaction.

**A.7.5.4.3** As an example, thousands of homes might need to be relocated from an identified flood plain in a community. The goal might be to relocate 10 percent of the residents annually until all residents are removed from the flood plain. If this annual goal is not met, the goal and implementation process should be re-evaluated. Typically process data are evaluated on a monthly or quarterly basis.

**A.7.5.5.1** Impact evaluation measures can be evaluated immediately following a specific program. They could also be evaluated months following a program. This evaluation should focus on documenting the changes in knowledge, behaviors and actions that reduce risk for a community or at risk population. Typically impact data are evaluated on a quarterly or annual basis.

**A.7.5.5.4** Impact data that monitor changes in learning will demonstrate whether the CRR plan has influenced change in any of these areas: awareness, knowledge levels, attitudes or beliefs, or skill levels. Changes in learning are typically measured by some form of test or survey.

Impact data that monitor changes in actions will demonstrate whether the CRR plan has influenced changes in any of these areas: target population behavior or lifestyle, targeted physical environment, hazard reduction, and public policy or code enforcement processes. Changes in actions are usually measured through direct observations.

Impact data evaluation is an ongoing process that takes place frequently on a planned cycle within the overall CRR plan.

**A.7.5.6** Outcome evaluation analyzes data from the CRA to demonstrate long-term changes in the level of community risk. Changes in risk within the community could be positive or negative. The overall goal of a CRR plan should be to reduce the level of risk within the community; however, the evaluation might indicate an increased risk in spite of the efforts of the AHJ. If this is found in the evaluation of the data, changes in the CRR plan would be warranted to achieve the desired outcomes.

**A.7.5.6.2** Outcome measurements should provide statistical proof of whether the CRR plan is reducing risk in the specified areas. These are typically reductions in injuries and fatalities, property loss, or medical costs. It could also include valid anecdotal proof that the program has changed behaviors or physical environments in a positive way. There are often long-term indicators that cultural change in a target population has led to sustained levels of behavioral change.

Outcome evaluation is a long-term process. The final outcome evaluation of a CRR plan might not occur until the next scheduled CRA, as noted in Chapter 5.

**A.7.6** Refer to Vision 20/20 or the National Fire Academy for sample reports, reporting, and performance measures.

**A.7.7** The CRR plan or specific programs should be reviewed periodically over the term of the plan to ensure that all the objectives are being met and any necessary changes are implemented to achieve the goals and objectives of the plan.

### Annex B Community Risk Reduction Plan Sample

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

**B.1** An example of a CRR Plan is shown in Figure B.1.

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# CHESTERFIELD FIRE AND EMS STATION 1

**EXAMPLE PROVIDED FOR NFPA 1300** 



# **COMMUNITY RISK REDUCTION PLAN**

(July 2015 – June 2016)

### INTRODUCTION

Because Chesterfield County is so diverse in our population, geography, and housing and business mix, we also have a diversity of community risks where our efforts should be focused. These differing risks are typically associated with home fire incidents, injury and deaths, but are not limited to those specific threats to our resident's safety. Other risks may be associated with the business community or natural disasters.

Community risk reduction strategies do not typically involve a quick resolution to the problems and risks the community faces. And as such, a longer term more planned approach to reducing these risks must be utilized to improve the likelihood of success. For that reason, this Fire Station based, Community Risk Reduction Plan has been developed focusing on our greatest fire related risks. This Plan will also serve to document the identified risks and efforts of each station. This will provide a consistent plan year after year in order to maximize the risk reduction efforts related to residential fire risks and document successes of the program.

In 2014, each station captain received a targeted area of the station's district in order to develop a strategy to reduce these fire losses in the community. Each station was encouraged to engage non-traditional methods of community education and outreach in order to change the public's behaviors and reduce the likelihood of fires in their district. These areas (and their associated risks) will be the focus of the station community risk reduction efforts for the next several years in order to develop a longer term strategy in these areas.

This plan provides the information used to identify those areas, a format to document the long term strategies, identify specific target goals, report the specific tasks accomplished, and document the process and impact measures associated with the efforts of station personnel.

Each year, this plan will be updated and revised to include the efforts and work conducted in order to identify which strategies are most effective. In 2016, the data will be reviewed by the Community Risk Reduction Branch and modifications in the targeted areas will be changed as needed for future efforts.

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### DEPARTMENT STRATEGIC PLAN INFORMATION



Vision

The vision of Chesterfield Fire & EMS is to be leaders in providing quality community fire & life safety prevention, fire protection, emergency medical and emergency management services.

Mission

The mission of Chesterfield Fire & EMS is to protect life, property and the environment.

### **Guiding Principles & Values**

In order to protect life, property and the environment, we recognize that "great service is provided by great people" who are guided by a set of principles and values. We will constantly strive to take care of each other and provide for the safety, health and well-being of our members. We will promote teamwork in meeting our goals and encourage initiative in continuously improving our individual performance as well as the quality of both our external and internal services and programs. To be successful as an organization, we must listen and communicate honestly, accurately and in a timely manner to foster trust and understanding. Furthermore, we have an expectation that our members will conduct themselves in accordance with the department's organizational values:

- We are <u>DEDICATED</u> to providing the highest quality of public safety services to the citizens and visitors of our county in a <u>SAFE</u>, effective and timely manner.
- ❖ We are **COMPASSIONATE** to those we serve and each other.
- ❖ We are <u>HONEST</u> in all of our interactions with others
- We have the highest sense of <u>INTEGRITY</u> to earn the trust and respect of our citizens and coworkers.
- ❖ We have **COURAGE** to do what is right for our community, the department and our members.
- We are <u>ACCOUNTABLE</u> to our citizens, the department and each other for our actions and for achieving the highest professional standards.

### **Organizational Goals**

- GOAL #1: Prevent fires, hazardous conditions, injuries and deaths.
- GOAL #2: Minimize risks to life, property, and the environment by mitigating hazards.
- GOAL #3: Prepare for emergencies and disasters.
- GOAL #4: Respond promptly to emergencies and disasters, suppress fires, control or eliminate hazards, save lives, and reduce suffering by providing patient care and transportation.
- GOAL #5: Recover from emergency incidents and disasters in order to reduce property loss and restore community well-being.

GOAL #6: Partner with residents to provide a safe and secure community through prevention, readiness, and professional response.

### **Organizational Objectives**

- 1. Enhance community preparedness through prevention and education
- 2. Increase safety and perception of safety
- 3. Reduce incidents that result in injury, death and property damage
- 4. Reduce the recurrence of incidents that negatively impact county resources
- 5. To reduce death and injury from medical emergencies and trauma
- 6. To reduce death, injury and property loss due to fire
- 7. To prevent occupational injury and illness
- 8. To develop members' knowledge, skills and abilities to accomplish the mission and goals of the department
- 9. To develop and implement a comprehensive plan to prepare for, respond to and recover from emergencies and disasters
- 10. To provide and maintain facilities, apparatus, equipment and supplies necessary to deliver quality services

### STATION SERVICE AREA

The station service area data was obtained from the most recent CFEMS Standards of Cover document (2014) that describes the size, population, workload and relative risks in the service area. This summary also includes the data and map outlining the fire specific risks in the area.

	Station 1 - FY 2012 - FY 2014						
	Address	4325 Old Hundred Road Chester, VA 23831					
Station	Year Built	1962					
Stat	Bays	3 single door					
	Configuration	Bunk Room Second Floor - Stairway Access					
			County	Station	% County		
	Total Incidents		109,982	9,106	8.3%		
	EMS Incidents		84,419	7,344	8.7%		
ಕ	Fire Incidents		25,563	1,762	6.9%		
District	EMS Incidents - Priority One		36,893	3,026	8.2%		
Ö	Cardiac Arrests		1,913	156	8.2%		
	Structure Fires		1,262	90	7.1%		
	Response Time - Priority One		06:21	06:40	105.0%		
	Unit Response		169,712	10,325	6.1%		
Units	Er	ngine 1		4,134			
n n	N	1edic 1		6,089			
	В	Brush 1		102			

ANNEX B 1300-17

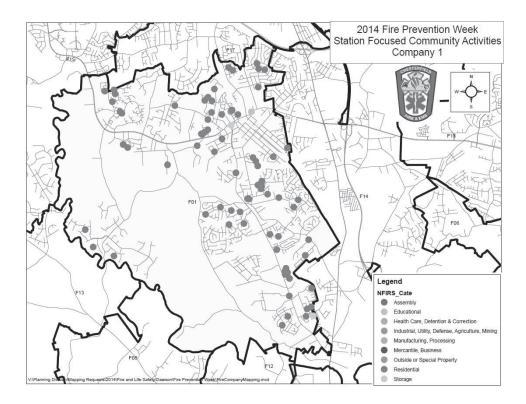
	FY2014				FY2013		FY2012		
	County	Station	%	County	Station	%	County	Station	%
Total Incidents	36,881	3,084	8.4%	36,245	2,976	8.2%	36,856	3,046	8.3%
EMS Incidents	28,303	2,515	8.9%	28,301	2,406	8.5%	27,815	2,423	8.7%
Fire Incidents	8,578	569	6.6%	7,944	570	7.2%	9,041	623	6.9%
EMS Incidents - P1	12,303	1,019	8.3%	12,427	1,006	8.1%	12,163	1,001	8.2%
Cardiac Arrests	635	43	6.8%	687	58	8.4%	591	55	9.3%
Structure Fires	423	30	7.1%	388	25	6.4%	451	35	7.8%

	Demographics					
				%		
		County	Station	County		
	2010 Population	316,236	25,663	8.1%		
	Area Square Miles	446.0	24.1	5.4%		
Area	Persons/Sq Mile	723	1,065	147.2%		
Ā	Response Zone Area	Sq. Mi. County	Sq. Mi. District	% District		
	Urban	169.7	14.0	58.3%		
	Rural	276.3	10.1	41.7%		
ė	Real Estate Tax Parcels	125,459	10,675	8.5%		
Infrastructure	Centerline Mileage	2,323	161.1	6.9%		
stru	Signalized Intersections	190	10	5.3%		
ıfras	Fire Hydrants	11,149	879	7.9%		
<u> </u>	Water Draft Sites /Draw Points	42	1	2.4%		
	Assembly	545	37	6.8%		
	Business	1,565	105	6.7%		
	Education	145	14	9.7%		
	Factory	112	2	1.8%		
ts	Institutional	125	15	12.0%		
mprovements	Mercantile	211	14	6.6%		
ver	Residential	105,924	9,001	8.5%		
bro	SCC Properties	75	3	4.0%		
_ <u></u> =	Storage	130	8	6.2%		
	Utility	34	7	20.6%		
	Vacant	16,593	1,469	8.9%		
	Parcel Use (Occupancies)	108,866	9,206	8.5%		
	Protected Value (Assessed)	\$23,344,056,100	\$1,718,098,900	7.4%		

Based on structure fire data (call types 111, 113, 114) compiled between July 1, 2011 and June 30, 2014, the following map was produced and targeted areas identified for Community Risk Reduction efforts.

Prevention and mitigation efforts over the next three years will focus in these localized communities in an effort to eliminate the risks identified. There were 84 multifamily housing fires over the period for the entire service area. These are the top three locations for those multifamily housing fires.

- 1. **Broadwater Townhomes** Fires in this development were caused primarily by cooking (6 of 7 fires), with an undetermined fire in the bathroom in once case
- 2. **Hyde Park Apartments** Primarily cooking related fires with one fire caused by a candle in a bedroom
- 3. Grand Oaks Apartments Primarily cooking related fires with one fire in a hallway from a light



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### FIGURE B.1 Continued

ANNEX B 1300-19

### PREVENTION/MITIGATION STRATEGIES DEVELOPED

### **SUMMARY OF 2014 EFFORTS:**

During Fire Prevention Month 2014 each shift was giving a specific location to concentrate their efforts on and to maximize the interactions with citizens. A-Shift went to Grand Oaks Apartments and set up a table in the club house and spoke with residents as they came in the office. A flyer was sent out to the residents prior to this day to inform residents that we would be there to answer any questions concerning fire prevention, and any other emergency questions they had. B- Shift went door to door in Hyde Park Apartments and educated the residents on cooking fires and checked smoke detectors. C-Shift went to Broadwater Apartments and stood at the bus stop with parents who were waiting on their children. Personnel spoke to parents along with children about cooking fires and other fire prevention.

### **SUMMARY OF 2015 PLAN:**

The 2015-2016 Plan will continue and expand upon the efforts of last year. Each shift has been given a specific area to concentrate on to maximize the interactions with citizens. A-Shift will be going to Hyde Park Apartments to speak with management along with residents on cooking fires and fire prevention. B-Shift will be going to Grand Oaks Apartments to continue the community center events. C-Shift will continue the school bus stop community interaction which was successful last year in Broadwater Apartments.

### **GOALS AND OBJECTIVES**

### GOAL:

Reduce the frequency of structure fires in multifamily housing located in Station 1's service area by 30% within three years (end of FY 17).

### **OBJECTIVES:**

Conduct fire safety education programs throughout the year with an increased frequency during the month of October in connection with Fire Prevention Month at each targeted apartment complex with the objective of delivering educational messaging to 50% of the residents in each apartment complex each year.

Conduct after incident educational programs within three days of all structure fire incidents in any apartment community in Station 1's district. These programs will focus on informing the residents of the community about the cause of the specific fire, the common causes of apartment fires (cooking), and prevention messages associated with each.

Identify three possible economic incentive models for encouraging resident participation in fire safety education programs in apartment communities and have each apartment management company of the three targeted apartment complexes adopt at least one of the economic incentive models.

### **SUMMARY OF ACTIVITIES**

The 2014 Fire Prevention Month Activity Summary:

Station	Shift	Activity	Number of Citizens Contacted	Number of Hazards Corrected
1	Α	Community Event MFD	50	0
1	Α	Public Display	90	0
1	Α	Public Display	110	0
1	В	Door to Door Education Only	78	0
1	В	Public Display	150	0
1	В	Public Display	75	0
1	С	Public Display	110	0
1	С	Public Display	45	0
1	С	Community Event MFD	10	0

### **APPENDIX INFORMATION**

Insert materials that support or document the efforts over the term of this plan. This can include handouts, educational materials, or program notes or outlines.