NFPA® 1660

Standard for Emergency, Continuity, and Crisis Management: Preparedness, Response, and Recovery

2024 Edition

NFPA, 1 Batterymarch Park, Quincy, MA 02169-7471
An International Codes and Standards Organization

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NFPA® 1660

Standard for

Emergency, Continuity, and Crisis Management: Preparedness, Response, and Recovery

2024 Edition

This edition of NFPA 1660, *Standard for Emergency, Continuity, and Crisis Management: Preparedness, Response, and Recovery*, was prepared by the Technical Committees on Emergency Management and Business Continuity, Mass Evacuation and Sheltering, and Pre-Incident Planning. It was issued by the Standards Council on October 7, 2022, with an effective date of October 27, 2022.

This document has been amended by one or more Tentative Interim Amendments (TIAs) and/or Errata. See "Codes & Standards" at www.nfpa.org for more information.

This edition of NFPA 1660 was approved as an American National Standard on October 27, 2022.

Origin and Development of NFPA 1660

This first edition of NFPA 1660, *Standard for Emergency, Continuity, and Crisis Management: Preparedness, Response, and Recovery*, has been developed as part of the consolidation plan for NFPA's Emergency Response and Responder Safety (ERRS) standards. At the April 2019 NFPA Standards Council meeting, all ERRS technical committees and NFPA staff were directed to consolidate and unify the ERRS standards with similar content areas. The goal of this effort is to increase usability, reduce errors and conflicts, and ultimately produce higher quality standards.

The 2024 edition of NFPA 1660 integrates NFPA 1600, NFPA 1616, and NFPA 1620 into a single standard that establishes a common set of criteria for emergency management and business continuity programs; mass evacuation, sheltering, and re-entry programs; and the development of pre-incident plans for emergency response personnel.

For the 2024 edition, the technical committees have ensured consistency and continuity throughout the entire document by creating a single set of terminology in Chapter 3. The technical committees have also revised the reference chapters to increase usability.

For more information about the ERRS consolidation project, see nfpa.org/errs.

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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.

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Committee Scope: This Committee shall establish a common set of criteria for mass evacuation, mass sheltering and mass re-entry programs, hereinafter referred to as the program.

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Committee Scope: This Committee shall have primary responsibility for documents on the site-specific pre-incident planning for response to fires and other types of emergencies.

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Standard for

Emergency, Continuity, and Crisis Management: Preparedness, Response, and Recovery

2024 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. 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 and extracted publications can be found in Chapter 2 and Annex Z.

Chapter 1 Administration

1.1 Scope. This standard establishes a common set of criteria for emergency management and business continuity programs; mass evacuation, sheltering, and re-entry programs; and the development of pre-incident plans for personnel responding to emergencies.

1.2 Purpose. The purpose of this standard is to provide the fundamental criteria for all-hazards preparedness, response, and resiliency program management; the fundamental criteria for mass evacuation, sheltering, and re-entry program management; and a process for the development of pre-incident plans to assist personnel with safe and effective incident management.

1.3* Application. This standard can be applied as follows:

(1) Chapters 1 through 3; Chapters 4 through 10; and Annexes A, B, C, D, E, F, G, H, I, J, K, and Z constitute NFPA 1600.

(2) Chapters 1 through 3; Chapters 11 through 16; and Annexes A, L, M, N, O, P, Q, R, S, T, U, V, W, X, and Z constitute NFPA 1616.

(3) Chapters 1 through 3; Chapters 17 through 23; and Annexes A, Y, and Z constitute NFPA 1620.

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. National Fire Protection Association, 1 Batterymarch Park, Quincy, MA 02169-7471.

NFPA 130, *Standard for Fixed Guideway Transit and Passenger Rail Systems,* 2023 edition.

NFPA 170, *Standard for Fire Safety and Emergency Symbols,* 2021 edition.

NFPA 241, *Standard for Safeguarding Construction, Alteration, and Demolition Operations,* 2022 edition.

NFPA 303, *Fire Protection Standard for Marinas and Boatyards,* 2021 edition.

NFPA 440, *Guide for Aircraft Rescue and Firefighting Operations and Airport/Community Emergency Planning,* 2024 edition.

NFPA 470, *Hazardous Materials/Weapons of Mass Destruction (WMD) Standard for Responders,* 2022 edition.

NFPA 502, *Standard for Road Tunnels, Bridges, and Other Limited Access Highways,* 2023 edition.

2.3 Other Publications.

2.3.1 US Government Publications. US Government Publishing Office, 732 North Capitol Street, NW, Washington, DC 20401-0001.

Title 29, Code of Federal Regulations, Part 1910.146, "Permit-Required Confined Spaces."

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.

NFPA 14, *Installation of Standpipe and Hose Systems,* 2019 edition.

NFPA *101®, Life Safety Code®,* 2021 edition.

NFPA 470, *Hazardous Materials/Weapons of Mass Destruction (WMD) Standard for Responders,* 2022 edition.

NFPA 1006, *Standard for Technical Rescue Personnel Professional Qualifications,* 2021 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 phrases "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 Abandoned Building. A building that is unoccupied/unused with no intention of re-occupying and reusing.

3.3.2 Access/Convenience Stairs. Limited floor-level stair that is located between two or more common floors utilized by a single tenant and distinct from the main building staircase.

3.3.3* Access and Functional Needs. A person's additional needs before, during, and after an incident in functional areas that might include, but not be limited to, maintaining independence, communication, transportation, supervision, and medical care.

3.3.4 All-Hazards. An approach for prevention, mitigation, preparedness, response, continuity, and recovery that addresses a full range of threats and hazards, including natural, human-caused, and technology-caused.

3.3.5 Anchor Store. A department store or major merchandising center that has direct access to the covered mall but in which all required means of egress is independent of the covered mall.

3.3.6 Animals. Includes household pets, service and assistance animals, working dogs, livestock, wildlife, exotic animals, zoo animals, research animals, and animals housed in shelters, rescue organizations, breeding facilities, and sanctuaries.

3.3.7 Apartment Building. A building or portion thereof containing three or more dwelling units with independent cooking and bathroom facilities.

3.3.8 Area of Refuge. An area that is either (1) a story in a building where the building is protected throughout by an approved, supervised automatic sprinkler system and has not less than two accessible rooms or spaces separated from each other by smoke-resisting partitions; or (2) a space located in a path of travel leading to a public way that is protected from the effects of fire, either by means of separation from other spaces in the same building or by virtue of location, thereby permitting a delay in egress travel from any level. [***101,*** 2021]

3.3.9* Assembly Occupancy. An occupancy (1) used for a gathering of 50 or more persons for deliberation, worship, entertainment, eating, drinking, amusement, awaiting transportation, or similar uses; or (2) used as a special amusement building, regardless of occupant load.

3.3.10* Assistance Animal. An animal that works, provides assistance, or performs tasks for the benefit of a person with a disability, or provides emotional support that alleviates one or more identified symptoms or effects of a person's disability.

3.3.11 Atrium. A large-volume space created by a floor opening or series of floor openings connecting two or more stories that is covered at the top of the series of openings and is used for purposes other than an enclosed stairway; an elevator hoistway; an escalator opening; or as a utility shaft used for plumbing, electrical, air-conditioning, or communications facilities. [***101,*** 2021]

3.3.12 Bulk Merchandising Retail Building. A building in which the sales area includes the storage of combustible materials on pallets, in solid piles, or in racks in excess of 3.7 m (12 ft) in storage height.

3.3.13 Business Impact Analysis (BIA). A management level analysis that identifies, quantifies, and qualifies the impacts resulting from interruptions or disruptions of an entity's resources. The analysis can identify time-critical functions, recovery priorities, dependencies, and interdependencies so that recovery time objectives can be established and approved.

3.3.14* Business Occupancy. An occupancy used for account and record keeping or the transaction of business other than mercantile.

3.3.15 Capability. The ability to perform required actions.

3.3.16 Clean Agent. Electrically nonconductive, volatile, or gaseous fire extinguishant that does not leave a residue upon evaporation.

3.3.17 Combustible Dust. A finely divided combustible particulate solid that presents a flash fire hazard or explosion hazard when suspended in air or the process-specific oxidizing medium over a range of concentrations.

3.3.18 Combustible Particulate Solid. Any solid material composed of distinct particles or pieces, regardless of size, shape, or chemical composition, that presents a fire hazard.

3.3.19 Common. Occurring or appearing frequently; occurring frequently or habitually; usual. Done often; prevalent.

3.3.20 Competence. Demonstrated ability to apply knowledge and skills to achieve intended results.

3.3.21 Competent Person. One who is capable of identifying existing and predictable hazards in the surroundings or working conditions that are unsanitary, hazardous, or dangerous to employees, and who has authorization to take prompt corrective measures to eliminate them. [**1006,** 2021]

3.3.22* Confined Space. A space that is large enough and so configured that an employee can bodily enter and perform assigned work, that has limited or restricted means for entry or exit, and that is not designed for continuous employee occupancy, as defined by 29 CFR 1910.146.

3.3.23 Continual Improvement. Recurring process of enhancing the management program in order to achieve improvements in overall performance consistent with the entity's policy, goals, and objectives.

3.3.24* Continuity. An ongoing process to ensure that the necessary steps are taken to identify the impacts of potential losses and maintain viable continuation of services, recovery strategies, and recovery plans; a term that includes business continuity/continuity of operations (COOP), operational continuity, succession planning, continuity of government (COG), which support the resilience of the entity.

3.3.25 Controlled Atmosphere Warehouse. A facility for storing specialty products, such as fruits, that generally includes sealed storage rooms, with controlled temperature and air content, the most common being an atmosphere containing a high percentage of a gas such as nitrogen.

3.3.26* Covered Mall Building. A building, including the covered mall, enclosing a number of tenants and occupancies, such as retail stores, drinking and dining establishments, entertainment and amusement facilities, offices, and other similar uses, wherein two or more tenants have a main entrance into the covered mall.

3.3.27 Crisis. An issue, event, or series of events with potential for strategic implications that severely impacts or has the potential to severely impact an entity's operations, brand, image, reputation, market share, ability to do business, or relationships with key stakeholders. A crisis might or might not be initiated or triggered by an incident, and requires sustained input at a strategic level to minimize its impact on the entity.

3.3.28 Crisis Management. The ability of an entity to manage incidents that have the potential to cause significant security, financial, strategic, or reputational impacts.

3.3.29 Damage Assessment. A determination of the effects of the incident on humans; on physical, operational, economic characteristics; and on the environment.

3.3.30* Detention and Correctional Occupancy. An occupancy used to house four or more persons under varied degrees of restraint or security where such occupants are mostly incapable of self-preservation because of security measures not under the occupants' control.

3.3.31 Disaster/Emergency Management. An ongoing process to prevent, mitigate, prepare for, respond to, maintain continuity during, and to recover from, an incident that threatens life, property, operations, information, or the environment.

3.3.32* Dormitory. A building or a space in a building in which group sleeping accommodations are provided for more than 16 persons who are not members of the same family in one room, or a series of closely associated rooms, under joint occupancy and single management, with or without meals, but without individual cooking facilities.

3.3.33* Educational Occupancy. An occupancy used for educational purposes through the twelfth grade by six or more persons for 4 or more hours per day or more than 12 hours per week.

3.3.34 Elevator Evacuation System. A system, including a vertical series of elevator lobbies and associated elevator lobby doors, an elevator shaft(s), and a machine room(s), that provides protection from fire effects for elevator passengers, people waiting to use elevators, and elevator equipment so that elevators can be used safely for egress. [***101,*** 2021]

3.3.35 Emergency Communication. Alerting and warning community members in a defined area of a potential threat to life and property and the actions to be taken in response to the threat.

3.3.36 Emergency Operations Center. A fixed, designated area to be used in supporting and coordinating operations during emergencies.

3.3.37 Emergency Power Supply (EPS). An electric power source of the capacity and quality required for an EPS system.

3.3.38* Emergency Respite. Provision of short-term, temporary relief to those who are caring for family members who might otherwise require permanent placement in a facility outside the home.

3.3.39 Emergency Services Organization (ESO). Any public, private, governmental, or military organization that provides emergency response and other related activities, whether for profit, not for profit, or governmentally owned and operated.

3.3.40* Entity. A person, organization, or group that is responsible for the implementation and/or fulfillment of the requirements and considerations of this standard.

3.3.41 Evacuation. (1) The act or process of evacuating; (2) to leave or remove someone from a dangerous place; (3) to withdraw from the potential area of impact in an organized way, especially for protection; (4) organized, phased, and supervised withdrawal, dispersal, or removal of civilians from dangerous or potentially dangerous areas, and their reception and care in safe areas.

3.3.42* Evacuation Capability. The ability of occupants, residents, and staff as a group either to evacuate a building or to relocate from the point of occupancy to a point of safety.

3.3.43 Evacuation Order. An order issued by a jurisdictional authority requesting, recommending, or requiring the movement of people and animals out of a defined area due to an immediate threat to life and property from an emergency.

3.3.44 Evacuation Warning. Alerting and warning of persons in a defined area of the potential need to evacuate due to a threat to life and property in response to an emergency.

3.3.45 Event. A planned nonemergency activity (e.g., sporting event, concert, parade, mass gathering).

3.3.46* Exercise. A process to assess, train, practice, and improve performance in an entity.

3.3.47 Facility. Permanent, semi-permanent, or temporary commercial or industrial property such as a building, plant, or structure, built, established, or installed for the performance of one or more specific activities or functions including all processes performed therein.

3.3.48* Facility Emergency Action Plan. A plan of designated actions by employers, employees, and other building occupants to ensure their safety from fire and other emergencies.

3.3.49 Fire Alarm System. A system or portion of a combination system that consists of components and circuits arranged to monitor and annunciate the status of fire alarm or supervisory signal–initiating devices and to initiate the appropriate response to those signals.

3.3.50* Fire Barrier. A continuous membrane or a membrane with discontinuities created by protected openings with a specified fire protection rating, where such membrane is designed and constructed with a specified fire resistance rating to limit the spread of fire, and that also restricts the movement of smoke.

3.3.51 Fire Compartment. A space within a building that is enclosed by fire barriers on all sides, including the top and bottom.

3.3.52 Fire Wall. A wall separating buildings or subdividing a building to prevent the spread of fire and having a fire resistance rating and structural stability.

3.3.53* Health Care Occupancy. An occupancy used for purposes of medical or other treatment or care of four or more persons where such occupants are mostly incapable of self-preservation due to age, physical or mental disability, or because of security measures not under the occupants' control.

3.3.54* Hotel. A building or groups of buildings under the same management in which there are sleeping accommodations for more than 16 persons and primarily used by transients for lodging with or without meals.

3.3.55 HVAC. An acronym for heating, ventilation, and air conditioning systems and their related components.

3.3.56* Incident. An event that has the potential to cause interruption, disruption, loss, emergency, disaster, or catastrophe and that can escalate into a crisis.

3.3.57 Incident Action Plan. A verbal plan, written plan, or combination of both that is updated throughout the incident and reflects the overall incident strategy, tactics, risk management, and member safety requirements approved by the incident commander.

3.3.58* Incident Management System (IMS). The combination of facilities, equipment, personnel, procedures, and communications operating within a common organizational structure and designed to aid in the management of resources during incidents.

3.3.59* Industrial Occupancy. An occupancy in which products are manufactured or in which processing, assembling, mixing, packaging, finishing, decorating, or repair operations are conducted.

3.3.60 Interoperability. The ability of diverse personnel, systems, and entities to work together seamlessly.

3.3.61 Joint Information System (JIS). Provides the mechanism to organize, integrate, and coordinate information to ensure timely, accurate, accessible, and consistent messaging across multiple jurisdictions or disciplines with nongovernmental organizations and the private sector and includes the plans, protocols, procedures, and structures used to provide public information.

3.3.62 Key Box. See 3.3.64, Lock Box.

3.3.63 Lift. A mechanically or electrically operated platform used to work at various heights.

3.3.64* Lock Box. A locked container often used to store building entry keys, pre-incident plans, and/or related data.

3.3.65 Lodging or Rooming House. A building or portion thereof that does not qualify as a one- or two-family dwelling, that provides sleeping accommodations for a total of 16 or fewer people on a transient or permanent basis, without personal care services, with or without meals, but without separate cooking facilities for individual occupants.

3.3.66* Mass Gathering. An event expected to be attended by a sufficient number of people to strain the planning and response resources of the hosting community, state, province, nation, or region.

3.3.67* Mercantile Occupancy. An occupancy used for the display and sale of merchandise.

3.3.68* Mitigation. Activities taken to reduce the impacts from hazards.

3.3.69* Mutual Aid/Assistance Agreement. A prearranged agreement between two or more entities to share resources in response to or during recovery from an incident.

3.3.70 On-Site Emergency Representative. The person responsible for coordinating and implementing the site emergency action plan during an incident.

3.3.71 Pre-Incident Plan. A document developed by gathering general and detailed data that is used by responding personnel in effectively managing emergencies for the protection of occupants, participants, responding personnel, property, and the environment.

3.3.72 Pre-Incident Plan Developer. The individual, group, or agency responsible for developing or maintaining the pre-incident plan.

3.3.73 Preparedness. Ongoing activities, tasks, and systems to develop, implement, and maintain the program.

3.3.74* Prevention. Activities to avoid or stop an incident from occurring.

3.3.75* Process Hazard Analysis. An analysis of a process or system used to identify potential cause and effect relationships and resultant hazards or system failures.

3.3.76* Recovery. Activities and programs designed to return conditions to a level that is acceptable to the entity.

3.3.77* Re-entry. The return of people to a previously evacuated area.

3.3.78* Residential Board and Care Occupancy. A building or portion thereof that is used for lodging and boarding of four or more residents, not related by blood or marriage to the owners or operators, for the purpose of providing personal care services.

3.3.79 Resiliency. The ability to prepare for and adapt to changing conditions and withstand and recover rapidly from disruptions.

3.3.80* Resource Management. A system for identifying available resources to enable timely access to resources needed to prevent, mitigate, prepare for, respond to, maintain continuity during, or recover from an incident.

3.3.81* Responding Personnel. Personnel, whether public or private, available to respond to emergencies.

3.3.82* Response. Immediate and ongoing activities, tasks, programs, and systems to manage the effects of an incident

that threatens life, property, operations, an entity, or the environment.

3.3.83 Risk. A measure of the probability and severity of adverse effects that result from exposure to a hazard.

3.3.84 Risk Assessment. The process of threat identification and the analysis of hazards, probabilities, vulnerabilities, and impacts.

3.3.85 Safety Data Sheet (SDS). Formatted information, provided by chemical manufacturers and distributors of hazardous products, about chemical composition, physical and chemical properties, health and safety hazards, emergency response, and waste disposal of the material. [**470,** 2022]

3.3.86 Sally Port (Security Vestibule). A compartment provided with two or more doors where the intended purpose is to prevent continuous and unobstructed passage by allowing the release of only one door at a time.

3.3.87 Scissor Stair. Two interlocking stairways providing two separate paths of egress located within one stairwell enclosure.

3.3.88* Security Vulnerability Assessment. Security vulnerability assessment methodology identifies and assesses potential security threats, risks, and vulnerabilities and guides the chemical facility industry in making security improvements.

3.3.89* Service Animal. Any dog or miniature horse that is individually trained to do work or perform tasks for the benefit of an individual with a disability, including a physical, sensory, psychiatric, intellectual, or other mental disability.

3.3.90* Shelter. A safe, short-term accommodation for persons and animals threatened or displaced by an emergency or disaster that can include overnight accommodations, heat or cooling, meals and water, security, health and medical services, clergy and social services, reunification, child care, showers, and laundry.

3.3.91 Sheltering. Seeking protection in the home, place of employment, or other location when disaster strikes. This can include staying with friends and relatives, seeking commercial lodging, or staying in a mass care facility operated by disaster relief groups in conjunction with local authorities.

3.3.92 Shelter-in-Place. To use a safe area inside a building or structure during an incident.

3.3.93 Site Liaison. An individual who has in-depth operating knowledge of the site or facility.

3.3.94 Situation Analysis. The process of collecting, evaluating, and disseminating information related to the incident, including information on the current and forecasted situation and on the status of resources for management of the incident.

3.3.95 Sky Lobby. An intermediate floor where people can change from an express elevator that only stops at the sky lobby to a local elevator which stops at every floor within a segment of the building.

3.3.96* Smoke Barrier. A continuous membrane, or a membrane with discontinuities created by protected openings, where such membrane is designed and constructed to restrict the movement of smoke.

3.3.97 Smoke Compartment. A space within a building enclosed by smoke barriers on all sides, including the top and bottom.

3.3.98 Social Media. Forms of electronic communication (such as websites) through which people create online communities to share information, ideas, and personal messages.

3.3.99 Spill Prevention Control and Countermeasure (SPCC) Plan. A plan prepared for facilities with a chemical or chemicals that exceed certain capacities in accordance with governmental regulations.

3.3.100* Sprinkler System. For fire protection purposes, an integrated system of underground and overhead piping designed in accordance with fire protection engineering standards that includes one or more water supplies.

3.3.101 Stakeholder(s). Any individual, group, or organization that might affect, be affected by, or perceive itself to be affected by the emergency or outcome of the program or the program's actions.

3.3.102* Standpipe System. An arrangement of piping, valves, hose connections, and associated equipment installed in a building or structure, with the hose connections located in such a manner that water can be discharged in streams or spray patterns through attached hose and nozzles, for the purpose of extinguishing a fire, thereby protecting a building or structure and its contents in addition to protecting the occupants. [**14,** 2019]

3.3.103* Storage Occupancy. An occupancy used primarily for the storage or sheltering of goods, merchandise, products, vehicles, or animals.

3.3.104 Supply Chain. A network of individuals, entities, activities, information, resources, and technology involved in creating and delivering a product or service from supplier to end user.

3.3.105 Test. Procedure for evaluation with a pass or fail result.

3.3.106* US National Grid (USNG). An alphanumeric point reference system that has been overlaid on the Universal Transverse Mercator (UTM) numerical grid.

3.3.107 Vacant Building. A building that is currently unoccupied/unused and for which there is intention to reoccupy and reuse in the future.

3.3.108 Vital Records. Information critical to the continued operation or survival of an entity.

3.3.109 Whole Community. Encompasses individuals, families, households, communities, the private and nonprofit sectors, faith-based organizations, and all levels of government.

Chapter 4 Program Management (NFPA 1600)

4.1 Administration.

4.1.1* Scope. Chapters 4 through 10 establish a common set of criteria for all-hazards crisis/disaster/emergency management and business continuity/continuity of operations programs, hereinafter referred to as "program."

4.1.2* Purpose. Chapters 4 through 10 provide the fundamental criteria for preparedness and resiliency, including the planning, implementation, execution, assessment, and maintenance of programs for prevention, mitigation, response, continuity, and recovery.

4.1.3* Application. Chapters 4 through 10 apply to public, private, nonprofit, and nongovernmental entities.

4.2 Leadership and Commitment.

4.2.1 The entity leadership shall demonstrate commitment to the program to prevent, mitigate the consequences of, prepare for, respond to, maintain continuity during, and recover from incidents.

4.2.2 The leadership commitment shall include the following:

(1) Support the development, implementation, and maintenance of the program
(2) Provide necessary resources to support the program
(3) Ensure the program is reviewed and evaluated as needed to ensure program effectiveness
(4) Support corrective action to address program deficiencies

4.2.3 The entity shall adhere to policies, execute plans, and follow procedures developed to support the program.

4.3* Program Coordinator. The program coordinator shall be appointed by the entity's leadership and authorized to develop, implement, administer, evaluate, and maintain the program.

4.4 Performance Objectives.

4.4.1* The entity shall establish performance objectives for the program in accordance with Chapter 4 and the elements in Chapters 5 through 10.

4.4.2 The performance objectives shall address the results of the hazard identification, risk assessment, and business impact analysis.

4.4.3 Performance objectives shall be developed by the entity to address both short-term and long-term needs.

4.4.4 The entity shall define the terms *short term* and *long term*.

4.5 Program Committee.

4.5.1* A program committee shall be established by the entity in accordance with its policy.

4.5.2 The program committee shall provide input or assist in the coordination of the preparation, development, implementation, evaluation, and maintenance of the program.

4.5.3 The program committee shall include the program coordinator and others who have the expertise, the knowledge of the entity, and the capability to identify resources from all key functional areas within the entity.

4.5.4* The program committee shall solicit applicable external representation.

4.6 Program Administration.

4.6.1 The entity shall have a documented program that includes the following:

(1) Executive policy, including vision, mission statement, roles and responsibilities, and enabling authority
(2)* Program scope, goals, performance objectives, and metrics for program evaluation
(3)* Applicable authorities, legislation, regulations, and industry codes of practice as required by Section 4.7
(4) Program budget and schedule, including milestones
(5) Program plans and procedures that include the following:
    (a) Anticipated cost
    (b) Priority
    (c) Resources required
(6) Records management practices as required by Section 4.9
(7) Management of change

4.6.2 The program shall include the requirements specified in Chapters 4 through 10, the scope of which shall be determined through an "all-hazards" approach and the risk assessment.

4.6.3* Program requirements shall be applicable to preparedness including the planning, implementation, assessment, and maintenance of programs for prevention, mitigation, response, continuity, and recovery.

4.7 Laws and Authorities.

4.7.1* The program shall comply with applicable legislation, policies, regulatory requirements, and directives.

4.7.2 The entity shall establish, maintain, and document procedure(s) to comply with applicable legislation, policies, regulatory requirements, and directives.

4.7.3* The entity shall implement a strategy for addressing the need for revisions to legislation, regulations, directives, policies, and industry codes of practice.

4.8 Finance and Administration.

4.8.1 The entity shall develop finance and administrative procedures to support the program before, during, and after an incident.

4.8.2* There shall be a responsive finance and administrative framework that does the following:

(1) Complies with the entity's program requirements
(2) Is uniquely linked to response, continuity, and recovery operations
(3) Provides for maximum flexibility to expeditiously request, receive, manage, and apply funds in a nonemergency environment and in emergency situations to ensure the timely delivery of assistance

4.8.3 Procedures shall be created and maintained for expediting fiscal decisions in accordance with established authorization levels, accounting principles, governance requirements, and fiscal policy.

4.8.4 Finance and administrative procedures shall include the following:

(1) Responsibilities for program finance authority, including reporting relationships to the program coordinator
(2)* Program procurement procedures
(3) Payroll
(4)* Accounting systems to track and document costs
(5) Management of funding from external sources
(6) Crisis management procedures that coordinate authorization levels and appropriate control measures
(7) Documenting financial expenditures incurred as a result of an incident and for compiling claims for future cost recovery
(8) Identifying and accessing alternative funding sources
(9) Managing budgeted and specially appropriated funds

4.9* Records Management.

4.9.1 The entity shall develop, implement, and manage a records management program to ensure that records are available to the entity.

4.9.2 The program shall include the following:

(1) Identification of records (hard copy or electronic) vital to continue the operations of the entity
(2) Backup of records on a frequency necessary to meet program goals and objectives
(3) Validation of the integrity of records backup
(4) Implementation of procedures to store, retrieve, and recover records on-site or off-site
(5) Protection of records
(6) Implementation of a record review process
(7) Procedures coordinating records access

Chapter 5 Planning (NFPA 1600)

5.1* Planning and Design Process.

5.1.1* The program shall follow a planning process that develops strategies, plans, and required capabilities to execute the program.

5.1.2 Strategic planning shall define the entity's vision, mission, and goals of the program.

5.1.3* A risk assessment and a business impact analysis (BIA) shall develop information to prepare prevention and mitigation strategies.

5.1.4* A risk assessment, a BIA, and a resource needs assessment shall develop information to prepare emergency operations/response, crisis communications, continuity, and recovery plans.

5.1.5* Crisis management planning shall address an event, or series of events, that severely impacts or has the potential to severely impact an entity's operations, brand, image, reputation, market share, ability to do business, or relationships with key stakeholders.

5.1.6* The entity shall include key stakeholders in the planning process.

5.2* Risk Assessment.

5.2.1 The entity shall conduct a risk assessment.

5.2.2 The entity shall identify hazards and monitor those hazards and the likelihood and severity of their occurrence over time.

5.2.2.1 Hazards to be evaluated shall include the following:

(1) Geological:
  (a) Earthquake
  (b) Landslide, mudslide, lahar, subsidence
  (c) Tsunami
  (d) Volcano
(2) Meteorological:
  (a) Drought
  (b) Extreme hot or cold temperatures
  (c) Famine
  (d) Flood, flash flood, seiche, tidal surge
  (e) Geomagnetic storm
  (f) Lightning
  (g) Snow, ice, hail, sleet, avalanche
  (h) Wildland fire
  (i) Windstorm, tropical cyclone, hurricane, tornado, waterspout, dust storm, sandstorm, derecho
(3) Biological:
  (a) Foodborne illnesses
  (b)* Infectious/communicable/pandemic diseases
(4) Accidental human-caused:
  (a) Building/structure collapse
  (b)* Entrapment
  (c) Explosion/fire
  (d) Fuel/resource shortage
  (e)* Hazardous material spill or release
  (f) Equipment failure
  (g) Nuclear reactor incident
  (h) Radiological incident
  (i)* Transportation incident
  (j) Unavailability of essential employee(s)
  (k)* Water control structure failure
  (l) Misinformation
(5) Intentional human-caused:
  (a) Incendiary fire
  (b) Bomb threat
  (c) Demonstrations/civil disturbance/riot/insurrection
  (d) Discrimination/harassment
  (e) Disinformation (e.g., rumors, false allegations, accusations)
  (f) Kidnapping/hostage/extortion
  (g)* Geopolitical risks
  (h) Missing person
  (i)* Cybersecurity incidents
  (j) Product defect or contamination
  (k) Robbery/theft/fraud
  (l) Strike or labor dispute
  (m) Suspicious package
  (n)* Terrorism
  (o) Vandalism/sabotage
  (p) Workplace/school/university violence
  (q) Supply chain constraint or failure
(6) Technological:
  (a)* Hardware, software, and network connectivity interruption, disruption, or failure
  (b)* Utility interruption, disruption, or failure
(7) Economic/financial:
  (a) Foreign currency exchange rate change
  (b) Economic recession
  (c) Boycott
  (d) Theft/fraud/malfeasance/impropriety/scandal involving currency, monetary instruments, goods, and intellectual property
(8) Strategic:
  (a) Loss of senior executive
  (b) Failed acquisition/strategic initiative
(9) Humanitarian issues

5.2.2.2* The vulnerability of people, property, operations, the environment, the entity, and the supply chain operations shall be identified, evaluated, and monitored.

5.2.3 The entity shall conduct an analysis of the impacts of the hazards identified in 5.2.2 on the following:

(1) Health and safety of persons in the affected area
(2) Health and safety of personnel responding to the incident
(3) Security of information
(4)* Continuity of operations
(5) Continuity of government
(6)* Property, facilities, assets, and critical infrastructure
(7) Delivery of the entity's services
(8) Supply chain
(9) Environment
(10)* Economic and financial conditions
(11) Legislated, regulatory, and contractual obligations
(12) Brand, image, and reputation
(13) Work and labor arrangements

5.2.4 The risk assessment shall include an analysis of the escalation of impacts over time.

5.2.5* The analysis shall evaluate the potential effects of regional, national, or international incidents that could have cascading impacts.

5.2.6 The risk assessment shall evaluate the adequacy of existing prevention and mitigation strategies.

5.3 Business Impact Analysis (BIA).

5.3.1 The entity shall conduct a BIA that includes an assessment of how a disruption could affect an entity's operations, reputation, and market share, ability to do business, or relationships with key stakeholders and identifies the resources and capabilities that might be needed to manage the disruptions.

5.3.1.1* The BIA shall identify processes that are required for the entity to perform its mission.

5.3.1.2* The BIA shall identify the following resources that enable the processes:

(1) Personnel
(2) Equipment
(3) Infrastructure
(4) Technology
(5) Information
(6) Supply chain

5.3.2* The BIA shall evaluate the following:

(1) Dependencies
(2) Single-source and sole-source suppliers
(3) Single points of failure
(4) Potential qualitative and quantitative impacts from a disruption to the resources in 5.3.1.2

5.3.2.1* The BIA shall determine the point in time [recovery time objective (RTO)] when the impacts of the disruption become unacceptable to the entity.

5.3.3* The BIA shall identify the acceptable amount of data loss for physical and electronic records to identify the recovery point objective (RPO).

5.3.4* The BIA shall identify gaps between the RTOs and RPOs and demonstrated capabilities.

5.3.5* The BIA shall be used in the development of continuity and recovery strategies and plans.

5.3.6* The BIA shall identify critical supply chains, including those exposed to domestic and international risks, and the timeframe within which those operations become critical to the entity.

5.4 Resource Needs Assessment.

5.4.1* The entity shall conduct a resource needs assessment based on the hazards identified in Section 5.2 and the continuity requirements and their dependencies identified in Section 5.3.

5.4.2 The resource needs assessment shall include the following:

(1)* Human resources, equipment, training, facilities, funding, expert knowledge, materials, technology, information, intelligence, and the time frames within which they will be needed
(2) Quantity, response time, capability, limitations, cost, and liabilities

5.4.3* The entity shall establish procedures to locate, acquire, store, distribute, maintain, test, and account for services, human resources, equipment, and materials procured or donated to support the program.

5.4.4* Facilities capable of supporting response, continuity, and recovery operations shall be identified.

5.4.5* Agreements. The need for mutual aid/assistance or partnership agreements shall be determined; if needed, agreements shall be established and documented.

Chapter 6 Implementation (NFPA 1600)

6.1 Common Plan Requirements.

6.1.1* Plans shall address the health and safety of personnel.

6.1.2* Plans shall identify and document the following:

(1) Assumptions made during the planning process
(2) Functional roles and responsibilities of internal and external entities
(3) Lines of authority
(4) Process for delegation of authority
(5) Lines of succession for the entity
(6) Liaisons to external entities
(7) Logistics support and resource requirements

6.1.3* Plans shall be individual, integrated into a single plan document, or a combination of the two.

6.1.4 The entity shall make sections of the plans available to those assigned specific tasks and responsibilities therein and to key stakeholders as required.

6.2 Prevention.

6.2.1* The entity shall develop a strategy to prevent an incident that threatens life, property, operations, information, and the environment.

6.2.2* The prevention strategy shall be kept current using the information collection and intelligence techniques.

6.2.3 The prevention strategy shall be based on the results of hazard identification and risk assessment, an analysis of impacts, program constraints, operational experience, and a cost-benefit analysis.

6.2.4 The entity shall have a process to monitor the identified hazards and adjust the level of preventive measures to be commensurate with the risk.

6.3 Mitigation.

6.3.1* The entity shall develop and implement a mitigation strategy that includes measures to be taken to limit or control the consequences, extent, or severity of an incident that cannot be prevented.

6.3.2* The mitigation strategy shall be based on the results of hazard identification and risk assessment, an analysis of impacts, program constraints, operational experience, and cost-benefit analysis.

6.3.3* The mitigation strategy shall include interim and long-term actions to reduce vulnerabilities.

6.4 Crisis Management.

6.4.1 The entity shall establish and maintain a crisis management capability to manage issues, events, or series of events, that severely impact or have the potential to severely impact an entity's brand, image, reputation, market share, ability to do business, or relationships with key stakeholders.

6.4.2 The crisis management capability shall include assigned responsibilities and established processes to perform the following:

(1) Engage senior leadership
(2) Detect the signals, symptoms, incidents, events, or circumstances that portend an emerging crisis or have the potential to trigger a crisis
(3) Conduct a situation analysis
(4) Declare a crisis, alert responsible persons, and activate crisis management plans should the current situation meet established criteria
(5) Identify issues to be addressed by the responsible persons and senior leadership
(6) Develop strategies to mitigate the potential impacts of identified issues
(7) Provide direction and support for the entity's facilities, operations, employees, customers, and others affected by or potentially affected by the crisis
(8) Coordinate with the entity's crisis communication capability and provide strategic direction, authorize communications strategies, and communicate with stakeholders

6.5 Crisis Communications and Public Information.

6.5.1* The entity shall develop a plan and procedures to disseminate information to and respond to requests for information from the following audiences before, during, and after an incident:

(1) Internal audiences, including employees
(2) External audiences, including the media, access and functional needs populations, and other stakeholders

6.5.2* The entity shall establish and maintain a crisis communications or public information capability that includes the following:

(1)* Central contact facility or communications hub
(2) Physical or virtual information center
(3) System for gathering, monitoring, and disseminating information
(4) Procedures for developing and delivering coordinated messages
(5) Protocol to clear information for release

6.6 Warning, Notifications, and Communications.

6.6.1* The entity shall determine its warning, notification, and communications needs.

6.6.2* Warning, notification, and communications systems shall be reliable, redundant, and interoperable.

6.6.3* Emergency warning, notification, and communications protocols and procedures shall be developed, tested, and used to alert stakeholders potentially at risk from an actual or impending incident.

6.6.4 Procedures shall include issuing warnings through authorized agencies if required by law as well as the use of pre-scripted information bulletins or templates.

6.6.5* Information shall be disseminated through the media, social media, or other means as determined by the entity to be the most effective.

6.7 Operational Procedures.

6.7.1 The entity shall develop, coordinate, and implement operational procedures to support the program.

6.7.2 Procedures shall be established and implemented for response to and recovery from the impacts of hazards identified in 5.2.2.

6.7.3* Procedures shall provide for life safety, property conservation, incident stabilization, continuity, and protection of the environment under the jurisdiction of the entity.

6.7.4 Procedures shall include the following:

(1) Control of access to the area affected by the incident
(2) Identification of personnel engaged in activities at the incident
(3) Accounting for personnel engaged in incident activities
(4) Mobilization and demobilization of resources

6.7.5 Procedures shall allow for concurrent activities of response, continuity, recovery, and mitigation.

6.8 Incident Management.

6.8.1* The entity shall develop an incident management system to direct, control, and coordinate response, continuity, and recovery operations.

6.8.1.1* Emergency Operations Centers (EOCs).

6.8.1.1.1* The entity shall establish primary and alternate EOCs capable of managing response, continuity, and recovery operations.

6.8.1.1.2* The EOCs shall be permitted to be physical or virtual.

6.8.1.1.3 On activation of an EOC, communications and coordination shall be established between incident command and the EOC.

6.8.2 The incident management system shall describe specific entity roles, titles, and responsibilities for each incident management function.

6.8.3* The entity shall establish procedures and policies for coordinating prevention, mitigation, preparedness, response, continuity, and recovery activities.

6.8.4 The entity shall coordinate the activities specified in 6.8.3 with stakeholders.

6.8.5 Procedures shall include a situation analysis that incorporates an assessment of the following for the purposes of activating emergency response/operations, business continuity/continuity of operations, crisis management, and/or crisis communications plans and capabilities:

(1) Casualties and the availability of required personnel resources
(2) Physical damage to property under the jurisdiction of the entity
(3) Interruption or disruption of the entity's operations
(4) Impacts to digital information and vital records
(5) Actual or potential contamination of the environment
(6) Actual or potential impacts to brand, image, reputation, market share, ability to do business, or relationships with key stakeholders
(7) Resources needed to support response, continuity, and recovery activities

6.8.6* Emergency operations/response shall be guided by an incident action plan or management by objectives.

6.8.7 Resource management shall include the following tasks:

(1) Establishing processes for describing, taking inventory of, requesting, and tracking resources
(2) Resource typing or categorizing by size, capacity, capability, and skill
(3) Mobilizing and demobilizing resources in accordance with the established IMS
(4) Conducting contingency planning for resource deficiencies

6.8.8 A current inventory of internal and external resources shall be maintained.

6.8.9 Donations of human resources, equipment, material, and facilities shall be managed.

6.9 Emergency Operations/Response Plan.

6.9.1* Emergency operations/response plans shall define responsibilities for carrying out specific actions in an emergency.

6.9.2* The plan shall identify actions to be taken to protect people, including people with disabilities and other access and functional needs, information, property, operations, the environment, and the entity.

6.9.3* The plan shall identify actions for incident stabilization.

6.9.4* The plan shall include the following:

(1) Protective actions for life safety in accordance with 6.9.2
(2) Warning, notifications, and communication in accordance with Section 6.6
(3) Crisis communication and public information in accordance with Section 6.5
(4) Resource management in accordance with 6.8.7
(5) Donation management in accordance with 6.8.9

6.10* Continuity and Recovery.

6.10.1 Continuity.

6.10.1.1 Continuity plans shall include strategies to continue critical and time-sensitive processes and as identified in the BIA.

6.10.1.2* Continuity plans shall identify and document the following:

(1) Stakeholders that need to be notified
(2) Processes that must be maintained
(3) Roles and responsibilities of the individuals implementing the continuity strategies
(4) Procedures for activating the plan, including authority for plan activation
(5) Critical and time-sensitive technology, application systems, and information
(6) Security of information
(7) Alternative work sites
(8) Workaround procedures
(9) Vital records
(10) Contact lists
(11) Required personnel
(12) Vendors and contractors supporting continuity
(13) Resources for continued operations
(14) Mutual aid or partnership agreements
(15) Activities to return critical and time-sensitive processes to the original state

6.10.1.3 Continuity plans shall be designed to meet the RTO and RPO.

6.10.1.4 Continuity plans shall address supply chain disruption.

6.10.2 Recovery.

6.10.2.1 Recovery plans shall provide for restoration of processes, technology, information, services, resources, facilities, programs, and infrastructure.

6.10.2.2* Recovery plans shall document the following:

(1) Damage assessment
(2) Coordination of the restoration, rebuilding, and replacement of facilities, infrastructure, materials, equipment, tools, vendors, and suppliers
(3) Restoration of the supply chain
(4) Continuation of communications with stakeholders
(5) Recovery of critical and time-sensitive processes, technology, systems, applications, and information
(6) Roles and responsibilities of the individuals implementing the recovery strategies
(7) Internal and external (vendors and contractors) personnel who can support the implementation of recovery strategies and contractual needs
(8) Adequate controls to prevent the corruption or unlawful access to the entity's data during recovery
(9) Compliance with regulations that would become applicable during the recovery
(10) Maintenance of pre-incident controls

6.11 Employee Assistance and Support.

6.11.1* The entity shall develop a strategy for employee assistance and support that includes the following:

(1)* Communications procedures
(2)* Contact information, including emergency contact outside the anticipated hazard area
(3) Accounting for persons affected, displaced, or injured by the incident
(4) Temporary, short-term, or long-term housing and feeding and care of those displaced by an incident
(5) Mental health and physical well-being of individuals affected by the incident
(6) Pre-incident and post-incident awareness

6.11.2 The strategy shall be flexible for use in all incidents.

6.11.3* The entity shall promote family preparedness education and training for employees.

Chapter 7 Execution (NFPA 1600)

7.1* Incident Recognition. The entity shall establish and implement a process whereby all appropriate stakeholders have a common reference for the types of incidents that could adversely affect its people, property, operations, or the environment, and ensure it is appropriately referenced throughout the incident management process.

7.2 Initial Reporting/Notification. The entity shall establish and implement a process whereby all appropriate stakeholders can warn, notify, and report an incident that has potential to cause an adverse impact on its people, property, operations, or the environment. *(See Section 6.6.)*

7.3 Plan Activation and Incident Action Plan.

7.3.1 The entity shall establish and implement a process to assess the impact of the incident on its people, property, operations, or the environment.

7.3.2 The entity shall develop a time frame to activate appropriate planning as detailed in Sections 6.5, 6.9, and 6.10, and coordinate activation when there is a declaration by public officials.

7.4 Activate Incident Management System.

7.4.1 The entity shall execute procedures from the documented plans in accordance with Sections 6.5, 6.8, 6.9, and 6.10.

7.4.2 The entity shall execute its incident management system and activities in support of established objectives and tasks.

7.4.3 On activation of an emergency operations center (EOC), communications and coordination shall be established between incident command and the EOC.

7.5 Ongoing Incident Management and Communications.

7.5.1 The entity shall continually assess the impact of the incident on its people, property, operations, and the environment, and re-evaluate/implement its action plan in accordance with established objectives and tasks.

7.5.2 The entity shall implement the warning, notification, and communications systems to alert stakeholders who are potentially at risk from an actual or impending incident.

7.5.3 Based upon the extent of damage sustained to the entity, all necessary actions to invoke special authorities and request assistance needed to deal with the situation shall be as described in Chapter 4.

7.6 Documenting Incident Information, Decisions, and Actions. The entity shall establish and implement a system for tracking incident information received, decisions made, resources deployed, and actions taken during the incident.

7.7* Incident Stabilization. The entity shall establish criteria for measuring when the incident has been stabilized.

7.8 Demobilize Resources and Termination. The entity shall execute a procedure to terminate the response, demobilize resources, and resume operations when the incident has been stabilized.

Chapter 8 Training and Education (NFPA 1600)

8.1* Curriculum. The entity shall develop and implement a competency-based training and education curriculum that supports all employees who have a role in the program.

8.2* Goal of Curriculum. The goal of the curriculum shall be to create awareness and enhance the knowledge, skills, and abilities required to implement, support, and maintain the program.

8.3 Scope and Frequency of Instruction. The scope of the curriculum and the frequency of instruction shall be identified.

8.4 Incident Management System Training. Personnel shall be trained in the entity's incident management system (IMS) and other components of the program to the level of their involvement.

8.5 Record Keeping. Records of training and education shall be maintained as specified in Section 4.9.

8.6 Regulatory and Program Requirements. The curriculum shall comply with applicable regulatory and program requirements.

8.7* Public Education. A public education program shall be implemented to communicate the following:

(1) The potential impacts of a hazard
(2) Preparedness information
(3) Information needed to develop a preparedness plan

Chapter 9 Exercises and Tests (NFPA 1600)

9.1 Program Evaluation.

9.1.1 The entity shall evaluate program plans, procedures, training, and capabilities and promote continuous improvement through periodic exercises and tests.

9.1.2 The entity shall evaluate the program based on post-incident analyses, lessons learned, and operational performance in accordance with Chapter 10.

9.1.3 Exercises and tests shall be documented.

9.2* Exercise and Test Methodology.

9.2.1 Exercises shall provide a standardized methodology to practice procedures and interact with other entities (internal and external) in a controlled setting.

9.2.2 Exercises shall be designed to assess the maturity of program plans, procedures, and strategies.

9.2.3 Tests shall be designed to demonstrate capabilities.

9.3* Design of Exercises and Tests. Exercises shall be designed to do the following:

(1) Ensure the safety of people, property, operations, and the environment involved in the exercise or test
(2) Evaluate the program
(3) Identify planning and procedural deficiencies
(4) Test or validate recently changed procedures or plans
(5) Clarify roles and responsibilities
(6) Obtain participant feedback and recommendations for program improvement
(7) Measure improvement compared to performance objectives
(8)* Improve coordination among internal and external teams and entities
(9) Validate training and education
(10) Increase awareness and understanding of hazards and the potential impact of hazards on the entity
(11) Identify additional resources and assess the capabilities of existing resources, including personnel and equipment needed for effective response and recovery
(12) Assess the ability of the team to identify, assess, and manage an incident
(13) Practice the deployment of teams and resources to manage an incident
(14) Improve individual performance

9.4* Exercise and Test Evaluation.

9.4.1 Exercises shall evaluate program plans, procedures, training, and capabilities to identify opportunities for improvement.

9.4.2 Tests shall be evaluated as either pass or fail.

9.5* Frequency.

9.5.1 Exercises and tests shall be conducted on the frequency needed to establish and maintain required capabilities.

Chapter 10 Program Maintenance and Improvement (NFPA 1600)

10.1* Program Reviews. The entity shall maintain and improve the program by evaluating its policies, program, procedures, and capabilities using performance objectives.

10.1.1* The entity shall improve effectiveness of the program through evaluation of the implementation of changes resulting from preventive and corrective action.

10.1.2* Evaluations shall be conducted on a regularly scheduled basis and when the situation changes to challenge the effectiveness of the existing program.

10.1.3 The program shall be re-evaluated when a change in any of the following impacts the entity's program:

(1) Regulations
(2) Hazards and potential impacts
(3) Resource availability or capability
(4) Entity's organization
(5)* Funding changes
(6) Infrastructure, including technology environment
(7) Economic and geographic stability
(8) Entity operations
(9) Critical suppliers

10.1.4 Reviews shall include post-incident analyses, reviews of lessons learned, and reviews of program performance.

10.1.5 The entity shall maintain records of its reviews and evaluations, in accordance with the records management practices developed under Section 4.9.

10.1.6 Documentation, records, and reports shall be provided to management for review and follow-up.

10.2* Corrective Action.

10.2.1* The entity shall establish a corrective action process.

10.2.2* The entity shall take corrective action on deficiencies identified.

10.3 Continuous Improvement. The entity shall effect continuous improvement of the program through the use of program reviews and the corrective action process.

Chapter 11 Mass Evacuation, Sheltering, and Re-entry Program Management (NFPA 1616)

11.1 Administration.

11.1.1* Scope. Chapters 11 through 16 establish a common set of criteria for the process of organizing, planning, implementing, and evaluating a program for mass evacuation, sheltering, and re-entry.

11.1.1.1 The requirements in Chapters 11 through 16 are based on the existence of a program for all hazards/crisis/disaster/emergency management and business continuity/continuity of operations.

11.1.1.2 An integrated program is defined in Chapters 4 through 10.

11.1.1.3 The integrated program is scalable to meet the needs of mass evacuation, sheltering, and re-entry.

11.1.2 Purpose. Chapters 11 through 16 provide public officials, private stakeholders, emergency management personnel, and emergency responders the essential elements, common terminology, and roles for mass evacuation stages, sheltering, and re-entry phases.

11.1.3 Application. Chapters 11 through 16 apply to public, private, nonprofit, and nongovernmental entities.

11.2 Leadership and Commitment.

11.2.1 The entity leadership shall demonstrate commitment to the program to evacuate, provide shelter, and facilitate re-entry.

11.2.2 The leadership commitment shall include the following:

(1) Support the development, implementation, and maintenance of the program
(2) Provide necessary resources to support the program
(3) Ensure the program is reviewed and evaluated as needed to ensure program effectiveness
(4) Support corrective action to address program deficiencies

(5) Lead and support the program and execution of the mass evacuation, sheltering, and re-entry
(6) Ensure compliance with legal protections afforded to persons with disabilities and other access and functional needs, including access for service and assistance animals

11.2.3 The entity shall adhere to policies, execute plans, and follow procedures developed to support the program.

11.3* Program Coordinator. An individual shall be appointed by the entity's leadership and authorized to develop, implement, administer, evaluate, and maintain the program.

11.4 Program Working Group.

11.4.1* A program working group shall be established by the entity in accordance with its policy.

11.4.2 The program working group shall provide input and/or assist in the coordination of the preparation, development, implementation, evaluation, and maintenance of the program.

11.4.3* The program working group shall include the program coordinator and representation from the whole community.

11.4.4 The program working group shall integrate all elements necessary for mass evacuation, sheltering, and re-entry within the entity and coordinate with other entities affected by these operations.

11.5 Program Administration.

11.5.1 The entity shall have a documented program that includes the following:

(1) Policy, including roles and responsibilities, and the enabling authority
(2)* Program scope, goals, performance objectives, and metrics for program evaluation
(3)* Applicable authorities, legislation, regulations, and industry codes of practice as required by Section 11.8
(4) Program plans and procedures that include the following:
    (a) Anticipated program cost
    (b) Resources required
    (c) Maintenance schedule
    (d) Records management practices of the entity as required by Section 11.7

11.5.2* The program shall include an all-hazards approach and risk assessment.

11.6 Performance Objectives.

11.6.1* The entity shall establish performance objectives for the program in accordance with the elements in Chapters 12 through 16.

11.6.2 The performance objectives shall address the results of the hazard identification, the risk assessment, and the requirements analysis.

11.6.3 Performance objectives shall address both short-term and long-term needs of evacuees, including persons with disabilities and other access and functional needs.

11.6.4* The entity shall define *short term* and *long term.*

11.7 Records Management.

11.7.1* The entity shall develop, implement, and manage a records management program to ensure that records are available to the entity following an evacuation.

11.7.2 Records management is designed to aid in the identification, backup, protection, and access to paper-based and electronic records that are vital to the entity and required for mass evacuation, sheltering, and re-entry.

11.7.3 The program shall include the following:

(1) Identification of records (hard copy or electronic) vital to continue the operations of the entity
(2) Backup of records as necessary to meet program goals and objectives
(3) Validation of the integrity of records backup
(4) Implementation of procedures to store, retrieve, and recover records onsite or offsite
(5) Storage and protection of records
(6) Implementation of a record review process
(7) Procedures coordinating records access within and outside the organization
(8) Executing a retention policy to archive and destroy records according to operational needs, operating procedures, statutes, and regulations

11.8 Laws and Authorities.

11.8.1* Mass evacuation, sheltering, and re-entry programs are covered by law or voluntary guidelines.

11.8.2* The entity shall implement a strategy for addressing the need for revisions to legislation, regulations, directives, policies, and industry codes of practice.

11.9 Finance and Administration.

11.9.1 The entity shall develop finance and administrative procedures to support the program before, during, and after an evacuation.

11.9.2* There shall be a responsive finance and administrative framework that does the following:

(1) Complies with the entity's program requirements
(2) Provides direct linkages to mass evacuation, sheltering, and re-entry operations
(3) Provides for maximum flexibility while retaining accountability

11.9.3 Finance and administrative procedures shall include the following:

(1) Accounting systems to track and document costs
(2) Program procurement procedures

Chapter 12 Planning (NFPA 1616)

12.1 Plan Requirements.

12.1.1 The plan shall address the health and safety of personnel as follows:

(1)* Identify actions to be taken to protect persons with disabilities, including those with access and functional needs
(2) Include an accountability system for all response personnel
(3) Monitor the health and well-being of response personnel
(4) Establish rehabilitation of personnel

(5) Ensure security and protection for response personnel
(6)* Provide appropriate personal protective equipment for response personnel

12.1.2 The plan shall identify and document the following:

(1) Assumptions made during the planning process
(2) Responsibilities for carrying out specific actions in a mass evacuation, sheltering, and re-entry; functional roles and responsibilities of internal and external agencies, organization, departments, and positions; lines of authority
(3) Trigger points to activate the evacuation plan
(4) Logistics support and resource management requirements
(5) Operational communications
(6)* Public information, including warnings, notifications, and communications

12.1.3 The entity shall make sections of the plans available to those assigned specific tasks and responsibilities therein and to key stakeholders as required.

12.2 Plan Assumptions. The plan's assumptions shall be based on the following:

(1) Research on human behavior and the risk or perception of the threat
(2) Hazard identification and risk assessment
(3)* Requirements analysis
(4) Resource analysis
(5) Number of people requiring evacuation
(6) That evacuation will require sheltering and re-entry
(7) Projections for the number of people requiring sheltering
(8) Projections for the number of people requiring re-entry
(9) That animals will be evacuated and sheltered as appropriate and feasible to safeguard human lives and facilitate an evacuation
(10) Types of vehicles required to transport persons with disabilities and other access and functional needs and animals
(11) Number of responders required to complete the evacuation process
(12) Development and implementation of plans and procedures to identify and meet the needs of populations requiring assistance and arranging of transportation for persons with disabilities and other access and functional needs during mass evacuation, sheltering, and re-entry
(13) Determination of physical requirements for evacuee assembly points, emergency respite stops, and staging and reception areas
(14) Coordination with local medical facilities to identify plans and resources in the event that these facilities require evacuation into a shelter

12.3* Plan Format.

12.3.1 Plans shall include the following:

(1) All hazards approach and risk assessment
(2) Evacuation
(3) Mass sheltering
(4) Re-entry

12.3.2 Plans shall be individual documents, integrated into a single plan document, or a combination of the two.

12.4 Planning Process.

12.4.1 A process shall be established that develops, evaluates, and improves capabilities required to implement the program.

12.4.2* The entity shall include key stakeholders and operational entities in the process.

12.4.3 The entity shall develop a set of trigger points on which to base planning efforts, including the following:

(1) The plan shall be reviewed at least annually.
(2) The plan shall be reviewed after each incident.

12.4.4* The trigger points shall identify specific actions to be taken based on specific events, threats, or hazards.

12.5* Threat, Hazard Identification, and Risk Assessment.

12.5.1 The entity shall identify the potential threats or hazards that could require evacuation and/or sheltering.

12.5.2 Natural and human-caused hazards specific to the jurisdictions that require evacuation and sheltering shall be considered during the risk assessment.

12.5.3* The entity shall identify the threats and risks associated with mass evacuation, sheltering, and re-entry.

12.5.4 The entity shall develop a safety analysis of the threats, hazards, and risks.

12.6 Requirements Analysis.

12.6.1* The entity shall conduct a requirements analysis for mass evacuation, sheltering, and re-entry that is based upon the threat hazard identification and risk assessment.

12.6.2 The requirements analysis shall include the following:

(1) Characteristics of the potentially affected population, including persons with disabilities and other access and functional needs
(2) Existence of mandatory evacuation laws and expected enforcement of those laws
(3) Characteristics of the incident that trigger consideration for evacuation shall include the following:
    (a) Weather, season, and environmental conditions
    (b) Speed of onset
    (c) Magnitude
    (d) Location and direction
    (e) Duration
    (f) Resulting damages to essential functions
    (g) Cultural and religious practices
    (h)* Risk for cascading effects and secondary disasters
    (i) Capability of transportation routes and systems to transport life-sustaining materials (food, water, medical supplies) into the affected area

12.6.3* The program shall consider the following conditions to determine whether evacuation or sheltering-in-place is appropriate to the situation and the resources available:

(1) The anticipated impact and duration of the incident
(2) The distance to appropriate sheltering facilities
(3) The availability of and access to transportation to those facilities
(4) The ability to communicate with the affected population within the required timeframe

12.6.4 Factors to be considered in planning for mass evacuation, sheltering, and re-entry shall include the following:

(1) Establishment of single or unified command
(2) Development of a joint information system to notify the public and provide an assessment of the time needed to reach people with the information
(3)* Identification of appropriate sheltering facilities by location, size, types of services available, accessibility, and building safety
(4) Identification of the modes and routes for evacuee transportation and the time needed to reach them
(5)* Sources of evacuee support services
(6) Manpower requirements based on various potential shelters

12.6.5* Sheltering facilities shall be deemed appropriate for temporary occupancy of evacuees for the applicable hazards by the local authority having jurisdiction (AHJ) and conform to the applicable requirements to ensure public health, safety, and general welfare.

12.6.6 Factors to be considered in the planning for re-entry shall include the following:

(1) Controlling access to restricted areas for security and evacuee safety
(2) Prioritizing building inspection and permitting
(3) The availability of and requirements for functioning infrastructure and utilities

12.7 Resource Needs Assessment.

12.7.1 The entity shall conduct a resource needs assessment.

12.7.2 The resource needs assessment shall include the following:

(1) Human resources, stakeholders, equipment, training, facilities, funding, expert knowledge, materials, technology, information, intelligence, and the time frames within which they will be needed
(2) Quantity, response time, capability, and cost

12.7.3 The entity shall plan to locate, acquire, store, distribute, maintain, test, and account for services, human resources, equipment, and materials procured to support the program.

12.7.4 Facilities with known capabilities and partner agreements shall be pre-identified during the assessment and planning process.

12.7.5 Established mutual aid/assistance or partnership agreements shall be included in the plan.

12.8 Communications and Public Information.

12.8.1 The entity shall develop a plan and procedures to disseminate information related to mass evacuation, sheltering, and re-entry to and respond to requests for information from the following audiences before, during, and after an incident:

(1) Internal audiences, including employees
(2) External audiences, including the general population, media, access and functional needs populations, community partners, and other stakeholders

12.8.2 The entity shall establish and maintain a communications and public information plan that considers the following:

(1) Central contact facility or communications hub
(2) Physical or virtual information center
(3) System for gathering, monitoring, and disseminating information
(4) Procedures for developing and delivering coordinated messages
(5) Protocol to clear information for release

12.9 Warning, Notifications, and Communications.

12.9.1 The entity shall determine its warning, notification, and communications needs for incidents requiring mass evacuation, sheltering, and re-entry.

12.9.2* Emergency warning, notification, and communications systems shall be reliable; interoperable; and, when feasible, redundant; and take into account persons with disabilities and other access and functional needs.

12.9.3* Emergency communications protocols and procedures shall be developed, tested regularly, and used to alert and warn stakeholders potentially at risk from an actual or impending hazard.

12.9.4* Procedures shall include issuing warnings through authorized agencies if required by law as well as the use of prescripted information bulletins or templates.

12.9.5 The same system used to issue pre-evacuation notifications shall be used to issue evacuation orders.

12.10 Operational Procedure Planning.

12.10.1 The entity shall develop operational procedures to support the plan.

12.10.2 Procedures shall be established for mass evacuation, sheltering, and re-entry.

12.10.3 Procedures shall consider life safety, property conservation, incident stabilization, continuity, and protection of the environment and of cultural heritage artifacts and buildings.

12.10.4 Procedures shall include the following:

(1) Triggers for use in decision making for shelter-in-place or evacuation
(2) Triggers for re-entry operations
(3) Evacuation procedures

12.10.5 The evacuation plan shall consider the following positions based on the size and complexity of the incident:

(1) Incident commander and deputies
(2) Command staff
(3) General staff

12.10.6* Sheltering procedures shall take into consideration the following:

(1) Evacuee and animal registration
(2) Facility management
(3)* Security and building access control
(4) Parking and traffic control
(5) Public information, public affairs, and media relations
(6) Dormitory management
(7) Medical and mental health services
(8) Disability-related needs for services, equipment, and accommodations
(9) Personal assistance services
(10) Communications and information technology
(11) Recovery information and resident messaging
(12) Family reunification
(13) Reunification of animals to owners

(14) Risk management and loss control
(15) Janitorial
(16) Building maintenance and engineering
(17) Logistical support
(18) Bulk distribution
(19) Donation and volunteer management
(20) Entertainment/recreation
(21) Child care
(22) Animal sheltering
(23) Laundry service
(24) Client transportation
(25) Postal service
(26) Meal service
(27) Spiritual care services
(28) Children's social services
(29) Charging station and electrical connections for electrical devices (e.g., phones, tablets, and so forth)

12.10.7 Re-entry procedures shall be as given in 12.10.7.1 through 12.10.7.3.

12.10.7.1 Those responsible for managing the evacuation shall ensure the transition to re-entry through performance objectives.

12.10.7.2 The entity shall determine when the area is safe prior to re-entry.

12.10.7.3 The entity shall determine whether the infrastructure is sufficient to support re-entry.

12.10.8 Procedures shall consider concurrent mass evacuation, sheltering, and re-entry operations.

Chapter 13 Implementation (NFPA 1616)

13.1* Incident Recognition.

13.1.1 The entity shall notify the appropriate officials of the emergency or impending emergency.

13.1.2 Plans shall be activated when further actions are warranted.

13.2* Situational Assessments.

13.2.1 Initial Assessment.

13.2.1.1 Depending on the nature of the incident, the initial situational assessment shall include an assessment of the impact to persons, animals, and property, infrastructure status, the availability of resources, and weather conditions.

13.2.1.2 Based on the initial assessment, the entity shall decide whether to evacuate or shelter-in-place.

13.2.2 Assessment and Evaluation. Assessments shall include evaluations of the effectiveness of previous and current actions.

13.3 Notifications and Activation.

13.3.1 Based upon the characteristics of the incident, those responsible for managing the incident shall make the necessary notifications to appropriate resources, directing them where and when to report.

13.3.2 Those responsible for managing the incident shall provide content for public information and warning messages, which will be approved and disseminated using the jurisdiction's established public information and warning policies and procedures.

13.4 Mobilization. Those responsible for managing the incident shall identify and mobilize the appropriate resources to support the initial incident objectives.

13.5 Evacuation Operations.

13.5.1* The entity shall be responsible for managing the evacuation operations.

13.5.2 In implementing the evacuation plan the entity shall consider the following:

(1) Occurrences that might require evacuation
(2) Priority of evacuation
(3) Procedures to request and coordinate required transportation assets from jurisdictional agencies
(4) Arrangements for transporting evacuees, including persons with disabilities and others with access and functional needs, and their animals
(5) Evacuation timeline
(6) Traffic management
(7) Refueling, safety, and motorist assistance requirements

13.5.3 The entity responsible for managing the evacuation shall continue to monitor media sources, public reports, incident characteristics, and progress of the operation, reflecting changing conditions that impact the incident objectives and incident action plan.

13.5.4 The entity responsible for managing the evacuation shall provide for the safety and health of evacuees and responders during all decision making.

13.5.5* The entity responsible for managing the evacuation shall determine potential resource requirements to ensure that resource management supports evacuation operations.

13.5.6 The entity responsible for managing the evacuation shall continue to provide updated information to the public through the joint information system.

13.5.7* The entity responsible for managing the evacuation shall utilize a record-keeping process for tracking of those persons (including their animals and property) provided transportation, sheltering, or other assistance. *(See Section 11.7.)*

13.5.8 The entity managing the evacuation shall ensure appropriate record keeping of costs and claims associated with the evacuation. *(See Section 11.7.)*

13.6* Sheltering Operations.

13.6.1 The entity shall provide procedures and coordinate components necessary to provide shelter to evacuees.

13.6.2* The entity shall provide for a safe and secure environment for evacuees.

13.6.3 The shelter plan shall address the basic needs of evacuees, including the following:

(1)* Medical support
(2) Persons with disabilities and others with access and functional needs support
(3) Cultural and religious support
(4) Animals, including pets and service and assistance animals

(5) Support services, including food, water, first aid, and personal care
(6) Gender identity in accordance with applicable laws, regulations, and policies

13.6.4 The entity shall provide information on the location and accessibility of shelters.

13.7 Transition to Interim and Recovery Housing. The entity shall ensure processes and procedures for transitioning individuals unable to return home into interim or long-term recovery housing.

13.8 Transition to Re-entry.

13.8.1 The entity responsible for managing the evacuation shall ensure the transition to re-entry.

13.8.2 The entity shall determine when the area is safe prior to evacuees returning.

13.8.3 The entity shall determine whether the infrastructure is sufficient to support re-entry.

13.8.4 The entity shall complete a damage assessment prior to initiating re-entry.

Chapter 14 Training and Education (NFPA 1616)

14.1 Curriculum. The entity shall develop and implement a competency-based training and education curriculum that supports all persons who have a role in the program.

14.1.1 All persons involved shall have a basic understanding of the incident command system (ICS) and how the AHJ will implement the command functions and allocation of resources.

14.1.2 Persons who will fill command functions shall have documented additional competency-based training.

14.2 Goals of the Curriculum. The goals of the curriculum shall be to create awareness and to enhance the knowledge, skills, and abilities required to implement, support, and maintain the program.

14.3 Scope and Frequency of Instruction. The scope of the curriculum and the frequency of instruction shall be identified by the AHJ.

14.4 Record Keeping. Records of training and education shall be maintained as specified in Section 11.7.

14.5 Regulatory and Program Requirements. The curriculum shall comply with applicable regulatory and program requirements.

14.6* Public Education. A public education program shall be implemented to communicate the following:

(1) Community awareness of potential hazards
(2) Understanding how and when a declaration of shelter-in-place or evacuation will take place
(3) Preparation for and safety during shelter-in-place
(4) Sources of reliable information on evacuation
(5) Evacuation warnings and orders
(6) Preparations for and safety during evacuation
(7) Consequences of refusal to evacuate
(8) Preparations for and safety during sheltering
(9) How re-entry information will be determined and communicated to all persons

14.7* Training Delivery. Training delivery to support mass evacuation, sheltering, and re-entry shall be presented by competent personnel.

Chapter 15 Exercises (NFPA 1616)

15.1 Program Evaluation.

15.1.1 The entity shall evaluate program plans, procedures, training, and capabilities and promote continuous improvement through periodic exercises.

15.1.2 The entity shall evaluate the program based on post-incident analyses of mass evacuation, sheltering, and re-entry; lessons learned; and operational performance during exercises in accordance with Chapter 20.

15.1.3 Exercises shall be documented.

15.2* Exercise Methodology.

15.2.1 Exercises shall provide a standardized methodology to practice and interact with other entities (internal and external) in a controlled setting.

15.2.2 Exercises shall be designed to assess the maturity of program plans, procedures, and strategies.

15.3* Design of Exercises. Exercises shall be designed to do the following:

(1) Ensure the safety of people, animals, property, and the environment involved in the exercise
(2) Evaluate the program
(3) Identify planning and procedural opportunities for improvement
(4) Validate recently changed procedures or plans
(5) Clarify roles and responsibilities
(6) Obtain participant feedback and recommendations for program improvement
(7) Measure improvement compared to performance objectives
(8) Improve coordination among internal and external teams, organizations, and entities
(9) Validate training and education effectiveness
(10) Increase awareness of hazards and the potential impact of hazards
(11) Identify additional resources and assess the capabilities of existing resources, including personnel and equipment needed for effective mass evacuation, sheltering, and re-entry. The resources need to take into account persons with disabilities and other access and functional needs and owners and their animals.
(12) Practice the deployment of resources to manage mass evacuation, sheltering, and re-entry
(13) Assess the ability to manage the mass evacuation, sheltering, and re-entry program
(14) Improve individual performance

15.4 Exercise Evaluation. Exercises shall evaluate program plans, procedures, training, and capabilities to identify opportunities for improvement.

15.5 Frequency.

15.5.1 Exercises shall be conducted on the frequency needed to establish and maintain required capabilities.

15.5.1.1 Frequency of exercises and resources needed shall be defined in the plan.

15.5.2 The entity shall establish the schedule for exercises.

Chapter 16 Program Maintenance and Improvement (NFPA 1616)

16.1* Program Reviews. The entity shall maintain and improve the program by evaluating its effectiveness using performance objectives and by identifying corrective and preventive action changes based upon assessments and evaluations conducted during exercises and real events.

16.1.1 The entity shall improve effectiveness of the program through incorporation of identified preventive and corrective actions.

16.1.2 The program shall be re-evaluated when a change in any of the following affects the entity's program:

(1) Regulations
(2) Hazards and potential impacts
(3) Resource availability or capability
(4) The entity's organizational structure or operations
(5) Funding changes
(6) Infrastructure, including the technology environment
(7) Economic stability and demographics

16.1.3* The entity shall review and revise the program based on post-incident analyses of mass evacuation, sheltering, and re-entry; lessons learned; and operational performance during exercises and real events.

16.1.4 The entity shall maintain records of its reviews and evaluations, in accordance with the records management practices developed under Section 11.7.

16.1.5 Documentation, records, and reports shall be provided to management for review and follow-up.

16.2 Corrective Actions.

16.2.1 The entity shall establish a corrective action process.

16.2.2 The entity shall take corrective actions on identified opportunities for improvement.

16.3 Continuous Improvement. The entity shall effect continuous improvement of the program through the use of program reviews and the corrective action process.

Chapter 17 Pre-Incident Planning Process (NFPA 1620)

17.1 Administrative.

17.1.1* Scope. Chapters 17 through 23 provide criteria for developing pre-incident plans for use by personnel responding to emergencies. Not every portion of this standard is applicable to the development of all pre-incident plans.

17.1.2* Purpose. The purpose of Chapters 17 through 23 is to identify a process for the development of pre-incident plans that will assist personnel in effectively managing incidents and events for the protection of occupants, responding personnel, property, and the environment.

17.1.3 Application.

17.1.3.1 The AHJ determines the location(s) to be pre-incident planned, data to be collected, and extent of documentation and training appropriate for the jurisdiction.

17.1.3.2 The AHJ applies the requirements in Chapters 17 through 23 to the development of a pre-incident plan.

17.1.3.3* When Chapters 17 through 23 are adopted by a jurisdiction, the AHJ sets a date or dates for achieving compliance with the requirements of this standard.

17.1.3.4* The AHJ is permitted to establish a phase-in schedule for compliance with specific requirements of Chapters 17 through 23.

17.1.3.5* Policies and procedures are required to ensure the protection of proprietary or sensitive information.

17.1.4 Units and Formulas.

17.1.4.1 SI Units. Units of measurement in this standard are in accordance with the modernized metric system known as the International System of Units (SI).

17.1.4.2 Primary Values. The inch-pound value for a measurement, and the SI value given in parentheses, shall each be acceptable for use as the primary value units for satisfying the requirements of this standard.

17.2 General.

17.2.1* The pre-incident plan shall be developed in accordance with a format approved by the AHJ.

17.2.2* The pre-incident plan developer shall be competent and familiar with the basic information to be collected and included in the final pre-incident plan.

17.2.3 The pre-incident plan shall be a cooperative effort among the pre-incident plan developer, facility management and operations staff, and responding personnel.

17.2.4 Persons shall be consulted who are able to provide valuable input, including technical experts who do not actually respond to an incident.

17.2.5* The pre-incident plan shall be coordinated with an incident management system.

17.2.6* The pre-incident plan developer shall solicit and document information from responding agencies and personnel regarding their availability and capabilities.

17.2.7 When multiple responding agencies are involved, roles and responsibilities shall be identified in the pre-incident plan.

17.2.8* The development of a pre-incident plan for new facilities and other situations shall begin during the design phase.

17.2.9 In establishing a program for the development of pre-incident plans, the following items shall be considered:

(1) Potential life safety hazard, including emergency responder safety
(2) Structure size and operations complexity
(3) Economic impact
(4) Importance to the community
(5) Location and seasonal variations

(6) Presence of hazardous materials
(7) Susceptibility to natural disasters

17.3 Pre-Incident Plan Development.

17.3.1 Once a site has been selected for pre-incident planning, the developer shall determine the information required.

17.3.2* To develop a pre-incident plan, the developers shall visit the property to become familiar with its layout, contents, construction, and protection features.

17.4* Data Collection.

17.4.1* The level of detail of the data collected shall be determined by the AHJ for the pre-incident plan.

17.4.1.1* The data shall be collected by consulting with knowledgeable personnel involved with one of the following:

(1) Site maintenance or operations
(2) Facility development

17.4.1.2* The data collected shall be evaluated to determine the data that is critical to the user and that shall be included in the pre-incident plan.

17.5* Pre-Incident Plan Preparation. The AHJ shall determine a format that presents the pre-incident plan details in the most concise manner for the user(s).

17.5.1 The pre-incident plan shall be created from the data collection document(s).

17.5.2* A standardized pre-incident plan document shall be utilized throughout the AHJ's response area.

17.5.3 The AHJ shall consider if it is necessary to modify operational procedures to reflect unique site conditions found during preplanning data collection and include those procedures in the pre-incident plan.

17.5.4 Electronic versions of the pre-incident plan document shall be permitted if the following three conditions are met:

(1) The electronic connection is considered reliable by the AHJ.
(2) The electronic connection is secured against unauthorized users.
(3) The electronic version is protected from unauthorized changes.

17.6* Pre-Incident Plan Sketches. The symbols provided in NFPA 170 shall be utilized on pre-incident plan sketches for consistency among pre-incident plan users.

17.7 Pre-Incident Plan Distribution. Copies of the pre-incident plan shall be distributed to responsible personnel as determined by the AHJ.

17.8* Training. The pre-incident planning process shall include a provision for training and education in those portions of the pre-incident plan that involve unique or unusual operations.

17.9* During the Incident. The pre-incident plan shall be available to the incident commander during the incident.

17.10 Post-Incident.

17.10.1 The adequacy and accuracy of the pre-incident plan shall be evaluated after an emergency or event.

17.10.2 The pre-incident plan shall be revised in accordance with 23.2.1.

Chapter 18 Physical and Site Considerations (NFPA 1620)

18.1* General. Physical elements and site considerations shall be classified into the following five groups:

(1) Construction (*see Section 18.2*)
(2) Building management systems and utilities (*see Section 18.3*)
(3) External site conditions (*see Section 18.4*)
(4) Internal and external security (*see Section 18.5*)
(5) Fences or other barriers (*see Section 18.6*)

18.2 Construction.

18.2.1* Area, Height, and Age. The entire building size, including overall height, number of stories, square footage, and approximate or actual year of original construction, shall be determined and included in the pre-incident plan.

18.2.2 Building Features.

18.2.2.1 The construction type of the building, including the combustibility of the building, shall be noted or summarized in the pre-incident plan.

18.2.2.2 Data on the following items shall be recorded:

(1)* Wall construction and insulation
(2)* Roof construction
(3)* Floor construction
(4)* Other pertinent building features
(5) Floor plan with room identifier and occupancy and use of each room
(6)* Location, types, and construction of access features
(7)* Areas where fire, products of combustion, or other contaminants could spread due to a lack of structural barriers
(8)* Atriums
(9)* Structural integrity of walls, roofs, and floors
(10)* Storage arrangements
(11) Fire command center location, access, and fire rating of the area fire walls

18.3* Building Management Systems and Utilities. Building management systems and utility systems data shall be recorded in the pre-incident plan.

18.3.1* Emergency Contact Information. Emergency contact information shall be recorded in the pre-incident plan for persons responsible for the operation of building systems and utilities and for persons knowledgeable of the supervisory control and data acquisition or similar systems.

18.3.2* Electrical Components, Power Supplies, and Energy Sources.

18.3.2.1 Transformers. The location of transformers filled with combustible and flammable fluids shall be recorded in the pre-incident plan.

18.3.2.2* Electric Utility Rooms. The location of electric utility rooms shall be recorded in the pre-incident plan.

18.3.2.3* Alternative Energy Sources. The location of alternative energy sources shall be recorded in the pre-incident plan.

18.3.2.4 Emergency Power Supply.

18.3.2.4.1* The following features of the emergency power supply (EPS) shall be identified and recorded in the pre-incident plan:

(1) Location
(2) Fuel supplies
(3) Areas served
(4) Equipment served
(5) Duration
(6) Isolation

18.3.2.4.2 An EPS requiring manual action shall be recorded in the pre-incident plan.

18.3.2.4.3 The location of the EPS' disconnecting means shall be recorded in the pre-incident plan.

18.3.2.5 Domestic Water and Process Water. Water shutoff locations shall be recorded in the pre-incident plan, with special consideration given to any equipment or processes that require an uninterrupted supply of water.

18.3.2.6* Compressed and Liquefied Gases. The location of compressors, storage containers, storage tanks, pressure vessels, the nearest shutoff means, and the size of storage tanks, shall be recorded in the pre-incident plan.

18.3.2.7* Steam. The location of steam lines and boilers and associated equipment, as well as shutoff valves for the steam supply, shall be recorded in the pre-incident plan.

18.3.2.8 Fuels.

18.3.2.8.1 Information regarding systems that have the capability of changing over from one fuel source to another shall be recorded in the pre-incident plan.

18.3.2.8.2 The location of all fuel pumps, tanks, regulating equipment, and shutoff valves shall be recorded in the pre-incident plan.

18.3.3* Elevators.

18.3.3.1 Elevator Information. Elevator information shall be recorded in the pre-incident plan.

18.3.3.2* Elevator Lobbies. The pre-incident plan shall note the presence of any fire- or smoke-resistant elevator lobbies.

18.4 External Site Conditions.

18.4.1* Access. The pre-incident plan shall note points of access for responding personnel.

18.4.1.1 The location of key/lock box for rapid access shall be recorded on the pre-incident plan.

18.4.2* Obstacles to Access. Site conditions that would hamper access of emergency equipment, such as height, width, or weight restrictions, shall be noted in the pre-incident plan.

18.5* Internal and External Security.

18.5.1 Security Measures.

18.5.1.1* Internal and external security measures shall be recorded in the pre-incident plan.

18.5.1.2 The pre-incident plan shall include the location of and access to keys, fobs, and RFID cards to enter secure areas.

18.5.1.3 The pre-incident plan shall document the performance of access control systems if primary power is lost.

18.5.2* Security Animals. The use of security animals shall be noted in the pre-incident plan.

18.5.3 Security Systems.

18.5.3.1* Data regarding intruder security systems shall be recorded in the pre-incident plan.

18.5.3.2* Data regarding an on-site security service shall be recorded in the pre-incident plan.

18.6* Fences or Other Barriers. The height, construction, and ingress/egress points of fences or other barriers shall be recorded in the pre-incident plan.

18.7 General Overall Condition.

18.7.1 Exposures. The ground surrounding the site, structure, or building shall be surveyed to identify buildings, structures, equipment, storage, and people that could be exposed by an incident, and the information shall be noted in the pre-incident plan.

18.7.2* Environmental Impact. Information shall be collected on potential environmental contaminants. (*See Sections 21.2.4 through 21.2.10.1.*)

18.8* Communications.

18.8.1* Data regarding communications systems within the facility shall be recorded in the pre-incident plan.

18.8.2* Data regarding the functionality of radio communications shall be recorded in the pre-incident plan.

18.9 Geospatial Position.

18.9.1 Standard Coordinates. Geospatial Positioning System [e.g., U.S. National Grid (USNG)] coordinates shall be utilized to record and specify locations of the facilities, structures, assets, utility components, water supplies, and so forth.

Chapter 19 Occupancy Considerations (NFPA 1620)

19.1 Occupancy. The pre-incident plan shall document the occupancy type and use. (*See Section Y.3.*)

19.2 Life Safety Considerations.

19.2.1 General.

19.2.1.1 The following information shall be noted in the pre-incident plan:

(1)* Hours of operation
(2)* Occupant load
(3)* Occupant accountability
(4)* Assistance for people with self-evacuation limits
(5)* Strategies for protecting facility occupants, other than evacuation

19.2.2* Means of Egress. The number of exits, their location, and any special locking conditions, such as delayed release, limited security access, and stairwell locking, shall be noted on the pre-incident plan.

19.3 On-Site Emergency Organization.

19.3.1* Facility Emergency Action Plan. If a facility has an emergency action plan, it shall be obtained for reference during an emergency.

19.3.2* Emergency Response Capabilities. The on-site emergency response capabilities and their coordination with responding personnel shall be incorporated into the pre-incident plan.

19.3.3 Specialized Operations, Processes, and Hazards. Where occupancies contain specialized operations, processes, and hazards that can pose unique challenges in an emergency, the emergency operating procedures and personnel knowledgeable of these conditions shall be documented in the pre-incident plan.

Chapter 20 Water Supplies and Fire Protection Systems (NFPA 1620)

20.1 General. Information on water supplies and fire protection systems shall be included in the pre-incident plan.

20.2* Water Supplies. Water supplies for fire suppression operations and water-based fire protection systems shall be described and identified in the pre-incident plan.

20.2.1* Required Fire Flow. The required fire flow shall be determined by the AHJ.

20.2.2* Available Water Supply.

20.2.2.1 The available water supply shall be included in the pre-incident plan.

20.2.2.2* Where the required fire flow exceeds the available water supply, the pre-incident plan shall address a response to mitigate the deficiency.

20.2.3* Public and Private Water Supply Utility Sources. The source of water supply, whether it is from a public or private water distribution system, shall be recorded in the pre-incident plan.

20.2.4 Static Water Supply Sources.

20.2.4.1 Static water sources, such as ponds, lakes, rivers, tanks, and cisterns, shall be recorded in the pre-incident plan.

20.2.4.2* The pre-incident plan shall include seasonal variation information for bodies of water.

20.2.4.3 The method of drafting from the water source shall be recorded in the pre-incident plan.

20.2.5* Water Storage Tanks.

20.2.5.1 Where a water storage tank is used as a source of water, the water storage capacity shall be recorded in the pre-incident plan.

20.2.5.2* The method of obtaining water from the water storage tank shall be recorded in the pre-incident plan.

20.2.6* Fire Hydrants. The location of fire hydrants shall be recorded in the pre-incident plan.

20.3* Water-Based Fire Protection Systems.

20.3.1* Sprinkler and Water Spray. Water-based systems, including type of system, location and identification of main riser valves, extent of coverage, and means of manual activation, shall be recorded in the pre-incident plan.

20.3.2* Standpipe Systems. Standpipe systems, including type of system, location and identification of control valves, location of hose valves, and presence of pressure reducing devices (PRV), shall be recorded in the pre-incident plan.

20.3.3* Fire Pumps. Fire pump(s), including location of, and access to, the fire pump and controller; rated capacity; source of water supply; and areas or systems served, shall be recorded in the pre-incident plan.

20.3.4 Fire Department Connection (FDC). Fire department connection(s) (FDC) shall be recorded in the pre-incident plan, including physical location, size, type, locking means, and area/systems supplied.

20.4* Non-Water-Based Fire Protection Systems. Non-water-based fire protection system(s) shall be recorded in the pre-incident plan, including type of system, hazard or area protected, means of activation, location of abort devices, location of control panel, location of agent supply and reserve containers, and personnel hazards following agent release.

20.5* Fire Alarm Systems. Fire alarm systems shall be recorded in the pre-incident plan, including area of coverage, location of fire alarm control unit (FACU) and remote annunciator panels, method of system activation, and method and extent of occupant notification.

20.6* Portable Fire Extinguishers. The pre-incident plan shall note the location and type of large, wheeled equipment or specialized extinguishers or both.

20.7 Smoke Control Systems.

20.7.1 Pressurization-Based Smoke Management Systems. A smoke management system(s) shall be recorded in the pre-incident plan, including location of areas served by system, location of control systems, system operation information, location of manual override controls, and location of supply and discharge arrangement.

20.7.2 Smoke and Heat Vents. Smoke and heat vents shall be recorded in the pre-incident plan, including location and type of activation (manual or automatic).

Chapter 21 Special Considerations (NFPA 1620)

21.1 General. The pre-incident plan shall identify and document special considerations in accordance with this chapter.

21.2* Hazardous Materials.

21.2.1 General. The pre-incident plan shall identify and document hazardous materials recognized by the AHJ that present life safety challenges, operations challenges, or other challenges to emergency responders.

21.2.1.1 Pre-incident plans for hazardous materials shall include the specifications of Sections 21.2.4 through 21.2.10.1.

21.2.2* Transient Conditions. Where hazardous materials exist intermittently, the AHJ shall determine the need to identify and record relevant information for each hazard and the length of time the hazard is expected to be present.

21.2.3* Inventory. Where the storage or use of hazardous materials has been identified as a special hazard, the pre-incident plan shall include the anticipated maximum inventory and bulk storage locations.

21.2.4 Explosives. The use or storage of explosive materials in an occupancy shall require preplanning as determined by the AHJ.

21.2.4.1 The presence, approximate amount, explosive class and division, and location of explosive materials shall be recorded in the pre-incident plan.

21.2.4.2* Materials that have the potential to explode upon exposure to fire, heat, and pressure shall be documented on the pre-incident plan.

21.2.4.3 Isolation and evacuation distances based on the type and quantity of explosives within a facility shall be recorded in the pre-incident plan.

21.2.5* Flammable and Combustible Liquids. Where the AHJ has determined that a facility using, handling, or storing flammable and combustible liquids requires pre-incident planning, the following shall be recorded in the pre-incident plan:

(1)* Drainage, such as the location where the flammable or combustible liquid will flow and collect if spilled
(2) Secondary containment, such as the presence of, and capacity of, built-in secondary containment features for the collection of firefighting water and spilled product
(3)* Specialized extinguishing agents, such as indicated product-specific requirements

21.2.6 Toxic or Biological Agents.

21.2.6.1 The location and quantity of toxic or biological agents shall be documented in the pre-incident plan.

21.2.6.2 The impact of toxic or biological agents on neighboring or downwind occupancies shall be evaluated.

21.2.7* Radioactive Materials.

21.2.7.1 The location and type of radioactive materials and radiation-producing devices shall be recorded in the pre-incident plan.

21.2.7.2 Isolation and evacuation distances, based on the type and quantity of radioactive material within a facility, shall be recorded in the pre-incident plan.

21.2.8* Reactive Chemicals and Materials.

21.2.8.1 Reactive chemicals and materials shall be recorded in the pre-incident plan.

21.2.8.2 Isolation and evacuation distances, based on the type and quantity of reactive chemical and material within a facility, shall be recorded in the pre-incident plan.

21.2.9* Combustible Dusts. Operations that generate, collect, or store combustible dusts shall be recorded in the pre-incident plan.

21.2.10* Special Atmospheres. Any area of an occupancy that contains rooms or equipment storing or using special gases or vapors that can present a hazard to the emergency responders shall be identified in the pre-incident plan.

21.2.10.1 The pre-incident plan shall identify special agents or procedures for emergency response to hazardous material (e.g., metal dusts and water reactive metals).

21.3 Vacant and Abandoned Structures.

21.3.1* General. The pre-incident plan shall identify and document any vacant and abandoned structures recognized by the AHJ that present life safety challenges, operations challenges, or other challenges to emergency responders.

21.3.2 Temporary Conditions. Where vacant and abandoned structures exist temporarily, the AHJ shall determine the need to identify and record relevant information for each hazard and the length of time the hazard is expected to be present.

21.3.3 Physical and Site Considerations. In addition to the building characteristics identified in Chapter 18, the following details shall be considered as part of the pre-incident plan for vacant and abandoned structures:

(1) Last known type of occupancy
(2) Open shafts
(3) Pits and holes due to removal of equipment
(4) Structural degradation due to weather and vandalism
(5) Exposed structural members
(6) Penetrations in barriers such as walls, floors, and ceilings that allow abnormal fire travel
(7) Combustible contents
(8) Maze-like configuration
(9) Blocked, damaged, or missing stairs

21.3.4 Potential Hazards. The following potential hazards shall be considered as part of the pre-incident plan for vacant and abandoned structures:

(1) Unstable structure
(2) Fall and trip hazards
(3) Standing water in basement
(4) Vermin
(5) Unexpected occupancy
(6) Ongoing criminal activity
(7) Rapid fire growth potential
(8) Status of utilities (e.g., active, inactive, unknown)
(9) Holes and penetrations in floors, walls, and roofs
(10) Fire escape access
(11) Maze-like configuration
(12) Previous fires in building
(13) Unsecured structure

21.3.5* Structure Markings. The presence of structural markings shall be noted in the pre-incident plan.

21.4 Buildings Under Construction.

21.4.1 General. A pre-incident plan shall be developed for buildings under construction as determined by the AHJ.

21.4.2 Temporary Conditions.

21.4.2.1* Where construction features exist temporarily, the AHJ shall determine the need to identify and record relevant information for the following:

(1) Each hazard present
(2) Length of time the hazard is expected to be present

21.4.2.2 The AHJ shall make a determination as to the frequency of visits and the pre-incident plan updating required for buildings under construction.

21.4.3* Pre-Fire Plans. The pre-incident plan shall include and reference the fire safety measures found in the pre-fire plan when developed in accordance with NFPA 241.

21.4.4 Building Completion. Once the building is completed and occupied, the pre-incident plan shall be updated.

21.5 Mass Gatherings.

21.5.1 General. A pre-incident plan shall be developed for mass gatherings recognized by the AHJ that present life safety challenges, operations challenges, or other challenges to emergency responders.

21.5.1.1 The AHJ shall identify the need for, and level of detail for, addressing mass gatherings in the pre-incident plan.

21.5.2 Incident Management System. The pre-incident plan shall address the implementation of an incident management system (IMS) for the duration of the event.

21.5.3 Physical and Site Considerations. Where the AHJ has determined that a pre-incident plan is required for mass gatherings, the following items shall be included in the pre-incident plan and coordinated with other applicable agencies:

(1) Unified command post
(2) Access and ingress/egress for the following:
    (a) Attendees
    (b) First responders
(3) Evacuation
(4) Weather
(5) Emergency medical services (e.g., routine and mass casualties)
(6) Security
(7) Traffic
(8) Crowd management
(9) Fire protection
(10) Food operations
(11) Pyrotechnics
(12) Aeronautical operations
(13) Communications
(14) Fuels (e.g., cooking equipment, internal combustion engines, hot air balloons)
(15) Safety data sheets (SDS) as determined by the AHJ
(16) Contingency plans
(17) Special operations (e.g., technical rescue, hazardous material)
(18) Temporary structures
(19) Other items as identified by the AHJ or mass gathering organizer that are necessary for an effective pre-incident plan

21.6 Transportation.

21.6.1* Highways and Interchanges. Pre-incident plans for highways, interchanges, road tunnels, and bridges shall be developed in accordance with NFPA 502.

21.6.2 Rail Lines, Locomotives, and Trains. Pre-incident plans for rail lines, locomotives, and trains shall be developed in accordance with Chapter 9 of NFPA 130.

21.6.3 Airports. Pre-incident plans for airports shall be developed in accordance with NFPA 424 (as incorporated in NFPA 440).

21.6.4 Ports. Pre-incident plans for ports shall be developed in accordance with NFPA 303.

21.6.5* Bakken Crude Oil Response and Emergencies. Pre-incident plans for Bakken crude oil response and emergencies shall assess the potential impact on towns, communities, and facilities where products are moved or handled.

21.6.6 Flammable and Combustible Liquid Spills and Fires. Pre-incident plans for flammable and combustible liquid spills and fires shall be developed in accordance with NFPA 472 (as incorporated in NFPA 470).

Chapter 22 Incident Operations (NFPA 1620)

22.1* General. The pre-incident plan shall address the response to an incident at the facility or site and additional resources as required.

22.2* Incident Notification. The pre-incident plan shall provide critical information for responding personnel at the time of dispatch, as determined by the AHJ.

22.3 Operation Resources.

22.3.1* The pre-incident plan shall indicate the facility's emergency response capabilities and incident management system.

22.3.2* The pre-incident plan developer shall consider the capabilities of initial public emergency response resources in managing emergencies for the protection of the occupants, responding personnel, property, and environment.

22.3.3 Where technical expertise from an outside agency, a building occupant, or a facility management representative is vital to successfully conduct emergency operations, the agency, occupant, or representative shall be considered an on-site emergency representative to the incident commander.

22.3.4 The on-site emergency representative shall be identified by name or job title in the pre-incident plan.

22.3.5 The contact information of the on-site emergency representative shall be included in the pre-incident plan.

22.3.6* Response to incidents that require additional agencies or organizations for other purposes shall be identified and included in the pre-incident plan.

Chapter 23 Pre-Incident Plan Maintenance (NFPA 1620)

23.1 General. Pre-incident plans shall be reviewed and updated at a frequency determined by the AHJ.

23.2 Pre-Incident Plan Update.

23.2.1* Pre-incident plans shall be updated or revised whenever significant changes occur.

23.2.2 Prior editions of the pre-incident plan shall be archived or destroyed in accordance with local policy.

23.2.3 The list of all pre-incident plan recipients maintained by the pre-incident plan developer shall be used for distribution of pre-incident plan updates.

23.3 Site Liaison.

23.3.1 The site liaison shall be responsible for providing site-specific information to the pre-incident plan developer.

23.3.2 The site liaison shall be identified in the pre-incident plan by name or job title, contact information, and who they represent.

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.1.3 NFPA's Emergency Response and Responder Safety (ERRS) Document Consolidation Project is incorporating three former standalone standards (NFPA 1600, NFPA 1616, and NFPA 1620) into a single consolidated standard, NFPA 1660. New editions of NFPA 1600, NFPA 1616, and NFPA 1620 will no longer be published as separate, standalone documents. Where an authority having jurisdiction (AHJ) elects to adopt the latest edition of one or more of the previous standards, the adopting language should refer to the specific chapters of this document as identified in Section 1.3.

The numbers found in parentheses at the end of each chapter title in NFPA 1660 refer to the former standalone documents. These references in the chapter titles within NFPA 1660 are intended to help users crosswalk between the chapters in NFPA 1660 and the former standalone documents.

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 or 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 standards in a broad manner because 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.3.3.3 Access and Functional Needs. The definition for *access and functional needs* aligns with the terminology in FEMA's Glossary of Terms.

Access and functional needs are individual circumstances requiring assistance, accommodation, or modification due to any temporary or permanent situation that limits an individual's ability to act in an emergency.

Individuals that could require additional response assistance include, but are not limited to, the following:

(1) Children
(2) Seniors
(3) People with disabilities
(4) People who live in institutionalized settings
(5) People from diverse cultures
(6) People who have limited English proficiency or are non-English-speaking
(7) People who are transportation disadvantaged

Additional needs for such individuals can include, but are not limited to, the following:

(1) Mobility
(2) Communication
(3) Transportation
(4) Safety
(5) Health maintenance

The terminology for this population continues to evolve. Similar terms include *handicapped*, *disabled*, *special needs*, *vulnerable population*, *individuals with medical dependencies*, *specialty care population*, and *vulnerable persons. (See Annex H.)*

A.3.3.9 Assembly Occupancy. Assembly occupancies might include the following:

(1) Armories
(2) Assembly halls
(3) Auditoriums
(4) Bowling lanes
(5) Club rooms
(6) College and university classrooms, 50 persons and over
(7) Conference rooms
(8) Courtrooms
(9) Dance halls
(10) Drinking establishments
(11) Exhibition halls
(12) Gymnasiums
(13) Libraries
(14) Mortuary chapels
(15) Motion picture theaters
(16) Museums
(17) Passenger stations and terminals of air, surface, underground, and marine public transportation facilities
(18) Places of religious worship
(19) Pool rooms
(20) Recreation piers
(21) Restaurants
(22) Skating rinks
(23) Special amusement buildings, regardless of occupant load
(24) Theaters

Assembly occupancies are characterized by the presence or potential presence of crowds with attendant panic hazard in case of fire or other emergency. They are generally open or occasionally open to the public, and the occupants, who are present voluntarily, are not ordinarily subject to discipline or control. Such buildings are ordinarily occupied by able-bodied persons and are not used for sleeping purposes. Special conference rooms, snack areas, and other areas incidental to, and under the control of, the management of other occupancies, such as offices, fall under the 50-person limitation. Restaurants and drinking establishments with an occupant load of fewer than 50 persons should be classified as mercantile occupancies.

A.3.3.10 Assistance Animal. Assistance animals are not required to be individually trained or certified. Dogs are the most common, but not the only type of assistance animal. An assistance animal is not a pet or a service animal.

This definition was developed in accordance with the Fair Housing Act and Air Carrier Access Act.

The AHJ must comply with federal statutory requirements and might have state, tribal, or local requirements to comply with legal protections and requirements for management of animals that do work or provide support for persons with disabilities and others with access and functional needs during mass evacuation, sheltering, and re-entry.

A.3.3.14 Business Occupancy. Business occupancies include the following:

(1) Air traffic control towers (ATCTs)
(2) City halls
(3) College and university instructional buildings, classrooms under 50 persons, and instructional laboratories
(4) Courthouses
(5) Dentists' offices
(6) Doctors' offices
(7) General offices
(8) Outpatient clinics (ambulatory)
(9) Town halls

Doctors' and dentists' offices are included, unless of such character as to be classified as ambulatory health care occupancies. Birth centers should be classified as business occupancies if they are occupied by fewer than four patients, not including infants, at any one time; do not provide sleeping facilities for four or more occupants; and do not provide treatment procedures that render four or more patients, not including infants, incapable of self-preservation at any one time. Service facilities common to city office buildings, such as newsstands, lunch counters serving fewer than 50 persons, barber shops, and beauty parlors, are included in the business occupancy group. City halls, town halls, and courthouses are included in this occupancy group insofar as their principal function is the transaction of public business and the keeping of books and records. Insofar as they are used for assembly purposes, they are classified as assembly occupancies.

A.3.3.22 Confined Space. Examples of confined spaces include tanks, vessels, silos, storage bins, hoppers, vaults, crawl spaces, and pits.

A.3.3.24 Continuity. Other terms for business continuity include *operational continuity* and *continuity of operations* (*COOP*). In the public sector, the term *continuity of government* (*COG*) is also used.

The practice of business continuity planning (BCP) as defined by Chapters 3 through 10 and the practice of COOP as defined within FEMA CGC-1, *Continuity Guidance Circular 1*, are more similar than not. Terminology varies, as well as the emphasis on various aspects of continuity planning. The most significant difference between BCP and COOP lies with objectives, the definition of *critical or essential functions*, and how demand for public sector essential services could change during an incident.

Objectives. The objective of BCP in the private sector is the continuity of business processes to avoid economic impacts including loss of revenue, dissatisfaction of stakeholders (particularly customers), increased costs, and damage to brand, image, and reputation. The primary focus of COOP in the public sector is the continuity of government including leadership of elected officials, exercise of civil authority, maintenance of public safety, and sustaining the industrial/economic base.

Responsibility for planning. COOP places responsibility for planning on the "senior elected official," "administrative head," and "senior leadership," which is similar to BCP placing responsibility on senior leadership. The business continuity manager and COOP continuity manager share similar responsibilities as do the business and continuity planning teams.

Planning process. Both BCP and COOP have defined a planning process. BCP as defined by Chapters 3 through 10 and industry practices outlines a program development process that aligns with Plan-Do-Check-Act (PDCA). COOP uses the term *standardized continuity program management cycle*, which includes multiple pillars and supporting implementation and continuous improvement methods.

Essential functions and critical processes. The identification and prioritization of essential functions (EFs) and essential supporting activities are at the core of COOP and are clearly differentiated from BCP. COOP defines *national essential functions (NEFs)* (federal government), *primary mission essential functions* (essential functions that support NEFs), *mission essential functions* (enabling an organization to provide vital services, exercise civil authority, maintain public safety, and sustain the industrial/economic base), and *essential supporting activities* (functions that should continue in a continuity activation, but are not recognized as EFs, such as human resources management, security, and facilities management).

An important distinction between governmental COOP and private sector BCP is the planning for enhanced demand for services during times of emergency and recovery (e.g., during a natural disaster, the demand for public health and safety services, restoration and recovery of public infrastructure, and agencies and departments that permit and approve repair and rebuilding spikes). COOP must anticipate the shift in demand for public services, depending on the type of emergency. Most businesses do not have to plan for a demand surge on their services during times of public emergency, unless they provide critical infrastructure or emergency services for the public sector.

Business impact analysis, business process analysis, and time frames. COOP guidance uses the term *business impact analysis(BIA)* to identify "the effects of failing to perform a function or requirement." COOP uses the term *business process analysis (BPA)* to define the methodology of "examining, identifying, and mapping the functional processes, workflows, activities, personnel expertise, systems, data, interdependencies, and facilities inherent in the execution of a function or requirement." BIA in the private sector incorporates a BPA.

COOP specifies that organizations must continuously perform primary mission essential functions (PMEFs) during a continuity activation or resume PMEFs within 12 hours of an event. Mission essential functions must continue throughout or resume rapidly after a disruption of normal activities. BIA does specify the continuity or recovery time frame.

The BIA is at the core of BCP. A BIA is the identification of business processes that are required for the entity to perform its mission and the minimum acceptable level of performance

to avoid economic and other impacts. *Critical business processes* is a common term used in BCP, and the BIA identifies and assesses the potential impacts of a disruption. The BIA should provide information for management to determine the point in time [recovery time objective (RTO)] when the impacts of the disruption become unacceptable to the entity. The BIA should also identify the acceptable amount of data loss for physical and electronic records, which is the recovery point objective (RPO). COOP calls for a "data risk assessment" but it does not call out defining RPOs.

The BIA should identify resources and capabilities to sustain business processes at a minimum requirement — both internal and external — including, but not separately identifying, what COOP defines as "essential supporting activities" (e.g., human resources, security).

Continuity strategies. COOP planning includes the concept of relocation as a continuity strategy and identifies an emergency relocation group. There is no difference between relocation as a strategy in COOP or BCP. COOP does define another term called *devolution* as the "transition of roles and responsibilities for performance of essential functions through pre-authorized delegations of authority and responsibility." Once again, this is a potential strategy to be utilized in the private sector, but the term *devolution* is not commonly used. *Reconstitution* is another term used in COOP that does not have a similar term in BCP but equates to recovery, including long-term recovery.

Orders of succession and delegations of authority. COOP emphasizes orders of succession and delegations of authority, which is also an important part of planning in the private sector. However, the need for public entities to ensure compliance with statutes that define lines of succession and the transfer of authority is at the core of COOP.

Terminology varies between BCP (e.g., *steering committee, business continuity team*) and COOP (e.g., *continuity manager, emergency relocation group, devolution relocation group*) relating to functional positions. *Vital records* in BCP are the same as *essential records* in COOP.

A.3.3.26 Covered Mall Building. Covered mall buildings are occupied primarily by mercantile occupancies. However, they can include other occupancies, such as drinking and dining establishments, entertainment and amusement facilities, offices, and similar uses that are incidental to the primary use of the building.

A.3.3.30 Detention and Correctional Occupancy. Detention and correctional occupancies include the following:

(1) Adult and juvenile substance abuse centers
(2) Adult and juvenile work camps
(3) Adult community residential centers
(4) Adult correctional institutions
(5) Adult local detention facilities
(6) Juvenile community residential centers
(7) Juvenile detention facilities
(8) Juvenile training schools

A.3.3.32 Dormitory. Rooms within dormitories intended for the use of individuals for combined living and sleeping purposes are guest rooms or guest suites. Examples of dormitories are college dormitories, fraternity and sorority houses, and military barracks.

A.3.3.33 Educational Occupancy. Educational occupancies include the following:

(1) Academies
(2) Kindergartens
(3) Schools

An educational occupancy is distinguished from an assembly occupancy in that the same occupants are regularly present.

A.3.3.38 Emergency Respite. Respite programs provide short-term and time-limited breaks for families and other caregivers. Respite often provides a positive experience for the person receiving care. The term *short break* is also used to describe respite care.

A.3.3.40 Entity. See Annex S for more information on the use of the term *entities*.

A.3.3.42 Evacuation Capability. NFPA *101* should be referred to for further explanation and methods of determining the evacuation capabilities of an occupancy.

A.3.3.46 Exercise. Exercise is the principal means of evaluating a program's ability to execute its response and recovery procedures and to validate that those procedures are effective. The purpose of conducting exercises is not to prove what works but to identify gaps or issues before a real event occurs so they can be addressed. It allows the entity to practice procedures and interact in a controlled setting. Participants identify and make recommendations to improve the overall program. Exercises include activities performed for the purpose of training and conditioning team members and personnel in appropriate responses, with the goal of achieving maximum performance.

An exercise can include seminars, workshops, games, drills, tabletops, functional exercises, or full-scale exercises and involve the simulation of a response or operational continuity incident. Exercises can be announced or unannounced and involve participant role-play in order to identify issues that might arise in a real incident.

A.3.3.48 Facility Emergency Action Plan. A written emergency action plan that is consistent with available equipment and personnel should be established to respond to fires and related emergencies. The plan should include the following:

(1) Procedures to be followed in case of fire, such as sounding the alarm, notifying the fire department, evacuating personnel, and controlling and extinguishing the fire
(2) Procedures and schedules for conducting drills of these procedures
(3) Appointment and training of personnel to carry out assigned duties, including review at the time of initial assignment, as responsibilities or response actions change, and whenever anticipated duties change
(4) Maintenance of fire protection equipment
(5) Procedures for shutting down or isolating equipment to reduce the release of liquid, including assigning personnel responsible for maintaining critical plant functions or shutdown of plant processes
(6) Alternate measures for the safety of occupants

A.3.3.50 Fire Barrier. A fire barrier might be vertically or horizontally aligned, such as a wall or floor assembly.

A.3.3.53 Health Care Occupancy. Health care occupancies include the following:

(1) Ambulatory health care facilities
(2) Hospitals
(3) Limited care facilities
(4) Nursing homes

Occupants of health care occupancies typically have physical or mental illness, disease, or infirmity. They also include infants, convalescents, or infirm aged persons.

A.3.3.54 Hotel. Apartment hotels should be classified as hotels, because they are potentially subject to the same transient occupancy as hotels. Transients are those who occupy accommodations for less than 30 days.

A.3.3.56 Incident. An *incident* occurs without warning or with only minimal warning, whereas an *event* can be predicted and pre-planning can be performed. A *continuum* exists from the interruption of normal operations to catastrophe. The continuum exists without definitive separation from one incident type to another.

A.3.3.58 Incident Management System (IMS). The incident management system is based on effective management characteristics that can be used by the public, private, and nonprofit sectors. For an IMS to work effectively, each management characteristic should contribute to the strength and efficiency of the overall system.

The following are common characteristics of incident management systems:

(1) *Common Terminology.* Common terminology allows diverse incident management and support entities to work together across a wide variety of incident management functions and hazard scenarios. This common terminology is covered in A.3.3.59(2) through A.3.3.59(12).
(2) *Organizational Functions.* Major functions and functional units with incident management responsibilities are named, and defined terminology for the organizational elements involved is standard and consistent. The incident management entity establishes a process for gathering, sharing, and managing incident-related information and intelligence.
(3) *Modular Entity.* The organizational structure develops in a top-down, modular fashion that is based on the size and complexity of the incident, as well as the specifics of the hazard environment created by the incident. Where needed, separate functional elements can be established, each of which can be further subdivided to enhance organizational management and coordination.
(4) *Comprehensive Resource Management.* Maintaining an accurate and up-to-date picture of resource utilization is a critical component of incident management. Resource management includes processes for categorizing, ordering, dispatching, tracking, and recovering resources. It also includes processes for reimbursement for resources, as appropriate. Resources are defined as personnel, teams, equipment, supplies, and facilities available or potentially available for assignment or allocation in support of incident management and emergency response activities. Personnel and equipment should respond only when requested or when dispatched by an appropriate authority.
(5) *Incident Facilities.* Various types of operational locations and support facilities are established in the vicinity of an incident to accomplish a variety of objectives, such as decontamination, donated goods processing, mass care, and evacuation. Typical facilities for emergency response and operations include incident command posts, bases, camps, staging areas, mass casualty triage areas, and other facilities as required. Recovery operations are commonly managed through a physical or virtual central operations center commonly referred to as an emergency operations center (EOC) or command center. Alternate operating facilities might also be established for recovery of operations or technology.
(6) *Management by Objectives.* Management by objectives represents an approach that is communicated throughout the entire entity. This approach includes establishing overarching objectives for the following:
    (a) Developing and issuing assignments, plans, procedures, and protocols
    (b) Establishing specific, measurable objectives for various incident management functional activities and directing efforts to attain them in support of defined strategic objectives
    (c) Documenting results to measure performance and facilitate corrective action
(7) *Reliance on an Incident Action Plan.* Incident action plans (IAPs) provide a coherent means of communicating the overall incident objectives in the context of both operational and support activities.
(8) *Manageable Span of Control.* Span of control is key to effective and efficient incident management. Although effective span of control varies, the span of incident management supervisory responsibility in the U.S. public sector is typically three to seven subordinates. The type of incident, the nature of the task, hazards and safety factors, and distances between personnel and resources all influence span of control considerations.
(9) *Integrated Communications.* Incident communications are facilitated through the development and use of a common communications plan and interoperable communications processes and architectures. This integrated approach links the operational and support units of the various responding areas involved. It is necessary to maintain communications connectivity and discipline and to enable common situational awareness and interaction. Preparedness planning should address the equipment, systems, and protocols necessary to achieve integrated voice and data incident management communications.
(10) *Establishment and Transfer of Command.* The command function has to be clearly established from the beginning of incident operations. In the U.S. public sector, the agency with primary jurisdictional authority over the incident designates the individual at the scene who will be responsible for establishing command. Private sector command could fall to a local team with tactical responsibilities for a specific site or technology, or if the incident impact is large enough, to the senior leaders of the entity or the board of directors. When command is transferred, the process should include a briefing that captures all essential information for continuing safe and effective operations.

(11) *Chain of Command and Unity of Command.* Chain of command refers to the orderly line of authority within the ranks of the incident management system. Unity of command means that every individual has a designated supervisor to whom he or she reports at the scene of the incident. These principles clarify reporting relationships and eliminate the confusion caused by multiple, conflicting directives. Incident managers at all levels have to be able to control the actions of all personnel under their supervision.
(12) *Unified Command (UC).* In the U.S. public sector, incidents involving multiple jurisdictions, a single jurisdiction with multiagency involvement, or multiple jurisdictions with multiagency involvement, unified command (UC) allows agencies with different legal, geographic, and functional authorities and responsibilities to work together effectively without affecting individual agency authority, responsibility, or accountability.

Although a single incident commander normally handles the command function, an incident management system (IMS) can be expanded into a UC. The UC is a structure that brings together the incident commanders of all major entities, which could include personnel from both private, nonprofit, and public sectors involved in the incident, in order to coordinate an effective response while at the same time carry out their own jurisdictional responsibilities. The UC links the entities responding to the incident and provides a forum for the entities to make consensus decisions. Under the UC, the various jurisdictions and/or agencies and nongovernment responders blend together throughout the operation to create an integrated response team.

The entity should participate in business or private sector emergency operations centers if made available by state or local government emergency management agencies, or local nonprofit or nongovernmental emergency preparedness organizations.

A.3.3.59 Industrial Occupancy. Industrial occupancies include the following:

(1) Drycleaning plants
(2) Factories of all kinds
(3) Food processing plants
(4) Gas pre-incident plants
(5) Hangars (for servicing/maintenance)
(6) Laundries
(7) Power plants
(8) Pumping stations
(9) Refineries
(10) Sawmills
(11) Telephone exchanges

In evaluating the appropriate classification of laboratories, the AHJ should treat each case individually, based on the extent and nature of the associated hazards. Some laboratories are classified as occupancies other than industrial; for example, a physical therapy laboratory or a computer laboratory.

A.3.3.64 Lock Box. Keys to open these containers are assigned only to selected individuals, such as representatives of the local fire department or police department.

A.3.3.66 Mass Gatherings. Mass gatherings can include planned long-term or one-time events. They can occur at a fixed facility designed to have mass gatherings (e.g., a stadium) or at a location not designed for mass gatherings (e.g., a rally, a town fair, a dignitary visit).

A.3.3.67 Mercantile Occupancy. Mercantile occupancies include the following:

(1) Auction rooms
(2) Department stores
(3) Drugstores
(4) Restaurants with fewer than 50 persons
(5) Shopping centers
(6) Supermarkets

Office, storage, and service facilities incidental to the sale of merchandise and located in the same building should be considered part of the mercantile occupancy classification.

A.3.3.68 Mitigation. Mitigation focuses on the impact of a hazard, encompassing the structural and nonstructural approaches taken to eliminate or limit a hazard's presence, peoples' exposure, or interactions with people, property, and the environment. The emphasis on sustained actions to reduce long-term risk differentiates mitigation from those tasks that are required to survive an emergency safely.

A.3.3.69 Mutual Aid/Assistance Agreement. The term *mutual aid/assistance agreement,* as used herein, includes cooperative agreements, partnership agreements, memoranda of understanding, memorandum of agreement, intergovernmental compacts, or other terms commonly used for the sharing of resources. Agreements can be executed between any combination of public, private, and not-for-profit entities.

A.3.3.74 Prevention. The term *prevention* refers to activities, tasks, programs, and systems intended to reduce the likelihood of an incident occurring.

Prevention can apply to accidental and intentional human-caused incidents and technology-caused incidents. Some examples of preventive actions include the following:

(1) Establishing accident prevention and safety programs to reduce the frequency of workplace accidents
(2) Gathering intelligence and information and implementing countermeasures such as enhanced surveillance and security operations; investigations to determine the nature and source of a threat; and law enforcement operations directed at deterrence, pre-emption, interdiction, or disruption to prevent or deter human-caused intentional incidents
(3) Implementing network and information security to help prevent penetration of networks, intercept malware, conduct vulnerability analyses of systems, and identify means to prevent incidents caused by interruption, disruption, or failure of technology

A.3.3.75 Process Hazard Analysis. The methods used to perform the analysis vary from simple to complex and depend on the detail required and the risk being evaluated. For example, a simple checklist or a detailed fault tree analysis can be utilized.

A.3.3.76 Recovery. Recovery programs are designed to assist victims and their families, restore entities to suitable economic growth and confidence, relocate or rebuild destroyed property, and reconstitute government operations and services. Recovery actions can be short term or long term, often continuing long after the incident has ended. Recovery programs include mitigation components designed to avoid damage from future incidents.

A.3.3.77 Re-entry. Other terms, including *repatriotization, repopulation,* and *reunification*, are also used. The return to a previously evacuated area would be under the following restrictions:

(1) The AHJ that ordered the evacuation authorizes the return for unrestricted use.
(2) The re-entry would be authorized when the threat that caused the evacuation has been mitigated, infrastructure and utilities are secured, and emergency services restored.

A.3.3.78 Residential Board and Care Occupancy. The following are examples of facilities that are classified as residential board and care occupancies:

(1) Group housing arrangement for physically or mentally handicapped persons who normally attend school in the community, attend worship in the community, or otherwise use community facilities
(2) Group housing arrangement for physically or mentally handicapped persons who are undergoing training in preparation for independent living, for paid employment, or for other normal community activities
(3) Group housing arrangement for the elderly that provides personal care services but that does not provide nursing care
(4) Facilities for social rehabilitation, alcoholism, drug abuse, or mental health problems that contain a group housing arrangement and that provide personal care services but do not provide acute care
(5) Assisted living facilities
(6) Other group housing arrangements that provide personal care services but not nursing care

A.3.3.80 Resource Management. This system includes a process for identifying, categorizing, ordering, mobilizing, tracking, and recovering and demobilizing resources, as well as a process for reimbursement for resources, as appropriate.

A.3.3.81 Responding Personnel. Responding personnel include, but are not limited to, the following:

(1) Facility owners, operators, or occupants
(2) Contractors hired by the owner or operator
(3) Privately organized plant emergency organizations
(4) Emergency response teams
(5) Fire brigades
(6) Hazardous material teams
(7) Rescue or medical response teams
(8) Health and safety personnel
(9) Risk management or insurance personnel
(10) Technical experts
(11) Security personnel
(12) Public fire services
(13) Law enforcement
(14) Emergency medical services
(15) Emergency management
(16) Environmental and utility departments or agencies
(17) Military

A.3.3.82 Response. The term *response* refers to the actions taken by an entity to mitigate an incident or event. Actions can include activities, tasks, programs, and systems to protect life safety, meet basic human needs, preserve or restore operational capability, and protect property and the environment.

A.3.3.88 Security Vulnerability Assessment. The use of the vulnerability assessment methodology is limited to preventing or mitigating terrorist or criminal actions that could have significant national impact, such as the loss of chemicals vital to the national defense or economy, or could seriously affect localities, such as the release of hazardous chemicals that would compromise the integrity of the facility, contaminate adjoining areas, or injure or kill facility employees or adjoining populations. It addresses physical security at fixed sites but not cyber and transportation security issues.

A.3.3.89 Service Animal. This definition was developed in accordance with the Fair Housing Act and Air Carrier Access Act.

The AHJ has federal statutory requirements and might have state, tribal, or local requirements to comply with legal protections and requirements for management of animals that do work or provide support for persons with disabilities and others with access and functional needs during mass evacuation, sheltering, and re-entry. In the United States, jurisdictions must, at a minimum, comply with service animal requirements of the Americans with Disabilities Act (ADA), as well as any additional protections afforded by state or local law, regulation, or policy.

A.3.3.90 Shelter. Commonly used terms for types of shelters include medical shelter, evacuation shelter, hurricane shelter, storm shelter, emergency/disaster shelter, and alternate care site.

Commonly used terms for mass care facilities that do not provide overnight accommodations include disaster reception center, cooling or warming centers, convenience centers, and power and shower sites.

A.3.3.96 Smoke Barrier. A smoke barrier can be vertically or horizontally aligned, such as a wall, floor, or ceiling assembly. A smoke barrier might or might not have a fire resistance rating.

A.3.3.100 Sprinkler System. The portion of the sprinkler system above ground is a network of specially sized or hydraulically designed piping installed in a building, structure, or area, generally overhead, and to which sprinklers are attached in a systematic pattern. The valve controlling each system riser includes a device for actuating an alarm when the system is in operation. The system is usually activated by heat from a fire and discharges water over the fire area.

A.3.3.102 Standpipe System. This arrangement is accomplished by means of connections to water supply systems or by means of pumps, tanks, and other equipment necessary to provide an adequate supply of water to the hose connections. [**14,** 2019]

A.3.3.103 Storage Occupancy. Storage occupancies include the following:

(1) Barns
(2) Bulk oil storage
(3) Cold storage

(4) Freight terminals
(5) Grain elevators
(6) Hangars (for storage only)
(7) Parking structures
(8) Stables
(9) Truck and marine terminals
(10) Warehouses

Storage occupancies are characterized by the presence of relatively small numbers of persons in proportion to the area.

A.3.3.106 US National Grid (USNG). Every modest-size home in the United States within a discrete area (e.g., city) can be described using eight digits (e.g., 1234 5678). By adding a two-letter prefix (e.g., XX 1234 5678), the location is uniquely identified regionally (e.g., statewide). The U.S. National Grid is functionally identical to the Military Grid Reference System (MGRS) used by the U.S. military and NATO since 1949.

A.4.1.1 The crisis/disaster/emergency management and business continuity/continuity of operations community comprises many different entities, including the government at distinct levels (e.g., federal, state/provincial, territorial, aboriginal, indigenous, tribal, and local levels); commercial business and industry; nonprofit and nongovernmental entities; and individual citizens. Each of these entities has its own focus, unique mission and responsibilities, varied resources and capabilities, and operating principles and procedures.

A.4.1.2 Chapters 4 through 10 promote a common understanding of the fundamentals of planning and decision making to help entities examine all hazards and produce an integrated, coordinated, and synchronized program for crisis/disaster/emergency management and business continuity/continuity of operations. Chapters 11 through 17 are based upon the integrated program described in Chapters 4 through 10.

Starting with the 2010 edition of *NFPA 1600*, Chapters 4 through 10 of NFPA 1660 have been organized in the Plan-Do-Check-Act (PDCA) format, as follows:

Plan is the process to determine goals and objectives and the desired outcome(s), and concludes with an agreement to proceed.

Do is executing the actions needed to achieve the desired outcome(s).

Check is evaluating whether the desired outcome(s) has been achieved by those actions.

Act is addressing any gaps between desired outcome(s) and actual outcome(s).

Figure A.4.1.2 depicts the PDCA cycle.

A.4.1.3 The application of Chapters 4 through 10 within the private sector is described in detail in the *NFPA 1600 Handbook* published by the National Fire Protection Association.

The application of Chapters 4 through 10 used with the United Nations Environment Programme (UNEP) Awareness and Preparedness for Emergencies at the Local Level (APELL) for Technological Hazards is described in Annex F. Annex F describes both the international and domestic applications.

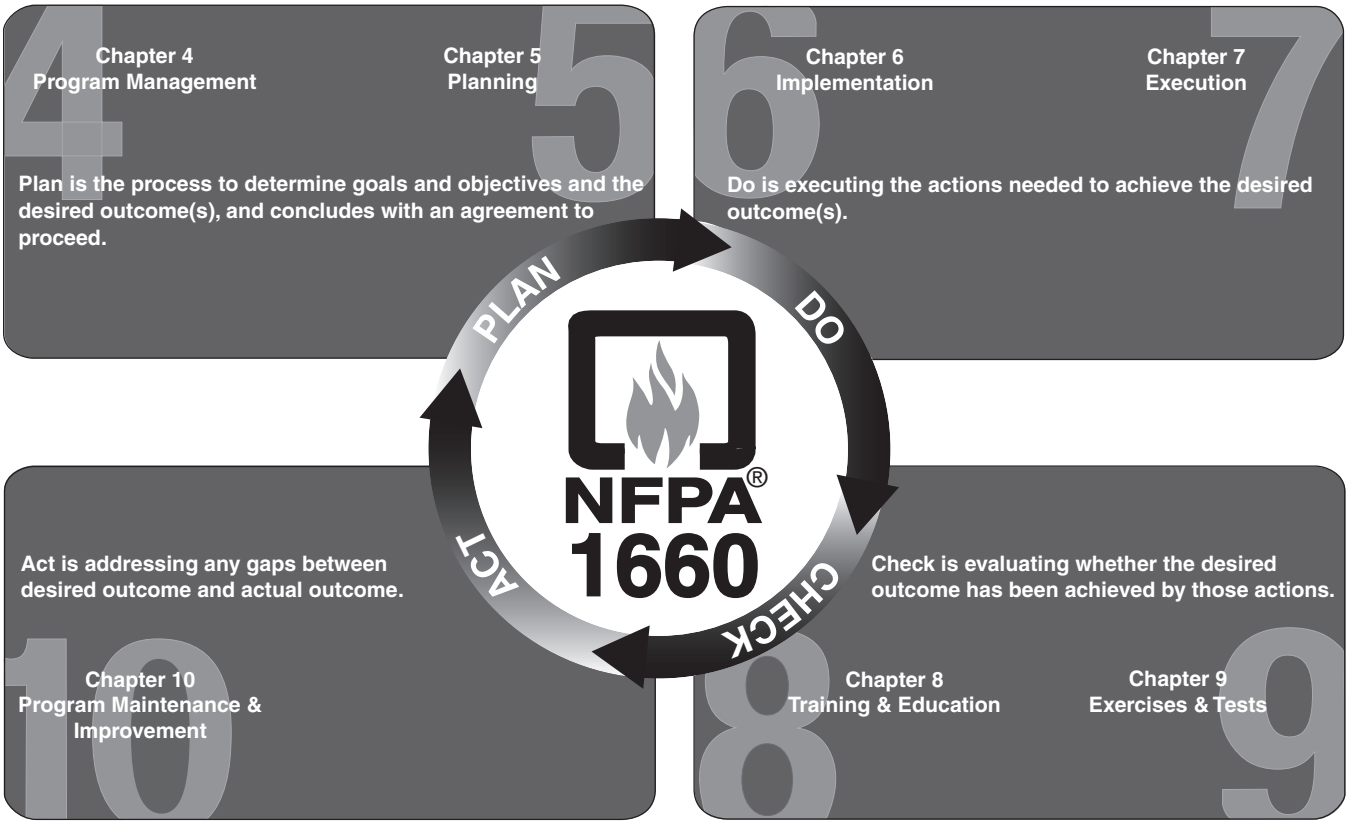

FIGURE A.4.1.2 The Plan-Do-Check-Act (PDCA) Cycle.

A.4.3 It is not the intent of this standard to restrict the users to the title *program coordinator*. It is recognized that different entities use various forms and names for the person who performs the program coordinator functions identified in the standard. Examples of titles are *emergency manager* (for the public sector), and *business continuity manager* (for the private and nonprofit sectors). A written position description should be provided.

Certification programs for emergency managers and business continuity/continuity of operations professionals can be found through organizations such as Disaster Recovery Institute International (DRII) and FEMA's Emergency Management Institute, and the Certified Emergency Manager (CEM) program administered by International Association of Emergency Managers (IAEM).

A.4.4.1 Performance objectives should be established for all elements in the program and should be linked to human performance.

An example of a technique for the development of performance objectives is the following SMART acronym for checking:

(1) ***S****pecific*. The wording must be precise and unambiguous in describing each objective.
(2) ***M****easurable*. The design and statement of objectives should make it possible to conduct a final accounting as to whether objectives were achieved.
(3) ***A****ction oriented*. An objective must have an action verb that describes the expected accomplishments.
(4) ***R****ealistic*. Objectives must be achievable with the resources that the entity can allocate or make available.
(5) ***T****ime sensitive*. Time frames should be specified (if applicable).

A.4.5.1 The program committee should be scalable to the resources of the organization.

A.4.5.4 When the representation on the program committee is being determined, consideration should be given to public sector representation on a private or nonprofit sector committee and vice versa, which will help to establish a coordinated and cooperative approach to the program.

The entity should determine if local government agencies and nonprofit or nongovernmental organizations have adopted relevant local emergency response, preparedness, and resiliency policies, programs, or training efforts.

A.4.6.1(2) Goals and objectives should be consistent with the entity's policy, vision, mission statement, roles and responsibilities, and enabling authority. Consideration should also be given to financial constraints, management support, regulatory requirements, and codes of practice.

The entity should also consider local cultural and religious customs as well as demographics when developing the program.

A.4.6.1(3) Industry codes of practices and guidelines and applicable regulations should also be considered along with any other directive established by the entity or the organization. In particular, applicable codes and ordinances can include requirements for the design or upgrade of protective and other building components to support emergency management (prevention, mitigation, response, continuity, and recovery).

A.4.6.3 Key program elements cross boundaries during prevention, mitigation, response, continuity, and recovery. Each element should be considered interrelated with other elements and can be considered concurrently. The use of the terms, phases, elements, or components varies from program to program.

A.4.7.1 The entity should research applicable legal, regulatory, and other industry requirements that are related to the hazards, threats, and risks associated with the entity's facilities, activities, functions, products, services, and supply chain; the environment; and stakeholders. The entity should document this information and keep it up to date.

A.4.7.3 If, through exercise or incident analysis, program evaluation, or corrective action, limitations in the applicable legislation, regulations, directives, policies, and/or codes of practice are discovered, a formal process should exist to amend them. This should include an understanding of the steps necessary to make or influence needed change.

Consideration should be made for periodic review of existing applicable legislation, regulations, directives, policies, and/or codes of practice to determine whether new legislation, regulations, directives, policies, and/or codes of practice should be developed and introduced through appropriate means.

A.4.8.2 It is important to have sound financial and administration procedures for daily operations. It is equally important to have procedures in place that will allow an entity to expedite financial decision making following an incident. This includes procedures for expediting financial approval for spending in support of recovery efforts and for proper accounting of recovery costs.

A.4.8.4(2) The entity should consider establishing contracts for resources in advance of an incident.

A.4.8.4(4) In order to reduce the threat of opportunistic fraud, it is important that the entity establish procedures to maintain financial controls even if normal processes to do so are impacted by the event.

A.4.9 Records management is designed to aid in the identification, backup, protection, and access to paper-based and electronic records that are vital to the entity and required for the crisis/disaster/emergency management and business continuity/continuity of operations program. It is not the intent of this section to require a records management program for all of the entity's records.

Records management practices should include the following activities:

(1) Creating, approving, and enforcing records management policies, including a classification system and a records retention policy
(2) Developing a records storage plan, including the short-term and long-term housing of physical records and digital information
(3) Identifying existing and newly created records and classifying and storing them according to standard operating procedures (SOPs)
(4) Coordinating the access and circulation of records within and outside the entity

(5) Executing a retention policy to archive and destroy records according to operational needs, operating procedures, statutes, and regulations

A.5.1 See Figure A.5.1.

A.5.1.1 A planning process is defined by DRI International, Inc. (DRII) in the Ten Profession Practices.

A.5.1.3 The results of a risk assessment and an impact analysis identify the highest potential risks and the risks with the highest impact into the entity. This will allow the entity to focus prevention and mitigation measures on those risks that are likeliest to occur and/or those that would have the greatest impact. *(See Figure A.5.1.3.)*

A.5.1.4 The results of the risk assessment, impact analysis, and resource needs assessment will enable the entity to understand what procedures should be documented in the emergency response, emergency operations, crisis management, continuity, and recovery plans.

A.5.1.5 The majority of incidents that affect life, health, and safety are the purview of emergency response. A plan for returning to normal operation following a business disruption is the focus of business continuity/continuity of operations. The goal of crisis management is to minimize disruption and to influence the outcome of the crisis. The crisis management team, which is led by senior management, is responsible for the broad strategic decisions that affect the entity's reputation and for the long-term consequences of a severe incident.

Crises can create issues or threaten consequences that can disrupt the entity's ability to do business. They are best mitigated by proactively addressing such issues before they have escalated to a crisis. Recognizing the signs of a potential crisis and proactively addressing the issue(s) can help mitigate any damage to the reputation and finances of the entity.

When activated, the crisis management team is the ultimate authority on the entity's response to the crisis. The crisis management team's primary function is to identify, evaluate, and manage the strategic issues that impact the entity without becoming involved in the details of the on-site emergency response actions. The crisis management team focuses on forecasting consequences of the incident and is responsible for keeping other senior managers and executives informed of current and anticipated response activities as well as formulating long-term strategic response plans.

Crisis management activities can include the following:

(1) Acting as a clearinghouse for all information
(2) Coordinating support to the site of the incident
(3) Coordinating the response activities of a group or functional areas
(4) Coordinating the implementation of business continuity/continuity of operations or disaster recovery plans and management of issues stemming from an incident
(5) Supporting leaders in crisis management activities

The crisis management team should address the following:

(1) Consequences of disruptions
(2) Implications of media, community, and government relationships
(3) Concerns about inter- and intra-organizational ramifications
(4) Impacts on strategic plans
(5) Consequences for labor and contractor relations
(6) Legal and financial liability
(7) Insurance implications
(8) Environmental issues
(9) Impacts on international relations

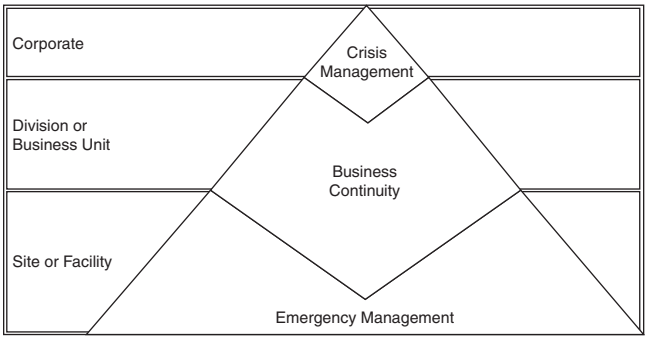

FIGURE A.5.1 Planning: Large Corporation (Entity).

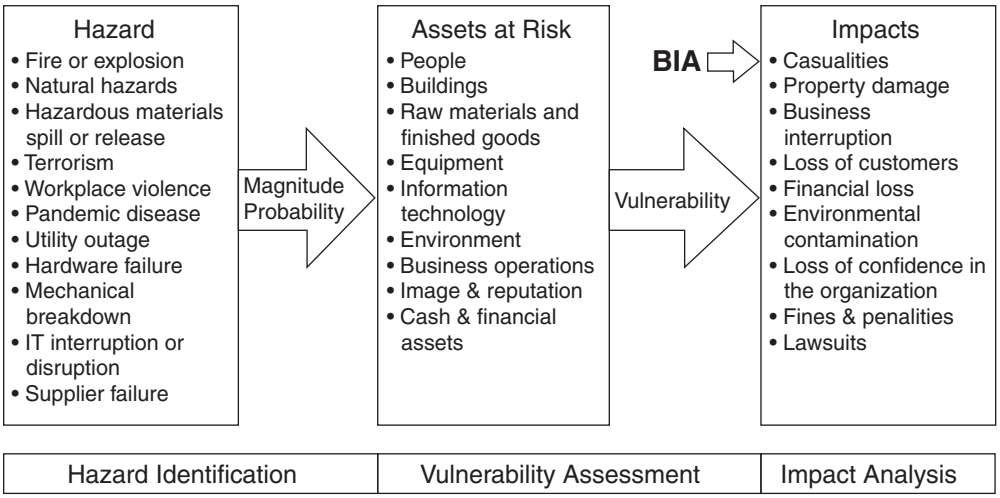

FIGURE A.5.1.3 Risk Assessment Process.

(10) Potential for industrywide, communitywide, statewide, or countrywide concerns

The roles and responsibilities of the crisis management team can include the following:

(1) Communicate with board of directors or public sector leadership
(2) Define policy
(3) Commit assets
(4) Provide overall management and direction

See Figure A.5.1.5.

A.5.1.6 The entity should seek out local government emergency management agencies, or local nonprofit or nongovernmental emergency preparedness organizations to include as stakeholders in the planning process. Examples of the latter classification are local emergency planning committees organized under the Emergency Planning and Community Right-to-Know Act, or Awareness and Preparedness for Emergencies at the Local Level (APELL) coordinating groups as described in Annex E.

A.5.2 Risk assessment is a process for identifying potential hazards/risk exposures and their relative probability of occurrence; identifying assets at risk; assessing the vulnerability of the assets exposed; and quantifying the potential impacts of the hazard/risk exposures on the assets. Periodic reassessment is needed when changes to the entity occur. Reassessment is also necessary because hazards/risk exposures change over time, and the collective knowledge of hazards/risk exposures develops over time.

In addition to identifying hazards that could be the primary cause of an incident, consideration should also be given to those secondary hazards or cascading events that could cause additional impacts to the entity and its assets. As an example, a fire could result in injury or death, property damage, interruption of operations, contamination of the environment, and negative attention on the entity.

A comprehensive risk assessment identifies the range of hazard/risk exposures, including threats, hazards, or disruptive incidents, that have impacted or might impact the entity, the surrounding area, or the critical infrastructure supporting the entity. The potential impacts of each threat, hazard/risk exposure, or disruptive incident are determined by the capabilities of the perpetrator, the magnitude of the hazard, and the scope of the incident, as well as the vulnerability of people, property, technology, the environment, and the entity's operations to the threat, hazard, or incident and the adequacy of existing mitigation. There are multiple methods to perform a risk assessment, but the entity should adhere to the following steps for conducting a comprehensive risk assessment:

(1) Determine the methodology the entity will use to conduct the assessment and determine whether the entity has the necessary expertise to perform the assessment.
(2) Consult with internal or external experts with the expertise to assess the vulnerability of the entity's assets from identified hazards.
(3) Identify and categorize assets (human resources, buildings, equipment, operations, technology, electronic information, suppliers, vendors, third-party service providers, etc.).
(4) Identify threats and hazards — natural, human-caused (accidental and intentional), and technology-caused.
(5) Evaluate hazard/risk exposures to which the entity is exposed.
(6) Assess the existing/current preventive measures and mitigation controls in place against credible threats.
(7) Categorize threats, hazard/risk exposures, and potential incidents by their relative frequency and severity. Keep in mind that there might be many possible combinations of frequency and severity for each, as well as cascading impacts.

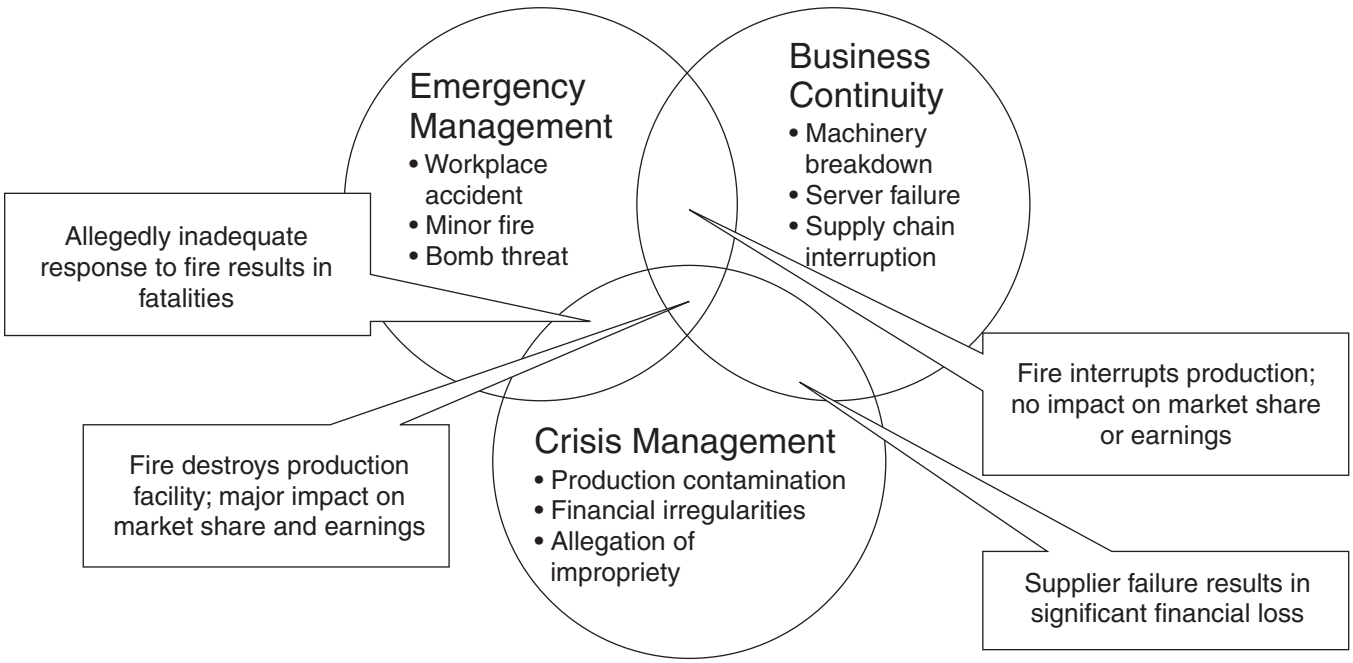

FIGURE A.5.1.5 Program Components.

(8) Evaluate the residual hazard/risk exposures (those that remain hazardous after prevention and mitigation activities).

Information from the risk assessment and impact analysis will help determine priorities for prevention and mitigation activities as well as prioritize development of plans and procedures. The entity should attempt to prevent, mitigate, prepare for, plan to respond to, and plan to recover from incidents that have significant potential to impact people, property, operational capabilities including technology, the environment, and the entity itself. The information provided from the risk assessment is not intended to be all-inclusive.

A.5.2.2.1(3)(b) Examples of infectious/communicable/pandemic diseases include, but are not limited to, SARS-CoV-2 (COVID-19), avian flu, H1N1, plague, smallpox, anthrax, Ebola, West Nile virus, foot and mouth disease, severe acute respiratory syndrome (SARS), and bovine spongiform encephalopathy (BSE, "mad cow" disease).

Refer to the US Centers for Disease Control (CDC) for additional information and an up-to-date list of infectious/communicable/pandemic diseases.

A.5.2.2.1(4)(b) Examples of entrapment include machinery, confined space, high angle, and water.

A.5.2.2.1(4)(e) Examples of hazardous materials or spills include flammable/combustible liquid; flammable/combustible gas; flammable solid; oxidizer; poison; and explosive, radiological, or corrosive material.

A.5.2.2.1(4)(i) Examples of transportation incidents include motor vehicle, railroad, watercraft, aircraft, and pipeline.

A.5.2.2.1(4)(k) An example of water control structure failure is the failure of a dam or levee.

A.5.2.2.1(5)(g) Examples of geopolitical risks include acts of war, change in government, and political instability.

A.5.2.2.1(5)(i) Examples of cybersecurity incidents include viruses, worms, hacking, Trojan horses, botnets, phishing, spyware, malware, ransomware, and denial of service.

A.5.2.2.1(5)(n) Examples of types of terrorism include explosive, chemical, biological, radiological, nuclear, cyber, and electromagnetic pulse.

A.5.2.2.1(6)(a) Examples of hardware, software, and network issues include outages, data corruption, data deletion, loss of internet or intranet, loss of electronic data interchange or ecommerce, loss of domain name server (DNS), interdependencies, direct physical loss, vulnerability exploitation, loss of encryption, and improper system use by an employee.

A.5.2.2.1(6)(b) Examples of utility issues include telecommunications, electrical power, water, gas, steam, HVAC, pollution control system, sewage system, and other critical infrastructure.

A.5.2.2.2 Supply chain interruption [e.g., loss of shipping or transportation, vendor failure (single or sole source provider)], including direct and indirect effects on the supply chain based on impacts from the expanded lists of hazards included in this document.

A.5.2.3(4) In order to maintain continuity of operations, the entity should identify essential or critical functions and processes, their recovery priorities, and their internal and external interdependencies, so that recovery time objectives can be set. Consideration also should be given to situations that cause the entity to become incapable of response or incapable of maintaining any continuity of operations for the foreseeable future. This process is called a business impact analysis (BIA) and is defined further in Section 5.3.

A.5.2.3(6) Assets include production machinery and processing equipment, tools, finished goods/inventory, raw materials, vehicles, electronic information, vital records, patents, intellectual property, and personnel/institutional knowledge. The analysis of impacts also should include evaluation of the infrastructure necessary to operate buildings, equipment, and technology.

A.5.2.3(10) Quantification of the potential economic and financial impacts resulting from property damage, interruption or disruption of operations, and environmental contamination provides input into the determination of where to invest in mitigation and planning efforts.

A.5.2.5 It is important to consider the cascading impacts of regional, national, or international incidents. One example is the cascading impacts of a hurricane. Direct impacts can include wind and flood damage. Secondary impacts can include telecommunications, electrical power, and transportation disruptions, both inside and outside the direct impact area. The earthquake and tsunami in Japan in 2011 resulted in supply chain interruptions around the world. The terrorist attacks of September 11, 2001, shut down air travel in the United States for days and impacted the financial markets.

A.5.3.1.1 Working with resources throughout the entity, identify all the entity's functions and related processes. Items such as organization charts, mission statement, operational procedures, and so forth, might assist the planner in identifying processes within the entity.

A.5.3.1.2 Working within each of the entity's operational areas, document the resources each process needs in order to operate successfully. For example, how many people are needed and what skill sets do they need? What equipment is needed to complete the process? What kind of infrastructure is required? What technology is required? What information is required? What suppliers are used by the process? Identify the lines of process flow (e.g., material flow, information flow, people movement, and cash flow) and time constraints. Typical output of the BIA will provide a process flow for the entire entity.

A.5.3.2 The BIA should also consider evaluating the following:

(1) Identify the interdependencies with key internal and external stakeholders, which could include mapping the nature of the interdependencies through the supply chain (inbound and outbound).
(2) Determine what resources are provided by single source (this is the only supplier that can provide this) and sole source (this is the only provider we choose to provide this) suppliers and the essential level of resources required to continue operations at a minimum acceptable level following a disruption. Identify the financial, regulatory, customer, or operational impacts, including potential bottlenecks, upstream and downstream to supply chains, and any long lead time equipment provided by single-source and sole-source suppliers.
(3) Identify the impacts resulting from single points of failure in resources needed to support the process. Examples

include a process operating in only one site, single electrical feed to the building, single application that provides the ability to perform a task.

(4) Identify the qualitative (unmeasurable) and quantitative (measurable) impacts and consequences to the entity's processes should the personnel, equipment, infrastructure, technology, information, and/or supply chain identified be disrupted.

A.5.3.2.1 The RTO represents the maximum period of time the entity can tolerate the loss of capability. Determine the RTO for each process, based on the identified consequences and the critical success factors for the function. Determine the severity of the impact over time if the RTO is not met. All the resources required to execute operational capability should have an identified RTO.

A.5.3.3 The RPO is the point in time from which data is recovered, i.e., the last good backup off site at the time of the event. Any activities that occurred after this point are lost and will need to be recreated by some other means. This includes activities occurring in technology applications, work in progress in operational areas, and vital records stored on site. The amount of time between the RPO and the time of disruption equals the amount of loss sustained during the incident. It can be deemed as the acceptable amount of data loss.

A.5.3.4 The BIA should document the gap between what capabilities the entity has demonstrated and what it requires in order to meet the defined RTO and RPO. For example, if the BIA determined that an application required by a process needs to be available RTO in 4 hours, yet the most recent recovery exercise for the application demonstrated the recovery took 12 hours, then there is a gap of 8 hours between what is needed and what has been demonstrated. The same is true of RPO. If the BIA identified that the process needed the data to be less than 24 hours old, yet the data is only backed up and sent off site weekly, that would indicate a gap of up to 6 days between the RPO needed and the RPO demonstrated.

A.5.3.5 Recovery strategies provide a means to restore operations quickly and effectively following a service disruption. The recovery strategies should consider the impacts of disruption and allowable outage times identified in the impact analysis, as well as cost, security, and integration with larger, entity-level recovery plans. RTOs and RPOs are often used as the basis for the development of recovery strategies and as a determinant as to when to implement the recovery strategies during a disaster situation. Three examples follow:

(1) An RTO in the range of a few minutes to hours might require that the operational process be fully functional in two geographically diverse sites that are fully equipped and staffed. In technology environments, this might require that two facilities either operate in parallel (active/active, mirroring) or at least duplicate the primary environment (active/passive, clustering or high availability).

(2) An RTO expressed in days to weeks can be sufficiently addressed by transferring the operations and staff to an alternative site, such as a commercial recovery facility or an internally developed and maintained hot, warm, or mobile site.

(3) An RTO expressed in months can be sufficiently addressed by a cold site that requires that all necessary equipment, technology, and supplies be re-established at the time of the event.

A.5.3.6 Supplier/vendor/third-party risk management should be implemented for those suppliers that have the potential to have an impact on the entity's ongoing operations should the supplier face a disruption. This should include the review of the supplier's business continuity, disaster recovery, crisis management, and emergency response and operations plans.

A.5.4.1 Scenarios developed during the risk assessment and BIA should be used to identify resources needed by the program. Resources for emergency operations/response to protect life safety, stabilize the incident, and protect property should be identified. Resources required to execute recovery strategies within the RTO also should be identified. The resource needs assessment should identify resource requirements necessary to achieve performance objectives.

A.5.4.2(1) The resource needs assessment might include "credentialing," which addresses the need for individuals licensed (e.g., doctors, engineers) in one jurisdiction (state or country) performing their professional duties (as volunteers or under mutual aid compacts) during an incident in a jurisdiction where they are not licensed or do not hold the proper credentials. Credentialing provides minimum professional qualifications, certifications, training, and education requirements that define the standards required for specific emergency response functional assignments.

A.5.4.3 Resources can be prepositioned to expedite deployment. These resources can include the following:

(1) Alternate locations
(2) Supplies (first aid, personal hygiene, consumable, administrative, and ice)
(3) Sources of energy (electrical and fuel) and emergency power systems
(4) Medical equipment
(5) Communications technology for both voice and data
(6) Food and water
(7) Technical information
(8) Clothing
(9) Shelter
(10) Specialized human resources (medical, faith-based, and volunteer entities; emergency management staff; utility workers; morticians; and private contractors)
(11) Vehicles, tools, and equipment
(12) Technology (computers, servers, routers, printers, etc.)
(13) Spatial data

All program equipment should be checked and tested on a regularly scheduled basis to ensure it will function properly when required. This might include vehicles, personal protective equipment (PPE), radio, information technology equipment, and warning and alerting devices and equipment, including sirens, special emergency response equipment, and so forth.

A.5.4.4 Since an adequate fuel supply is essential for extended operation of emergency standby power systems, a fuel tank inventory control resources plan that addresses fuel tank inventory, type of petroleum product, tank location, and compliance documentation should be considered.

A.5.4.5 The term *mutual aid/assistance agreement*, as used here, includes cooperative assistance agreements, intergovernmental compacts, or other terms commonly used for the sharing of resources. Partnerships can include any combination of public, private, and nonprofit entities or NGOs.

Mutual aid/assistance and partnership agreements are the means for one entity to provide resources, facilities, services, and other required support to another entity during an incident. Each entity should be party to the agreement with appropriate entities from which they expect to receive or to which they expect to provide assistance during an incident. This would normally include neighboring or nearby entities, as well as relevant private sector nonprofit entities or NGOs. States should participate in interstate compacts and look to establish intrastate agreements that encompass all local entities. Mutual aid/assistance agreements with nonprofit entities or NGOs, such as the International Red Cross/Red Crescent, can be helpful in facilitating the timely delivery of private assistance.

If needed, agreements should be in writing, be reviewed by legal counsel, be signed by a responsible official, define liability, and detail funding and cost arrangements. Agreements should include the following:

(1) Definitions of key terms used in the agreement, including *intellectual property, duration of the agreement*, and *duration of assistance*
(2) Roles and responsibilities of individual parties
(3) Procedures for requesting and providing assistance, including mobilization and demobilization
(4) Procedures, authorities, and rules for payment, reimbursement, and allocation of costs
(5) Notification procedures
(6) Protocols for interoperable communications
(7) Relationships with other agreements among entities
(8) Workers' compensation
(9) Treatment of liability and immunity
(10) Recognition of qualifications and certifications

A.6.1.1 The plan developed by the program needs to address the safety and health of personnel and needs to be part of prevention and mitigation planning, emergency response and operations planning, and continuity and recovery planning.

Recovery operations can be particularly hazardous. Due to the nature of the recovery, normal operations might be disrupted and the hazards uncontrolled. For example, work conditions change drastically after hurricanes and other natural disasters. In the wake of a hurricane, response and recovery workers face additional challenges, such as downed power lines, downed trees, and high volumes of construction debris, while performing an otherwise familiar task or operation. Procedures and training are needed to help ensure safe performance of those engaged in cleanup after an incident.

Corrective actions to eliminate or mitigate hazard exposure should be aggressive and complete, but they also should be carefully considered before implementation so as not to create a new set of hazard exposures.

A.6.1.2 Assumptions used in preparation of plans, especially those regarding hazard identification, risk assessment, analysis of potential impacts, and the availability and capability of resources, should be identified, evaluated, and validated during the planning process. Confidential or sensitive information can be redacted or protected.

A.6.1.3 Many entities have written one or more plan documents for their programs. For example, environmental health and safety, security, emergency response, business continuity/continuity of operations, and crisis management and communications plans are written by private sector entities. Within the public sector, mitigation, emergency management, continuity of operations, and other plans are written. The committee's intent in 6.1.3 is to provide flexibility for the user to create needed program plans. However, development of all plans should be coordinated, and plans should be sufficiently connected to ensure that they meet the needs of the entity.

A.6.2.1 Common prevention and deterrence strategies include the following:

(1) Security patrols inside and outside facilities; increased inspections of vehicles entering the facility; background checks of personnel
(2) Access controls, including perimeter fence line and gates, access control systems, camera surveillance, intruder detection systems (motion-sensing cameras, infrared detectors)
(3) Immunizations, isolation, or quarantine
(4) Land use restrictions to prevent development in hazard-prone areas, such as flooding areas or construction of hazardous materials facilities in areas near schools, in population centers, or in areas of identified critical infrastructure
(5) Uninterruptible power supply (UPS) to provide short-term backup power to critical electrical components, including the data center power distribution unit (PDU), desktop computers in time-sensitive operational areas, phone switchboard (PBX), the HVAC system, and safety controls such as elevators and emergency lighting
(6) Gasoline- or diesel-powered generators to provide long-term backup power
(7) Crime prevention through environmental design (CPTED), including site layout, landscape design, and exterior lighting
(8) Personnel management
(9) Background investigations
(10) Cybersecurity, including firewalls, intrusion detection, virus protection, password management, cryptographic key management, and access to information based on need to know

A.6.2.2 Techniques to consider in a prevention strategy include the following:

(1) Ongoing hazard identification
(2) Threat assessment
(3) Risk assessment
(4) Analysis of impacts
(5) Operational experience, including incident analysis
(6) Information collection and analysis
(7) Intelligence and information sharing
(8) Regulatory requirements

The cost-benefit analysis should not be the overriding factor in establishing a prevention strategy. Other considerations have indirect benefits that are difficult to quantify (e.g., safety, property conservation).

A.6.3.1 Mitigation strategies can include the following:

(1) Use of applicable building construction standards
(2) Hazard avoidance through appropriate land use practices
(3) Relocation, retrofitting, or removal of structures at risk
(4) Removal or elimination of the hazard
(5) Reduction or limitation of the amount or size of the hazard
(6) Segregation of the hazard from that which is to be protected

(7) Modification of the basic characteristics of the hazard
(8) Control of the rate of release of the hazard
(9) Provision of protective systems or equipment for both cyber risks and physical risks
(10) Establishment of hazard warning and communication procedures
(11) Redundancy or diversity of essential personnel, critical systems, equipment, information, operations, or materials
(12) Acceptance/retention/transfer of risk (insurance programs)
(13) Protection of competitive/proprietary information

A.6.3.2 Development of the mitigation strategy should consider the following:

(1) Explanation of hazard and vulnerabilities
(2) Quantification of the risk if unmitigated
(3) Anticipated cost
(4) Anticipated benefit
(5) Cost-benefit analysis
(6) Prioritization of projects based on probability of occurrence and severity of potential impacts
(7) Planned changes to the entity
(8) Project timeline
(9) Resources required
(10) Funding mechanism

Hazard/risk exposure can be eliminated or minimized by removing the hazards or by not performing the hazardous task. However, complete elimination of risk is not always be feasible, and controls should then be instituted.

Hazard control begins with identification of the hazard and the vulnerability of people or assets potentially exposed and elimination or mitigation according to the hierarchy of controls as follows:

(1) *Elimination or substitution.* Whenever possible, the hazard should be eliminated from the work area (e.g., repairing or removing fallen electrical power lines before allowing other work to proceed in the area). Although desirable, elimination or substitution might not be options for most airborne/chemical hazards created by an incident.
(2) *Engineering controls.* Steps should be taken to reduce or eliminate exposure to a hazard through engineering controls such as the installation of ventilation systems, automatic sprinklers (building), or special protection systems.
(3) *Administrative controls.* Work practices should be implemented that reduce the duration, frequency, and severity of risk exposures. Safety and health controls include training, safety procedures, observations, and enforcement of safe behavior, for example, using well-rested crews and daylight hours to perform higher hazard or unfamiliar tasks, requiring frequent breaks during hot weather, removing nonessential personnel from the area during certain tasks/operations, and decontaminating equipment and personnel after contact with contaminated floodwater or chemicals, and when possible, using water to suppress dust and work upwind in dusty conditions.
(4) *Personal protective equipment (PPE).* If hazard exposures cannot be engineered or administratively controlled, individuals should be shielded or isolated from chemical, physical, and biological hazards through the use of PPE. Careful selection and use of adequate PPE should protect the respiratory system, skin, eyes, face, hands, feet, head, body, and hearing. Examples of PPE are safety glasses and goggles for eyes, gloves for hands, and respirators to protect the lungs. Control of the hazard exposures should not stop with providing PPE.

A.6.3.3 Corrective actions to eliminate or mitigate hazard exposure should be aggressive and complete, but they also should be carefully considered before implementation so as not to create a new set of hazard exposures.

A.6.5.1 The crisis communications plan should include a preestablished structure and process for gathering and disseminating emergency or crisis information to both internal and external stakeholders. The communications plan should identify not only key stakeholders but also who on the communications team is responsible for tailoring and communicating appropriate information to each stakeholder group before, during, and after an incident. Formal awareness initiatives should be established in advance of an emergency with the intention of reaching populations that could be impacted by a risk or hazard. A means of collecting inquiries and responding to concerns from the public also should be incorporated into the process to better ensure a two-way dialogue. This can be done through pamphlets, websites, social media, community meetings, newsletters, and other means.

A.6.5.2 The entity should create a basic communications structure that is flexible enough to expand and contract to fit the needs of the situation. Communications activities should be coordinated not only among the various communications functions that have been activated but also with the site team and response entity.

A joint information center (JIC) can be established during incident operations to support the coordination and dissemination of critical emergency as well as public affairs information from all communications operations related to the incident, including federal, state, local, and tribal public information officers (PIOs) as well as private entity or corporate communications staff. The JIC can be physical or virtual.

A.6.5.2(1) Stakeholder liaisons and others tasked with communications responsibilities should coordinate information through a central communications hub to ensure an organized, integrated, and coordinated mechanism for the delivery of understandable, timely, accurate, and consistent information to all parties. Information or tools that can be prepared in advance, such as pre-scripted information bullets or template press releases, can help speed the release of information. Similarly, narrowing the time between when information becomes known and when it is approved for release to the public can be a critical factor in shaping public opinion.

A.6.6.1 The entity should determine warning, notification, and communications needs based on the hazards and potential impacts identified during the risk assessment and the capabilities required to execute response, crisis communications, continuity, and recovery plans, procedures, and public education/emergency information programs.

Warning systems can include fire alarm, emergency voice communication, public address, mass notification, social media, and other systems designed to warn building occupants, people on a campus, or citizens in the community that there is a threat or hazard and to take protective action. Notification systems are used to alert members of response, continuity, and

recovery teams as well as external resources (public emergency services), regulators, management, and so forth. Communications needs include two-way radio systems, and wired and wireless voice and data communications, among other systems. See Annex J for additional information on alerting and warning systems.

A.6.6.2 Since warning, notification, and communications systems must be immediately available and functional to warn persons potentially at risk, to alert persons to respond, and to enable communications between responders, reliability of systems and equipment is critically important. Redundancy in systems and equipment provides assurance that essential warnings, notifications, and communications can be made. Systems and equipment must be interoperable to ensure that responders are able to communicate effectively during an incident. Also see 3.3.60, Interoperability.

A.6.6.3 The entity should identify the circumstances requiring emergency communication and the stakeholders that would need to be warned. Protocols defining the circumstances and procedures for implementing communications should be established in advance, tested, and maintained. Scripting templates for likely message content and identification of the best communication mechanisms in advance reduce the time necessary to communicate and enhance the effectiveness of messages.

Stakeholders will vary depending on the entity. Typical stakeholders for many entities include the media, government, customers, employees and their families, vendors, suppliers, community, visitors, and investors.

A.6.6.5 A common format for gathering pertinent information (i.e., inbound messaging) and disseminating information (i.e., outbound messaging) is recommended. Use of social media can provide a distinct advantage to both inbound and outbound messaging, and should be considered a basic form of communication with external and internal audiences. See Annex I for additional information on social media in emergency management.

A.6.7.3 The term *property conservation* means minimizing property damage. Actions can be taken in advance of a forecast event such as a hurricane (e.g., boarding up windows) and during and following the incident (e.g., using water vacuums to remove water that has entered a building). Also see Section 6.9 for details on protective actions for life safety, incident stabilization, and other guidance.

A.6.8.1 An incident management system (IMS) should be used to manage an incident. The system used varies among entities and among jurisdictions within entities. In minor incidents, IMS functions might be handled by one person: the incident commander or equivalent designee.

An example of a public sector IMS would be the National Incident Management System (NIMS) used in the United States or similar systems in other countries, such as the Gold-Silver-Bronze system in the United Kingdom. In the Incident Command System (ICS) portion of NIMS, incident management is structured to facilitate activities in five major functional areas: command, operations, planning, logistics, and finance and administration.

Figure A.6.8.1 illustrates public sector functions under the ICS. All positions would not be filled for all incidents. In addition, the number of positions reporting to any supervisor should not exceed the "manageable span of control" within the ICS. The intent of Figure A.6.8.1 is to show how the positions for different scenarios would be organized under the ICS. In addition, the figure illustrates that the entity can grow as the scale of the incident and the resources needed to manage the incident expand.

For private sector or nonprofit entities, it is acceptable for the IMS to be organized in whatever way best fits the organizational structure, as long as it is clear how the entity will coordinate its operations with public sector resources arriving at the incident scene.

A.6.8.1.1 An emergency operations center (EOC) is the location where the coordination and support of incident management activities take place. The EOC should have adequate workspace, communications, and backup utilities and should meet basic human needs. For complex incidents, EOCs might need to be staffed by personnel representing multiple jurisdictions, sectors, functional disciplines, and resources. The physical size, staffing, and equipping of an EOC will depend on the size of the entity, the resources available and the anticipated incident management support required. EOCs can be permanent facilities or can be established to meet temporary, short-term needs.

A.6.8.1.1.1 The requirement to establish primary and alternate EOCs is intended to ensure that the capacity exists to support operations from a centralized facility or virtual capability. The primary and alternate EOCs should be located so both are not impacted by the same event and at least one EOC will be operational. Alternate EOCs can include site or department EOCs, which focus on internal department or agency incident management and are linked to and, in most cases, physically represented in a higher level EOC.

On-scene incident command posts (ICPs), which are located at or in the immediate vicinity of an incident site, should be linked to EOCs to ensure communications and effective and efficient incident management. An ICP is focused primarily on the tactical on-scene response but can be used to function as an EOC-like function in smaller-scale incidents or during the initial phase of the response to larger, more complex events.

The entity should participate in business or private sector EOCs if made available by state or local government emergency management agencies or local nonprofit or nongovernmental emergency preparedness organizations.

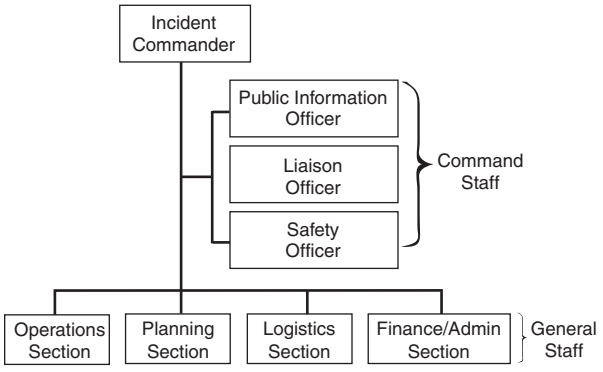

FIGURE A.6.8.1 Diagram of Incident Command System.

A.6.8.1.1.2 Virtual EOCs that link team members located in separate locations via conference call, web meeting, and or other electronic meeting tool meet the requirements of this section.

A.6.8.3 Common prevention strategies and techniques as outlined in A.6.2.1 and A.6.2.2 typically occur prior to the occurrence of an incident. There are occasions, however, where an incident management system is activated to manage a planned event, as well as to prevent the occurrence of incidents that might impact the event. It might also be necessary to activate an incident management system in the face of a threat, with the purpose of preventing such a threat from occurring. Should prevention measures not be successful, response and recovery measures can be implemented to deal with the consequences of an incident.

A.6.8.6 In larger scale incidents a formal incident action plan *(see 3.3.57)* is developed and approved by the incident commander. In small-scale incidents, objectives are established by the incident commander and verbally communicated. Operations are then managed by command to achieve the objectives.

A.6.9.1 Emergency action plans should be based on the hazard scenarios developed during the risk assessment to accomplish established program goals. Plans should define responsibilities for warning persons at risk or potentially at risk, alerting responders, and notifying those who must be made aware of the incident. Plans should also define specific functional roles and responsibilities for protection of life safety, incident stabilization to the extent the entity is required or chooses, and property conservation. Documentation such as checklists, emergency action guides, and standard operating procedures (SOPs) should identify emergency assignments, responsibilities, and emergency duty locations. The SOPs and notification procedures should be integrated.

A.6.9.2 Protective actions for life safety include evacuation, shelter-in-place, and lockdown and depend upon the nature and location of the threat or hazard. Action should include defining the protocols and procedures for warning people with disabilities and other access and functional needs and the actions that should be taken to protect their safety. Special attention might be needed to address the needs of people with disabilities and other access and functional needs (for guidance, see http://www.ready.gov/individuals-access-functional-needs). Emergency plans should address those who might have additional needs before, during, or after an incident in one or more of the following functional areas:

(1) Visually impaired
(2) Hearing impaired
(3) Mobility impaired
(4) Single working parent
(5) Language competency
(6) People without vehicles
(7) People with special dietary needs
(8) People with medical conditions
(9) People with intellectual disabilities
(10) People with dementia

Persons with disabilities and other access and functional needs can include those who reside in institutionalized settings, the elderly, children, and those from diverse cultures who have limited proficiency in the local language.

A.6.9.3 Incident stabilization is the action taken to prevent an incident from growing and to minimize the potential impacts on life, property, operations, and the environment. Incident stabilization can include many different functions depending upon the nature and location of the threat or hazard, the magnitude of the incident, the actual and potential impacts of the incident, applicable regulations that could dictate minimum response capabilities, the entity's program goals, and the resources available to the entity for incident response. Examples of incident stabilization activities are listed under "Operations" in Figure A.6.8.1.

A.6.9.4 The emergency operations/response plan should include data interoperability, which is the ability to share data with any organization across platforms in real time with minimal time of conversion. (See Annex K for more information.)

A.6.10 Examples of strategies, options and alternatives for manufacturing, health care, education, service, or other operational facilities include the following:

(1) Strategies for disruption or loss of operational site, such as the following:
    (a) Transfer of workload and staff to a surviving site.
    (b) Alternate site contracted through a commercial recovery vendor.
    (c) Reciprocal agreement or mutual aid agreement with a similar entity.
    (d) Dedicated alternate site built by the entity to support recovery.
    (e) Mobile facility — Generally, a trailer or mobile home that has been equipped to support operational recovery. These can be owned or contracted for through a vendor.
    (f) Remote access/work from home.
    (g) Resources acquired at the time of disruption — This would be used for less time-sensitive operations.
    (h) Customer service or product priority — Focuses operational capacity on specific high-value customers or high-profit products or services.
    (i) Finished goods buyback.
    (j) Utilized to recover already delivered inventory from other customers to meet the demands of customers who utilize "just in time."
    (k) Relocation of staff to a surviving site that has additional capacity.
    (l) Stockpile critical equipment and inventory to be available at time of disaster.
(2) Third-party (i.e., vendor provided/extended enterprise) recovery strategy options, such as the following:
    (a) Multiple sourcing — The entity buys the same or similar product or service from multiple vendors to prevent supply chain disruption should one of them experience a disruption.
    (b) Alternate sourcing — To identify another source for a product or service should the current vendor experience a disruption.
    (c) Service level agreement — Established service level agreements with the third party with penalties for nonperformance.
    (d) Insource (do not outsource) — To identify internal resources that can provide service or product.

(3) Technical recovery alternatives, such as the following:
   (a) Commercial vendor (hot site) — A variety of commercial vendors will provide a recovery environment for technology of all shapes and sizes. This eliminates the need to have redundant hardware/software within the entity's own footprint.
   (b) Resources acquired at time of disruption — This type of plan is used where the technology environment is small and easy to replace or not time sensitive to the survival of the entity.
   (c) Quick-ship equipment — Established agreement with a vendor to provide specific technology on demand following a disruption.
   (d) Dual data center with active/active — This strategy requires that the entity has access to two data center environments that are always fully operational and are either owned by the entity or leased where they can load balance time-sensitive applications between two geographic locations. If one center experiences a disruption, the surviving center takes the entire load without need for recovery and is capable of handling the entire load. These data centers must generally be within 50 network miles of each other to prevent network latency.
   (e) Dual data center with active/passive — This strategy requires that the entity has access to two data center environments that are always fully operational and either owned by the entity or leased where they can split time-sensitive applications between the two geographic locations. The data that supports the applications in each center needs to be replicated to the other data center to facilitate recovery and to prevent significant data loss. If one center experiences a disruption, the applications operating in the disrupted data center are "restarted" at the surviving center that can handle the entire load. These data centers can be geographically distant, even in different countries. The load from the impacted site is simply "switched over" to the surviving site. There is a minimal disruption during the transition and little data loss if the data is replicated between the centers.
   (f) Outsourcing with a service level agreement (e.g., cloud computing) — An entity can have some or all of this technology environment hosted in the "cloud." This would likely prevent the entity's operations and the technology environment from being impacted by the same disruption. The requirements for recovery of the technology environment are established with the cloud vendor.
   (g) Stockpiled equipment — The entity could store the equipment needed for recovery on-site in their recovery location.
   (h) Manual workarounds or alternate systems — The entity could use manual workarounds such as a manual call log or alternate systems such as spreadsheets instead of the general ledger system until the technology environment is recovered.
(4) Backup strategies for records, such as the following:
   (a) Electronic storage — On media such as flash drives or external hard drives.
   (b) Synchronous replication — Data is written onto data storage at two locations simultaneously.
   (c) Asynchronous replication — Data is written onto data storage at two locations but with some degree of latency between writing on the production drive and writing on the backup drive.
   (d) Electronic journaling — Activities that happen on one data store are captured on a journal as they are written. If a disruption occurs, you can recover up to the last good journal entry off-site at the time of the disruption.
   (e) Standby database — A backup to the production database should the production database be corrupted or lost in a disruption.
   (f) Electronic vaulting — A point-in-time backup stored on disk.
   (g) Tape backup — A point-in-time backup stored on tape.
   (h) Full backup — A point-in-time backup of everything on a data store.
   (i) Differential backup — A point-in-time backup of everything on the data store that has changed since the last full backup was made.
   (j) Incremental backup — A point-in-time backup of everything on the data store since the last time *any* type of backup was made.
   (k) Salvage — An attempt to recover data from a device that has been damaged.
(5) Hard-copy storage, such as the following:
   (a) Film — Pictures or video.
   (b) Fiche — Old technology that allows large quantities of images to be stored in a small space.
   (c) Photocopy — A copy of an original record stored off-site.
   (d) Scan — A digital image of a record that can be stored off-site.
   (e) Salvage — An attempt to restore damaged paper records following a disruption.

Plans should include or provide the following as needed to support the recovery:

(1) Facilities and equipment
(2) Technology infrastructure
(3) Telecommunications and data protection systems
(4) Distribution systems for essential goods
(5) Transportation systems, networks, and infrastructure
(6) Human resources
(7) Psychosocial services
(8) Health services
(9) Power, water, and HVAC

Short-term goals and performance objectives should be established and include the following:

(1) Recovery of critical or time-sensitive personnel, systems, operations, records, and equipment
(2) Agreed-upon priorities for restoration and mitigation
(3) Length of downtime acceptable before restoration to a minimal level is required
(4) Minimal acceptable level of resources needed to provide for the restoration of facilities, processes, programs, services, and infrastructure

Long-term goals and objectives should be based on the entity's strategic plan and include the following:

(1) Management and coordination of activities
(2) Funding and fiscal management

(3) Management of contractual and entity resources
(4) Opportunities for prevention and mitigation

A.6.10.1.2 Plans for business continuity, continuity of operations, and continuity of government are generally similar in intent and less similar in content. Continuity plans have various names in public, private, and nonprofit sectors, including business continuity, continuity of operations plans, business resumption plans, continuity of government plans, and disaster recovery plans.

Devolution is defined as the capability to transfer authority (statutory authority in the public sector) and responsibility for essential functions from an organization's primary operating staff and facilities within the organization to other staff and facilities within the organization, and to sustain that operational capability for an extended period. Devolution is a continuity strategy used in the event of a threatened or actual catastrophic incident when primary and alternate facilities are damaged or inaccessible or when staff is unable to relocate to defined alternate sites.

Active protocols that trigger devolution include the forecast or warning of an incident with potential magnitude exceeding pre-defined criteria; occurrence of an incident that damages or destroys primary and alternate facilities, incapacitates staff, or severely disrupts infrastructure; or activation of the organization's continuity plan that includes short-term devolution of essential functions until the alternate facility becomes operational. Passive protocols that trigger devolution include situations where leadership is not available to initiate plan activation because an incident severely impacts leadership's availability or ability to direct relocation to alternate facilities. Protocols, lines of succession, and delegation of authority should be established to ensure that prompt decisions to activate can be made if leadership is not available or capable of ordering plan activation including devolution.

Reconstitution is the transition from continuity operations or devolution operations back to normal operations with minimal disruption to the performance of essential functions. Reconstitution involves accounting of personnel, their safety, and their ability to return to work; assessment of facilities to support operations; effecting repairs and cleanup to ensure a safe environment for returning employees; preparing the facility for return to work; and transferring essential functions and required resources back to the primary facility.

A.6.10.2.2 Recovery planning for public, private, and nonprofit sectors should provide for continuity of operations to return the entity, infrastructure, government, community, and/or individuals back to an acceptable level. This includes implementation of mitigation measures to facilitate short-term and long-term recovery.

A.6.11.1 Employee assistance and support might also be called human continuity, human impacts, workforce continuity, and human aspects of continuity. Employee assistance and support includes the entity's employees and their families or significant others affected by the incident. See Annex K, which supports emergency communications.

A.6.11.1(1) Communications procedures are the methods that the entity and its employees will use to inform employees of the program before an event occurs and to inform employees that the program is activated and available following the occurrence of an event. Employees should have a means of notifying the entity of the need for assistance through the communications system established. Similarly, the entity should develop a means of communicating with employees when operations are interrupted at a site and the staff has been sent home, and how communications will be made to employees when the interruption has occurred outside normal business hours.

Various communications methodologies can be established, including the following:

(1) Automated notification systems or call centers
(2) Email, website, or voicemail broadcasts
(3) Call lists
(4) Social media
(5) Emergency radio broadcast or two-way broadcast alerts *(see Annex J)*
(6) Ham radio operations
(7) Walkie/talkies
(8) Text messaging

There are situations in which customers, vendors, and other parties might be located at the entity's facility, and the program should include the ability to communicate with them as well.

A.6.11.1(2) The entity should develop policies and procedures to store, retrieve, and control access to personal information when needed in an emergency, including the ability to facilitate notification to, and reunification of, family members.

A.6.11.3 Family preparedness is an ongoing process to educate and train individuals to plan for and take steps during an emergency. *(See Annex G for more information.)*

A.7.1 The types of incidents to be recognized as having potential for major impact on the entity can be found through the risk assessment in 5.2.2.1 and 5.2.3, the business impact analysis (BIA) in 5.3.2, crisis communications and public information in Section 6.5, and incident management in Section 6.8.

A.7.7 Relying on sufficient and accurate documentation and a firm assessment of the situation, the entity should determine when the event has been stabilized. The entity should also determine whether corresponding response decisions and activities have been sufficient to alleviate any further operational disruption resulting from the situation, so that recovery decisions and activities can commence. Stabilization of the event shall be verified and declared by the incident commander with the advice and consent of the incident management team.

A.8.1 Competency-based education and training programs focus on the specific knowledge elements, skills, and/or abilities that are objective, that is, measurable or demonstrable, on the job. Education is usually focused on unknown risk exposures. Training is instruction that imparts and/or maintains the skills necessary for individuals and teams to perform their assigned system responsibilities and is usually focused on known risk exposures.

The learning objectives of training should be competency-based and the criteria should be related to the relevant competencies. Competency is based on demonstrated performance to achieve designated goals.

All personnel designated to perform specific task(s) should demonstrate competence to perform the tasks and meet the expected criteria identified in the performance objectives. Competency is defined as demonstrated performance to achieve designated objectives. Competencies are mastered

through a multitude of ways: life experience, education, apprenticeship, on-the-job experience, self-help programs, and training and development programs.

A.8.2 An incident response can include protective actions for life safety (e.g., evacuation, shelter in place, and run, hide, fight), conducting damage assessment, initiating recovery strategies, and any other measures necessary to bring an entity to a more stable status.

A.8.7 Information that should be included in public outreach and awareness efforts include regulatory disclosures such as those required by the SARA Title III [Emergency Planning and Community Right-to-Know Act (EPCRA)], the Community Awareness Emergency Response (CAER), and the Clery Act (universities). Nonregulatory examples of awareness that might be included in public education include severe weather outreach and alerts, shelter-in-place, and evacuation.

A.9.2 An exercise is an instrument used to train for, assess, practice, and improve performance in prevention, protection, response, and recovery capabilities in a risk-managed environment. Exercises can be used for testing and validating policies, plans, and procedures; to train individuals; to practice using equipment; to validate alternate site readiness; and to practice utilization of interagency agreements. Exercise goals can include clarifying and training personnel in roles and responsibilities, improving coordination and communications, identifying gaps in resources, improving individual performance, and identifying opportunities for improvement.

A test or testing is a type of exercise that incorporates an expectation of a pass or fail element within the established goal or objectives. Generally, one tests equipment and technology and exercises people and plans. Testing equipment and technology is either a pass or fail — it either works or it does not work. Exercising people and plans is not a pass or fail, although goals and objectives should be set that are either met or not met by the exercise. The purpose of exercising a person or a plan is to find out what does not work so the issue can be resolved before a problem occurs. Remember, if we knew it all worked, we would not need to test or exercise.

An exercise allows the entity to practice procedures and interact in a controlled setting. Participants identify and make recommendations to improve the overall program. The fundamental purpose is to improve capabilities to respond to and recover from a real incident. In support of that goal, an exercise should be used to achieve the following:

(1) Reveal planning weaknesses and strengths in plans, standard operating procedures (SOPs), and standard operating guidelines (SOGs), and validate recently changed procedures
(2) Improve the coordination among various response entities, including, as appropriate, government officials and community support entities
(3) Validate the training for response (e.g., incident command, hazard recognition, protective actions, and communications) and recovery (e.g., crisis management, technology recovery, operational recovery, and recovery communications)
(4) Increase the entity's general awareness of the hazards and protective actions
(5) Identify gaps where additional resources, equipment, or personnel are needed to prepare for, respond to, and recover from an incident
(6) Provide training and conditioning for team members and personnel in appropriate actions
(7) Practice established incident command structure, and practice response and recovery in a safe environment

A.9.3 An exercise can involve invoking response and operational continuity procedures, or simulate response or operational continuity incidents, in which participants role-play to assess issues that could arise prior to a real invocation. Exercises can be announced in advance.

Exercises should include, but not be limited to, orientation seminars, drills, tabletop exercises, functional exercises, and full-scale exercises.

Orientation seminar. The orientation seminar is an overview or introduction. Its purpose is to familiarize participants with roles, plans, procedures, or equipment. It can also be used to resolve questions of coordination and assignment of responsibilities.

Drill. A drill is a coordinated, supervised exercise activity normally used to test a single specific operation or function, such as an evacuation drill to test the ability to quickly and safely evacuate a facility. With a drill, there is no attempt to coordinate entities or fully activate the EOC. Its role in an exercise program is to practice and perfect one small part of the response plan and help prepare for more extensive exercises, in which several functions will be coordinated and tested. The effectiveness of a drill is its focus on a single, relatively limited portion of the overall emergency management system. It makes possible a tight focus on a potential problem area.

Tabletop exercise. A tabletop exercise is a facilitated analysis of an emergency situation in an informal, relatively stress-free environment. It is designed to elicit constructive discussion as participants examine and resolve problems based on existing operational plans and identify where those plans need to be refined. The success of the exercise is largely determined by group participation in the identification of problem areas.

Functional exercise. A functional exercise is a fully simulated interactive exercise that tests the capability of an entity to respond to a simulated event. The exercise tests multiple functions of the entity's operational plan. It is a coordinated response to a situation in a time-pressured, realistic simulation.

Full-scale exercise. A full-scale exercise simulates a real event as closely as possible. It is designed to evaluate the operational capability of emergency and crisis management systems and operational recovery plans in a highly stressful environment that simulates actual response conditions. To accomplish this realism, it can include the mobilization and actual movement of emergency personnel, equipment, and resources. Ideally, the full-scale exercise should exercise and evaluate the capabilities of the emergency management plan, the technology recovery plan, crisis management plan, and/or operational plan.

A.9.3(8) Coordination between internal and external teams and entities should be a primary objective of exercises and tests where appropriate. Such teams could include, but are not limited to, crisis management, incident command management/structure, response organizational structure, emergency support functions, internal/external coordinators or liaisons, and all elements of the supply chain, including critical suppliers, purchasing, human resources, and communications (including marketing, websites, and social media).

A.9.4 The Homeland Security Exercise Evaluation Program (HSEEP) provides a guide for designing, developing, and evaluating various types of exercises.

A.9.5 Where no frequency is established, a minimum annual frequency of exercises and testing is recommended.

A.10.1 Performance improvement is based on the following two distinct but interrelated functions:

(1) Measurement, sometimes called "assessment" or "observation," is the function in which the personnel accurately determine exactly what organizational performance has occurred.
(2) Evaluation is the function in which the observed performance is compared with criteria, sometimes called "standards" or "competencies," to determine if the actual organizational performance meets expectations.

A.10.1.1 Necessary improvements to the program can be identified in many ways, such as following an exercise or test of the program, following an actual event that required one or more of the program elements to be activated, or through a scheduled periodic review of the program.

A.10.1.2 The program should be reviewed on a regularly scheduled basis, after major changes to or within the entity (e.g., new facility, process, product, or policy), after scheduled exercises (i.e., testing of the program), or following an incident that required a part of the plan associated with the program to be utilized. Consideration should be given to the use of external evaluators.

The program might also need to be reviewed based on lessons learned from external influences, such as relevant changes to one of the standards referenced in Annex D.

A.10.1.3(5) Many emergency management entities and programs in public, private, and nonprofit sectors are supported in part by grants from government entities or private sources. A change in grant assistance could materially impact the entity's program, necessitating an evaluation of the program.

A.10.2 The corrective action process should follow a review of the program or follow an actual event or exercise to identify program deficiencies and take necessary corrective actions to address such deficiencies. The corrective action program should include techniques to manage the capabilities improvement process. The corrective action program should begin following the "after-action" discussion/critique of the incident or exercise or should take place during the incident if a lengthy or extended event is being managed. During the evaluation process, deficiencies that require improvement should be identified. Process deficiencies should be identified within one or more of the program elements found in this standard.

Corrective actions should be identified by the following:

(1) Changes to regulations, policy, plans, or procedures
(2) Additions or modifications to facilities, systems, or equipment
(3) Results of exercises and testing
(4) After-action reviews of actual incidents

A task group should be assigned to each identified area of noted deficiency to develop the necessary actions for improvement, and a time schedule for development of the necessary corrective action should be established.

The task group should take the following actions:

(1) Develop options for appropriate corrective action
(2) Make recommendations for a preferred option
(3) Develop an implementation plan, including training if required
(4) Ensure that during the next exercise the corrective actions are evaluated to determine if the corrective actions have been successful

The entity should establish a process to identify the root cause of the deficiencies noted. The entity also should establish a change management process (i.e., a process involving all sectors of an entity's operations in which changes to the operations are reflected in the plan and, vice versa, changes in the plan are reflected in the entity's operations).

A.10.2.1 The corrective action process should include the following:

(1) Develop a problem statement that states the problem and identifies its impacts
(2) Review corrective action issues from previous evaluations and identify possible solutions to the problem
(3) Select a corrective action strategy and prioritize actions to be taken, and a schedule for completion
(4) Assign responsibility for completion and provision of authority and resources to the individual assigned responsibility and accountability for implementation
(5) Identify the resources required to implement the strategy
(6) Track progress of the corrective action
(7) Forward problems to the level of authority that can resolve the problem
(8) Once the problem is solved, test the solution through exercising

A.10.2.2 The appropriate corrective actions might not be taken due to budgetary or other constraints or might be deferred as a part of the long-range capital project. However, temporary actions could be adopted until the desired option is funded and implemented.

A.11.1.1 Annexes M through X include material specific to Chapters 11 through 16 and are intended to assist the end user with a mass evacuation, sheltering, and re-entry program.

A.11.3 Terms other than *program coordinator* are in use. Different entities use various forms and names for the person who performs the program coordinator functions identified in this standard, for example, *emergency manager* (for the public sector) and *business continuity manager* (for the private sector). A written description of the position should be provided.

A.11.4.1 Mandating an entity to have a program committee/working group might, in some cases, violate the authorities under which the emergency management entity is established. Those entities that can have, or want to have, a program committee that will provide advice and guidance should be encouraged to do so.

A.11.4.3 When the representation on the program committee is being determined, consideration should be given to public sector representation on a private sector committee and vice versa, which will help to establish a coordinated and cooperative approach to the program.

A.11.5.1(2) Goals and objectives should be consistent with the entity's policy, vision, mission statement, roles and responsibilities, and enabling authority. Consideration also should be given

to resource constraints, management support, regulatory requirements, and codes of practice.

A.11.5.1(3) Industry codes of practices and guidelines also should be considered. In the private sector, corporate policy might dictate the directives that should be followed. The entity should consider local cultural and religious customs as well as demographics when developing the program.

A.11.5.2 This hazards and risk assessment could be performed by the entity or by an external agency, professional engineer, or similar licensed professional.

A.11.6.1 Performance objectives should be established for all elements in the program and should be linked to human performance. When the performance is compared to criteria to determine if the performance meets expectations, the measurement and evaluation of performance are impossible without well-written performance objectives. Performance objectives should contain three essential parts:

(1) *Performance*. Specific identification of expected behavior that is observable and measurable. If the specific behavior is based on expected knowledge (cognitive process) or attitudes (emotions, feelings), indicator behaviors should be used, because knowledge and attitude performance objectives are not directly observable and, therefore, are not measurable. An indicator behavior is observable and is based on either cognitive or emotional processes.
(2) *Conditions*. Specific identification of exact location, tools, the equipment used, and so forth that will be part of the observable, measurable behavior.
(3) *Criteria*. Specific criteria that will be used to compare the observed behavior so it can be determined if the performance objectives have been achieved.

A.11.6.4 The time frames that define short-term and long-term performance objectives should be developed by the entity. Examples of short-term objectives might include "initiate evacuation order" and "maintain current status of evacuation," while long-term objectives might include "prevent environmental damage" and "comply with regulatory requirements."

A.11.7.1 It is not the intent of this section to require a records management program for all of the entity's records.

A.11.8.1 The program should comply with applicable legislation, policies, regulatory requirements, and directives. The regulatory requirements include mandatory evacuation laws and laws to enforce mandatory evacuation. Annex T provides additional information.

A.11.8.2 Leadership should research applicable legal, regulatory, and other industry requirements that are related to the hazards, threats, and risks associated with the entity's facilities, activities, functions, products, services, and supply chain; the environment; and stakeholders. The entity should document this information and keep it up to date.

A.11.9.2 In addition to having sound financial and administration procedures for daily operations, it is equally important to have procedures in place that will allow an entity to expedite financial decision making and ensure that proper accounting occurs. The finance department should be actively involved with identifying, prioritizing, and purchasing internal and external resources.

A.12.1.1(1) Annex S provides information to complete the requirements.

A.12.1.1(6) The entity should be responsible for all personal protective equipment (PPE) used, whether the equipment is supplied by the entity or others. The PPE program should specify the responsibilities of the entity and of the personnel.

The entity is responsible for the following:

(1) Performing a hazard assessment of the workplace to identify and control physical and health hazards
(2) Identifying and providing appropriate PPE for employees
(3) Training personnel in the use and care of the PPE
(4) Maintaining PPE, including replacing worn or damaged PPE
(5) Periodically reviewing, updating, and evaluating the effectiveness of the PPE program
(6) Personnel reporting to the entity are responsible for the following:
    (a) Properly wearing PPE
    (b) Attending training sessions on PPE
    (c) Cleaning and maintaining PPE
    (d) Notifying a supervisor of the need to repair or replace PPE

A.12.1.2(6) Public information messages as warnings, notifications and communications should be presented to end user devices in a consistent way, so as to avoid confusion on their interpretation, especially by tourists, foreigners, or residents of other states. Even when using the same data standard, messaging system developers each make their separate presentation design choices. As a result, users often are confused by inconsistent warning presentations. Every effort should be made to harmonize device developers' design choices when they deal with communicating emergency warnings to the public as publishers of messages from official alerting authorities.

A.12.2(3) See Annex N, Annex O, and Annex P which support the requirement for a requirement analysis in planning.

A.12.3 Plans should be available in alternative formats, including large print, braille, and in languages common within the jurisdiction.

A.12.4.2 For information on coordinating with health care facilities requiring evacuation of patients, see 12.5.3.4.7 in NFPA 99.

A.12.4.4 See Annex M which identifies risks related to mass evacuation, sheltering, and re-entry.

A.12.5 See Annex M.

A.12.5.3 Risk assessment is a process for identifying potential hazards/risk exposures and their relative probability of occurrence; identifying assets at risk; assessing the vulnerability of the assets exposed; and quantifying the potential impacts of the hazard/risk exposures on the assets. Periodic reassessment is needed when changes to the entity occur. Reassessment is also necessary because hazards/risk exposures change over time, and the collective knowledge of hazard/risk exposures develops over time.

In addition to identifying hazards that could be the primary cause of an incident, consideration should also be given to those secondary hazards or cascading events that could cause additional impact to the entity and its assets. As an example, a fire could result in injury or death, property damage, interruption of operations, contamination of the environment, and negative attention on the entity.

Particular attention should be paid to the hazards that could affect the buildings that are going to be selected to shelter evacuees. As an example, the shelters' requirements could easily result in the selection of buildings in flat areas, often located in flooding-prone areas. While such hazard could be acceptable for most purposes, it is not for sheltering purposes when an emergency of such kind is ongoing.

A comprehensive risk assessment identifies the range of hazard/risk exposures, including threats or disruptive incidents, that have impacted or might impact the entity, surrounding area, or critical infrastructure supporting the entity. The potential impact of each threat, hazard/risk exposure, or disruptive incident is determined by the capabilities of the perpetrator, magnitude of the hazard, and scope of the incident; as well as the vulnerability of people, property, technology, the environment; the entity's operations to the threat, hazard, or incident; and the adequacy of existing mitigation. There are multiple methods to perform a risk assessment, but the entity should adhere to the following steps for conducting a comprehensive risk assessment:

(1) Determine the methodology the entity will use to conduct the assessment and determine whether the entity has the necessary expertise to perform the assessment.
(2) Consult with internal or external experts with the expertise to assess the vulnerability of the entity's assets from identified hazards.
(3) Identify and categorize assets (human resources, buildings, equipment, operations, technology, electronic information, suppliers, vendors, third-party service providers, etc.).
(4) Identify threats and hazards — natural, human caused (accidental and intentional), and technology caused.
(5) Evaluate hazards/risks to which the entity is exposed.
(6) Assess existing preventive measures and mitigation controls in place against credible threats.
(7) Categorize threats, hazard/risk exposures, and potential incidents by their relative frequency and severity. Keep in mind that there might be many possible combinations of frequency and severity for each, as well as cascading impacts.
(8) Evaluate the residual hazard/risk exposures (those that remain hazardous after prevention and mitigation activities).

A.12.6.1 See Annex N, Annex O, and Annex P, which provide detailed information on the requirements in the section.

A.12.6.2(3)(h) Two examples of cascading effects are an earthquake causing a tsunami or a hurricane causing a flood. An example of a secondary disaster would be multiple hurricanes.

A.12.6.3 See Annex N and Annex Q.

A.12.6.4(3) See Annex O for best practice guidance on building safety and accessibility considerations in selection of resilient sheltering facilities and guidance on shelters for specific hazards.

A.12.6.4(5) See Annex R for detailed information on requirements for animals.

A.12.6.5 Sheltering facilities should be deemed appropriate for use as a temporary shelter facility for the applicable hazards by the local authority having jurisdiction and conform to the applicable structural, fire safety, means of egress, accessibility, light, ventilation, and sanitary requirements to ensure public health, safety, and general welfare.

A.12.9.2 The Emergency Communications Systems chapter in *NFPA 72* addresses critical equipment concerns for warning, notification, and communications systems regarding reliability, intelligibility of voice messages, signaling pathway survivability, secondary power, and interoperability with other alarm systems. See Annex T and Annex W for additional information.

A.12.9.3 See Annex T, which provides information on common information and templates for warning messages and alerts.

A.12.9.4 See Annex T, which provides information on common information and templates for warning messages and alerts.

A.12.10.6 These requirements might not apply to all types of shelters.

A.12.10.6(3) To maintain security and population count, all guests will be registered at the reception area and will be provided with wristbands, which will be scanned each time they go through the main entrance. However, if multiple shelters are used, the wristbands scanning systems could register data in different formats. In this way it could become difficult, if not impossible, to build up one consistent common operational picture — in real time, if possible, or later on. For this reason wristbands should adopt the same standard and encoding for the barcode and implement interoperability features into the scanning systems, so as to allow for a seamless data exchange. Whenever possible such wristbands should embed UHF-RFID tags, for a faster remote scanning, which could allow real-time population count, setting-up unsupervised RFID-fitted exit gates.

A.13.1 There are two types of incidents: no-notice incidents and advance-notice incidents.

In no-notice incidents, the initial indicator is often instant recognition or notification of an event or incident (earthquake, fire alarm or 911 call reporting an incident) which prompts a response activity.

In advance-notice incidents or events, one or more indicators of a potential incident are monitored and evaluated over time, which might lead to an incident response activity.

A.13.2 See Annex W for information on the interoperability of data to support mass evacuation, sheltering, and re-entry operations.

A.13.5.1 An organization's evacuation and sheltering planning process should include a decision flow chart for continuity of care and business operations, as shown in Figure A.13.5.1.

A.13.5.5 Information produced should be assembled in accessible formats in accordance with the Americans with Disabilities Act (ADA) and the Rehabilitation Act.

A.13.5.7 Some entities involved with the evacuation and sheltering might not share information about those transported or sheltered.

A.13.6 Typical shelter operations are described in Annex O.

A.13.6.2 The following steps should be taken to identify and acquire buildings that can be used for sheltering:

(1) Contact local realtors and possibly engage one.

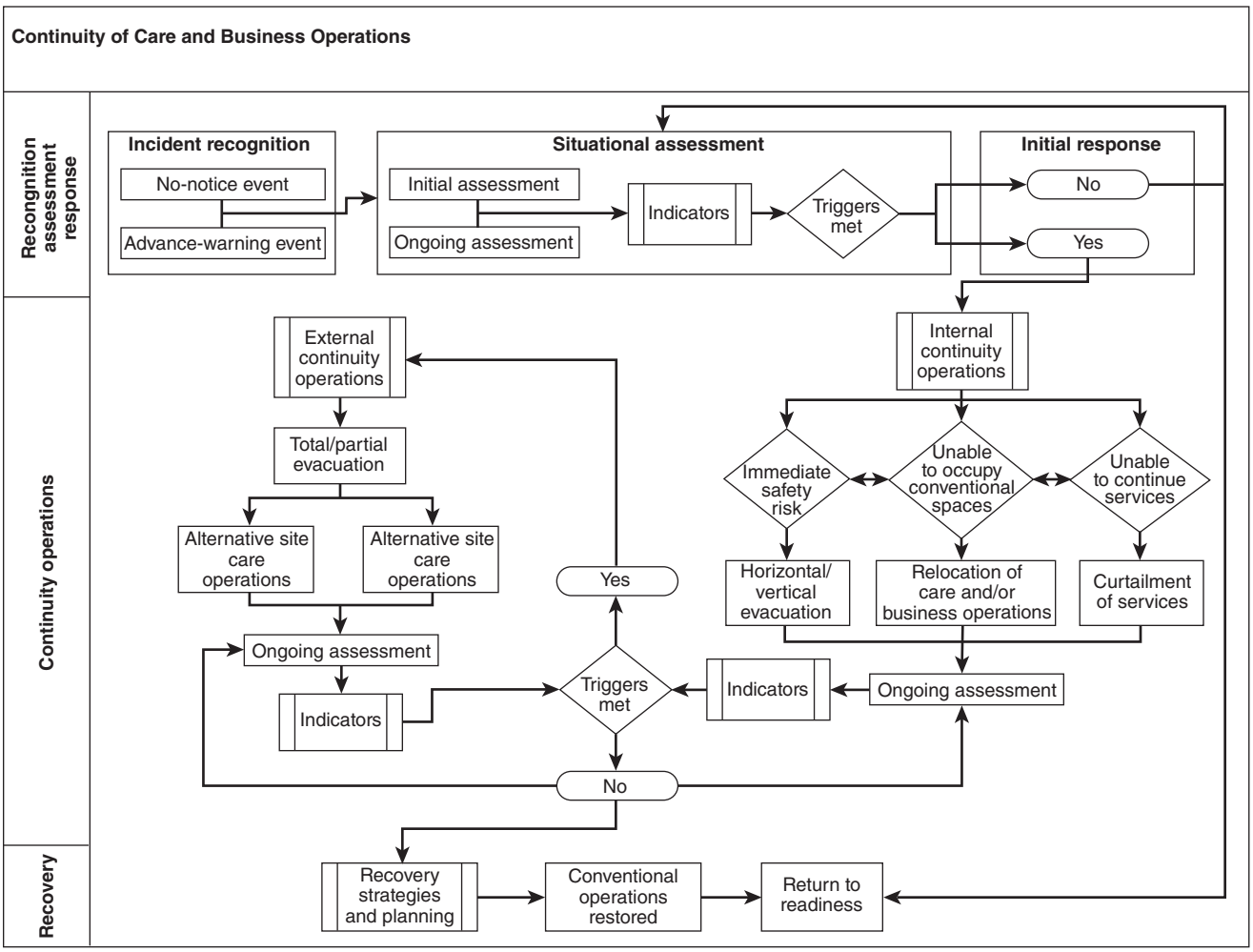

FIGURE A.13.5.1 Continuity of Care and Business Operations Decision Flow Chart.

(2) Conduct site visits and carry out an initial and a comprehensive survey, as follows:
   (a) Initial survey by the shelter operations team
   (b) Comprehensive survey by other agencies and partners, including local Americans with Disabilities Act (ADA) compliance agencies, public works and utilities, health services, water supply systems, and local animal welfare agencies
(3) Continually monitor building availability and lease terms
(4) Consider a building's accessibility to the following:
   (a) Highways
   (b) Public transportation
   (c) Shopping
   (d) Medical facilities
   (e) Animal shelter
   (f) Reception
   (g) Proximity to neighborhoods
   (h) Schools
(5) Assess the vulnerability of the building versus the identified hazards/risks

A.13.6.3(1) See Chapter 12 of NFPA 99 for information about coordinating with local health care facilities in the event of a health care evacuation.

A.14.6 The material should be prepared in multiple formats to ensure accessibility to the whole community.

A.14.7 See Annex V, which provides information on training that could be presented with shortened lead times.

A.15.2 An exercise is the principal means of validating a program's ability to implement its mass evacuation, sheltering, and re-entry policies, plans, procedures, training, equipment, and interagency agreements. Exercises also provide a means of clarifying and training persons in roles and responsibilities, improving interagency coordination and communications, identifying gaps in resources, improving individual performance, and identifying opportunities for improvement. It allows the entity and other agencies and organizations to practice and interact in a controlled setting. Participants identify and make recommendations for improvement of the exercises and the overall program.

A.15.3 Exercises should include, but not be limited to, orientation seminars, drills, tabletop exercises, functional exercises, and full-scale exercises.

Orientation Seminar. The orientation seminar is an overview or introduction. Its purpose is to familiarize participants with roles, plans, procedures, or equipment. It can also be used to

resolve questions of coordination and assignment of responsibilities.

Drill. A drill is a coordinated, supervised exercise activity normally used to test a single specific operation or function. With a drill, there is no attempt to coordinate organizations or to fully activate the emergency operation center (EOC). Its role in an exercise program is to practice and perfect one small part of the response plan and help prepare for more extensive exercises in which several functions will be coordinated and tested. The effectiveness of a drill is its focus on a single, relatively limited portion of the overall emergency management system. It makes possible a tight focus on a potential problem area.

Tabletop Exercise. A tabletop exercise is a facilitated analysis of an emergency situation in an informal, relatively stress-free environment. It is designed to elicit constructive discussion as participants examine and resolve problems based on existing operational plans and identify where those plans need to be refined. The success of the exercise is determined largely by group participation in the identification of problem areas.

Functional Exercise. A functional exercise is a fully simulated interactive exercise that tests the capability of an organization to respond to a simulated event. The exercise tests multiple functions of the organization's operational plan. It is a coordinated response to a situation in a time-pressured, realistic simulation.

Full-Scale Exercise. A full-scale exercise simulates a real event as closely as possible. It is designed to evaluate the operational capability of emergency management systems in a highly stressful environment that simulates actual response conditions. To accomplish this realism, it can include the mobilization and actual movement of emergency personnel, equipment, and resources. Ideally, the full-scale exercise should test and evaluate most functions of the emergency management plan or operational plan.

A.16.1 Performance improvement is based on two distinct but interrelated functions:

(1) *Measurement.* Sometimes called "assessment," measurement is the function in which the personnel determine what organizational performance has occurred.
(2) *Evaluation.* Evaluation is the function in which the observed performance is compared with criteria, sometimes called "standards" or "competencies," to determine if the actual organizational performance meets expectations.

A.16.1.3 The facility's mass evacuation, sheltering, and reentry plan should be evaluated through exercises. As with any emergency incident or exercise, an after-action report (AAR) should be completed to identify lessons learned and processes that can be improved for the future. The AAR should solicit feedback from all participants involved and should provide a frame of reference from which leaders can make improvements.

A.17.1.1 Terms that might be used interchangeably with the term pre-incident planning as referenced and defined by Chapter 3 and Chapters 17 through 23 can include, but are not limited to, the following terms:

(1) Pre-incident
(2) Pre-plan/preplan
(3) Pre-fire/prefire
(4) Pre-fire/prefire plan
(5) Pre-fire/prefire planning
(6) Pre-emergency
(7) Preplanning
(8) Preplanned
(9) Prefire plan
(10) Fire plan
(11) Fire control plan
(12) Emergency action plan
(13) Emergency procedure plan
(14) Emergency planning
(15) Fire emergency plan

A.17.1.2 Pre-incident planning involves evaluating the protection systems, building construction, contents, and operating procedures that can impact incidents and events and is not intended to replace code-enforcement inspections. However, fire hazards, life safety hazards, or both, observed during the pre-incident planning process should be abated or reported to the appropriate AHJ or both.

A.17.1.3.3 The specific determination of the AHJ depends on the mechanism under which Chapters 17 through 23 are adopted and enforced. Where the standard is adopted voluntarily by a particular emergency services organization (ESO) for its own use, the ESO is the AHJ. Where the standard is legally adopted and enforced by a body having regulatory authority over an ESO, such as the federal, state, or local government or a political subdivision, this body is responsible for making those determinations as the AHJ. The pre-incident plan development should take into account the ESO services, the financial resources available, the availability of personnel, the availability of trainers, and such other factors as will affect the ESO's ability to achieve compliance.

A.17.1.3.4 For an ESO to evaluate its compliance with Chapters 17 through 23, it must develop some type of logical process. Chapters 17 through 23 are intended to be implemented based on a balanced evaluation of economic factors, as well as public safety and personnel safety factors. The compliance schedule seeks to ensure that risk is objectively assessed and reasonable priorities are set in reaching compliance. Interim compensatory measures might be necessary to ensure that safety action is being addressed until full compliance is reached and formally adopted into the ESO's policies and procedures. Such measures can include, but are not limited to, increased inspections, testing, temporary suspension or restricted use of specific equipment, specialized training, and administrative controls.

A.17.1.3.5 Confidential information can be withheld from distributed copies of the pre-incident plan if the security of that information cannot be ensured by any entity that receives copies of the pre-incident plan. The confidential information should be made available to the responding agencies on their arrival at the scene of the incident.

A.17.2.1 A pre-incident plan is one of the most valuable tools available for aiding responding personnel in effectively controlling an emergency. The needs and benefits of pre-incident planning should be explained in detail to all involved participants. Although there are many types of incidents that require emergency response, fires generally represent the most frequent challenge to emergency responders. Many of the requirements in this standard that relate to fires and fire protection features can be applied to other types of incidents.

Pre-incident planning is a total concept based upon the following:

(1) Situation awareness
(2) Management commitment
(3) Education
(4) Prevention
(5) Protection
(6) Emergency organization

A thorough pre-incident plan involves information gathering, analysis, and dissemination; applying the "what-if" approach; planning; reviewing; training; and evaluating. Pre-incident plans within a jurisdiction should be similar in style, procedures, and content to maximize effectiveness and to reduce the time required to familiarize responding forces with the pre-incident plan.

Emergency response programs are planned; emergencies are not. The best time to learn about an occupancy is before the incident.

A.17.2.2 The pre-incident plan developer should be able to prepare a pre-incident survey, given the necessary forms and tools, so that all necessary occupancy information is recorded, items of concern are noted, and accurate sketches or diagrams are prepared.

Requisite Knowledge: Familiarity with sources of water supply for fire protection; fundamentals of fire suppression and detection systems; common symbols used in diagramming construction features, utilities, hazards, and fire protection systems; departmental requirements for a pre-incident survey and form completion; and importance of accurate diagrams.

Requisite Skills: Ability to identify the components of fire suppression and detection systems; sketch the site, buildings, and special features; detect hazards and special considerations to include in the pre-incident plan; and complete all related departmental forms.

Agencies and organizations, other than the fire department, might need different knowledge and skills to complete pre-incident plans that are applicable to their disciplines.

A.17.2.5 The pre-incident plan will be most effective when coordinated with an incident management system, such as the one presented in NFPA 1561.

A.17.2.6 The pre-incident plan developer should determine the average and maximum response time of each responding agency, including, but not limited to, fire department, emergency medical services, law enforcement, hazardous materials response, and rescue service. The evaluation should seek to determine whether the responding agency's equipment, personnel, and training enable the agency to effectively manage an incident at the site or facility.

A.17.2.8 The pre-incident planning process should begin during the construction design process of the proposed facility to identify emergency responders' concerns. The pre-incident planning process should allow for revisions to the pre-incident plan during different phases of construction. Design professionals should submit construction documents to identify data for inclusion in the pre-incident plan.

A.17.3.2 During a site visit, the pre-incident plan developer(s) should abide by all applicable safety and health procedures, which can include, but are not limited to, fall protection, confined space entry, personal protective equipment (PPE) and restricted access.

A.17.4 Pre-incident plan data includes quantitative and qualitative information about the facility (such as physical site, operation features, personnel, and protection features).

A.17.4.1 Effective pre-incident plans of simple sites or facilities or a pre-incident plan with simple objectives can be developed with minimal amounts of data. Additional data are required for pre-incident plans for more complex sites or facilities, facilities with more numerous potential hazards, pre-incident plans with more complex objectives, or potential incidents with greater risks. Data that might be useful should be collected with the understanding that it can be filtered out later if not needed in the final pre-incident plan. If a pre-incident plan developer intends to prepare a single pre-incident plan, the requirements provided in Chapters 1 through 3 and 17 through 23 and the information in Section Y.2 can be followed to aid in determining the types of data that could be needed. Alternatively, data collection forms can be developed to aid in the efficient and consistent collection of data for pre-incident plan development. Sample data collection forms are provided in Section Y.3.

It is helpful to understand the intended audience for the final pre-incident plan and to obtain consensus regarding the information that is needed and the threshold of information that the pre-incident plan user can effectively utilize once an incident has occurred. These considerations should govern the scope of the data collection effort.

A.17.4.1.1 The sources of data should include fire protection engineers, sprinkler and fire alarm contractors, building architects or engineers, building officials, water authorities, facility information experts, and insurance professionals. The collection of data could be limited by several factors, such as available resources, time, proprietary information, and privacy concerns. It will be necessary for the pre-incident plan developer to determine which data will be most critical and to prioritize the data collection effort to obtain the largest data sets given the established constraints.

Historical data on similar occupancies/events involved in emergencies should be reviewed for items that could cause problems in the structure or venue being surveyed.

A.17.4.1.2 For this effort, it is critical that the pre-incident plan developer and user(s) interact. An overabundance of information can be as detrimental to a pre-incident plan user as a lack of information if the user cannot easily distinguish critical information. Additionally, the specifics of any particular incident cannot be exhaustively anticipated. Therefore, the pre-incident plan should not attempt to perform incident command or management functions (e.g., placing apparatus, specifying attack strategies), although this could be desirable in certain instances.

A.17.5 A successful strategy for pre-incident plan development is an incremental process where simple pre-incident plans are developed and issued (in lieu of having none) and subsequently revised and enhanced. As an example, a local municipality could prepare simple pre-incident plans for all of the hospitals in its community for a given resource expenditure. As additional resources become available, the pre-incident plans for all of the hospitals can be brought up to another level. This method might be preferable to expending all of the available resources to prepare a complex and comprehensive pre-

incident plan for one hospital while leaving the other hospitals without any pre-incident plan.

Section Y.3 provides an example of a pre-incident plan field collection card and a completed pre-incident plan facility data record. Consideration should be given to interoperability with other emergency services organizations (ESOs).

A.17.5.2 The pre-incident plan document should be consistent and concise. Three manageable levels of building intelligence should be considered for a pre-incident plan.

Level 1 Basic. Level 1 information is the initial information necessary for the first responding elements to initiate operations, and includes the following items:

(1) Address
(2) Location name
(3) Lock box location
(4) Construction type
(5) Dimensions (length, width, and height)
(6) Number of stories (including belowgrade levels)
(7) Primary and secondary entrances
(8) Exposures to the building
(9) Stairs (roof and belowgrade)
(10) Alternative power
(11) Fire protection systems, as follows:
    (a) Sprinkler/standpipe
    (b) FDC location
    (c) Fire alarm control panel (FACP)
(12) Special hazards
(13) A section for notes

Level 2 Intermediate. Level 2 information is detailed information intended for circumstances where a strategy to respond to an emergency within a unique facility is necessary. In addition to Level 1 components, it includes the following items:

(1) Fire flow
(2) Staging areas
(3) Compartmentation
(4) Critical shutoffs
(5) Emergency contacts
(6) HVAC
(7) Electrical
(8) Elevators (service and passenger)
(9) Fire command center
(10) Emergency communications
(11) Smoke management system
(12) Unique security
(13) Fire protection systems
(14) Generator sets (fuel supplies)
(15) Fire pumps
(16) Hazardous materials
(17) Sketches
(18) Date the information was obtained
(19) Date of plan

Level 3 Comprehensive. Level 3 information is the most detailed level of pre-incident planning and is intended to include process hazards and protection schemes, detailed occupancy considerations, room or area layouts, and operational features (e.g., ventilation, power). In addition to Level 1 and Level 2 components, it includes the following items:

(1) Standpipe/sprinkler risers
(2) Plumbing risers
(3) Detailed tenant information
(4) Technical rescue
(5) Facility emergency plan
(6) Sky lobbies
(7) Hardened elevators
(8) Utility risers
(9) Chases
(10) Special hazards
(11) Areas of refuge
(12) Roof fixture/access
(13) Landing zones
(14) A/E floor plans
(15) Shafts
(16) Unique communication needs
(17) Interstitial spaces
(18) Additional applicable information from Chapter 18

A.17.6 The pre-incident plan is intended primarily for use by the emergency responders. Therefore, it is critical that the information presented be relevant, clear, concise, and complete. It is unlikely that emergency responders will have the time to read extensive text. Information should be presented graphically (sketches and pictures) wherever possible.

Information that will not be of use to the emergency responder should be reserved for other uses and should not be allowed to clutter the pre-incident plan.

A.17.8 Chapter 23 provides specific details on how review, testing, and maintenance of pre-incident plans should be completed. Training should be utilized to communicate the pre-incident plan expectations to individuals or agencies identified in the pre-incident plan that do not normally work together.

A.17.9 The pre-incident plan should be a foundation for the decision-making process during an emergency situation and provide important data that will assist the incident commander in developing appropriate strategies and tactics for managing the incident. The pre-incident plan should help responding personnel identify critical factors that will affect the ultimate outcome of the incident, including personnel safety. The incident commander should use the information contained in a pre-incident plan to anticipate likely scenarios and to develop tactical options. The incident commander should also consult the pre-incident plan throughout the incident to remain aware of factors that might affect the success of the operation and the need for strategic or tactical adjustment.

A.18.1 These elements are generally unaffected by outside influences and are therefore relatively static during the pre-incident planning process.

A.18.2.1 The size of the building, both vertical and horizontal, can have a profound effect on the decision-making process during an emergency. The number of stories might not represent the height of the building. There are cases where the number of stories does not include half stories or mezzanines used for utilities that are found at varying levels throughout a facility. Additionally, there are cases where the first few stories of a building are higher than a standard floor-to-ceiling distance, and, thus, the number of stories should not be used to determine the overall height of the building.

Grade level access can be to different floors on various sides of an occupancy. It is critical that the pre-incident plan address access and floor designations from all potential avenues of approach.

A.18.2.2.2(1) Data regarding wall construction and insulation could include the following:

(1) Hourly fire rating of exterior and interior walls
(2) Metal panel walls
(3) Masonry walls
(4) Glass walls
(5) Wood frame walls
(6) Plastic wall components
(7) Combustible insulation

See NFPA 220 for additional information regarding building construction.

A.18.2.2.2(2) Data regarding roof construction could include the following:

(1) Roof support components (e.g., joists, trusses, beams, girders), including the length of support spans, types of material, and fire protection rating
(2) Roof deck material (e.g., wood, metal, concrete)
(3) Roof covering materials, since combustibility and buildup thickness can affect firefighting tactics
(4) Roof shape or configuration (e.g., peaked, flat, dome, sawtooth)
(5) Availability of means for runoff drainage (e.g., trenches, drains, scuppers, slopes)

A.18.2.2.2(3) Data regarding floor construction could include the following:

(1) Floor support components (e.g., joists, trusses, beams, girders), including the lengths of span and the level of protection afforded to the floor support
(2) Floor members (e.g., wood deck, metal deck, concrete)
(3) Availability of means for runoff drainage (e.g., trenches, drains, scuppers, slopes)

A.18.2.2.2(4) Data regarding other pertinent building features could include the following:

(1) Construction type of interior walls
(2) Interior finish materials
(3) Suspended ceiling assemblies
(4) Raised floors
(5) Concealed spaces, including multiple ceiling and roof levels
(6) Windows used for rescue purposes, ventilation, or both
(7) Confined spaces
(8) Fire resistance and protection of structural members

A.18.2.2.2(6) Data regarding the location, types, and construction of access features could include the following:

(1) Doorways
(2) Locking devices
(3) Accessible windows
(4) Fire escapes
(5) Tunnels
(6) Breachable walls

A.18.2.2.2(7) The construction and fire rating of any fire or smoke barriers should be identified, as well as the presence of any protection items, such as fire doors, fire shutters, or automatic-closing devices or dampers designed to contain fire, products of combustion, or contaminants.

Data regarding the spread of combustion products or other contaminants could include the following:

(1) Large undivided areas
(2) Unprotected openings between floors
(3) Stairwells
(4) Elevator shafts
(5) Utility shafts
(6) Escalators
(7) Light wells
(8) High hazard areas
(9) Wall openings

A.18.2.2.2(8) Data regarding atriums should include the following:

(1) Location of atrium(s) in the building
(2) Number of stories connected by the atrium
(3) Number of stories open to the atrium
(4) Fire suppression system(s) present in the atrium
(5) Automatic fire detection and alarm system(s) present in the atrium
(6) Smoke management systems, including location of controls and operation
(7) Prescriptive- or performance-based design
(8) Overall height of the atrium
(9) Any fire protection equipment or devices located at the top of the atrium

A.18.2.2.2(9) Note obvious signs of deterioration or structural weakening, alterations, renovations, unusual added live and dead loads, and any other conditions that could impact the following:

(1) Spread of fire horizontally or vertically through the building's interior and exterior features
(2) Ability of responding personnel to access the building's interior, either through openings or by breaching a wall, so as to safely perform interior operations
(3) Potential for falling materials such as glass, curtain walls, exterior ornamentation, parapets, and overhanging components
(4) Exposures

A.18.2.2.2(10) Storage arrangements could include storage height, rack arrangements, special storage (e.g., aerosol, flammable liquids or gases, tires), storage encapsulation, and storage collapse hazards.

A.18.3 Information on building management systems and utilities that should be collected includes the following:

(1) HVAC systems and areas supplied
(2) Building electrical
(3) Boilers and chillers
(4) Steam, chilled water, water, and chemical piping systems
(5) Security systems and cameras
(6) Control systems that can be activated or shut off on-site or at a remote location(s)

HVAC systems can contribute to the spread of products of combustion and contaminants throughout a facility. Some facilities might be provided with central HVAC, self-contained units, or a combination of both. Some HVAC systems are designed for smoke control. *(See Section 20.7 for information on smoke control systems.)*

Experience has shown that various building services and their associated equipment can cause or contribute to an emergency incident. Distributing information about these services and equipment can help reduce their potential to have an adverse impact on an incident. Conversely, this information

might outline methods for using building services to support effective control of an incident.

A.18.3.1 The pre-incident plan should identify when and where building services technicians are required to render site energy systems safe. Energy systems include any source of electrical, mechanical, hydraulic, pneumatic, chemical, thermal, spring, or other stored energy, including controlled power sources.

A.18.3.2 The location(s) and method of entrance (aboveground or underground) for electric power, multiple feeds, locations of disconnects both inside and outside the facility, and overhead primary and secondary conductors resulting in reduced vertical clearance should be noted.

Certain processes might require electrical power to operate properly. Disconnect could cause the shutdown of agitators or other safety equipment that could result in an uncontrolled reaction. Disconnect or loss of power in certain medical facilities, such as those with ventilator-dependent patients, might require first responders to provide manual medical intervention to keep patients stabilized.

A.18.3.2.2 Electric utility rooms might consist of electrical distribution centers, motor control centers, utility service interface, or rectifier or inverter equipment (ac/dc).

A.18.3.2.3 Alternative energy sources should be documented in the pre-incident plan in order to identify potentially hazardous exposure to energized electrical sources. All sources of alternative electrical energy should be identified. The location of control circuitry, disconnection methods, lock out procedures, and isolation methods should be documented. Any special tools, information, responder training, and on-site contacts able to assist with rendering these systems safe should be contained in the planning documents. The location and method of storing the electrical energy produced should be documented. The location of the inverter system for converting the dc current to ac current should be identified. System voltages (dc and ac) should be documented.

A.18.3.2.4.1 Examples of emergency power supply (EPS) that should be recorded include, but are not limited to, generators, batteries, uninterruptible power supply systems, stored energy, and other sources.

A.18.3.2.6 All gases and gaseous mixtures should be noted and quantities recorded. Peak inventories should be noted. Be aware of incompatible gas storage. Special consideration should be given to any equipment or processes that might pose a hazard if the compressed or liquefied gas supply is interrupted.

A.18.3.2.7 Steam pressure lines can vary from low pressure to high pressure.

A.18.3.3 Elevator information should include the following:

(1) Number and location of cars or elevator banks, or both
(2) Location of elevator machine rooms (machine rooms might be located remote from hoistways)
(3) Floors served
(4) Type (e.g., electric or hydraulic, passenger or freight, manual or automatic, service, stretcher accessible)
(5) Restrictions
(6) Location of emergency access key
(7) Power lockout location
(8) Emergency access to car (e.g., roof hatch, sidewall panel)
(9) Overall height of elevator shafts
(10) Blind shaft and access panels
(11) Location of sky lobby
(12) Access point into elevator pit rooms
(13) Elevator recall
(14) Firefighter service override
(15) Emergency power

A.18.3.3.2 Some elevator lobbies are formed by activation of a power-operated sliding door by the fire alarm system. These doors have either a swinging door or a special release device to open the door to a predefined width [typically 81 cm (32 in.)]. Other types of operable elevator lobby separations are available.

A.18.4.1 Points of access might include the following:

(1) Basement level of building
(2) Main level of building
(3) If needed, access to special areas/floors of building
(4) Roof of building
(5) Adjoining buildings that might provide a tactical strategic advantage by way of tunnels or skywalks

A.18.4.2 Conditions that would hamper the access of responding personnel include the following:

(1) Bridge width or weight restrictions
(2) Narrow rights-of-way
(3) Roads subject to flooding, drifting snow, washout, or other blockage
(4) Low overhead clearances, railroad grade crossings, and drawbridges
(5) Security checkpoints and barriers
(6) Speed control devices
(7) Traffic

A.18.5 Security requirements are dynamic and can restrict access or egress to or from a facility. These measures can include various types of locking devices, access control features, and physical barriers. Some of these measures might be interlocked with fire alarm systems, surveillance, and other operational management systems.

Occupancies or facilities might also include extraordinary security measures or features that could delay response or evacuation. Some security measures might change, based on an increase or decrease in threat levels as dictated by the U.S. Department of Homeland Security. These types of facilities might include, but are not limited to, the following:

(1) Jails and detention centers
(2) Specialized wards in health care facilities
(3) Large-scale data processing centers
(4) Secure warehouses
(5) Government installations
(6) Public or mass transit (e.g., airports, ferry terminals, subways)
(7) Power plants and transmission yards (e.g., nuclear power plants, electrical substations)
(8) Bulk loading/unloading facilities with and without marine access
(9) Precious metal processing
(10) High profile or landmark facilities

A.18.5.1.1 Data relating to surveillance systems can include, but are not limited to, the following:

(1) Site plan showing exterior camera locations and angles of view
(2) Floor plan showing interior camera locations and angles of view
(3) Locations where surveillance camera images can be viewed
(4) Remote and wireless access to surveillance systems including URL/IP address and login credentials

A.18.5.2 Contact information should be obtained for the person(s) responsible for the security animals.

A.18.5.3.1 The following are examples of intruder security systems:

(1) Mantraps
(2) Motion detection
(3) Security smoke systems
(4) Sound barriers
(5) Strobes
(6) Fail-secured locking mechanisms

A.18.5.3.2 On-site security services include the following:

(1) Procedure for contacting the security service
(2) On-site location
(3) Number of personnel on duty
(4) Level of access within the facility
(5) Scope of security service emergency response training
(6) Armed security personnel

A.18.6 Pre-incident information regarding fences or other barriers might include the following:

(1) Lock boxes
(2) Alarms
(3) Unusual locking devices
(4) Electrification
(5) Barbed or razor wire
(6) Need to breach fences or barriers for operational considerations
(7) Sound barriers
(8) Jersey barriers

A.18.7.2 Sprinkler operation or manual firefighting operations can produce large quantities of contaminated water that can be harmful to wastewater treatment plants or the environment.

A.18.8 Types of communications systems could include the following:

(1) Facility public address (PA) systems
(2) Facility audio signaling systems
(3) Computer communications systems
(4) Emergency firefighter telephone systems
(5) Facility portable radio systems
(6) Interior telephones

A.18.8.1 Data can include, but is not limited to, the following:

(1) Access points, coverage, capabilities, and limitations of systems and equipment for alerts, notifications, warnings, and communications
(2) Procedures and credentials for access and use of mass notification systems and smartphone messaging apps, including SMS communications

A.18.8.2 Data regarding communications could include the following:

(1) Interference or poor coverage as a result of construction or radio system design, including coverage in the following areas:
    (a) Belowgrade or shielded areas
    (b) Interiors of large structures
    (c) Upper floors of high-rise buildings
    (d) Assignment of radio channels
    (e) Other supplemental communications
(2) Availability of facility radios for emergency responders

The capability of emergency responder portable radio communications should be verified to ensure an acceptable level of radio coverage throughout the facility.

A.19.2.1.1(1) The hours of operation should be noted. While most activities take place during daylight hours, many occupancies can have around-the-clock operations or varying activity levels.

A.19.2.1.1(2) Information should be collected regarding the normal and maximum occupant loads, any anticipated variations, or potential crowding.

A.19.2.1.1(3) Many occupancies have the ability for real-time occupant tracking and accountability, which should be noted in the pre-incident plan. This information is extremely helpful in determining occupant accountability and evacuation needs.

A.19.2.1.1(4) Certain occupants might have restricted or limited means of self-evacuation. The locations of occupants who need assistance to safely evacuate should be noted. Areas of refuge, if provided, should be noted. The location of equipment, such as stair chairs, stretchers, or lifts, that can assist evacuation should be identified.

A.19.2.1.1(5) All areas utilizing the shelter-in-place, internal relocation, or other methods and designated safe areas should be noted.

A.19.2.2 The potential for exits to be compromised should be noted. This might include access control, perimeter protection, or any condition that might impede egress or access.

A.19.3.1 An emergency plan might also be known as a site emergency plan or an emergency response plan, or it might be known by another name. The strategy and tactics to be used by emergency responders should be coordinated with the facility's emergency action plan. An emergency action plan organizational structure and emergency contact list should be obtained from facility management. At a minimum, the list should include whom to contact, in order of priority, in the event of an emergency. A current list that specifies each individual's assigned emergency response duties should be available. This list might identify technical liaisons that are familiar with the building process, utility, and automation systems and other persons with similar assignments. The pre-incident plan should identify existing evacuation plans and the need for any interface with evacuation plans. The location of safety data sheet (SDS) and related data should be indicated in the pre-incident plan.

A.19.3.2 The facility emergency action plan might specify total evacuation without any efforts to control the emergency or might specify an active occupant response. The AHJ or the facility owner or occupant might require an emergency

response organization of building occupants to specifically control fires, chemical spills, and related emergencies, or to facilitate evacuation or deliver emergency medical services.

A.20.2 The adequacy of a water supply is based on the following two primary factors:

(1) Capacity, which is the ability to deliver the water flow rate needed for the duration of the incident
(2) Pressure, that is, having the pressure necessary to deliver the required water flow rate to the point of use plus the pressure necessary to meet any additional pressure requirements of the systems being supplied

When the evaluation of the available water supply is completed, the user should compare the water available to the water required.

A.20.2.1 The following factors should be considered when evaluating the water required:

(1) Volume of water required for fire protection, including, but not limited to, the following:
    (a) Automatic sprinkler system demand *(see NFPA 13)*
    (b) Standpipe system requirements *(see NFPA 14)*
    (c) Outside hose line requirements for manual fire suppression efforts *(see NFPA 1, NFPA 13, and NFPA 1142)* and local fire department requirements
    (d) Other aqueous-based extinguishing system demands *(see NFPA 11 and NFPA 16)*
(2) Volume of water needed for processes that cannot be interrupted

Additional factors that could affect the quantity of water required or the duration of time that the water must be available include, but are not limited to, the following:

(1) Combustibility of construction
(2) Combustibility of contents
(3) Presence of hazardous processes and materials
(4) Exposures

Additional resources that could provide information on the quantity or duration of water that should be available include, but are not limited to, the following:

(1) Local fire department requirements
(2) Requirements in applicable fire protection standards, including, but not limited to, the following:
    (a) NFPA 13
    (b) NFPA 14
    (c) NFPA 15
    (d) NFPA 16
    (e) NFPA 30
    (f) NFPA 30B
    (g) NFPA 1142

A.20.2.2 The available water supply should be determined by conducting a water supply test in accordance with NFPA 291.

The results of the water supply test should be reported in the pre-incident plan, including the following:

(1) Static pressure
(2) Residual pressure and flow rate
(3) Flow rate available at 140 kPa (20 psi) residual (unless the water supply source is developed from a draft, then flow rate is the rate developed at the draft)

Care should be exercised in interpreting the test results, since only the available water supply in the water mains is determined. The actual flow from the hydrant will be less than the test results, depending on the size and length of the hydrant lateral, the type of hydrant, and the outlet that is used. The 140 kPa (20 psi) should be available at the hydrant outlet as a minimum. The available flow and pressure at the pump intake of the fire engine should be determined.

The types of fire protection system demands, including required fire flow, sprinkler system, standpipe system, water spray system, and foam water system, should be obtained.

A.20.2.2.2 A deficient water supply might be mitigated by any combination of the following:

(1) Supply from an adjacent water distribution system pressure zone
(2) Mutual aid
(3) Tankers or water tenders
(4) Drafting from static water sources, such as lakes, streams, and swimming pools

A.20.2.3 The water distribution system should be defined in terms of adequacy and reliability, and the following should be recorded:

(1) Flow rates and pressures at various locations
(2) Source, such as gravity tank, pressure tank, wells, pumps (quantity and rated capacity)

The following information on the water distribution system should be recorded:

(1) Gridded
(2) Dead end
(3) Pressure zones
(4) Location of isolation valves
(5) Multiple systems (e.g., process supplies, high and low pressure systems)
(6) Interconnections with other systems
(7) Emergency contacts

A.20.2.4.2 Seasonal information might include the following:

(1) Low water level
(2) Whether the static source is subject to freezing
(3) Access to the source
(4) Tidal information

A.20.2.5 The quantity of water stored in a tank might also be dedicated to fire protection. Where the tank serves both fire protection and domestic demands, the quantity of water dedicated for fire protection should be included in the pre-incident plan.

A.20.2.5.2 Various methods of obtaining water from a water storage tank include, but are not limited to, a fire hydrant, a fire hose valve, or a direct valved connection to the tank.

A.20.2.6 Additional information on fire hydrants might include operating direction, thread type and size, hydrant color coding, and so forth.

A.20.3 Types of water-based fire protection systems include the following:

(1) Wet-pipe sprinkler
(2) Dry-pipe sprinkler
(3) Pre-action sprinkler
(4) Deluge sprinkler

(5) Foam-water sprinkler
(6) Water spray
(7) Water mist

A.20.3.1 During the pre-incident plan process, key fire protection control valves should be noted. The facility owner or manager might have additional information regarding the location and function of valves in addition to the main riser valves in the building.

A.20.3.2 Types of standpipe systems include the following:

(1) Automatic wet
(2) Automatic dry
(3) Manual wet
(4) Manual dry

Classes of standpipe hose connections include the following:

(1) Class I
(2) Class II
(3) Class III

The name of the manufacturer of the pressure reducing valve should be noted, because different manufacturers have different override methods to increase hose stream pressure.

A.20.3.3 For electric fire pumps, the location and means of electrical disconnect should be identified, so that the power to the pump is not compromised during the incident. If the fire pump power supply is not electrically separated from the facility disconnect, it should be noted in the pre-incident plan.

A.20.4 Types of non-water-based fire protection systems include the following:

(1) Wet chemical suppression systems
(2) Dry chemical suppression systems
(3) Gaseous suppression systems

A.20.5 Types of alarm systems might include high-sensitivity detection systems and smoke, heat, and toxic gas monitoring, and notification systems. Some of these systems might report to a location other than the fire alarm system.

A.20.6 Examples might include Class D, chemical neutralization units, Class K, foam-water, carbon dioxide (CO_2), and clean agent.

A.21.2 Pre-incident planning for facilities where hazardous materials are present should record the following:

(1) Impact on emergency operations
(2) Specific hazard(s) of the materials
(3) Quantity and type of materials present and container type(s)
(4) Engineering controls
(5) Containment systems
(6) Fire suppression systems
(7) Special firefighting requirements

Special hazards might include the following:

(1) Chemical hazards
(2) Physical hazards
(3) Biological hazards
(4) Nuclear hazards
(5) Radiological hazards
(6) Explosives
(7) Research facilities
(8) Hazardous processes
(9) Large-scale data processing centers

Other occupancies, by the nature of their use, or the unique characteristics of their presence, should be evaluated for pre-incident planning needs by the local AHJ.

Plan developers should be familiar with the following documents before initiating preplanning for special hazard occupancies:

(1) NFPA *101*
(2) NFPA 472 (as incorporated in NFPA 470)
(3) NFPA 473 (as incorporated in NFPA 470)
(4) CCPS, *Guidelines for Chemical Process Quantitative Risk Analysis*
(5) Notice FRL-5512-8, *The National Response Team's Integrated Contingency Pre-Incident Plan Guidance*
(6) NFPA 150
(7) *NFPA 70*
(8) Department of Homeland Security, *Chemical Facility Anti-Terrorism Standards (CFATS)*, Appendix A, Release Chemicals

A.21.2.2 Among the situations that could produce transient hazardous conditions are the following:

(1) Periodic maintenance or shutdowns
(2) Renovations and alterations
(3) Special manufacturing production runs
(4) Crop-handling or storage
(5) Material-handling facilities (e.g., loading docks, package sorting/transfer facilities)

A.21.2.3 Since the inventory of special hazard materials can fluctuate throughout the year, the pre-incident plan should identify an approved process to obtain the best estimate of current inventory at the time of the incident. Methods of tracking inventory might include internal tracking systems and shipping and receiving documentation.

The AHJ should have a process to determine the need to document the operational conditions, locations, and characteristics of hazardous materials that might be present for a one-time condition or seasonally.

A.21.2.4.2 Ammonium nitrate has the potential to explode upon exposure to fire, heat, and pressure.

A.21.2.5 Flammable and combustible liquids create fires that grow faster and produce much more heat than ordinary combustibles. The high heat release can cause premature structural collapse in addition to making entry into the fire area extremely difficult.

Flammable and combustible liquids can be stored in flammable liquids storage rooms, flammable liquids handling rooms, or flammable storage cabinets or cans, and so forth.

Many flammable liquids will flow with fire suppression water runoff and have the potential to spread the fire or contaminate the environment. To control this hazard, facilities might have built-in features, such as floor drainage or containment, for flammable liquids areas. If containment is provided (including piping the drainage to a containment area), firefighters must be aware of the capacity of the containment area. Once the capacity of the area is known, emergency responders can calculate how long it will take to fill and potentially overflow the containment. The simplest method for calculating the overflow time is to divide the capacity of the containment area by the anticipated flow (gpm). The resulting number is the length of time, in minutes, that it will take to fill the containment area.

In calculating the flow, be sure to include the design of the sprinkler system (gpm/ft^2 × area of design) as well as hose lines.

A.21.2.5(1) Materials can flow directly to an environmental receptor or to a spill containment holding area.

A.21.2.5(3) Specialized extinguishing agents, such as alcohol-resistant firefighting foams can be used to successfully extinguish a flammable liquids fire. Special agent requirements should also identify the presence of engineered systems for fire suppression.

A.21.2.7 Small radioactive sources used in laboratory, manufacturing, health care, or other occupancies could pose significant risks if removed from their storage or shielding. Information should be included about special entry requirements or security procedures and alarms for equipment such as lasers, irradiators, or other areas or devices that could result in exposure to responders.

A.21.2.8 Many chemicals can produce an adverse reaction if contaminated or mixed with other materials. Chemicals could also undergo a chemical reaction when exposed to elevated temperatures as in a fire and have the potential for buildup of pressure in containers and the generation of toxic by-products and heat.

Reactive chemicals that require cooling, for example, in a refrigerated warehouse, should also be noted, because it is likely that power could be interrupted during an emergency. Plan for any chemical processes that could become hazardous if interrupted or left unattended (e.g., during the building evacuation).

Materials that react upon exposure to air or water should also be documented on the pre-incident plan. Include information about any secondary containment to prevent exposure to hazardous conditions.

A.21.2.9 Combustible dust can accumulate on any upward-facing surface. Fine dusts can even cling to vertical surfaces. A large amount of combustible dust often accumulates overhead on structural components or other surfaces where it is hard to notice or clean. Historically, these dust accumulations are associated with cascading secondary explosions that lead to major or total facility loss. The following standards provide guidance on combustible dusts:

(1) NFPA 654
(2) NFPA 655
(3) NFPA 664
(4) NFPA 61
(5) NFPA 484

The following firefighting operations can inadvertently increase the chance of a combustible dust explosion:

(1) Tactics that cause dust clouds to form or reach the explosive range
(2) Tactics that introduce air, creating an explosive atmosphere
(3) Application of incorrect or incompatible extinguishing agents
(4) Use of equipment or tools that can become an ignition source

OSHA 3644-04, "Firefighting Precautions at Facilities with Combustible Dust," can be referenced for additional guidance and operational considerations.

A.21.2.10 Examples of places that might contain hazardous atmospheres include the following:

(1) Confined spaces
(2) Inert atmospheres
(3) Ripening facilities
(4) Special equipment treating atmospheres
(5) Fumigation chambers or active fumigation operation firefighting
(6) Magnetic resonance imaging (MRI) quench gases

A.21.3.1 Vacant and abandoned buildings pose significant risk to responding emergency service delivery providers. These buildings have caused countless deaths and injuries to firefighters who have responded to these locations for fires, gas leaks, or other emergencies. These facilities have many hidden dangers that must be recognized and preplanned by responders prior to emergencies. These structures are subject to deterioration, primarily from lack of maintenance, and illegal entrance. Pre-incident planning should be performed on these properties to reduce risk to emergency responders. *(See Section Y.1.6.)*

A.21.3.5 Useful information on marking can be found in the FEMA Urban Search and Rescue (US&R) Response System and the firefighter safety building marking system (*see Annex E in NFPA 1*).

A.21.4.2.1 Prior to the installation of the sprinkler or standpipe system, there is a greater risk of fire spread and a greater danger to occupants. When a temporary sprinkler or standpipe system is installed and made operational this hazard is reduced. Hence, the AHJ may wish to identify the period of time the building is without a sprinkler or standpipe system in their pre-incident plan.

A.21.4.3 A great deal of information found in the pre-fire plan when developed in accordance with NFPA 241 can provide useful information for the pre-incident plan.

A.21.6.1 See Annex F of NFPA 502 for a typical emergency response plan that can be used as the basis of a pre-incident plan.

A.21.6.5 The Pipeline and Hazardous Materials Safety Administration (PHMSA) Safety Alert by the International Association of Fire Chiefs (IAFC) provides guidance on elements that should be contained in a pre-incident plan.

A.22.1 Guidance on the development of all hazard emergency operations and post-incident recovery procedures can be found in Chapters 4 through 10, state and local plans, and many documents, including, but not limited to, the following:

(1) NFPA 472 (as incorporated in NFPA 470)
(2) NFPA 473 (as incorporated in NFPA 470)
(3) NFPA 600
(4) NFPA 1710
(5) NFPA 1720
(6) Notice FRL-5512-8, *The National Response Team's Integrated Contingency Pre-Incident Plan Guidance*

The pre-incident plan should identify the emergency response resources' availability and access. Documented agreements should be in place to ensure all organizations involved are committed to providing requested support.

Various national, state, and local laws define the roles, responsibilities, and authority of government agencies during specific emergency conditions. Some of these laws might also extend jurisdiction or responsibility to property owners or semi-government agencies. In order to provide for effective emergency operations, it is critical that a single incident action plan be developed and implemented. This action plan should be managed with an incident management system and, whether a unified or single command is utilized, the lines of authority and command should be clearly defined. In the event that competing action plans occur during an emergency, the action plan for the legally authorized agency should supersede all other action plans.

A.22.2 This information should be easily accessible to the responders and should include, but not be limited to, hydrant locations, direct and alternate routes, staging information, known hazardous chemicals or conditions, and site access.

A.22.3.1 The scope and intensity level of the required information flow between the facility staff and the incident commander will vary during various phases of the incident; however, information flow, including any actions taken by the members of both parties, should continue throughout the incident.

When a facility representative is not available, the pre-incident plan should address the means needed for rapid access to, and consultation with, a site representative until an on-site liaison can be established.

A.22.3.2 The pre-incident plan should not be developed without some basic understanding of the public emergency response resources that would probably be involved in mitigating an on-site incident. The capabilities of those responders can have a significant impact on the pre-incident plan assumptions and content. A pre-incident plan developed for a hazardous materials facility where a fully staffed Type I hazmat team is available within 10 minutes of an incident will probably look significantly different than a pre-incident plan for the same type of facility in a rural area where the closest hazmat team is four hours away from the facility.

A.22.3.6 Various other agencies or organizations might have legal authority at different intervals during an incident. It is important that these agencies and organization be notified of the incident, that their roles and responsibilities are clearly defined and understood, and that, as required by law, the agencies are given access or control of the incident.

An example would be where an incident occurs and an EMS response is dispatched to a person with burn injuries. Upon arrival, EMS finds the patient has self-evacuated from a fire and calls for the fire department. The fire department arrives, takes command of the incident, and extinguishes the fire. The fire department then requests a law enforcement agency to investigate the cause of the fire. The law enforcement agency determines the fire was caused by arson and takes control of the incident. Once the law enforcement agency completes its investigation, the building department is notified to determine how much structural damage has occurred and if the building is habitable. In this example, four different government agencies had legal authority at different phases of the emergency. To protect members of the public and investigate the fire, each agency collaborated within its authority and the transition between agencies was critical to the protection of public safety.

A.23.2.1 Significant changes can include impairments to fire protection systems and devices, including, but not limited to, fire hydrants, fire sprinkler systems, fire alarm systems, and smoke management systems when they are taken out of service for repairs or maintenance. While some repairs or maintenance might be completed in a short period of time, others might involve several days or weeks, depending on the scope of the maintenance or repairs and availability of parts.

Annex B Self-Assessment for Conformity with Chapters 4–10 (NFPA 1600)

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

B.1 Table B.1 is a self-assessment tool to assist entities in determining conformity with the requirements of Chapters 4 through 10. The table includes a list of hazards and text from the body of the standard to make the self-assessment tool more user friendly. Users of this self-assessment tool can indicate conformity or nonconformity, as well as evidence of conformity, corrective action, task assignment, a schedule for action, or other information in the Comments column.

Table B.1 Self-Assessment Tool for Conformity with Chapters 4–10

Program Elements	Conforming	Nonconforming	Comments
Chapter 4 Program Management			
4.2 Leadership and Commitment.			
4.2.1 The entity leadership shall demonstrate commitment to the program to:			
• Prevent incidents			
• Mitigate the consequences of incidents			
• Prepare for incidents			
• Respond to incidents			
• Maintain continuity during incidents			

(continues)

Table B.1 *Continued*

Program Elements	Conforming	Nonconforming	Comments
• Recover from incidents			
4.2.2 The leadership commitment shall include the following:			
(1) Support the development, implementation, and maintenance of the program			
(2) Provide necessary resources to support the program			
(3) Ensure the program is reviewed and evaluated as needed to ensure program effectiveness			
(4) Support corrective action to address program deficiencies			
4.2.3 The entity shall:			
• Adhere to policies			
• Execute plans			
• Follow procedures developed to support the program			
4.3* Program Coordinator. The program coordinator shall be appointed by the entity's leadership and authorized to:			
• Develop the program			
• Implement the program			
• Administer the program			
• Evaluate the program			
• Maintain the program			
4.4 Performance Objectives.			
4.4.1* The entity shall establish performance objectives for the program in accordance with Chapter 4 and the elements in Chapters 5 through 10.			
4.4.2 The performance objectives shall address the results of:			
• Hazard identification			
• Risk assessment			
• Business impact analysis			
4.4.3 Performance objectives shall be developed by the entity to address both:			
• Short-term needs			
• Long-term needs			
4.4.4* The entity shall define the terms:			
• *Short-term*			
• *Long-term*			
4.5 Program Committee.			
4.5.1 A program committee shall be established by the entity in accordance with its policy.			
4.5.2 The program committee shall provide input or assist in the coordination of:			
• Preparation of the program			
• Development of the program			
• Implementation of the program			
• Evaluation of the program			
• Maintenance of the program			
4.5.3* The program committee shall include:			
• The program coordinator			

(continues)

Table B.1 *Continued*

Program Elements	Conforming	Nonconforming	Comments
• Others who have the expertise, the knowledge of the entity, and the capability to identify resources from all key functional areas within the entity			
4.5.4* The program committee shall solicit applicable external representation.			
4.6 Program Administration.			
4.6.1 The entity shall have a documented program that includes the following:			
(1) Executive policy, including vision, mission statement, roles and responsibilities, and enabling authority			
(2)* Program scope, goals, performance objectives, and metrics for program evaluation			
(3)* Applicable authorities, legislation, regulations, and industry codes of practice as required by Section 4.7			
(4) Program budget and schedule, including milestones			
(5) Program plans and procedures that include the following:			
(a) Anticipated cost			
(b) Priority			
(c) Resources required			
(6) Records management practices as required by Section 4.9			
(7) Management of change			
4.6.2 The program shall include the requirements specified in Chapters 4 through 10, the scope of which shall be determined through an "all-hazards" approach and the risk assessment.			
4.6.3* Requirements for prevention, mitigation, response, continuity, and recovery programs shall be applicable to preparedness including:			
• Planning			
• Implementation			
• Assessment			
• Maintenance			
4.7 Laws and Authorities.			
4.7.1 The program shall comply with:			
• Applicable legislation			
• Policies			
• Regulatory requirements			
• Directives			
4.7.2 The entity shall establish, maintain, and document procedure(s) to comply with:			
• Applicable legislation			
• Policies			
• Regulatory requirements			
• Directives			
4.7.3* The entity shall implement a strategy for addressing the need for revisions to:			
• Legislation			
• Regulations			
• Directives			
• Policies			

(continues)

Table B.1 *Continued*

Program Elements	Conforming	Nonconforming	Comments
• Industry codes of practice			
4.8 Finance and Administration.			
4.8.1 The entity shall develop finance and administrative procedures to support the program:			
• Before an incident			
• During an incident			
• After an incident			
4.8.2* There shall be a responsive finance and administrative framework that does the following:			
(1) Complies with the entity's program requirements			
(2) Is uniquely linked to response, continuity, and recovery operations			
(3) Provides for maximum flexibility to expeditiously request, receive, manage, and apply funds in a nonemergency environment and in emergency situations to ensure the timely delivery of assistance			
4.8.3 Procedures shall be created and maintained for expediting fiscal decisions in accordance with:			
• Established authorization levels			
• Accounting principles			
• Governance requirements			
• Fiscal policy			
4.8.4 Finance and administrative procedures shall include the following:			
(1) Responsibilities for program finance authority, including reporting relationships to the program coordinator			
(2)* Program procurement procedures			
(3) Payroll			
(4)* Accounting systems to track and document costs			
(5) Management of funding from external sources			
(6) Crisis management procedures that coordinate authorization levels and appropriate control measures			
(7) Documenting financial expenditures incurred as a result of an incident and for compiling claims for future cost recovery			
(8) Identifying and accessing alternative funding sources			
(9) Managing budgeted and specially appropriated funds			
4.9* Records Management.			
4.9.1 The entity shall ensure that records are available to the entity by:			
• Developing a records management program			
• Implementing a records management program			
• Managing a records management program			
4.9.2 The program shall include the following:			
(1) Identification of records (hard copy or electronic) vital to continue the operations of the entity			
(2) Backup of records on a frequency necessary to meet program goals and objectives			
(3) Validation of the integrity of records backup			
(4) Implementation of procedures to store, retrieve, and recover records on-site or off-site			

(continues)

Table B.1 *Continued*

Program Elements	Conforming	Nonconforming	Comments
(5) Protection of records			
(6) Implementation of a record review process			
(7) Procedures coordinating records access			
Chapter 5 Planning			
5.1 Planning and Design Process.			
5.1.1* The program shall follow a planning process for execution that develops:			
• Strategies			
• Plans			
• Required capabilities			
5.1.2 Strategic planning shall define the entity's program:			
• Vision			
• Mission			
• Goals			
5.1.3* A risk assessment and a business impact analysis (BIA) shall develop information to prepare:			
• Prevention strategies			
• Mitigation strategies			
5.1.4* A risk assessment, a BIA, and a resource needs assessment shall develop information to prepare the following plans:			
• Emergency operations/response plan			
• Crisis communications plan			
• Continuity plan			
• Recovery plan			
5.1.5* Crisis management planning shall address an event, or series of events, that severely impacts or has the potential to severely impact an entity's:			
• Operations			
• Brand			
• Image			
• Reputation			
• Market share			
• Ability to do business			
• Relationships with key stakeholders			
5.1.6* The entity shall include key stakeholders in the planning process.			
5.2* Risk Assessment.			
5.2.1 The entity shall conduct a risk assessment.			
5.2.2 The entity shall:			
• Identify hazards			
• Monitor those hazards			
• Monitor the likelihood and severity of those hazards' occurrence over time			
5.2.2.1 Hazards to be evaluated shall include the following:			
(1) Geological:			

(continues)

Table B.1 *Continued*

Program Elements	Conforming	Nonconforming	Comments
(a) Earthquake			
(b) Landslide, mudslide, lahar, subsidence			
(c) Tsunami			
(d) Volcano			
(2) Meteorological:			
(a) Drought			
(b) Extreme hot or cold temperatures			
(c) Famine			
(d) Flood, flash flood, seiche, tidal surge			
(e) Geomagnetic storm			
(f) Lightning			
(g) Snow, ice, hail, sleet, avalanche			
(h) Wildland fire			
(i) Windstorm, tropical cyclone, hurricane, tornado, waterspout, dust storm, sandstorm, derecho			
(3) Biological:			
(a) Food-borne illnesses			
(b)* Infectious/communicable/pandemic diseases			
(4) Accidental human-caused:			
(a) Building/structure collapse			
(b)* Entrapment			
(c) Explosion/fire			
(d) Fuel/resource shortage			
(e)* Hazardous material spill or release			
(f) Equipment failure			
(g) Nuclear reactor incident			
(h) Radiological incident			
(i)* Transportation incident			
(j) Unavailability of essential employee(s)			
(k)* Water control structure failure			
(l) Misinformation			
(5) Intentional human-caused:			
(a) Incendiary fire			
(b) Bomb threat			
(c) Demonstrations/civil disturbance/riot/insurrection			
(d) Discrimination/harassment			
(e) Disinformation (e.g., rumors, false allegations, accusations)			
(f) Kidnapping/hostage/extortion			
(g) Geopolitical risks			
(h) Missing person			

(continues)

Table B.1 *Continued*

Program Elements	Conforming	Nonconforming	Comments
(i)* Cybersecurity incidents			
(j) Product defect or contamination			
(k) Robbery/theft/fraud			
(l) Strike or labor dispute			
(m) Suspicious package			
(n)* Terrorism			
(o) Vandalism/sabotage			
(p) Workplace/school/university violence			
(q) Supply chain constraint or failure			
(6) Technological:			
(a)* Hardware, software, and network connectivity interruption, disruption, or failure			
(b)* Utility interruption, disruption, or failure			
(7) Economic/financial:			
(a) Foreign currency exchange rate change			
(b) Economic recession			
(c) Boycott			
(d) Theft/fraud/malfeasance/impropriety/scandal involving currency, monetary instruments, goods, and intellectual property			
(8) Strategic:			
(a) Loss of senior executive			
(b) Failed acquisition/strategic initiative			
(9) Humanitarian issues			
5.2.2.2* The vulnerability of the following shall be identified, evaluated, and monitored:			
• People			
• Property			
• Operations			
• Environment			
• Entity			
• Supply chain operations			
5.2.3 The entity shall conduct an analysis of the impacts of the hazards identified in 5.2.2 on the following:			
(1) Health and safety of persons in the affected area			
(2) Health and safety of personnel responding to the incident			
(3) Security of information			
(4)* Continuity of operations			
(5) Continuity of government			
(6)* Property, facilities, assets, and critical infrastructure			
(7) Delivery of the entity's services			
(8) Supply chain			
(9) Environment			

(continues)

Table B.1 *Continued*

Program Elements	Conforming	Nonconforming	Comments
(10)* Economic and financial conditions			
(11) Legislated, regulatory, and contractual obligations			
(12) Brand, image, and reputation			
(13) Work and labor arrangements			
5.2.4 The risk assessment shall include an analysis of the escalation of impacts over time.			
5.2.5* The analysis shall evaluate the potential effects of:			
• Regional incidents that could have cascading impacts			
• National incidents that could have cascading impacts			
• International incidents that could have cascading impacts			
5.2.6 The risk assessment shall evaluate the adequacy of existing:			
• Prevention strategies			
• Mitigation strategies			
5.3 Business Impact Analysis (BIA).			
5.3.1 The entity shall conduct a BIA that:			
• Assesses how a disruption could affect an entity's operations, reputation, and market share, ability to do business, or relationships with key stakeholders			
• Identifies the resources and capabilities that might be needed to manage the disruptions			
5.3.1.1* The BIA shall identify processes that are required for the entity to perform its mission.			
5.3.1.2* The BIA shall identify the following resources that enable the processes:			
(1) Personnel			
(2) Equipment			
(3) Infrastructure			
(4) Technology			
(5) Information			
(6) Supply chain			
5.3.2* The BIA shall evaluate the following:			
(1) Dependencies			
(2) Single-source and sole-source suppliers			
(3) Single points of failure			
(4) Potential qualitative and quantitative impacts from a disruption to the resources in 5.3.1.2			
5.3.2.1* The BIA shall determine the point in time [recovery time objective (RTO)] when the impacts of the disruption become unacceptable to the entity.			
5.3.3* The BIA shall identify the acceptable amount of data loss for physical and electronic records to identify the recovery point objective (RPO).			
5.3.4* The BIA shall identify gaps between:			
• RTOs			
• RPOs			
• Demonstrated capabilities			
5.3.5* The BIA shall be used in the development of:			
• Continuity strategies and plans			
• Recovery strategies and plans			

(continues)

Table B.1 *Continued*

Program Elements	Conforming	Nonconforming	Comments
5.3.6* The BIA shall identify:			
• Critical supply chains, including those exposed to domestic and international risks			
• The time frame within which supply chain operations become critical to the entity			
5.4 Resource Needs Assessment.			
5.4.1* The entity shall conduct a resource needs assessment based on:			
• The hazards identified in Section 5.2			
• The continuity requirements and their dependencies identified in Section 5.3			
5.4.2 The resource needs assessment shall include the following:			
(1)* Human resources, equipment, training, facilities, funding, expert knowledge, materials, technology, information, intelligence, and the time frames within which they will be needed			
(2) Quantity, response time, capability, limitations, cost, and liabilities			
5.4.3* The entity shall establish procedures to accomplish the following for any services, human resources, equipment, and materials procured or donated to support the program:			
• Locate			
• Acquire			
• Store			
• Distribute			
• Maintain			
• Test			
• Account for			
5.4.4 Facilities capable of supporting the following types of operations shall be identified:			
• Response operations			
• Continuity operations			
• Recovery operations			
5.4.5* Agreements. The need for mutual aid/assistance or partnership agreements shall be determined; if needed, agreements shall be established and documented.			
Chapter 6 Implementation			
6.1 Common Plan Requirements.			
6.1.1* Plans shall address the health and safety of personnel.			
6.1.2 Plans shall identify and document the following:			
(1) Assumptions made during the planning process			
(2) Functional roles and responsibilities of internal and external entities			
(3) Lines of authority			
(4) Process for delegation of authority			
(5) Lines of succession for the entity			
(6) Liaisons to external entities			
(7) Logistics support and resource requirements			
6.1.3* Plans shall be individual, integrated into a single plan document, or a combination of the two.			
6.1.4* The entity shall make sections of the plans available to:			
• Those assigned specific tasks and responsibilities therein			

(continues)

Table B.1 *Continued*

Program Elements	Conforming	Nonconforming	Comments
• Key stakeholders as required			
6.2 Prevention.			
6.2.1* The entity shall develop a strategy to prevent an incident that threatens:			
• Life			
• Property			
• Operations			
• Information			
• Environment			
6.2.2* The prevention strategy shall be kept current using the information collection and intelligence techniques.			
6.2.3 The prevention strategy shall be based on the results of:			
• Hazard identification and risk assessment			
• Analysis of impacts			
• Program constraints			
• Operational experience			
• Cost-benefit analysis			
6.2.4 The entity shall have a process to:			
• Monitor the identified hazards			
• Adjust the level of preventive measures to be commensurate with the risk			
6.3 Mitigation.			
6.3.1*For an incident that cannot be prevented, the entity shall develop and implement a mitigation strategy that includes measures to limit or control the following:			
• Consequences			
• Extent			
• Severity			
6.3.2* The mitigation strategy shall be based on the results of:			
• Hazard identification risk assessment			
• Analysis of impacts			
• Program constraints			
• Operational experience			
• Cost-benefit analysis			
6.3.3 The mitigation strategy shall include:			
• Interim actions to reduce vulnerabilities			
• Long-term actions to reduce vulnerabilities			
6.4 Crisis Management.			
6.4.1 The entity shall establish and maintain a crisis management capability to manage issues, events, or a series of events, that severely impact or have the potential to severely impact an entity's:			
• Brand			
• Image			
• Reputation			

(continues)

Table B.1 *Continued*

Program Elements	Conforming	Nonconforming	Comments
• Market share			
• Ability to do business			
• Relationships with key stakeholders			
6.4.2 The crisis management capability shall include assigned responsibilities and established processes to perform the following:			
(1) Engage senior leadership			
(2) Detect the signals, symptoms, incidents, events, or circumstances that portend an emerging crisis or have the potential to trigger a crisis			
(3) Conduct a situation analysis			
(4) Declare a crisis, alert responsible persons, and activate crisis management plans should the current situation meet established criteria			
(5) Identify issues to be addressed by the responsible persons and senior leadership			
(6) Develop strategies to mitigate the potential impacts of identified issues			
(7) Provide direction and support for the entity's facilities, operations, employees, customers, and others affected by or potentially affected by the crisis			
(8) Coordinate with the entity's crisis communication capability and provide strategic direction, authorize communications strategies, and communicate with stakeholders			
6.5 Crisis Communications and Public Information.			
6.5.1* The entity shall develop a plan and procedures to disseminate information to and respond to requests for information from the following audiences before, during, and after an incident:			
(1) Internal audiences, including employees			
(2) External audiences, including the media, access and functional needs populations, and other stakeholders			
6.5.2* The entity shall establish and maintain a crisis communications or public information capability that includes the following:			
(1)* Central contact facility or communications hub			
(2) Physical or virtual information center			
(3) System for gathering, monitoring, and disseminating information			
(4) Procedures for developing and delivering coordinated messages			
(5) Protocol to clear information for release			
6.6 Warning, Notifications, and Communications.			
6.6.1* The entity shall determine its warning, notification, and communications needs.			
6.6.2* Warning, notification, and communications systems shall be:			
• Reliable			
• Redundant			
• Interoperable			
6.6.3*The following shall be developed, tested, and used to alert stakeholders potentially at risk from an actual or impending incident:			
• Emergency warning protocols and procedures			
• Notification protocols and procedures			
• Communications protocols and procedures			
6.6.4 Procedures shall include:			

(continues)

Table B.1 *Continued*

Program Elements	Conforming	Nonconforming	Comments
• The issuance of warnings through authorized agencies, if required by law			
• The use of pre-scripted information bulletins or templates			
6.6.5* Information shall be disseminated through:			
• The media			
• Social media			
• Other means as determined by the entity to be the most effective			
6.7 Operational Procedures.			
6.7.1 The entity shall develop, coordinate, and implement operational procedures to support the program.			
6.7.2 Procedures shall be established and implemented for:			
• Response to the impacts of hazards identified in 5.2.2			
• Recovery from the impacts of hazards identified in 5.2.2			
6.7.3* Procedures shall provide for the following:			
• Life safety			
• Property conservation			
• Incident stabilization			
• Continuity			
• Protection of the environment under the jurisdiction of the entity			
6.7.4 Procedures shall include the following:			
(1) Control of access to the area affected by the incident			
(2) Identification of personnel engaged in activities at the incident			
(3) Accounting for personnel engaged in incident activities			
(4) Mobilization and demobilization of resources			
6.7.5 Procedures shall allow for concurrent activities of:			
• Response			
• Continuity			
• Recovery			
• Mitigation			
6.8 Incident Management.			
6.8.1* The entity shall develop an incident management system to:			
• Direct response, continuity, and recovery operations			
• Control response, continuity, and recovery operations			
• Coordinate response, continuity, and recovery operations			
6.8.1.1* Emergency Operations Centers (EOCs).			
6.8.1.1.1* The entity shall establish primary and alternate EOCs capable of managing:			
• Response operations			
• Continuity operations			
• Recovery operations			
6.8.1.1.2* The EOCs shall be permitted to be:			
• Physical			

(continues)

Table B.1 *Continued*

Program Elements	Conforming	Nonconforming	Comments
• Virtual			
6.8.1.1.3* On activation of an EOC, communications and coordination shall be established between incident command and the EOC.			
6.8.2 The incident management system shall describe:			
• Specific entity roles for each incident management function			
• Specific titles for each incident management function			
• Specific responsibilities for each incident management function			
6.8.3* The entity shall establish procedures and policies for coordinating:			
• Prevention activities			
• Mitigation activities			
• Preparedness activities			
• Response activities			
• Continuity activities			
• Recovery activities			
6.8.4 The entity shall coordinate the activities specified in 6.8.3 with stakeholders.			
6.8.5 Procedures shall include a situation analysis that incorporates an assessment of the following for the purposes of activating emergency response/operations, business continuity/continuity of operations, crisis management, and/or crisis communications plans and capabilities:			
(1) Casualties and the availability of required personnel resources			
(2) Physical damage to property under the jurisdiction of the entity			
(3) Interruption or disruption of the entity's operations			
(4) Impacts to digital information and vital records			
(5) Actual or potential contamination of the environment			
(6) Actual or potential impacts to brand, image, reputation, market share, ability to do business, or relationships with key stakeholders			
(7) Resources needed to support response, continuity, and recovery activities			
6.8.6 Emergency operations/response shall be guided by an incident action plan or management by objectives.			
6.8.7 Resource management shall include the following tasks:			
(1) Establishing processes for describing, taking inventory of, requesting, and tracking resources			
(2) Resource typing or categorizing by size, capacity, capability, and skill			
(3) Mobilizing and demobilizing resources in accordance with the established IMS			
(4) Conducting contingency planning for resource deficiencies			
6.8.8 A current inventory of internal and external resources shall be maintained.			
6.8.9 Donations of human resources, equipment, material, and facilities shall be managed.			
6.9 Emergency Operations/Response Plan.			
6.9.1* Emergency operations/response plans shall define responsibilities for carrying out specific actions in an emergency.			
6.9.2* The plan shall identify actions to be taken to protect:			
• People, including individuals with disabilities and other access and functional needs			
• Information			

(continues)

Table B.1 *Continued*

Program Elements	Conforming	Nonconforming	Comments
• Property			
• Operations			
• The environment			
•The entity			
6.9.3* The plan shall identify actions for incident stabilization.			
6.9.4 The plan shall include the following:			
(1) Protective actions for life safety in accordance with 6.9.2			
(2) Warning, notifications, and communication in accordance with Section 6.6			
(3) Crisis communication and public information in accordance with Section 6.5			
(4) Resource management in accordance with 6.8.7			
(5) Donation management in accordance with 6.8.9			
6.10* Continuity and Recovery.			
6.10.1 Continuity.			
6.10.1.1 Continuity plans shall include strategies to continue critical and time-sensitive processes and as identified in the BIA.			
6.10.1.2 Continuity plans shall identify and document the following:			
(1) Stakeholders that need to be notified			
(2) Processes that must be maintained			
(3) Roles and responsibilities of the individuals implementing the continuity strategies			
(4) Procedures for activating the plan, including authority for plan activation			
(5) Critical and time-sensitive technology, application systems, and information			
(6) Security of information			
(7) Alternative work sites			
(8) Workaround procedures			
(9) Vital records			
(10) Contact lists			
(11) Required personnel			
(12) Vendors and contractors supporting continuity			
(13) Resources for continued operations			
(14) Mutual aid or partnership agreements			
(15) Activities to return critical and time-sensitive processes to the original state			
6.10.1.3 Continuity plans shall be designed to meet:			
• RTO			
• RPO			
6.10.1.4 Continuity plans shall address supply chain disruption.			
6.10.2 Recovery.			
6.10.2.1 Recovery plans shall provide for restoration of:			
• Processes			
• Technology			
• Information			

(continues)

Table B.1 *Continued*

Program Elements	Conforming	Nonconforming	Comments
• Services			
• Resources			
• Facilities			
• Programs			
• Infrastructure			
6.10.2.2 Recovery plans shall document the following:			
(1) Damage assessment			
(2) Coordination of the restoration, rebuilding, and replacement of facilities, infrastructure, materials, equipment, tools, vendors, and suppliers			
(3) Restoration of the supply chain			
(4) Continuation of communications with stakeholders			
(5) Recovery of critical and time-sensitive processes, technology, systems, applications, and information			
(6) Roles and responsibilities of the individuals implementing the recovery strategies			
(7) Internal and external (vendors and contractors) personnel who can support the implementation of recovery strategies and contractual needs			
(8) Adequate controls to prevent the corruption or unlawful access to the entity's data during recovery			
(9) Compliance with regulations that would become applicable during the recovery			
(10) Maintenance of pre-incident controls			
6.11 Employee Assistance and Support.			
6.11.1* The entity shall develop a strategy for employee assistance and support that includes the following:			
(1)* Communications procedures			
(2)* Contact information, including emergency contact outside the anticipated hazard area			
(3) Accounting for persons affected, displaced, or injured by the incident			
(4) Temporary, short-term, or long-term housing and feeding and care of those displaced by an incident			
(5) Mental health and physical well-being of individuals affected by the incident			
(6) Pre-incident and post-incident awareness			
6.11.2 The strategy shall be flexible for use in all incidents.			
6.11.3* The entity shall promote family preparedness education and training for employees.			
Chapter 7 Execution			
7.1* Incident Recognition.			
The entity shall establish and implement a process, ensuring it is appropriately referenced throughout the incident management process, whereby all appropriate stakeholders have a common reference for the types of incidents that could adversely affect its:			
• People			
• Property			
• Operations			
• Environment			
7.2 Initial Reporting/Notification.			

(continues)

Table B.1 *Continued*

Program Elements	Conforming	Nonconforming	Comments
For an incident that has the potential to cause an adverse impact on people, property, operations, or the environment *(see Section 6.6)*, the entity shall establish and implement a process whereby all appropriate stakeholders can:			
• Warn			
• Notify			
• Report			
7.3 Plan Activation and Incident Action Plan.			
7.3.1 The entity shall establish and implement a process to assess the impact of the incident on its:			
• People			
• Property			
• Operations			
• Environment			
7.3.2 The entity shall develop a timeframe to activate appropriate planning as detailed in Sections 6.5, 6.9, and 6.10, and coordinate activation when there is a declaration by public officials.			
7.4 Activate Incident Management System.			
7.4.1 The entity shall execute procedures from the documented plans in accordance with:			
(1) Section 6.5			
(2) Section 6.8			
(3) Section 6.9			
(4) Section 6.10			
7.4.2 The entity shall execute its IMS and activities in support of established objectives and tasks.			
7.4.3 On activation of an emergency operations center (EOC), communications and coordination shall be established between incident command and the EOC.			
7.5 Ongoing Incident Management and Communications.			
7.5.1 The entity shall continually:			
• Assess the impact of the incident on its people, property, operations, and the environment			
• Re-evaluate/implement its action plan in accordance with established objectives and tasks			
7.5.2 The entity shall implement the warning, notification, and communications systems to alert stakeholders who are potentially at risk from an actual or impending incident.			
7.5.3 Based upon the extent of damage sustained to the entity, all necessary actions to invoke special authorities and request assistance needed to deal with the situation shall be as described in Chapter 4.			
7.6 Documenting Incident Information, Decisions, and Actions. The entity shall establish and implement a system for tracking:			
• Incident information received			
• Decisions made			
• Resources deployed			
• Actions taken			
7.7* Incident Stabilization. The entity shall establish criteria for measuring when the incident has been stabilized.			

(continues)

Table B.1 *Continued*

Program Elements	Conforming	Nonconforming	Comments
7.8 Demobilize Resources and Termination. The entity shall execute a procedure to terminate the response, demobilize resources, and resume operations when the incident has been stabilized.			
Chapter 8 Training and Education			
8.1* Curriculum. The entity shall develop and implement a competency-based training and education curriculum that supports all employees who have a role in the program.			
8.2 Goal of Curriculum. The goal of the curriculum shall be to:			
• Create awareness			
• Enhance the knowledge, skills, and abilities required to implement, support, and maintain the program			
8.3 Scope and Frequency of Instruction. The scope of the curriculum and the frequency of instruction shall be identified.			
8.4 Incident Management System Training. Personnel shall be trained in the entity's IMS and other components of the program to the level of their involvement.			
8.5 Record Keeping. Records of training and education shall be maintained as specified in Section 4.9.			
8.6 Regulatory and Program Requirements. The curriculum shall comply with applicable regulatory and program requirements.			
8.7* Public Education. A public education program shall be implemented to communicate the following:			
(1) The potential impacts of a hazard			
(2) Preparedness information			
(3) Information needed to develop a preparedness plan			
Chapter 9 Exercises and Tests			
9.1 Program Evaluation.			
9.1.1 The entity shall use periodic exercises and tests to promote continuous improvement and to evaluate the program's:			
• Plans			
• Procedures			
• Training			
• Capabilities			
9.1.2 The entity shall evaluate the program in accordance with Chapter 10 based on:			
• Post-incident analyses			
• Lessons learned			
• Operational performance			
9.1.3 Exercises and tests shall be documented.			
9.2* Exercise and Test Methodology.			
9.2.1 Exercises shall provide a controlled setting and standardized methodology to:			
• Practice procedures			
• Interact with other entities (internal and external)			
9.2.2 Exercises shall be designed to assess the maturity of program:			
• Plans			
• Procedures			

(continues)

Table B.1 *Continued*

Program Elements	Conforming	Nonconforming	Comments
• Strategies			
9.2.3 Tests shall be designed to demonstrate capabilities.			
9.3* Design of Exercises and Tests. Exercises shall be designed to do the following:			
(1) Ensure the safety of people, property, operations, and the environment involved in the exercise or test			
(2) Evaluate the program			
(3) Identify planning and procedural deficiencies			
(4) Test or validate recently changed procedures or plans			
(5) Clarify roles and responsibilities			
(6) Obtain participant feedback and recommendations for program improvement			
(7) Measure improvement compared to performance objectives			
(8)* Improve coordination among internal and external teams and entities			
(9) Validate training and education			
(10) Increase awareness and understanding of hazards and the potential impact of hazards on the entity			
(11) Identify additional resources and assess the capabilities of existing resources, including personnel and equipment needed for effective response and recovery			
(12) Assess the ability of the team to identify, assess, and manage an incident			
(13) Practice the deployment of teams and resources to manage an incident			
(14) Improve individual performance			
9.4* Exercise and Test Evaluation.			
9.4.1 Exercises shall identify opportunities for improvement by evaluating program:			
• Plans			
• Procedures			
• Training			
• Capabilities			
9.4.2 Tests shall be evaluated as either pass or fail.			
9.5* Frequency.			
9.5.1 Exercises and tests shall be conducted on the frequency needed to establish and maintain required capabilities.			
Chapter 10 Program Maintenance and Improvement			
10.1* Program Reviews. The entity shall maintain and improve the program by using performance objectives to evaluate its:			
• Policies			
• Program			
• Procedures			
• Capabilities			
10.1.1* The entity shall improve effectiveness of the program through evaluation of the implementation of changes resulting from preventive and corrective action.			
10.1.2* Evaluations shall be conducted on a regularly scheduled basis and when the situation changes to challenge the effectiveness of the existing program.			
10.1.3 The program shall be re-evaluated when a change in any of the following impacts the entity's program:			

(continues)

Table B.1 *Continued*

Program Elements	Conforming	Nonconforming	Comments
(1) Regulations			
(2) Hazards and potential impacts			
(3) Resource availability or capability			
(4) Entity's organization			
(5)* Funding changes			
(6) Infrastructure, including technology environment			
(7) Economic and geographic stability			
(8) Entity operations			
(9) Critical suppliers			
10.1.4 Reviews shall include:			
• Post-incident analyses			
• Reviews of lessons learned			
• Reviews of program performance			
10.1.5 The entity shall maintain records of its reviews and evaluations, in accordance with the records management practices developed under Section 4.9.			
10.1.6 Documentation, records, and reports shall be provided to management for review and follow-up.			
10.2* Corrective Action.			
10.2.1* The entity shall establish a corrective action process.			
10.2.2* The entity shall take corrective action on deficiencies identified.			
10.3 Continuous Improvement. The entity shall effect continuous improvement of the program through the use of:			
• Program reviews			
• The corrective action process			

Annex C Small Business Preparedness Guide (NFPA 1600)

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

C.1 Figure C.1 shows a sample small business preparedness guide.

Small Business Preparedness Guide

NFPA 1660 is intended to meet the unique needs of all entities, regardless of size. The objective for small businesses or entities might be to simply increase preparedness. The following guidance material is intended to highlight and simplify key aspects of Chapters 4 through 10 where small entities might wish to focus their preparedness efforts.

This guidance material can help an entity better identify where it needs to focus to protect its assets (people, property, operations); continue to provide goods and/or services; maintain cash flow; preserve its competitive advantage and reputation; and provide the ability to meet legal, regulatory, financial, and contractual obligations.

Key sections of NFPA 1660 are mentioned in parentheses for easy reference.

Program Management (Chapter 4)
Leadership and Commitment (Section 4.2)

The entity's leadership should demonstrate commitment to its emergency management/business continuity program by taking an active role. In small entities, the owner or organizational leader might be responsible for the entire program.

Has someone been appointed to be responsible for developing and maintaining the organization's program? ❑ Yes ❑ No

Planning (Chapter 5)

Document your emergency management/business continuity plans and procedures. Plans can be simple but should consider:

- How the entity will respond to an emergency or disaster (emergency operations/response)
- What the entity needs to communicate, who the organization needs to communicate with, and how the entity will go about communicating with those stakeholders (crisis communications and some degree crisis management)
- How the entity will recover from a disaster (recovery) and keep its business operations going after a disaster happens (continuity)
- What the entity can do to prevent a disaster in the first place (prevention) or limit the damage when a disaster does happen (mitigation)
- How all these plans fit together and how they provide for the future of the organization (strategic/crisis management)

We have reviewed and documented basic steps to take in an emergency — such as an evacuation route and a meeting place. ❑ Yes ❑ No

We have contact lists for all employees, customers, and key vendors. ❑ Yes ❑ No

We have outlined the steps for restoring the business if we lose computers/technology. ❑ Yes ❑ No

Risk Assessment (Section 5.2)

Identify which hazards are most likely to occur and which will have the biggest consequences or be most severe for the entity if they do occur. The intent of a risk assessment is to help an entity better allocate its resources by being cognizant of and focusing attention on prevention, mitigation, preparation, and a plan on how to recover from the highest risk threats.

Additional considerations for small entities include:

- Natural hazard recognition — Business owners/operators should be cognizant of any natural hazards that their location is exposed to such as floods, hurricanes, and earthquakes. Local emergency management and insurance companies should be able to provide this information. Make sure the building's construction and location is resistant to such hazards.
- Exposure — Exposure is "what's nearby that can hurt you." It could be an adjacent combustible building, wildfire potential, or a hazardous occupancy nearby (e.g., a chemical plant or a gas station). It could also be a nearby river that poses a flood risk. To evaluate an entity's exposure, go up on the roof and look around the facility. Then walk inside and around the facility and consider the potential hazards — an oven fire in a restaurant, faulty wiring, equipment failure that could bring manufacturing to a standstill. Finally, drive around the block or area that borders the facility. Ask the question, "What can hurt me or my facility?"

See 5.2.2.1 for a list of common hazards to consider including natural hazards, human-caused events, and technology-caused incidents.

We have reviewed which hazards are most likely to occur in our area and consider these hazards when we do our planning. ❑ Yes ❑ No

We have reviewed the potential hazards posed by neighbors and taken that into consideration as well. ❑ Yes ❑ No

Business Impact Analysis (Section 5.3)

Identify critical business operations and analyze the impact of losing them. This is helpful to better prioritize plans and procedures, especially if resources are limited. Think through the steps an entity will need to take to continue to operate if hazards/impacts occur.

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FIGURE C.1 Sample Small Business Preparedness Guide.

Additional considerations for small entities include:

- Backup data — If it's critical or important to an entity, then it should be backed up. How frequently the backup occurs is dictated by the amount of data that can be lost without inflicting unreasonable damage to the entity (usually measured in dollar amounts, reputation, etc.).
- Backup hardware — Backed-up data is only half the equation. How will the backed-up data be processed or accessed?

We have backups of inventory records identifying how much is on hand and where it is. ❑ Yes ❑ No

We have backups of accounts receivable and accounts payable information identifying who and how much. ❑ Yes ❑ No

We have backups of client names and contact information (e-mail, address, phone numbers, etc.). ❑ Yes ❑ No

We have backups of other information critical to the organization, such as equipment lists, drawings, specifications, etc. ❑ Yes ❑ No

We have determined the availability of equipment to access the data we backed up. ❑ Yes ❑ No

We have a copy of these planning documents off site. ❑ Yes ❑ No

Resource Needs Assessment (Section 5.4)

What resources will be needed to resume operation if a hazard occurs? What training is needed?

We have determined where resources will come from if we need to resume operation following an incident and we have a location to store physical resources and supplies. ❑ Yes ❑ No

Additional considerations for small entities include:

- Fire prevention program — Fire is the most common and significant threat to most businesses. Owner/operators can reduce the probability of fire by implementing fire safety programs, especially where flammable liquids or gasses are handled.
- Automatic sprinklers — Locating a business or operation in buildings that are fully protected by automatic sprinklers significantly reduces an entity's exposure to a catastrophic incident. Many natural catastrophes are often compounded by fire.

We have a fire safety program. ❑ Yes ❑ No

We have automatic sprinklers. ❑ Yes ❑ No

- Adequate insurance — Business interruption (BI) and extra expense (EE) coverage is often overlooked. "All risk" policies should be considered as well, as they are more expansive and in some cases allow for customization. In all cases, policyholders should know what is included in their policy and determine what can or should be added, based on their specific needs.
- If an entity's premises are damaged as a result of a covered loss and can operate at a temporary location, extra expense coverage might cover the costs above and beyond normal operating expenses. Among other things, it could cover the cost of relocation, rent for the temporary location, and advertising to bring back customers or those that utilize the entity's services.
- Business interruption insurance (also known as business income insurance) compensates an entity for lost income if it has to vacate the premises due to a covered loss under the property insurance policy, such as a fire. Business interruption coverage might provide compensation for lost profits — based on the entity's financial records — had the event not happened. It also covers continuing operating expenses, such as utilities and rent on the property, which continue to accrue even though business activities have been temporarily suspended.
- Entities that depend heavily on suppliers should consider contingent business interruption (CBI) insurance and contingent extra expense coverage. CBI and contingent extra expense coverage reimburse lost profits and extra expenses resulting from an interruption of business at the premises of a customer or supplier. It is possible to get protection against a set list of suppliers or in some cases to purchase blanket coverage protecting any supplier's shutdown.

We have adequate insurance coverage for our needs. ❑ Yes ❑ No

We have BI insurance. ❑ Yes ❑ No

We have extra expense insurance. ❑ Yes ❑ No

- Plan ahead – The entity should anticipate the level of planning required for their situation by discussing operations, capabilities, and expectations with local emergency services agencies (fire, rescue, police, hazmat, etc.) and local emergency planning nonprofit organizations (local emergency planning committees, Red Cross, Salvation Army, and similar groups).

If we have hazards on site, or pose a potential hazard to our neighbors as a result of our operations, we have shared this information with the fire department and invited them for a meeting to discuss. ❑ Yes ❑ No

FIGURE C.1 ***Continued***

Implementation (Chapter 6)

An entity does not need to have separate emergency response, incident management, and business continuity/recovery plans, but those who have a role in implementing the plans should be aware of what is expected of them.

Plans should focus on safety of employees and public, and prevention and mitigation of the hazards, risks, vulnerabilities, and impacts that have been identified.

Do all employees know how to respond to any incident? ❑ Yes ❑ No

Communications (Sections 6.5 and 6.6)

Identify the entity's most important audiences (employees, customers, media, investors, regulators, vendors, etc.) and predetermine how to communicate with them following an emergency or disaster. The simplest way to determine who the entity's key stakeholders are is to consider who is most important to the organization, who is most interested in the organization, or who could be hurt by problems that befall the organization.

Determine how you will notify key audiences of an emergency. Make sure there is a backup.

Plan how critical information will be provided to employees as well as key external audiences. Figure out how to coordinate dissemination of that information to ensure it is consistent.

Additional considerations for small entities include:

- Employee contact info. — Ensure emergency contact information has been gathered and a means of communicating with employees has been established. Has a process been devised to make sure employees can be accounted for in a disaster?
- Media contacts — Most entities use the media for promotion (e.g., TV, radio, print, social websites). The same media can be used to help recover from a crisis. Preplanning how the entity will communicate in a crisis situation is key.
- Customer lists — Every entity has clients or customers who have an interest in the organization. Being able to communicate very quickly after an incident allows the entity to help their clients and customers understand what has happened and how it will affect them, and also provides an opportunity to reassure them that the organization will be there to meet their needs. These lists can be used for e-mail blasts or informational mailings.
- E-mail — Here's where backup data comes in. Blasts to the entity's clients/customers lets them know the entity's status.
- Social media — Same as for e-mail.

We have employee contact lists and have determined how to account for employees following an emergency or disaster. ❑ Yes ❑ No

We have key customer/supplier/vendor contact lists as well and have determined how to coordinate a steady stream of information to them? ❑ Yes ❑ No

Emergency Operations/Response Plan (Section 6.9)

Identify emergency actions to protect people and stabilize the emergency. Anyone tasked with a role will need a copy of the parts of the action plan that pertain to them.

Additional considerations for small entities include:

- Emergency numbers/alarms — Simple procedures such as knowing to call appropriate emergency numbers or to activate manual alarms should be communicated to all personnel via orientation and follow-up training. Fast response can mean the difference between life and death, and it can minimize property damage.
- Evacuation plan — Every organization should have an evacuation plan. Exits should be well marked and kept clear. Evacuation drills should be conducted on a regular basis under realistic conditions.

We have provided emergency procedure orientation as well as follow-up training to all personnel. ❑ Yes ❑ No

We conduct evacuation drills on a regular basis. ❑ Yes ❑ No

Continuity and Recovery (Section 6.10)

Determine how to recover critical or time-sensitive processes as quickly as possible after a disaster. Stipulate roles and responsibilities — not only the jobs that have to be done and who will do those jobs, but also who will be in charge if the owner or manager is not available during an emergency or disaster.

Additional considerations for small entities include:

- Location strategy — If the entity loses its facility, where will it relocate?
- Do you know your building, utility, and infrastructure needs, including the following:
  - Purchasing — What is the local commercial real estate market like?
  - Leasing/renting — Is it possible on a short-term or mid-term basis?
- Consider a mutual aid agreement with a similar entity
- Allow employees to work from home, when applicable

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FIGURE C.1 ***Continued***

- Processing strategy — How will the entity continue to provide goods or services to its clients/customers?
- Outsourcing — Is there a way to provide goods or services through a third-party vendor?
- Mutual aid — Is there a similar provider who can fill the entity's needs by agreement and the entity would reciprocate if the roles were reversed?

We have determined where to relocate if we are not able to operate out of our facility following a disaster. ❑ Yes ❑ No

We have determined how to continue to provide goods and services to our clients/customers following a disaster. ❑ Yes ❑ No

Training and Education (Chapter 8) and Exercises and Tests (Chapter 9)

Regardless of the size of the entity, periodic awareness, exercises, and tests can be helpful to do the following:

- Practice responses
- Validate plans/procedures
- Ensure those tasked with a response are clear on what is expected of them
- Improve hazard awareness
- Identify any capability gaps or needed resource improvements

For small entities, this could entail periodic testing of the following:

- IT backups to ensure they are adequately capturing information
- Fire drills

We train/drill on plans/procedures as part of new employee orientation with annual updates. ❑ Yes ❑ No

Program Maintenance and Improvement (Chapter 10)

Regularly review plans and procedures with an eye toward identifying ways to improve the program.

Triggers for program improvement include, but are not limited to, the following:

- Identification of new hazards or exposures
- Addition (or elimination) of regulations or resources
- Budget changes
- Addition (or elimination) of products or services
- Personnel turnover

We review the program at least annually to identify improvements? ❑ Yes ❑ No

Resources

There are free planning resources available through various sources.

The Insurance Institute for Business & Home Safety has an "Open for Business®" planning toolkit, available free of charge. *Open for Business EZ® — Business Continuity Planning* is composed of a workbook, a multimedia trainer series to help users manage their time and walk through the planning process, as well as the OFB — EZ mobile app. This app includes several helpful planning tools, such as evaluation checklists to help business users understand their risks, and forms for users to enter and store important contact information for employees, key customers, suppliers, and vendors. In addition, it provides mitigation tips for protecting property from natural hazard events. (www.disastersafety.org/ibhs-business-protection)

Ready.gov is a free planning web site sponsored by FEMA. There are resources to help develop a business continuity plan and information to plan and prepare for events.

The Red Cross web site (ReadyRating.org) includes emergency preparedness information, checklists, and tools to help with preparing for emergency and disasters.

FIGURE C.1 ***Continued***

Annex D Crosswalk to DRII Professional Practices, CSA Z1600, FCD-1, and FCD-2 (NFPA 1600)

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

D.1 Annex D is a cross-reference to the requirements of Chapters 4 through 10 and Disaster Recovery Institute International's (DRII) *Professional Practices for Business Continuity Management*; CSA Z1600, *Emergency and Continuity Management Program*; and FDC-1, *Federal Continuity Directive 1: Federal Executive Branch National Continuity Program and Requirements*, and FDC-2, *Federal Continuity Directive 2: Federal Executive Branch Mission Essential Functions and Candidate Primary Mission Essential Functions Identification and Submission Process. [See Table D.1(a) through Table D.1(c).]*

This annex is intended purely as a high-level comparison of the component sections of the indicated standards. If a full comparison is needed, the actual details in each section should be referenced.

Table D.1(a) Cross-Reference of NFPA 1660 to DRII Professional Practices

NFPA 1660 (2024)	DRII Professional Practices (2017)
Chapter 4 Program Management	
4.1 Administration	
4.1.1 Scope	
4.1.2 Purpose	
4.1.3 Application	
4.2 Leadership and Commitment	1. Program Initiation and Management
4.3 Program Coordinator	1. Program Initiation and Management
4.4 Performance Objectives	1. Program Initiation and Management
4.5 Program Committee	1. Program Initiation and Management
4.6 Program Administration	1. Program Initiation and Management
4.7 Laws and Authorities	1. Program Initiation and Management 3. Business Impact Analysis 9. Crisis Communications 10. Coordinating with External Agencies
4.8 Finance and Administration	1. Program Initiation and Management
4.9 Records Management	3. Business Impact Analysis
Chapter 5 Planning	
5.1 Planning and Design Process	2. Risk Assessment 3. Business Impact Analysis 4. Business Continuity Strategies 5. Incident Response 6. Plan Development and Implementation
5.2 Risk Assessment	2. Risk Assessment
5.3 Business Impact Analysis	3. Business Impact Analysis
5.4 Resource Needs Assessment	1. Program Initiation and Management 2. Risk Assessment 3. Business Impact Analysis 6. Plan Development and Implementation
Chapter 6 Implementation	
6.1 Common Plan Requirements	5. Incident Response 6. Plan Development and Implementation
6.2 Prevention	
6.3 Mitigation	4. Business Continuity Strategies
6.4 Crisis Management	1. Program Initiation and Management 6. Plan Development and Implementation 9. Crisis Communications
6.5 Crisis Communications and Public Information	6. Plan Development and Implementation 9. Crisis Communications
6.6 Warning, Notifications, and Communications	5. Incident Response 9. Crisis Communications 10. Coordination with External Agencies
6.7 Operational Procedures	4. Business Continuity Strategies 5. Incident Response 6. Plan Development and Implementation 9. Crisis Communications
6.8 Incident Management	5. Incident Response 6. Plan Development and Implementation

(continues)

Table D.1(a) *Continued*

NFPA 1660 (2024)	DRII Professional Practices (2017)
6.9 Emergency Operations/ Response Plan	5. Incident Response 6. Plan Development and Implementation 10. Coordination with External Agencies
6.10 Continuity and Recovery	4. Business Continuity Strategies 6. Plan Development and Implementation 9. Crisis Communications
6.11 Employee Assistance and Support	6. Plan Development and Implementation 9. Crisis Communications
Chapter 7 Execution	
7.1 Incident Recognition	5. Incident Response 8. Business Continuity Plan Exercise, Assessment and Maintenance
7.2 Initial Reporting/Notification	5. Incident Response
7.3 Plan Activation and Incident Action Plan	5. Incident Response
7.4 Activate Incident Management System	5. Incident Response
7.5 Ongoing Incident Management and Communications	
7.6 Documenting Incident Information, Decisions, and Actions	5. Incident Response
7.7 Incident Stabilization	5. Incident Response
7.8 Demobilize Resources and Termination	5. Incident Response
Chapter 8 Training and Education	
8.1 Curriculum	7. Awareness and Training Programs
8.2 Goal of Curriculum	7. Awareness and Training Programs
8.3 Scope and Frequency of Instruction	8. Business Continuity Plan Exercise, Assessment and Maintenance
8.4 Incident Management System Training	7. Awareness and Training Programs
8.5 Record Keeping	7. Awareness and Training Programs
8.6 Regulatory and Program Requirements	
8.7 Public Education	
Chapter 9 Exercises and Tests	
9.1 Program Evaluation	8. Business Continuity Plan Exercise, Assessment and Maintenance
9.2 Exercise and Test Methodology	8. Business Continuity Plan Exercise, Assessment and Maintenance
9.3 Design of Exercises and Tests	8. Business Continuity Plan Exercise, Assessment and Maintenance
9.4 Exercise and Test Evaluation	8. Business Continuity Plan Exercise, Assessment and Maintenance
9.5 Frequency	8. Business Continuity Plan Exercise, Assessment and Maintenance
Chapter 10 Program Maintenance and Improvement	
10.1 Program Reviews	8. Business Continuity Plan Exercise, Assessment and Maintenance
10.2 Corrective Action	8. Business Continuity Plan Exercise, Assessment and Maintenance
10.3 Continuous Improvement	8. Business Continuity Plan Exercise, Assessment and Maintenance

Table D.1(b) Cross-Reference of NFPA 1660 to CSA Z1600

NFPA 1660 (2024)	CSA Z1600 (2017)
Chapter 4 Program Management	**Chapter 4 Program Management**
4.1 Administration	4.4 Program Administration
4.1.1 Scope	1.1 Scope
4.1.2 Purpose	1.2 Purpose
4.1.3 Application	1.3 Application
4.2 Leadership and Commitment	4.1 Leadership and Commitment
4.3 Program Coordinator	4.2 Program Coordinator
4.4 Performance Objectives	4.4.3 Goals, Objectives, and Performance Measures
4.5 Program Committee	4.3 Program Committee
4.6 Program Administration	4.4 Program Administration
4.7 Laws and Authorities	4.5 Compliance with Laws and Authorities
4.8 Finance and Administration	4.6 Financial Management
4.9 Records Management	4.4.6 Records Management
Chapter 5 Planning	**Chapter 5 Planning**
5.1 Planning and Design Process	5.1 Planning Process
5.2 Risk Assessment	5.3 Risk Assessment
5.3 Business Impact Analysis (BIA)	5.4 Impact Analysis
5.4 Resource Needs Assessment	4.7 Resources
	5.4.3 Supporting Resources for RTO
	6.2.7 Resource Management
Chapter 6 Implementation	**Chapter 6 Implementation**
6.1 Common Plan Requirements	5.2 Common Plan Requirements
6.2 Prevention	5.5.2 Prevention
	6.1.2 Prevention
6.3 Mitigation	5.5.3 Mitigation
	6.1.3 Mitigation
6.4 Crisis Management	5.1.2 (part of the planning process)
	6.2.4 (described in the response plan)
6.5 Crisis Communications and Public Information	6.2.5 Communication and Warning
	6.2.5.1 General
	6.2.5.2 Communications Assessment
	6.2.5.3 Communication Systems
	6.2.5.4 Communication Procedures
	6.2.5.5 Public Awareness and Education
	6.2.5.6 Emergency Communication and Warning Capability
	6.2.5.7 Emergency Information
	6.2.5.8 Crisis Information
	6.3.6 Emergency Information
6.6 Warning, Notifications, and Communications	6.2.5 Communication and Warning
	6.2.5.6 Emergency Communication and Warning Capability
6.7 Operational Procedures	6.3.1 Operational Procedures
6.8 Incident Management	6.2.3 Incident Management System
6.9 Emergency Operations/ Response Plan	5.5.5 Response
	6.2.4 Response Plan
	6.3 Response
6.10 Continuity and Recovery	5.5.6 Continuity
	5.5.7 Recovery
	6.2.6 Continuity
	6.3.3 Continuity
	6.4 Recovery
6.11 Employee Assistance and Support	
Chapter 7 Execution	
7.1 Incident Recognition	
7.2 Initial Reporting/Notification	

(continues)

Table D.1(b) *Continued*

NFPA 1660 (2024)	CSA Z1600 (2017)
7.3 Plan Activation and Incident Action Plan	
7.4 Activate Incident Management Plan	
7.5 Ongoing Incident Management and Communications	
7.6 Documenting Incident Information, Decisions, and Actions	
7.7 Incident Stabilization	
7.8 Demobilize Resources and Termination	
Chapter 8 Training and Education	5.5.9 Training and Education 6.2.8 Training
8.1 Curriculum	6.2.8.2 (competency-based curriculum)
8.2 Goal of Curriculum	
8.3 Scope and Frequency of Instruction	6.2.8.3 (frequency and scope of training)
8.4 Incident Management System Training	
8.5 Record Keeping	6.2.8.4 (maintain training records)
8.6 Regulatory and Program Requirements (pertaining to training curriculum)	4.5 Compliance with laws and authorities (pertaining to overall program)
8.7 Public Education	6.2.5.5 Public Awareness and Education 6.3.7 Public Awareness
Chapter 9 Exercises and Tests	**Chapter 7 Program Evaluation**
9.1 Program Evaluation	7.1 Evaluation
9.2 Exercise and Test Methodology	
9.3 Design of Exercises and Tests	
9.4 Exercise and Test Evaluation	7.2 Exercises and Tests
9.5 Frequency	
Chapter 10 Program Maintenance and Improvement	**Chapter 8 Management Review**
10.1 Program Reviews	7.3 Audit and Review 8.1 Senior Management Review
10.2 Corrective Action	7.4 Corrective Action
10.3 Continuous Improvement	8.2 Continual Improvement

Table D.1(c) Cross-Reference of NFPA 1660 to FCD-1 and FCD-2

NFPA 1660 (2024)	FCD-1 and FCD-2 (2017)
Chapter 4 Program Management	**IV. Policy and Background**
4.1 Administration	
4.1.1 Scope	
4.1.2 Purpose	
4.1.3 Application	
4.2 Leadership and Commitment	IV. A. Policy V. Roles and Responsibilities (assigned responsibilities are outlined in PPD-40)
4.3 Program Coordinator	V. Roles and Responsibilities
4.4 Performance Objectives	Annex A: Program, Management, Plans, and Procedures
4.5 Program Committee	VI. Federal Executive Level Continuity Coordination Meetings
4.6 Program Administration	V. Roles and Responsibilities, B. Continuity Program Manager (Continuity Manager)
4.7 Laws and Authorities	Annex O: Authorities and Resources
4.8 Finance and Administration	Annex A: Program Management, Plans, and Procedures; Requirements and Criteria for Program Management, Plans, and Procedures, para 5
4.9 Records Management	Annex F: Essential Records Management
Chapter 5 Planning	**IV. Policy and Background, Annex A: Program Management, Plans, and Procedures**
5.1 Planning and Design Process	Annex A: Program Management, Plans, and Procedures
5.2 Risk Assessment	VI. Risk Management and Analysis (FCD-2)
5.3 Business Impact Analysis (BIA)	Annex B: Essential Functions (FCD-1), Annex C: Business Process Analysis (FCD-2), Annex D: Business Impact Analysis (FCD-2)
5.4 Resource Needs Assessment	Annex C: Business Process Analysis (FCD-2), Annex D: Business Impact Analysis (FCD-2) VIII. Readiness Reporting System
Chapter 6 Implementation	**Annex L: Continuity Plan Operational Phases and Implementation**
6.1 Common Plan Requirements	Annex A: Program Management, Plans, and Procedures
6.2 Prevention	VI. Risk Management and Analysis, para A
6.3 Mitigation	VI. Risk Management and Analysis, para A
6.4 Crisis Management	
6.5 Crisis Communications and Public Information	Annex E: Communications and Information Systems
6.6 Warning, Notifications, and Communications	Annex E: Communications and Information Systems
6.7 Operational Procedures	Annex L: Continuity Operational Phases and Implementation
6.8 Incident Management	VIII. Readiness Reporting System Annex L: Continuity Operational Phases and Implementation, Continuity Operations Phase
6.9 Emergency Operations/ Response Plan	
6.10 Continuity and Recovery	Annex L: Continuity Operational Phases and Implementation, Continuity Operations Phase Annex J: Reconstitution
6.11 Employee Assistance and Support	Annex H: Human Resources
Chapter 7 Execution	**Annex L: Continuity Operational Phases and Implementation, Continuity Operations Phase**
7.1 Incident Recognition	
7.2 Initial Reporting/Notification	Annex L: Continuity Operational Phases and Implementation, Continuity Operations Phase

(continues)

Table D.1(c) *Continued*

NFPA 1660 (2024)	FCD-1 and FCD-2 (2017)
7.3 Plan Activation and Incident Action Plan	Annex L: Continuity Operational Phases and Implementation, Continuity Operations Phase
7.4 Activate Incident Management System	Annex L: Continuity Operational Phases and Implementation, Continuity Operations Phase
7.5 Ongoing Incident Management and Communications	Annex L: Continuity Operational Phases and Implementation, Continuity Operations Phase
7.6 Documenting Incident Information, Decisions, and Actions	
7.7 Incident Stabilization	
7.8 Demobilize Resources and Termination	
Chapter 8 Training and Education	**Annex K: Test, Training, and Exercise Program**
8.1 Curriculum	
8.2 Goal of Curriculum	
8.3 Scope and Frequency of Instruction	Annex K: Test, Training, and Exercise Program, para Training
8.4 Incident Management System Training	
8.5 Record Keeping	Annex F: Essential Records Management
8.6 Regulatory and Program Requirements	Annex F: Essential Records Management
8.7 Public Education	
Chapter 9 Exercises and Tests	**Annex K: Test, Training, and Exercise Program, para Testing**
9.1 Program Evaluation	
9.2 Exercise and Test Methodology	Annex K: Test, Training, and Exercise Program
9.3 Design of Exercises and Tests	Annex K: Test, Training, and Exercise Program
9.4 Exercise and Test Evaluation	Annex K: Test, Training, and Exercise Program
9.5 Frequency	Annex K: Test, Training, and Exercise Program, para Testing, para Exercises
Chapter 10 Program Maintenance and Improvement	**Annex A: Program Management, Plans, and Procedures**
10.1 Program Reviews	Annex A: Program Management, Plans, and Procedures, para 1.b
10.2 Corrective Action	
10.3 Continuous Improvement	
	Annex G: Alternate Locations
	Annex I: Devolution
	X. Coordination with State, Local, Tribal, and Territorial Governments, Non-Governmental Organizations, and Private Sector Critical Infrastructure Owners and Operators

Annex E Maturity Models (NFPA 1600)

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

E.1 Development. An internal assessment of the development, implementation, and progress made in a crisis/disaster/emergency management and business continuity/continuity of operations program is an important part of an entity's growth and success. The entity should consider the benefits of developing a documented method to conduct an assessment similar to the example provided in B.1 that also tracks the program's continuous improvement and progress. This can be done through a "maturity model" or other form of internal metrics the entity has adopted and committed to monitoring for tracking progress through a defined time period. By quantifying progress through a scalable method, the entity can also benefit by documenting its efforts when responding to an internal or external audit process. This form of continuous improvement allows the entity to set goals (short term through long term), track progress, and eliminate waste in cost and effort while monitoring present state through future state. This also helps in justifying expenses and substantiating the need for capital, personnel, and other process components that can help to improve implementation of a crisis/disaster/emergency management and business continuity/continuity of operations. Internal metrics can be monitored over a defined time period (e.g., semiannual or annual) and cross-compared with other divisions, departments, or sectors of the entity.

A specific method of applying a self-assessment and maturity model can include the following:

(1) Defining the key concepts of the maturity model
(2) Defining the elements of each concept
(3) Providing the guidelines and minimum requirements for each element
(4) Defining a method for the entity to conduct a scoring process to record its compliance with the model
(5) Implementing a method to distribute the model, train the participants, gather results, and prepare a summary to all interested parties

Best practices, lessons learned, and other criteria discovered during the assessment can be shared throughout, resulting in process improvement for the entire entity.

There are multiple approaches to evaluating the maturity of a crisis/disaster/emergency management and business continuity/continuity of operations program, and multiple models have been published. Consideration should be given to providing guidelines and minimum requirements for each item being evaluated by the entity, so that the assessment is applied accurately and effectively. Regardless of the approach selected, a continued focus on a quantifiable process and its use throughout all levels of the entity will provide maximum benefits for the entity.

Annex F Awareness and Preparedness for Emergencies at Local Level (APELL) (NFPA 1600)

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

F.1 Awareness and Preparedness for Emergencies at Local Level (APELL) consists of a series of programs first developed in 1988 under the leadership of the United Nations Environment Programme (UNEP) with the cooperation of multiple entities, including the U.S. EPA, in response to the Union Carbide gas leak in Bhopal, India, in December 1984. APELL is a multistakeholder dialogue tool that is intended to establish adequate coordination and communication in situations in where the public might be affected by accidents and disasters. The most recent edition of the *APELL Handbook* was issued at the end of 2015 and referenced in *NFPA 1600*, which has been incorporated in the 2024 edition of NFPA 1660.

The APELL program was successfully used to implement *NFPA 1600*, a standard developed to define a program for the integration of crisis/disaster/emergency management and business continuity/continuity of operations, and applicable to the private, public, and not-for-profit sectors.

The APELL program for technological hazards was implemented in 1996 in Bahia Blanca, Argentina, a city located in the southeast of the province of Buenos Aires, by the Atlantic Ocean. The city, with a population of over 300,000, is an important seaport whose harbor reaches a depth of 40 ft (12 m). The name Bahía Blanca, which means "White Bay," comes from the typical color of the salt covering the soil surrounding the shores.

The need for the APELL program in Bahia Blanca is reinforced by a review of the number and amounts of hazardous chemicals produced each year. The industrial complex is made up of three types of industry:

(1) Petroleum industry, with an installed capacity of 4 million tons a year, producing ethanol, petrol, naphtha, GLP, fuel oil, gas oil, gasoline, asphalt, and kerosene
(2) Petrochemical industry, with an installed capacity of 3.4 million tons a year, producing ethylene, VCM, PVC, polyethylene, urea, and pure ammonia
(3) Chemical industry, with an installed capacity of 350,000 tons a year, producing chlorine and caustic soda

Due to the success of implementing APELL and NFPA 1660 in Bahia Blanca, Argentina, the local emergency planning committee (LEPC) in Lake County, Indiana has adopted the same integrated approach to enhance the interaction among industries, local government, and the public as required under the Superfund Amendments and Reauthorization Act (SARA), Title III. Lake County is located on the southern shore of Lake Michigan and has a heavy industrial concentration of steel, oil, and chemicals, a similar set of hazards as faced by Bahia Blanca. The LEPC is recommending a county ordinance to ensure implementation. Other counties in Indiana are exploring the advantages of using the APELL/NFPA 1660 approach.

The APELL process is being practiced in other places within the United States and worldwide. The National Association of SARA Title III Program Officials (NASTTPO) has encouraged the use of the *APELL Handbook* as a guide for local emergency planning committees. The newest version of the handbook, issued in October 2015, emphasizes the use of metrics based upon gap analysis of capabilities to support strategic planning by communities as they seek to improve their preparedness and resilience capabilities. The gap analysis approach is equally applicable to entities seeking to improve their preparedness and planning capabilities under this standard and will assist managers in the performance of the activities outlined in Chapter 7.

A key aspect of the gap analysis is the concept of a "vision of success." Put simply, this concept is designed to have communities thinking long range in terms of the preparedness and capa-

bilities outcomes they would like to achieve. It is an aspirational view of the future that helps to drive strategic planning and short-term progress. The same concept can be used by entities following this standard to promote and measure continuous improvement.

APELL process implementation consists of the following ten elements:

(1) Element 1 — Identify Participants and Establish Their Roles
(2) Element 2 — Evaluate Risks
(3) Element 3 — Review Existing Capabilities and Emergency Plans — Identify Gaps
(4) Element 4 — Create the Vision of Success
(5) Element 5 — Making Progress Toward the Vision of Success
(6) Element 6 — Make Changes in Existing Emergency Plans and Integrate into Overall Community Preparedness Plan
(7) Element 7 — Obtain Endorsement from Government Authorities
(8) Element 8 — Implement Community Preparedness Plans Through Communicating, Educating, and Training Community Members
(9) Element 9 — Establish Procedures for Periodic Testing, Review, and Updating of the Plans
(10) Element 10 — Maintain APELL Through Continuous Improvement

Each of these elements is illustrated through examples and desired outcomes in the *APELL Handbook*.

The APELL process informs the community about the risks to which they are exposed and educates the community on how to react to accidents/disasters. The program promotes the coordination among representatives from the industry, local-level institutions, and the public. The APELL process includes the preparation of an integrated community preparedness plan, including preparing the community for early warnings of emergencies.

Other APELL programs have been produced for mining, port areas, multihazards, transportation, and tourism. The latest edition of the *APELL Handbook* and these other documents are available at the "Global APELL Platform."

Annex G Personal and/or Family Preparedness (NFPA 1600)

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

G.1 Experts agree that during emergencies individuals are concerned first and foremost with the safety and well-being of themselves and their families. Employees are responsible for developing their personal and family preparedness plan.

Entities (or organizations) can help employees become better prepared by educating and training individuals to plan, understand, and implement the steps they need to take with regard to preparing themselves and their families in the event of an emergency. The process must consider not just what it takes to be ready but also the elements that build capabilities to recover rapidly and improve resilience. An entity must plan for protective actions and recovery of individuals at a personal level before establishing recovery time objectives (RTOs) and dispensing duties.

The organizational plan should include adequate education and training to ensure that individuals are prepared, can communicate, and know their family's status in order to function with full effectiveness. The training and education provided to employees should include preparations needed for evacuating and sheltering themselves and their families, as well as provide information regarding the unique needs of people with disabilities and other access and functional needs. A plan must ensure employees and their families and pets are prepared for self-sufficiency for a minimum of three (3) days.

Following the "Plan-Do-Check-Act" (PDCA) model, individual and family preparedness actions can be aligned with whole-community response and recovery actions.

G.2 PDCA Model.

G.2.1 Plan. The entity should consider establishing a system to identify, document, communicate, measure, educate, and train employees on how to prepare themselves and their families in the event of an emergency.

The entity should consider implementing a program that educates and trains employees on how to be informed about family and community risks and vulnerabilities, as well as community response and recovery programs to determine family protective strategies and skills required for effective response in an emergency or disaster situation.

By taking personal preparedness measures, such as conducting a family risk assessment, and engaging in preparedness planning, individuals can develop plans and create readiness kits, that will allow them to respond to an emergency with a greater level of confidence.

Public and private sector employees should be encouraged by the entity to make preparedness and resiliency a priority at home.

The entity should encourage their contractors to have a similar program for their employees.

G.2.2 Do. Implement a program that educates and trains individuals to be informed of risks, community and individual protective actions, and skills required for effective response in an emergency or disaster situation. Individuals have specific responsibilities outside of their professional obligations. By taking personal preparedness measures, such as an individual risk assessment, family preparedness planning, and developing personal readiness kits, individuals will be able to respond to an emergency with a greater level of confidence that will help them meet their individual and household responsibilities as well as fulfill their professional duties and obligations.

The preparedness and resiliency of employees from all sectors is a requirement for both public and private sector continuity and an emerging priority for resilience at all levels. It requires a specific focus on the education and training for individual and family preparedness that builds resiliency at a granular level.

G.2.2.1 The categories of preparedness in G.2.2.1.1 through G.2.2.1.6 follow a national consensus on messaging about individual and family preparedness used by FEMA and other federal agencies as well as national nonprofit entities conducting preparedness training.

G.2.2.1.1 Risk Assessment. Based on the individual's geography, living conditions, socioeconomic status, including work

and home-based roles and responsibilities, a risk assessment should guide individuals to prepare for natural and man-made disasters and emergencies that are most likely to occur in their location. Being prepared for these events will build resilience for unforeseen future emergencies.

G.2.2.1.2 Protective Actions, Alerts, and Warnings. Based on the hazards identified in the risk assessment, protective actions, alerts, and warnings include knowledge and skills to take the appropriate primary and alternative protective actions that will decrease vulnerability in an event, knowledge of local alerts and warning systems and plans for how to receive updated information during an emergency, knowledge of jurisdiction and frequent location response plans (e.g., home, work, or sports venues) including shelter and evacuation plans.

G.2.2.1.3 Family Preparedness Plan. A family preparedness plan should include designated rally locations if household members are separated during an emergency; home fire escape plan; communication plan for when household members are separated or normal communications are disrupted (i.e., cell phones do not work); the unique needs for access and functional need individuals, emergency utility shutoff, shelter and evacuation plans for individuals based on their family preparedness plans and local jurisdiction emergency plans; and emergency contact information. An emergency contact should be included who lives outside of the immediate area.

G.2.2.1.4 Recovery. Recovery strategies include plans for all types of emergencies. Both short- and long-term recovery strategies include determining living and transportation arrangements for individuals to be able to return to work. Therefore, communicating to employees how they can take advantage of government programs is vital. Employees should understand the roles of the centers that open for disaster recovery.

G.2.2.1.5 Disaster Resiliency Plans. For separated families (e.g., a child, elder, and home care), these plans include managing financial and personal records and managing shifted roles and responsibilities of an absent family member.

G.2.2.1.6 Response and Recovery Tools and Supplies to Support Protective Actions and Plans. Survival kits should be prepared for multiple locations and each household/family member, to include copies of identification and essential documents, contents of wallet, and medicine cabinet.

The information in G.2.2.1.6.1 through G.2.2.1.6.5 represents the vital information necessary to prepare for, respond to, and recover from an event. The vital information is divided into five basic information areas and is presented with its intended purpose and a recommended checklist of data components. *(See Annex H for a list of resources.)*

The entity and employee responsibility for safeguarding information does not change during an event. All best practices established before an event should shelter-in-place or equivalent new practices should be implemented.

G.2.2.1.6.1 Personal Information. Personal information is intended to provide the basic information needed to prove an individual's identity, provide key medical information to first responders, or to aid in the information needed to apply for disaster assistance relief.

Personal information can include the following:

(1) Family contact information
(2) Date of birth
(3) Birthplace
(4) Phone numbers
(5) Social Security number
(6) Passport number
(7) Immunization records
(8) Driver's license number
(9) Other identification numbers
(10) Email addresses
(11) Passwords and PINs
(12) Family medical information
(13) Immediate medical concerns
(14) Current medications (name, dosage, and frequency)
(15) Medical insurance provider information

G.2.2.1.6.2 Financial Information. Financial information is intended to help individuals rebuild their financial history and/or to make insurance claims following an emergency.

Financial information can include the following:

(1) Bank information: checking/savings accounts, safe deposit box, and so forth
(2) Investments: stocks, bonds, CDs, IRAs, 401k plans, pensions, brokerage, and other accounts
(3) Debts: credit cards, auto loans, student loans, and other debts
(4) Real property: home, rental, time share, senior housing, and so forth
(5) Personal property (major items): automobiles, motorcycles, boats, RVs, and other items of value
(6) Personal property (minor items): furniture, jewelry, art, collectibles, and so forth
(7) Income sources: wages, bonuses, commissions, rent, leases, alimony, child support, and so forth
(8) Expenses: mortgage, electric, gas, water, cable, home phone, cellular, trash, pet care, and so forth
(9) Insurances: home, vehicle, renters, and so forth
(10) Tax record history: federal, state, business, estate, other items of record

G.2.2.1.6.3 Emergency Information. The preparation of emergency information is intended to help individuals and their families in preplanning emergency action steps specific to their geographic risks, communication methods, and assembling of disaster emergency kit resources. Emergency information can include the following:

(1) Emergency communication methods:
    (a) Emergency contacts (out-of-town, regional, primary, work, etc.)
    (b) Other relevant contacts (employer, insurance agent, landlord, school, etc.)
    (c) Virtual rallying point locations (Facebook, Twitter, and other social networks, etc.)
(2) Shelter-in-place or prearranged alternative shelter locations:
    (a) Evacuation plans and routes
    (b) Rally point locations near the home (if the emergency is localized to the home or a few homes)
    (c) Utility shutoff procedures
(3) Disaster kit (home, work, and car): first aid, go bag, food, and water
(4) Geographical identification of risks (natural or manmade): local emergency resources

(5) Critical workplace information (What is my emergency response assignment? Where do I report? Whom do I report to?):
    (a) Workplace disaster assistance (i.e., benefits, employee assistance programs, policies, and processes)
    (b) Workplace roles and responsibilities
(6) Emergency physical access information (secured areas, garage, pool, etc.)
(7) Emergency technology access information (work files, voicemail, home files, etc.)
(8) Location of spare keys
(9) Wallet contents

G.2.2.1.6.4 Household Information. The preparation of household information is intended to assist an alternative person in assuming household responsibilities and/or family care at a moment's notice. Household information can include the following:

(1) Household details:
    (a) Security system
    (b) Mail delivery
    (c) Waste removal
    (d) Water
    (e) Contracted services
    (f) Nonemergency utility controls
    (g) Routine bill pay information: Type of bill, amount, account it is paid out of, due date, and payment method (check, automatic, or online)
(2) Child and elder care information:
    (a) Emergency contact information
    (b) Nicknames
    (c) Physician information
    (d) Access and functional considerations
    (e) Medications
    (f) Allergies
(3) Pet care:
    (a) Breed and sex
    (b) Markings
    (c) Veterinarian
    (d) Special considerations
    (e) Vaccination dates
    (f) Medical history
(4) Household security:
    (a) Online accounts (provider, user names, passwords, and secret question answers)
    (b) ATM card numbers
    (c) Home alarms
    (d) Gated community access codes
(5) Numbers not listed in G.2.2.1.6.4(4) that someone else might need to assume care of your household or family members

G.2.2.1.6.5 Legal Information. The preparation of pertinent legal information is intended to assist a household in rebuilding the critical legal family information and to provide critical legal information that might need to be conveyed (such as medical directives and final considerations). Legal information can include the following:

(1) Legal service provider information
(2) Marriage certificates
(3) Divorce and custody court orders
(4) Alimony and childcare court orders
(5) Adoption papers
(6) Wills and trusts
(7) Birth, marriage, and death certificates
(8) Powers of attorney and medical releases
(9) Location of identification cards
(10) Location of tax and financial records
(11) Medical directives and final considerations

G.2.3 Check. Education and training is intended to prepare personnel to respond to emergencies and disasters and support performance of the entity's essential functions. Education and training of all personnel is critical for building the resilience that should allow the entity or business to recover rapidly and resume its mission and functions. As part of its training program, the entity must provide documentation of training conducted, training material, the date of training, names of personnel trained, and the name of the facilitator/instructor. This process and its supporting documentation will help ensure that individuals have received the necessary guidance and support and know prior to, during, and after an event what is expected of them. Training follows the criteria set forth in Chapter 8.

G.2.4 Act. Based on measures of documented understanding, adequacy, and effectiveness of the education and training, the entity must take any corrective actions to improve or enhance the employee and family preparedness education and training program. Program improvements follow the criteria set forth in Chapter 10.

Annex H Access and Functional Needs (NFPA 1600)

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

H.1 General. Responsibility for preparedness is a whole-community approach that rests on the shoulders of many stakeholders, from persons with disabilities and other access and functional needs to community emergency response personnel and the community supply chain that supports this population during times of peace and emergencies (i.e., Meals on Wheels, food providers, volunteers, public health, NGOs, infrastructure service providers, and commercial entities). Each segment of the community has a role in prevention, mitigation, response, continuity, and recovery that can be addressed in a holistic manner as long as persons with disabilities and other access and functional needs are identified in advance.

H.2 The Role of People with Disabilities and Other Access and Functional Needs. Preparedness, like safety, is everyone's responsibility. Having a family preparedness plan is paramount to being ready for any event.

There are many agencies that make up the supply chain for persons with disabilities and other access and functional needs. Therefore, knowing where and how to get connected is vital to developing your emergency plan.

Additional details from Public Safety Canada are available in the Emergency Preparedness Guide for People with Disabilities/Special Needs and in Emergency Preparedness for Children. For information on building an emergency kit, see FEMA's "Build A Kit" resources.

H.3 The Role of Entities. Entity resilience is predicated on how well employees are prepared. When entities assess their vulnerability to threats and hazards, they can determine how

key personnel are engaged in continuity planning; specifically, identifying what roles employees with access or functional needs play in entity plans.

The process of returning an entity to normalcy includes restoring the workforce to pre-event conditions and understanding how to support employees and their families that have been identified as having access and functional needs.

For primary infrastructure businesses (power, heating fuels, water, telecommunications), preparedness includes reviewing plans with first responders to develop response plans that identify access and functional needs populations.

H.4 The Role of Emergency Management and EOCs. Emergency management departments can be prepared to support people with disabilities and other access and functional needs by engaging in outreach strategies at local levels with nonprofit and nongovernmental entities to understand the access and functional needs supply chain of services and provide preparedness education to other providers.

H.5 The Role of Public Health. During response, the health department is dedicated to supporting public health through medical, mental health, and mortuary services. Their skills are focused on protecting the public, and they are responsible for recognizing threats that can increase morbidity and mortality. During a disaster, the health department works closely with agencies responsible for sheltering to ensure that accommodations are appropriate for the functional needs, housing, and human services to aid access and functional needs populations.

H.6 The Role of NGOs. NGOs should collaborate with first responders, governments, and other agencies to provide services to aid disaster victims and fill the support gap when assistance is not available.

H.7 Identification of People with Disabilities and Other Access and Functional Needs. The American Red Cross uses four categories to identify people with disabilities and other access and functional needs populations:

(1) Health:
   (a) Persons with disabilities that include sensory impairment, physical impairment, mental or behavioral impairment, developmental disability
   (b) Specialty care populations: dialysis, community populations–based, life saving technology–dependent
(2) Economic:
   (a) Migrant
   (b) Community populations
   (c) Latchkey kids
   (d) Unemployed
   (e) Displaced
   (f) Welfare
   (g) Single-parent families
(3) Social:
   (a) Pregnant women
   (b) Infants
   (c) Veterans
   (d) Homeless adults, families, juveniles
   (e) Battered spouses
(4) Language:
   (a) Non-native-language speaking

H.8 Helpful Information. See Annex G for other information.

H.9 Sample List of Resources.

H.9.1 Documents Available from the ADA:

ADA *Best Practices Tool Kit for State and Local Governments*—Chapter 7, Emergency Management

ADA *Best Practices Tool Kit for State and Local Governments*

ADA National Network: http://www.dbtac.vcu.edu

Revised ADA Regulations Implementing Title II and Title III, 2011

ADA Standards for Accessible Design, 2010

ADA.gov — Information and Technical Assistance on the Americans with Disabilities Act

H.9.2 Additional Documents. American Red Cross at redcross.org, *search:* disaster safety for people with disabilities.

Cal OES Access & Functional Needs at caloes.ca.gov, *search:* access, functional, needs.

Centers for Disease Control and Prevention at cdc.gov, *search:* emergency preparedness for older adults.

Developing a Disaster Ready Organization — Inclusion Research Institute at inclusionresearch.org, *search:* inclusion research institute.

Disaster Resources for People with Disabilities, Disability-related Organizations and Emergency Managers at jik.com, *search:* disaster preparedness.

Emergency Response for People Who Have Access and Functional Needs — St. Petersburg College at spcollege.edu, *search:* national terrorism preparedness institute.

Employers' Guide to Including Employees with Disabilities in Emergency Evacuation Plans — Job Accommodation Network at askjan.org, *search:* emergency evacuation plans — job accommodation network.

Evacuation and Transportation Planning Toolkit for People with Functional Needs — CA EMA at nusura.com, *search:* understanding evacuation and transportation of people.

FEMA's Functional Needs Support Services Guidance at phe.gov, *search:* preparedness, planning, functional, needs.

Guidance on Planning for Integration of Functional Needs Support Services in General Population Shelters at fema.gov, *search:* guidance, planning, functional needs, population, shelters.

Individuals with Access and Functional Needs at Ready.gov, *search:* individuals with disabilities.

Individuals with Access and Functional Needs — FEMA at ready.gov, *search:* access, functional, needs.

National Council on Disability at ncd.gov, *search:* emergency management.

National Organization on Disability at nod.org, *search:* emergency preparedness initiative.

National Resource Center on Advancing Emergency Preparedness for Culturally Diverse Communities at diversitypreparedness.org.

North Carolina Institute for Public Health at unc.edu, *search:* assisting persons with disabilities during an emergency.

Obtaining and Using Employee Medical Information as Part of Emergency Evacuation Procedures at eeoc.gov, *search:* emergency evacuation.

People with Disabilities and Other Access and Functional Needs — FEMA at fema.gov, *search:* disabilities, access, functional needs.

Project Safe EV-AC Evacuation and Accommodation of People with Disabilities at preventionweb.net/English, *search:* evacuation, accommodation, people, disabilities.

U.S. Department of Health and Human Services, Civil Rights at hhs.gov, *search:* emergency preparedness.

U.S. Department of Labor, Office of Disability Employment Policy at dol.gov, *search:* emergency preparedness and people with disabilities.

U.S. Department of Transportation at transportation.gov, *search:* emergency preparedness and individuals with disabilities.

U.S. Office of Personnel Management at opm.gov, *search:* disability employment.

Annex I Social Media in Emergency Management (NFPA 1600)

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

I.1 Introduction. Social media has a strong and increasingly important influence on emergency/crisis management. Social media's emergence has fundamentally changed the way crisis/disaster/emergency management and business continuity/continuity of operations are approached in both the public and private sectors. When disasters occur, many people look to social media for their initial source of information. The public also routinely turns to social media to obtain real-time updates during emergencies and to share experiential data about the disasters in the form of text, pictures, and video. It has also become an efficient way of sharing information between disaster relief and government organizations and citizens on the ground during times of emergencies.

While social media allows for greater situational awareness for emergency responders, it also holds many challenges for emergency managers. Despite these challenges, there are several cases of social media being used successfully in disasters.

I.2 Case Studies and Evolution of Social Media in Emergency Management. After almost every major incident since the 2001 terrorist attacks, emergency responders have cited communications and information-sharing failures as major factors impacting response efforts. The Indian Ocean tsunami in 2004 is one of the deadliest disasters on record. It was covered by just about every major media outlet imaginable, yet it occurred before the modern era of social media. Facebook, founded in 2004, was just beginning to evolve into the social media icon it has now become. When Hurricane Katrina devastated the U.S. Gulf Coast in 2005, Twitter, founded in 2006, did not exist to provide breaking news updates or eyewitness accounts as events unfolded.

The Haiti earthquake in 2010 may be the seminal event that changed how social media is used in disasters. Social media was evolving in the years preceding the event, but the scale and emotional appeal of that disaster created the right environment for it to blossom into an effective emergency communication tool.

Perhaps one of the best examples showcasing the benefits of social media during times of disaster took place after the Joplin, Missouri, tornadoes in 2011. Through the use of Facebook, volunteers created a "Joplin Tornado Information" page. Over the course of several weeks, volunteers monitored and updated the page around the clock. Ultimately, the page served as a credible source of information for the community, first responders, and family members, who were desperate to learn about the well-being of victims. Information was shared on mass sheltering, resource requests, family needs, and volunteer inquiries.

Immediately after the Boston Marathon bombings in 2013, nearly one quarter of Americans reportedly looked to Facebook, Twitter, and other social networking sites for information, according to The Pew Research Center. During the search for the two suspects, traditional media outlets and social media sites both hindered and assisted with the ultimate capture of one surviving suspect.

Since each disaster is different, social media can create complications as a result of rapid information exchange. It can both improve disaster response and allow affected communities to provide information to responders and media outlets. Researchers, emergency management, and communications experts have concluded that creating a social media strategy in advance is a crucial component of effective emergency planning. The challenge, however, is that many emergency managers recognize the power of social media but might not have the resources to use it effectively in an emergency.

Annex J is intended to provide additional guidance specifically related to Chapters 4, 5, and 6 in this standard. Sections I.3 through I.5 contain the necessary information to prepare for, respond to, and recover from disruptive events through the inclusion of a viable social media strategy and capability into the emergency and business continuity planning process. Information is divided into three common emergency management areas, and is presented with a stated purpose and key considerations.

I.3 Planning. The emergence and reliance on social media has fundamentally changed the way we prepare for and manage disasters and emergencies. Traditional methods should not be abandoned, but rather should be supplemented with social media. Key planning considerations include, but are not limited to, the following:

(1) Establish governance — Top management should review the social media recommendations and authorize appropriate resources for implementation. The entity should review whether it has, or needs to develop, a social media policy stipulating who is to use social media channels on behalf of the entity. The entity should ensure senior leadership understands and endorses the use of social media by the identified individuals because these individuals will be speaking on behalf of the entity.
(2) Identify resources — If the entity has a communications, public relations (PR), or public information officer (PIO) department, begin with this team because they might

already have the necessary capability and appropriate channels established. The entity should leverage the process and individuals who control the entity's social media channels for use during an emergency. If no team is currently in place, the entity should form a team of employees and stakeholders who already use social media with the goal of developing a process for implementing social media to distribute emergency information. The entity should ensure any existing communications, PR, or PIO team is fully integrated into the planning process.

(3) Outline roles and responsibilities — Considerations should include the following:
   (a) Let employees know ahead of time what is expected of them during an emergency.
   (b) Consider staffing requirements before an emergency and train where necessary.
   (c) On-the-job training and experience before an emergency are key.
   (d) Develop a policy for all staff working inside the emergency operations center (EOC) and response (i.e., personal vs. official use of social media).
   (e) Maintain a network of social media personnel within your organization and among other related organizations.

(4) Define activities — The entity should identify the most popular platforms that would be most useful for the stakeholders. (There are many platforms; it is not realistic to expect the entity will be able to stay abreast of more than a handful.) Individuals designated to use social media on behalf of the entity should develop competence in the opportunities and limitations of each of the social media platforms in use. Related activities include the following:
   (a) Identify objectives your organization will try to achieve through its use of social media.
   (b) Consider levels of activation, to what extent your organization will engage in social media, and in what context this level could change during different phases of an emergency (e.g., Level 1 — monitor only, Level 2 — monitor and respond to select posts).
   (c) Evaluate current social media presence before disaster strikes, so community members know where to look for information during the response and recovery phases of a disaster. During nondisaster periods, emergency management professionals should explore how they can use social media outlets like Twitter, blogs, Flickr, Facebook, Instagram, and YouTube to deliver emergency preparedness and prevention information.
   (d) Identify social media management tools to be used (e.g., Hootsuite and TweetDeck).
   (e) Consider developing standardized messages or templates for rapid use.
   (f) Decide in advance what your organization will or won't respond to.
   (g) Develop a content strategy outlining what types of information will be shared and how often (if applicable).
   (h) Identify any formal links your organization will make with other related organizations (e.g., guidance on how information will be shared between organizations and who has authority to do what).

(5) Develop capabilities — Determine which social media platforms will be primary and which platforms will be secondary for the following:
   (a) Evacuation, including shelter-in-place
   (b) Mass sheltering
   (c) Re-entry, re-opening, or returning to business as usual
   (d) Office/building closures or delayed openings

(6) While automatic callback tools are often used only during emergencies, social media channels are meant to be used to build rapport, trust, credibility, and increase the number of followers. They should be used regularly to be relevant. The entity should ensure that individuals responsible for social media communication are sufficiently trained not only in the channels they will be using, but also on the nuances of how the use of these tools might need to change during an emergency, and ensure there is a clear process for approval. The entity should also determine what incoming information and sources will be retransmitted and linked, and identify the frequency of review to keep information fresh.

(7) The entity should practice the use of social media tools during exercises and testing.

I.4 Response. The effectiveness of an entity's response to a disaster or emergency is directly linked to their level of effort during the planning process. If you are not telling your story on social media, someone else might be telling it for you. When there is a comprehensive planning process, entities can provide an efficient and effective response and have better control over dissemination of information. Response (and recovery) considerations can include the following:

(1) Staffing needs — Evaluate the following throughout response and recovery processes:
   (a) The entity should identify the need for additional staff during an emergency.
   (b) To actively engage, resourcing levels will be high (24/7), and a devoted social media team will be needed.
   (c) Ensure level of engagement doesn't exceed available resources.
   (d) Scale your use of social media to the size of your team.
   (e) Ensure back-up personnel are trained and ready to stand in.

(2) Communications — One advantage that social media has over other communication channels is that it is more of a two-way channel. Understandably, social media is highly effective at reaching people who stay tuned in, or periodically check in, to their social media accounts throughout the day. But social media's value could be even greater as an inbound communications channel, where organizations can use it to learn more about what is happening during an event in real time. The following are best practices that an entity should consider adopting:
   (a) Implement strategies and perform activities as outlined during the planning phase.
   (b) Verify sources and information prior to release.
   (c) Use plain language, facts, and a reassuring tone.
   (d) Refer to an official source whenever possible.
   (e) Don't disparage other organizations or agencies.
   (f) Monitor the timeline and balance frequency of posts (too few vs. too many).

(g) Use the social media and emergency management hashtag #smem. The hashtag is likely the most popular means of categorizing content on social media.
(h) Avoid speculation and rumors; correct false information.
(i) Like other emergency communications channels — landlines, mobile, email, and so forth — social networking has its strengths and limitations. Some people prefer to communicate on one channel, while other people prefer to communicate on another. Using multiple channels both increases the chances of reaching everyone; it also increases the chances that you'll actually influence the behavior from more of the people you do reach.
(j) Consider multilanguage social media posts.
(k) Look for ways to integrate disparate data sources.
(l) Monitor the conversation on social media channels.
(m) Many mass notification systems push out volumes of information to people, which might not be the most effective way to communicate with residents during a disaster.
(n) Remember that just as emergency responders can monitor social media to get a better view of a situation, people intent on taking advantage of the situation can do the same.

(3) Force multipliers — Look for ways to supplement limited resources through the following:
(a) Where feasible, partner with other related organizations.
(b) Take advantage of local or international volunteers (if appropriate), particularly for monitoring and gathering information during the response phase, i.e., virtual operations support teams (VOST).

(4) Measure and refine — Debrief to identify lessons learned, planning gaps, and/or process improvements.

I.5 Exercises and Testing. Social media tools allow emergency managers to disseminate information to wider audiences, interact with the public, monitor social media networks to get a better sense of what's happening on the ground during a crisis, get better situational awareness, and improve collaboration for sharing information during an emergency and best practices and lessons learned. Whether or not social media is part of your advanced emergency planning, it almost certainly will be part of the communications occurring during your emergencies from now on.

However, without ongoing testing of and training in the use of these tools, their effectiveness during an actual emergency or disaster could be limited. The following are recommended practices to maintain proficiency levels of team members responsible for executing an entity social media strategy:

(1) Update crisis, emergency, business continuity and disaster recovery, and other plans as appropriate.
(2) Stay current on social media best practices, by reading white papers and attending external training and webinars.
(3) Include a social media component in any emergency response training conducted.
(4) Include components of your social media strategy in exercises, simulations, and other testing.
(5) Use results of exercises and tests to improve the entity's overall response plan, particularly as it relates to integration of social media.

Annex J Emergency Communications: Public Alerts and Warnings in Disaster Response (NFPA 1600)

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

J.1 Introduction. The material in this annex is based on the National Institute of Standards and Technology (NIST) and Fire Protection Research Foundation research and documents: *Developing Emergency Communication Strategies for Buildings,* by E. Kuligowski, S. Gwynne, K. Butler, B. Hoskins, and C. Sandler; *General Guidance on Emergency Communication Strategies for Buildings, 2nd Edition,* by E. Kuligowski and H. Omori; *Outdoor Siren Systems: A review of technology, usage, and public response during emergencies*, by E. Kuligowski and K. Wakeman, and *A Review of Public Response to Short Message Alerts under Imminent Threat*, by E. Kuligowski and J. Doermann.

The purpose of this annex is to provide information and guidance on emergency communication strategies to emergency managers, emergency personnel, first responders, government agencies, the media, businesses, and other entities responsible for alerting and warning the public in the response phase of hazards and disasters. This guidance is based on multiple reviews of literature sources from a variety of social science and engineering disciplines.

First, the annex discusses the differences between alerts and warnings, followed by an overview of emergency communication technology and/or approaches. The annex ends with a presentation of guidance on emergency communication strategies, including general guidance on coordination and preplanning, alerts, and warnings.

J.2 Differences Between Alerts and Warnings: Effective Emergency Communication Strategies Include Both Alerts and Warnings. An *alert* is meant to grab peoples' attention that an emergency is taking place. A *warning* message is meant to follow an alert and provide or convey important information to building occupants (i.e., the state of the emergency and what people should do in response to the emergency).

J.3 Emergency Communication Technologies and/or Approaches. Various types of emergency communication technologies and/or approaches are available for entities to alert and warn their audience of an impending hazard event. Technologies and/or approaches that the entity might want to consider using in their emergency communication strategy include the options described in J.3.1 through J.3.8.

J.3.1 Outdoor Siren Systems. These systems often consist of interconnected sirens designed to alert individuals located outdoors, of an approaching threat. Some systems disseminate both sound alerts and voice communication, while others broadcast only sound alerts. In cases where the siren system disseminates only sound (without accompanying information by this or other technology), the listening audience could be confused about what the siren means in a particular event. To reach a wider audience, some systems provide options to mount strobe lights on (or as part of) outdoor sirens to aid with alerting, especially to reach those who are unable to hear the siren tones/signals.

J.3.2 Social Media. Social media is increasingly being used to provide alerting and warning information (i.e., photos, videos, graphics, and text) before, during, and after emergencies. For disasters that require evacuation, for example, warning information can include maps, evacuation instructions, evacuation site/shelter locations, and directions and evacuation routes.

J.3.2.1 Benefits of Social Media. The benefits of social media are as follows:

(1) Quick dissemination of information.
(2) Two-way capabilities: allowing message providers to monitor public response, craft messages that are appropriate for the current emergency, and provide follow-up messages that are relevant to the affected population.
(3) Self-correction of false information.
(4) Facilitation of the milling or confirmation process. In any emergency, individuals are likely to spend time discussing the emergency with others to decipher what is going on and what should be done about it. By posting and reposting information on social media sites, the milling process takes place in a virtual forum, which can reduce the time spent in this process and allow individuals to respond more quickly.
(5) A fast, cheap, and relatively easy way for mass distribution of communications.

J.3.2.2 Limitations of Social Media. The use of social media for emergency communication includes the following limitations:

(1) Agencies might be required to spend a significant amount of time filtering and verifying incoming information both before and during a disaster. Depending upon the duration of the disaster and the size of the affected audience, social media might not be a feasible avenue for two-way emergency communication.
(2) Some platforms limit the number of characters allowed in an emergency message. In this case, technologies that limit the number of characters (e.g., 140 characters) might disseminate messages that act more like an alert than a warning, since it is difficult to include all information required in a warning message within smaller character limits.
(3) The perception that the technology might be relatively confined to certain subpopulations in the United States (e.g., younger populations or populations with access to the internet); however, usage among those 65 years old and older has more than tripled since 2010.
(4) Older, less relevant information remains online (and can be retweeted), making it important to identify and make salient new and relevant information for audiences.
(5) Social media relies on the internet, and thus, electricity and computer software. Natural and human-caused disasters represent a risk of technology or software failure (or security breach).

J.3.3 Wireless Emergency Alerts (WEAs). WEA is a nationwide program across the United States whereby emergency alerts (currently restricted to 90 characters in length) are sent to individual mobile devices by "authorized government alerting authorities." An individual can receive these alerts directly to his or her mobile device without the need to download an app or subscribe to a particular service. There are three main types of alerts that can be disseminated through this system: alerts for extreme weather, AMBER alerts (i.e., urgent bulletins alerting individuals about child-abduction cases), and Presidential Alerts during a national emergency. WEA messages are always accompanied by a special tone and vibration, which are both repeated twice as the message is first displayed on the mobile device. In addition to emergency managers, the National Weather Service is considered an "authorized government alerting authority" and can send WEA messages for tsunami, tornado, and flash floods, and hurricanes, typhoons, dust storms, and extreme wind. The WEA messages are sent to individuals based upon their geographical location (i.e., WEAs are broadcast from area cell towers to mobile devices in the area), their type of device (i.e., it needs to be a WEA-capable phone), and their wireless carrier (i.e., the carrier must participate in the program). This is an opt-out program, in that if individuals do not wish to receive WEAs, they can opt out of the system via settings on their mobile devices.

J.3.4 Automated Messages via Phone, Email, or Application. Many private companies now offer services that allow for automated messages to be disseminated to a certain population via routine phone (landline or mobile device), text, email, or app group services. These often are facilitated through a business or university, among other communities, whereby an individual who wishes to register for the service will receive alerts and warning messages about various types of natural disasters and other types of human-caused events (e.g., an active shooter threat or a chemical spill/hazardous materials situation). This category of technology includes *Reverse 911,* which provides an automated audible message via phone call to registered landlines or mobile phones. If available, the entity's communication system should have the capability to receive feedback from their audience (employees, personnel, etc.), where necessary.

J.3.5 Emergency Alert System (EAS). The Emergency Alert System (EAS) is a national public alerting and warning system that requires the following providers to disseminate communications' capability to the President to address the American public within 10 minutes during a national emergency: broadcasters, cable television systems, wireless cable systems, satellite digital audio radio service, and direct broadcast satellite. This system can also be used by state and local authorities in cooperation with the broadcast community to deliver emergency information, such as AMBER alerts and weather information. Each message is comprised of four features: a header, an attention signal or tone, an audible announcement (of which some portion might be provided via text), and an "end-of-message" marker.

J.3.6 Tone Alert (or Weather Alert) Radios. Tone alert radios are a technology used to disseminate messages originated by NOAA Weather Radio All Hazards (NWR), a national network of radio stations broadcasting continuous weather information directly from the nearest National Weather Service office. NWR broadcasts official National Weather Service warnings, watches, forecasts, and other hazard information 24 hours a day, 7 days a week (www.nws.noaa.gov). NWR also broadcasts warning information for all types of natural, environmental, and public safety emergencies in partnership with federal, state, and local emergency managers and other public officials. The receivers are either desktop or handheld models, and these require the owner to program the radio (i.e., to specify the particular area for which he or she would like to receive alerts) to ensure that the appropriate location-specific broadcasts are disseminated via the receiver.

J.3.7 Radio or Television Broadcasts. In addition to EAS via television or radio, the public can also receive warning information via other radio or television broadcasts. Local radio and television stations are in place in most towns/communities; however, where local stations are not readily available, the broadcast of local emergency information can become complicated.

J.3.8 Internet/Website Posts, News, and Blogs. Warning information can also be provided to the public via Internet/website posts, news, and blogs, as examples. Warning information is often posted directly on the front page of the website, making it easier for the public to find it. Also, it is often the entity's public information officer (PIO) or communication specialist whose responsibility it is to post emergency information. Due to changing conditions of the emergency, the posted information often requires constant updates in an emergency situation, which becomes more difficult as the entity's attention is divided among numerous emergency-related tasks during and after the disaster.

J.4 Guidance on the Emergency Communication Strategies. Guidance is provided for entities responsible for public alerts and warnings in disaster response (and recovery, where applicable).

J.4.1 Coordination and Preplanning. Entities should engage with message providers within the community to ensure consistent communication and messaging to the public before, during, and after an event.

J.4.2 Creation and Dissemination of Alerts.

J.4.2.1 Outdoor Siren Systems. The following guidance is provided for entities on the ways in which alerts (and/or warnings) should be created and disseminated via outdoor siren systems:

(1) Develop consistent protocols for outdoor siren systems across entities. Since the protocols and procedures for outdoor siren system use varies significantly in the U.S. from entity to entity, common national or regional standards and practices for the use of outdoor siren systems can be adopted to minimize confusion among the public and increase trust in the outdoor siren systems.
(2) Reach as wide an audience as possible.
(3) Increase the impact of the outdoor siren system by accompanying alerts with specific, credible, accurate, and consistent warning information disseminated by multiple warning technologies.
(4) Reach out to vulnerable populations who are unable to receive the alerting signal from these systems.
(5) Educate and train the public on the outdoor siren system — its signal tone, when (and for what disasters) it will sound, and the actions to be taken when it sounds.

J.4.2.2 "Short Messages Alerts". The following guidance is provided for the creation of short message alerts (i.e., alert messages with specific character restrictions) for populations under imminent threat.

Include the following content within the short message alert:

(1) Source of the message
(2) Type of hazard and its consequences
(3) Location of the hazard
(4) Timeline of the hazard
(5) Actions that should be taken by the receiving public

List the message source at the beginning of the short message alert. Messages are more successful in prompting safe and effective public response if the source of the message is perceived as credible by the receiving public.

Use clear language. Reduce, and if possible, remove abbreviations, acronyms, and jargon. Clearly spell out all words, including the source of the message and timeline information (e.g., time zones). When identifying hazard or safe zones, use terminology that is familiar to the receiving public.

Communicate the seriousness of the event, the consequences of the risk if the receiver does not act, and the specific actions that should be taken in response to the event.

Craft the messages using imperative- or instructional-style voice, especially when relaying the protective action(s) that should be taken by the receiving public.

J.4.3 Creation and Dissemination of Warning Messages. Annex G in *NFPA 72* provides guidance on the creation and dissemination of warning messages, including warning message content (e.g., the types of information that should be included in a warning message), the source of the message, message structure, message language (or wording), and the use of multiple messages, as well as more specific guidance on the appropriate methods to disseminate audible warnings. Message templates are also provided.

Annex K Emergency Management, Continuity, and Crisis Management Data Interoperability (NFPA 1600)

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

K.1 Interoperability. Chapters 6, 8, and 9, in conjunction with the respective sections in Annexes A and J, required the organization to practice incident and resource management using situation analysis and coordination, emergency operations/response using situation analysis and crisis communication, and continuity using a variety of data and communication resources. In all these cases, the success of the activity depends upon good data kept in an interoperable system so that access by all those responsible for planning, making operational decisions, or communicating during a crisis have the same and current information.

Accordingly, the organization must create and maintain such a system. The vision of success for such a system is that the data it contains be accurate and updated, that it be accessible during planning as well as during a crisis, that it be easily used and accessed by the entire range of potential users, and that it be kept in a fashion that will maintain these traits during even catastrophic events.

While every organization working to comply with NFPA 1660 will have its own set of critical data elements, there are some commonalities. For example, data elements that capture information on the organization's critical and time-sensitive processes and the status of key personnel will all be critical in following the requirements of Sections 6.6, 6.7, 6.8, and 6.9 regardless of the nature of the organization's operations.

Many users will immediately be drawn to software products to fill these needs. This annex does not recommend any software product nor does it necessarily stand for the proposition that software is the solution.

Instead, the organization must assess the hazards it might face and evaluate its current data interoperability capabilities in the arenas of emergency management, continuity, and crisis management. Most organizations will find that in comparison to the vision of success, their current data interoperability systems will have capability gaps.

The next step is to strategically plan to fill such gaps. While there is great temptation to reach for a quick solution, such solutions often bring their own additional capability gaps in the areas of financial burdens, the need for training and staffing support, the difficulties of system operation and maintenance, and the usefulness and reliability of the system during incidents. These new or additional capability gaps must be factored into the strategic plan.

As the vision of success notes as its first priority, data accuracy and updates are of paramount importance. It is pointless to have a wonderful software system if the data it contains is not accurate and updated. The practical aspects of data creation and maintenance must remain top of mind in the strategic planning process.

The strategic plan to fill gaps is a process. The organization must establish its data interoperability priorities. It is valid for an organization to prioritize communication during an incident while another might prioritize the value of data in continuity and recovery as long as these initial prioritizations are not viewed as completing the process. Planning to fill these gaps represent a process with many steps, all of which should demonstrate progress toward achieving the requirements of NFPA 1660.

Data interoperability is such a key foundation for emergency management, continuity, and crisis management that the techniques required in Chapters 6, 8, and 9 must be applied to this function. For example, the base assumptions under which the system was created must be constantly re-evaluated to determine if they are still valid. Points of failure must be identified and plans to bypass these failures put in place. The data interoperability system must be tested repeatedly under a variety of scenarios. Identifying failures, finding corrections, and implementing enhancements are as much a part of good data interoperability as they are of emergency management, continuity, and crisis management generally.

One example is DHS SAFECOM Interoperability Continuums, which could be particularly useful to share an early common view on data interoperability. *(See Figure K.1.)*

Annex L Self-Assessment for Conformity with Chapters 11–16 (NFPA 1616)

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

L.1 Table L.1 is a self-assessment tool to assist entities in determining conformity with the requirements of Chapters 11 through 16. The table includes text from the body of the standard to make the self-assessment tool more user friendly. Users of this self-assessment tool can indicate conformity, partial conformity, or nonconformity as well as evidence of conformity, corrective action, task assignment, a schedule for action, or other information in the Comments column.

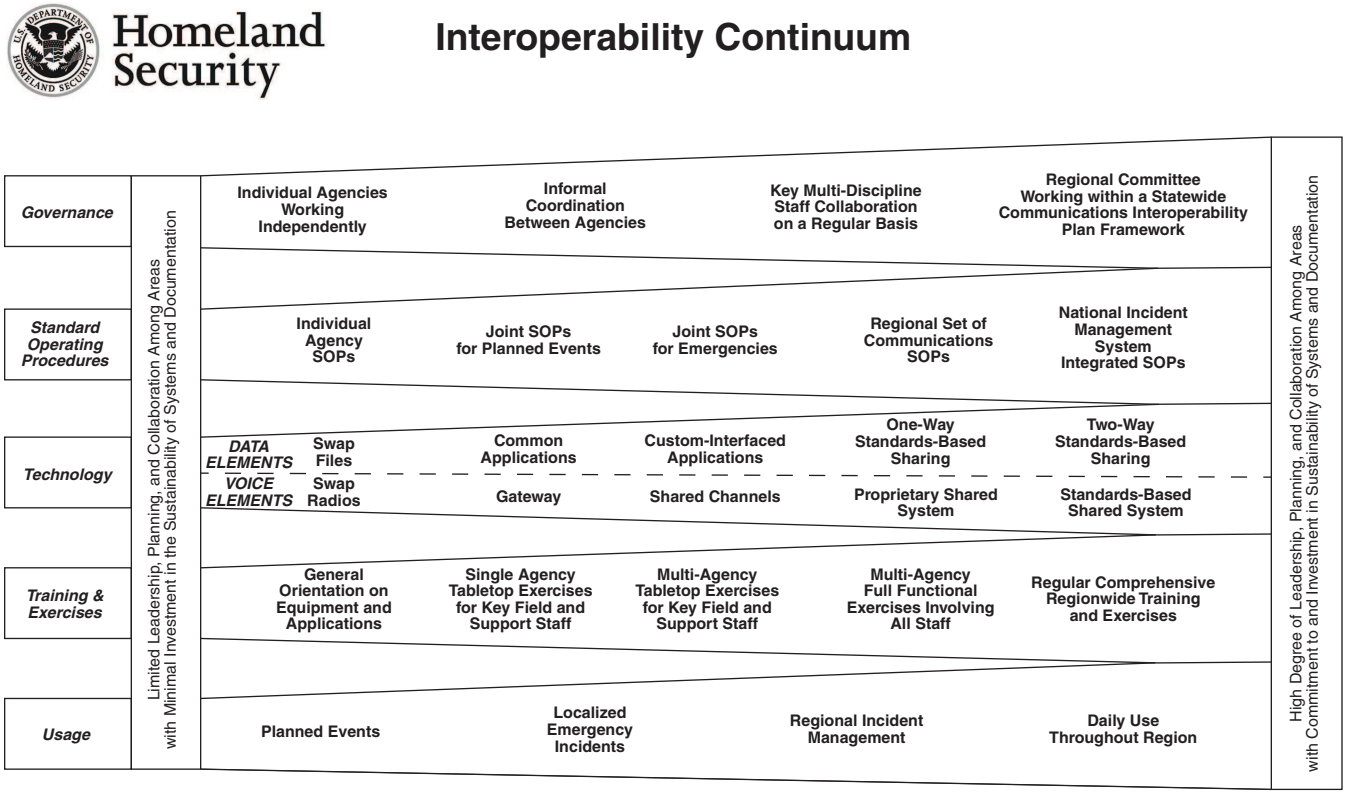

FIGURE K.1 DHS SAFECOM Interoperability Continuum.

Table L.1 Self-Assessment Tool for Conformity with Chapters 11–16

Program Elements	Conforming	Partially Conforming	Nonconforming	Comments
Chapter 11 Mass Evacuation, Sheltering, and Re-entry Program Management				
11.2 Leadership and Commitment. **11.2.1** The entity leadership shall demonstrate commitment to the program to evacuate, provide shelter, and facilitate re-entry.				
11.2.2 The leadership commitment shall include the following: (1) Support the development, implementation, and maintenance of the program				
(2) Provide necessary resources to support the program				
(3) Ensure the program is reviewed and evaluated as needed to ensure program effectiveness				
(4) Support corrective action to address program deficiencies				
(5) Lead and support the program and execution of the mass evacuation, sheltering, and re-entry				
(6) Ensure compliance with legal protections afforded to persons with disabilities and other access and functional needs, including access for service and assistance animals				
11.2.3 The entity shall adhere to policies, execute plans, and follow procedures developed to support the program.				
11.3 Program Coordinator. An individual shall be appointed by the entity's leadership and authorized to develop, implement, administer, evaluate, and maintain the program.				
11.4 Program Working Group. **11.4.1** A program working group shall be established by the entity in accordance with its policy.				
11.4.2 The program working group shall provide input and/or assist in the coordination of the preparation, development, implementation, evaluation, and maintenance of the program.				
11.4.3 The program working group shall include the program coordinator and representation from the whole community.				
11.4.4 The program working group shall integrate all elements necessary for mass evacuation, sheltering, and re-entry within the entity and coordinate with other entities affected by these operations.				
11.5 Program Administration. **11.5.1** The entity shall have a documented program that includes the following:				
(1) Policy, including roles and responsibilities, and the enabling authority				
(2) Program scope, goals, performance objectives, and metrics for program evaluation				
(3) Applicable authorities, legislation, regulations, and industry codes of practice as required by Section 11.8				
(4) Program plans and procedures that include the following:				
(a) Anticipated program cost				
(b) Resources required				
(c) Maintenance schedule				
(d) Records management practices of the entity as required by Section 11.7				

(continues)

Table L.1 *Continued*

Program Elements	Conforming	Partially Conforming	Nonconforming	Comments
11.5.2 The program shall include an all-hazards approach and risk assessment.				
11.6 Performance Objectives. **11.6.1** The entity shall establish performance objectives for the program in accordance with the elements in Chapters 12 through 16.				
11.6.2 The performance objectives shall address the results of the hazard identification, the risk assessment, and the requirements analysis.				
11.6.3 Performance objectives shall address both short-term and long-term needs of evacuees, including persons with disabilities and other access and functional needs.				
11.6.4 The entity shall define *short term* and *long term*.				
11.7 Records Management. **11.7.1** The entity shall develop, implement, and manage a records management program to ensure that records are available to the entity following an evacuation.				
11.7.2 Records management is designed to aid in the identification, backup, protection, and access to paper-based and electronic records that are vital to the entity and required for mass evacuation, sheltering, and re-entry.				
11.7.3 The program shall include the following:				
(1) Identification of records (hard copy or electronic) vital to continue the operations of the entity				
(2) Backup of records as necessary to meet program goals and objectives				
(3) Validation of the integrity of records backup				
(4) Implementation of procedures to store, retrieve, and recover records onsite or offsite				
(5) Storage and protection of records				
(6) Implementation of a record review process				
(7) Procedures coordinating records access within and outside the organization				
(8) Executing a retention policy to archive and destroy records according to operational needs, operating procedures, statutes, and regulations				
11.8 Laws and Authorities. **11.8.1** Mass evacuation, sheltering, and re-entry programs are covered by law or voluntary guidelines.				
11.8.2 The entity shall implement a strategy for addressing the need for revisions to legislation, regulations, directives, policies, and industry codes of practice.				
11.9 Finance and Administration. **11.9.1** The entity shall develop finance and administrative procedures to support the program before, during, and after an evacuation.				
11.9.2 There shall be a responsive finance and administrative framework that does the following:				
(1) Complies with the entity's program requirements				
(2) Provides direct linkages to mass evacuation, sheltering, and re-entry operations				
(3) Provides for maximum flexibility while retaining accountability				
11.9.3 Finance and administrative procedures shall include the following:				

(continues)

Table L.1 *Continued*

Program Elements	Conforming	Partially Conforming	Nonconforming	Comments
(1) Accounting systems to track and document costs				
(2) Program procurement procedures				
Chapter 12 Planning				
12.1 Plan Requirements. **12.1.1** The plan shall address the health and safety of personnel as follows:				
(1) Identify actions to be taken to protect persons with disabilities, including those with access and functional needs				
(2) Include an accountability system for all response personnel				
(3) Monitor the health and well-being of response personnel				
(4) Establish rehabilitation of personnel				
(5) Ensure security and protection for response personnel				
(6) Provide appropriate personal protective equipment for response personnel				
12.1.2 The plan shall identify and document the following:				
(1) Assumptions made during the planning process				
(2) Responsibilities for carrying out specific actions in a mass evacuation, sheltering, and re-entry; functional roles and responsibilities of internal and external agencies, organization, departments, and positions; lines of authority				
(3) Trigger points to activate the evacuation plan				
(4) Logistics support and resource management requirements				
(5) Operational communications				
(6) Public information, including warnings, notifications, and communications				
12.1.3 The entity shall make sections of the plans available to those assigned specific tasks and responsibilities therein and to key stakeholders as required.				
12.2 Plan Assumptions. The plan's assumptions shall be based on the following:				
(1) Research on human behavior and the risk or perception of the threat				
(2) Hazard identification and risk assessment				
(3) Requirements analysis				
(4) Resource analysis				
(5) Number of people requiring evacuation				
(6) That evacuation will require sheltering and re-entry				
(7) Projections for the number of people requiring sheltering				
(8) Projections for the number of people requiring re-entry				
(9) That animals will be evacuated and sheltered as appropriate and feasible to safeguard human lives and facilitate an evacuation				
(10) Types of vehicles required to transport persons with disabilities and other access and functional needs				
(11) Number of responders required to complete the evacuation process				

(continues)

Table L.1 *Continued*

Program Elements	Conforming	Partially Conforming	Nonconforming	Comments
(12) Development and implementation of plans and procedures to identify and meet the needs of populations requiring assistance and arranging of transportation for persons with disabilities and other access and functional needs during mass evacuation, sheltering, and re-entry				
(13) Determination of physical requirements for evacuee assembly points, emergency respite stops, and staging and reception areas				
(14) Coordination with local medical facilities to identify plans and resources in the event that these facilities require evacuation into a shelter				
12.3 Plan Format. **12.3.1** Plans shall include the following:				
(1) All hazards approach and risk assessment				
(2) Evacuation				
(3) Mass sheltering				
(4) Re-entry				
12.3.2 Plans shall be individual documents, integrated into a single plan document, or a combination of the two.				
12.4 Planning Process. **12.4.1** A process shall be established that develops, evaluates, and improves capabilities required to implement the program.				
12.4.2 The entity shall include key stakeholders and operational entities in the process.				
12.4.3 The entity shall develop a set of trigger points on which to base planning efforts, including the following:				
(1) The plan shall be reviewed at least annually.				
(2) The plan shall be reviewed after each incident.				
12.4.4 The trigger points shall identify specific actions to be taken based on specific events, threats, or hazards.				
12.5 Threat, Hazard Identification, and Risk Assessment. **12.5.1** The entity shall identify the potential threats or hazards that could require evacuation and/or sheltering.				
12.5.2 Natural and human-caused hazards specific to the jurisdictions that require evacuation and sheltering shall be considered during the risk assessment.				
12.5.3 The entity shall identify the threats and risks associated with mass evacuation, sheltering, and re-entry.				
12.5.4 The entity shall develop a safety analysis of the threats, hazards, and risks.				
12.6 Requirements Analysis. **12.6.1** The entity shall conduct a requirements analysis for mass evacuation, sheltering, and re-entry that is based upon the threat hazard identification and risk assessment.				
12.6.2 The requirements analysis shall include the following:				
(1) Characteristics of the potentially affected population, including persons with disabilities and other access and functional needs				
(2) Existence of mandatory evacuation laws and expected enforcement of those laws				

(continues)

Table L.1 *Continued*

Program Elements	Conforming	Partially Conforming	Nonconforming	Comments
(3) Characteristics of the incident that trigger consideration for evacuation shall include the following:				
(a) Weather, season, and environmental conditions				
(b) Speed of onset				
(c) Magnitude				
(d) Location and direction				
(e) Duration				
(f) Resulting damages to essential functions				
(g) Cultural and religious practices				
(h) Risk for cascading effects and secondary disasters				
(i) Capability of transportation routes and systems to transport life-sustaining materials (food, water, medical supplies) into the affected area				
12.6.3 The program shall consider the following conditions to determine whether evacuation or sheltering-in-place is appropriate to the situation and the resources available:				
(1) The anticipated impact and duration of the incident				
(2) The distance to appropriate sheltering facilities				
(3) The availability of and access to transportation to those facilities				
(4) The ability to communicate with the affected population within the required timeframe				
12.6.4 Factors to be considered in planning for mass evacuation, sheltering, and re-entry shall include the following:				
(1) Establishment of single or unified command				
(2) Development of a joint information system to notify the public and provide an assessment of the time needed to reach people with the information				
(3) Identification of appropriate sheltering facilities by location, size, types of services available, accessibility, and building safety				
(4) Identification of the modes and routes for evacuee transportation and the time needed to reach them				
(5) Sources of evacuee support services				
(6) Manpower requirements based on various potential shelters				
12.6.5 Sheltering facilities shall be deemed appropriate for temporary occupancy of evacuees for the applicable hazards by the local authority having jurisdiction (AHJ) and conform to the applicable requirements to ensure public health, safety, and general welfare.				
12.6.6 Factors to be considered in the planning for re-entry shall include the following:				
(1) Controlling access to restricted areas for security and evacuee safety				
(2) Prioritizing building inspection and permitting				
(3) The availability of and requirements for functioning infrastructure and utilities				
12.7 Resource Needs Assessment. **12.7.1** The entity shall conduct a resource needs assessment.				
12.7.2 The resource needs assessment shall include the following:				

(continues)

Table L.1 *Continued*

Program Elements	Conforming	Partially Conforming	Nonconforming	Comments
(1) Human resources, stakeholders, equipment, training, facilities, funding, expert knowledge, materials, technology, information, intelligence, and the time frames within which they will be needed				
(2) Quantity, response time, capability, and cost				
12.7.3 The entity shall plan to locate, acquire, store, distribute, maintain, test, and account for services, human resources, equipment, and materials procured to support the program.				
12.7.4 Facilities with known capabilities and partner agreements shall be pre-identified during the assessment and planning process.				
12.7.5 Established mutual aid/assistance or partnership agreements shall be included in the plan.				
12.8 Communications and Public Information. **12.8.1** The entity shall develop a plan and procedures to disseminate information related to mass evacuation, sheltering, and re-entry to and respond to requests for information from the following audiences before, during, and after an incident:				
(1) Internal audiences, including employees				
(2) External audiences, including the general population, media, access and functional needs populations, community partners, and other stakeholders				
12.8.2 The entity shall establish and maintain a communications and public information plan that considers the following:				
(1) Central contact facility or communications hub				
(2) Physical or virtual information center				
(3) System for gathering, monitoring, and disseminating information				
(4) Procedures for developing and delivering coordinated messages				
(5) Protocol to clear information for release				
12.9 Warnings, Notifications, and Communications. **12.9.1** The entity shall determine its warning, notification, and communications needs for incidents requiring mass evacuation, sheltering, and re-entry.				
12.9.2 Emergency warning, notification, and communications systems shall be reliable; interoperable; and, when feasible, redundant; and take into account persons with disabilities and other access and functional needs.				
12.9.3 Emergency communications protocols and procedures shall be developed, tested regularly, and used to alert and warn stakeholders potentially at risk from an actual or impending hazard.				
12.9.4 Procedures shall include issuing warnings through authorized agencies if required by law as well as the use of pre-scripted information bulletins or templates.				
12.9.5 The same system used to issue pre-evacuation notifications shall be used to issue evacuation orders.				
12.10 Operational Procedure Planning. **12.10.1** The entity shall develop operational procedures to support the plan.				
12.10.2 Procedures shall be established for mass evacuation, sheltering, and re-entry.				

(continues)

Table L.1 *Continued*

Program Elements	Conforming	Partially Conforming	Nonconforming	Comments
12.10.3 Procedures shall consider life safety, property conservation, incident stabilization, continuity, and protection of the environment and of cultural heritage artifacts and buildings.				
12.10.4 Procedures shall include the following:				
(1) Triggers for use in decision making for shelter-in-place or evacuation				
(2) Triggers for re-entry operations				
(3) Evacuation procedures				
12.10.5 The evacuation plan shall consider the following positions based on the size and complexity of the incident:				
(1) Incident commander and deputies				
(2) Command staff				
(3) General staff				
12.10.6 Sheltering procedures shall take into consideration the following:				
(1) Evacuee and animal registration				
(2) Facility management				
(3) Security and building access control				
(4) Parking and traffic control				
(5) Public information, public affairs, and media relations				
(6) Dormitory management				
(7) Medical and mental health services				
(8) Disability-related needs for services, equipment, and accommodations				
(9) Personal assistance services				
(10) Communications and information technology				
(11) Recovery information and resident messaging				
(12) Family reunification				
(13) Reunification of animals to owners				
(14) Risk management and loss control				
(15) Janitorial				
(16) Building maintenance and engineering				
(17) Logistical support				
(18) Bulk distribution				
(19) Donation and volunteer management				
(20) Entertainment/recreation				
(21) Child care				
(22) Animal sheltering				
(23) Laundry service				
(24) Client transportation				
(25) Postal service				
(26) Meal service				
(27) Spiritual care services				

(continues)

Table L.1 *Continued*

Program Elements	Conforming	Partially Conforming	Nonconforming	Comments
(28) Children's social services				
(29) Charging station and electrical connections for electrical devices (e.g., phones, tablets, and so forth)				
12.10.7 Re-entry procedures shall be as given in 12.10.7.1 through 12.10.7.3.				
12.10.7.1 Those responsible for managing the evacuation shall ensure the transition to re-entry through performance objectives.				
12.10.7.2 The entity shall determine when the area is safe prior to re-entry.				
12.10.7.3 The entity shall determine whether the infrastructure is sufficient to support re-entry.				
12.10.8 Procedures shall consider concurrent mass evacuation, sheltering, and re-entry operations.				
Chapter 13 Implementation				
13.1 Incident Recognition. **13.1.1** The entity shall notify the appropriate officials of the emergency or impending emergency.				
13.1.2 Plans shall be activated when further actions are warranted.				
13.2 Situational Assessments. **13.2.1 Initial Assessment.** **13.2.1.1** Depending on the nature of the incident, the initial situational assessment shall include an assessment of the impact to persons, animals, and property, infrastructure status, the availability of resources, and weather conditions.				
13.2.1.2 Based on the initial assessment, the entity shall decide whether to evacuate or shelter-in-place.				
13.2.2 Assessment and Evaluation. Assessments shall include evaluations of the effectiveness of previous and current actions.				
13.3 Notifications and Activation. **13.3.1** Based upon the characteristics of the incident, those responsible for managing the incident shall make the necessary notifications to appropriate resources, directing them where and when to report.				
13.3.2 Those responsible for managing the incident shall provide content for public information and warning messages, which will be approved and disseminated using the jurisdiction's established public information and warning policies and procedures.				
13.4 Mobilization. Those responsible for managing the incident shall identify and mobilize the appropriate resources to support the initial incident objectives.				
13.5 Evacuation Operations. **13.5.1** The entity shall be responsible for managing the evacuation operations.				
13.5.2 In implementing the evacuation plan the entity shall consider the following:				
(1) Occurrences that might require evacuation				
(2) Priority of evacuation				
(3) Procedures to request and coordinate required transportation assets from jurisdictional agencies				
(4) Arrangements for transporting evacuees, including persons with disabilities and others with access and functional needs, and their animals				

(continues)

Table L.1 *Continued*

Program Elements	Conforming	Partially Conforming	Nonconforming	Comments
(5) Evacuation timeline				
(6) Traffic management				
(7) Refueling, safety, and motorist assistance requirements				
13.5.3 The entity responsible for managing the evacuation shall continue to monitor media sources, public reports, incident characteristics, and progress of the operation, reflecting changing conditions that impact the incident objectives and incident action plan.				
13.5.4 The entity responsible for managing the evacuation shall provide for the safety and health of evacuees and responders during all decision making.				
13.5.5 The entity responsible for managing the evacuation shall determine potential resource requirements to ensure that resource management supports evacuation operations.				
13.5.6 The entity responsible for managing the evacuation shall continue to provide updated information to the public through the joint information system.				
13.5.7 The entity responsible for managing the evacuation shall utilize a record-keeping process for tracking of those persons (including their animals and property) provided transportation, sheltering, or other assistance. *(See Section 11.7.)*				
13.5.8 The entity managing the evacuation shall ensure appropriate record keeping of costs and claims associated with the evacuation. *(See Section 11.7.)*				
13.6 Sheltering Operations. **13.6.1** The entity shall provide procedures and coordinate components necessary to provide shelter to evacuees.				
13.6.2 The entity shall provide for a safe and secure environment for evacuees.				
13.6.3 The shelter plan shall address the basic needs of evacuees, including the following:				
(1) Medical support				
(2) Persons with disabilities and others with access and functional needs support				
(3) Cultural and religious support				
(4) Animals, including pets and service and assistance animals				
(5) Support services, including food, water, first aid, and personal care				
(6) Gender identity in accordance with applicable laws, regulations, and policies				
13.6.4 The entity shall provide information on the location and accessibility of shelters.				
13.7 Transition to Interim and Recovery Housing. The entity shall ensure processes and procedures for transitioning individuals unable to return home into interim or long-term recovery housing.				
13.8 Transition to Re-entry. **13.8.1** The entity responsible for managing the evacuation shall ensure the transition to re-entry.				
13.8.2 The entity shall determine when the area is safe prior to evacuees returning.				

(continues)

Table L.1 *Continued*

Program Elements	Conforming	Partially Conforming	Nonconforming	Comments
13.8.3 The entity shall determine whether the infrastructure is sufficient to support re-entry.				
13.8.4 The entity shall complete a damage assessment prior to initiating re-entry.				
Chapter 14 Training and Education				
14.1 Curriculum. The entity shall develop and implement a competency-based training and education curriculum that supports all persons who have a role in the program.				
14.1.1 All persons involved shall have a basic understanding of the incident command system (ICS) and how the AHJ will implement the command functions and allocation of resources.				
14.1.2 Persons who will fill command functions shall have documented additional competency-based training.				
14.2 Goals of the Curriculum. The goals of the curriculum shall be to create awareness and to enhance the knowledge, skills, and abilities required to implement, support, and maintain the program.				
14.3 Scope and Frequency of Instruction. The scope of the curriculum and the frequency of instruction shall be identified by the AHJ.				
14.4 Record Keeping. Records of training and education shall be maintained as specified in Section 11.7.				
14.5 Regulatory and Program Requirements. The curriculum shall comply with applicable regulatory and program requirements.				
14.6 Public Education. A public education program shall be implemented to communicate the following:				
(1) Community awareness of potential hazards				
(2) Understanding how and when a declaration of shelter-in-place or evacuation will take place				
(3) Preparation for and safety during shelter-in-place				
(4) Sources of reliable information on evacuation				
(5) Evacuation warnings and orders				
(6) Preparations for and safety during evacuation				
(7) Consequences of refusal to evacuate				
(8) Preparations for and safety during sheltering				
(9) How re-entry information will be determined and communicated to all persons.				
14.7 Training Delivery. Training delivery to support mass evacuation, sheltering, and re-entry shall be presented by competent personnel.				
Chapter 15 Exercises				
15.1 Program Evaluation. **15.1.1** The entity shall evaluate program plans, procedures, training, and capabilities and promote continuous improvement through periodic exercises.				
15.1.2 The entity shall evaluate the program based on post-incident analyses of mass evacuation, sheltering, and re-entry; lessons learned; and operational performance during exercises in accordance with Chapter 16.				
15.1.3 Exercises shall be documented.				

(continues)

Table L.1 *Continued*

Program Elements	Conforming	Partially Conforming	Nonconforming	Comments
15.2 Exercise Methodology. **15.2.1** Exercises shall provide a standardized methodology to practice and interact with other entities (internal and external) in a controlled setting.				
15.2.2 Exercises shall be designed to assess the maturity of program plans, procedures, and strategies.				
15.3 Design of Exercises. Exercises shall be designed to do the following:				
(1) Ensure the safety of people, animals, property, and the environment involved in the exercise				
(2) Evaluate the program				
(3) Identify planning and procedural opportunities for improvement				
(4) Validate recently changed procedures or plans				
(5) Clarify roles and responsibilities				
(6) Obtain participant feedback and recommendations for program improvement				
(7) Measure improvement compared to performance objectives				
(8) Improve coordination among internal and external teams, organizations, and entities				
(9) Validate training and education effectiveness				
(10) Increase awareness of hazards and the potential impact of hazards				
(11) Identify additional resources and assess the capabilities of existing resources, including personnel and equipment needed for effective mass evacuation, sheltering, and re-entry. The resources need to take into account persons with disabilities and other access and functional needs and owners and their animals.				
(12) Practice the deployment of resources to manage mass evacuation, sheltering, and re-entry				
(13) Assess the ability to manage the mass evacuation, sheltering, and re-entry program				
(14) Improve individual performance				
15.4 Exercise Evaluation. Exercises shall evaluate program plans, procedures, training, and capabilities to identify opportunities for improvement.				
15.5 Frequency. **15.5.1** Exercises shall be conducted on the frequency needed to establish and maintain required capabilities.				
15.5.1.1 Frequency of exercises and resources needed shall be defined in the plan.				
15.5.2 The entity shall establish the schedule for exercises.				
Chapter 16 Program Maintenance and Improvement				
16.1 Program Reviews. The entity shall maintain and improve the program by evaluating its effectiveness using performance objectives and by identifying corrective and preventive action changes based upon assessments and evaluations conducted during exercises and real events.				
16.1.1 The entity shall improve effectiveness of the program through incorporation of identified preventive and corrective actions.				
16.1.2 The program shall be re-evaluated when a change in any of the following affects the entity's program:				

(continues)

Table L.1 *Continued*

Program Elements	Conforming	Partially Conforming	Nonconforming	Comments
(1) Regulations				
(2) Hazards and potential impacts				
(3) Resource availability or capability				
(4) The entity's organizational structure or operations				
(5) Funding changes				
(6) Infrastructure, including the technology environment				
(7) Economic stability and demographics				
16.1.3 The entity shall review and revise the program based on post-incident analyses of mass evacuation, sheltering, and re-entry; lessons learned; and operational performance during exercises and real events.				
16.1.4 The entity shall maintain records of its reviews and evaluations, in accordance with the records management practices developed under Section 11.7.				
16.1.5 Documentation, records, and reports shall be provided to management for review and follow-up.				
16.2 Corrective Actions. **16.2.1** The entity shall establish a corrective action process.				
16.2.2 The entity shall take corrective actions on identified opportunities for improvement.				
16.3 Continuous Improvement. The entity shall effect continuous improvement of the program through the use of program reviews and the corrective action process.				

Annex M Risk Management of Mass Evacuation, Sheltering, and Re-entry (NFPA 1616)

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

M.1 Risk Management Consideration. The matrix in Table M.1 lists risks that might be encountered leading up to and during sheltering-in-place, mass evacuation, sheltering, and re-entry, along with potential strategies for mitigation. This tool is intended to assist entities preparing plans in advance of an incident, recognizing that there are many risks and mitigation strategies not identified here. The planning effort must consider the various risks that can be expected in individual jurisdictions and the mitigation strategies identified to address those risks. Note: The risks and the mitigation strategies are not intended to be all-inclusive or comprehensive but to provide a starting point for discussions and consideration.

M.2 For additional information on risk management, see NFPA 1250, NFPA 1300, and Chapter 5 of NFPA 1730.

Table M.1 Risk Identification and Potential Mitigation Strategies

Potential Risks	Potential Mitigation Strategies
Onset of Incident	
Failure to recognize impending incident could require shelter-in-place or evacuation determination; no-notice incidents	Evacuation plan should identify various triggers that assist the AHJ in recognizing circumstances that could require shelter-in-place or evacuation orders to be given.
Inadequate identification of area(s) to be evacuated	Evacuation plan should provide the AHJ with considerations for area(s) that should be evacuated based on a variety of factors including, but not limited, to expected hazard, time of onset, areas susceptible to negative impacts, at-risk populations, and egress limitations.
Inadequate lead time to accomplish evacuation	Evacuation plan should provide the AHJ with guidance as to the expected lead time necessary to evacuate areas based on the expected hazard and resources available.
Inadequate consideration given to priority of evacuation areas	Evacuation plan should provide the AHJ with prioritized considerations for areas with higher risk potential or exposure that could require additional resources or time to evacuate.
Resources for use in evacuation unavailable or otherwise allocated	Evacuation plan should identify available resources to assist with evacuation and a means of confirming their availability for use at the time of need. Depending on circumstances of the incident, command might need to identify potential alternative sources for the resources.
Shelter-in-Place	
Inadequate knowledge of shelter-in-place areas	Public education on shelter-in-place preparations.
Inadequate protection from harm to people and animals	Public education through schools, churches, nongovernmental organizations (NGOs), animal shelters, and medical and veterinary doctors.
Notification to Evacuate	
Failure to effectively communicate who does or does not need to evacuate	Evacuation plan should include evacuation alerting and communication strategies that will be used. These strategies should identify emergency notification tools such as public alert systems and communication strategies using conventional public media (e.g., radio, television), websites, and social media. Communications must provide detailed yet easily understood information explaining who should act and what actions they should take.
Evacuees might not understand what they need to take or leave when evacuating	Public education to include what items evacuees should take including, but not limited to, the following: important documents (passports, insurance papers, identifications, and so forth), medications, personal items, credit cards, cash, food, and so forth. Public education to also identify prohibited items that should be left behind if reporting to a shelter.
Power failure significantly affecting ability to notify the public of the need to evacuate	Evacuation plan should include alternative strategies for notification should widespread power outages limit the ability to communicate through normal channels. Strategies could include first responders utilizing vehicular public address systems and door-to-door notification.
Shadow evacuations (i.e., evacuations of persons outside the identified evacuation areas), increasing traffic volume on evacuation routes, and sheltering/resource demands	Evacuation plan should include alerting and communications strategies for situations in which specific areas or groups need to evacuate and others do not. Specific messaging regarding the consequences of unnecessary or unaffected area evacuations on the availability of resources.
Unattended animals left behind when owners evacuate	Regardless of expected length of evacuation, evacuation notices should inform animal owners that they are to take their animal with them when they leave, where feasible. All animal owners should be encouraged to plan and prepare for evacuation of their animal.
Resource limitations	Evacuation should identify resource requirements and how those resources will be obtained and assigned. If door-to-door notifications are part of the evacuation plan, consideration will need to be given to the number of physical resources required to complete the notification within an adequate timeframe to allow for effective evacuation.

(continues)

Table M.1 *Continued*

Potential Risks	Potential Mitigation Strategies
Refusal to evacuate	Evacuation plan should include information for the AHJ on how to deal with individuals who refuse to leave under mandatory evacuation orders. The policy will depend on local authorities and legislation applicable to the situation. While it is suggested that resources not be dedicated to removing individuals from impacted or potentially impacted areas, it is important that the AHJ provide information to those who refuse to evacuate regarding the risks associated with refusal and the potential inability of responders to assist during hazardous conditions or their inability to return to the impacted area.
Security of evacuated areas	Evacuation plan should include information on if, how, and when security will be provided for the evacuated areas.
Evacuation issues with hospitals and other resident health care facilities	The AHJ should ensure that hospitals and other resident health care facilities have comprehensive emergency response plans in place for their facilities that include shelter-in-place and evacuation provisions. The AHJ will need to consider how to assist should the facilities' plans prove to be inadequate or they become overwhelmed.
Transportation-disadvantaged and persons with disabilities and others with access and functional needs	Evacuation plan should provide guidance for the AHJ to manage those who do not have a means of transportation available to evacuate. Consideration must be given for those persons with disabilities and others with access and functional needs who will require additional assistance and resources to be able to evacuate.
Routes of egress impeded by disabled vehicles or other obstacles	Evacuation plan should include support for evacuation routes to include fuel sources for vehicles that run low on fuel as well as tow trucks or other means to move disabled vehicles from the traffic lanes.
Evacuation routes inadequate for traffic flow requirements	Evacuation pre-planning should include transportation officials to identify strategies that will be used for effective traffic management during evacuations. Traffic management plans should include anticipated number of vehicles, how egress will be managed, and implementation of contra-flow lanes if contra-flow is part of the evacuation plan.
Emergent conditions along evacuation routes	Evacuation plan should consider provisions for response of fire and emergency medical responders along evacuation routes for fires, motor vehicle collisions, and medical issues.
Resources to Manage Evacuation	
Insufficient emergency personnel	Established continuity of operations plans should include guidance for emergency personnel and their families to ensure they are prepared for emergencies and evacuation thereby personnel are available for duty; potential provision of assistance to family members of emergency personnel during evacuations; and mutual aid agreements with nearby communities for emergency personnel. Examine policies and labor agreements that could affect the ability to utilize personnel.
Insufficient transportation personnel	Evacuation pre-planning should include mass transportation officials and include provisions for family members of (essential operations personnel such as vehicle operators or pilots. Established continuity of operations plans should include guidance for transportation personnel and their families to ensure they are prepared for emergencies and evacuation thereby personnel are available for duty. Transportation resources might require mutual aid agreements with nearby communities.
Sheltering	
Insufficient number of shelters	Sheltering plan should include identification of sufficient shelter space to accommodate the anticipated number of evacuees; could include multiple shelters or a mega shelter. Consideration of contingency shelters should be included in the sheltering plan for instances where an existing shelter is damaged due to the unfolding incident.
Inadequate facilities	Sheltering plan should include minimum criteria for facilities to serve as shelters along with necessary (e.g., bathrooms, showers, laundry, and so forth) and recommended (e.g., children's play areas, quiet rooms, and so on) ancillary support services. Facilities should be intact and structurally sound.

(continues)

Table M.1 *Continued*

Potential Risks	Potential Mitigation Strategies
Insufficient resources to maintain shelter	Sheltering plan should include minimum criteria for service provisions, including shelter staffing, security, feeding plans, cots/bedding, medical needs/prescriptions, and so forth.
Providing for persons with disabilities and others with access and functional needs	Sheltering plan should address meeting the needs of persons with disabilities and others with access and functional needs.
Managing animals in shelters	Sheltering plan should address how evacuees with animals, including pets, service animals, and assistance animals, will be managed, including remote, collocated, or cohabitational pet/animal shelters, as well as provisions in general-population shelters for service animals and assistance animals based on legal requirements.
Sex offenders arriving at shelters	Sheltering plan should address how sex offenders who present at shelters will be handled.
Persons arriving at shelters with weapons	Plans should identify how persons will be screened for weapons and how found weapons will be managed.
Record keeping; reunification issues	Sheltering plan should address plans for a reception center (remote or onsite), registration, and reunification. Unaccompanied minors will need to be accounted for, separated from the general population, and supervised until the appropriate social services or law enforcement agency is able to reunite the minor with parents or guardians.
Inadequate fire and life safety provisions in shelters	Shelter plans should address facility evacuation preplanning, training/education for evacuees, and shelter personnel, along with control of ignition sources, electrical equipment, emergency lighting, and maintaining means of egress.
Extended response time from emergency responders	Shelters might not have immediate access to emergency response during an emergency and should consider this in planning stages.
Re-entry	
Residents kept away from their homes and businesses longer than potentially necessary, resulting in frustrated evacuees and prolonged demand on responders and shelters	AHJ should determine what level of services (e.g., heat, electricity, water, emergency services, and so forth) need to be restored prior to allowing re-entry. AHJ should consider allowing evacuees to conduct scheduled inspections of their homes or businesses.
Failure to effectively communicate accurate and timely re-entry information	Re-entry plan should address the use of conventional public media (e.g., radio, television, print), web sites, and social media to provide detailed information regarding re-entry plans to evacuees, including when and where it will be safe to return.
Uncoordinated re-entry, resulting in roadways and services becoming overwhelmed	Re-entry plan should provide for phased access and coordinated re-entry of persons back into their communities. Plans should consider providing services similar to evacuation services such as towing, fueling, and medical services.
Increased demand for information and services from returned evacuees; lack of information regarding who to call for unmet needs	Re-entry plan should have an effective communications component to address various needs of returning evacuees. It might be helpful to establish call centers. Re-entry plans should identify how assistance will be provided to returning evacuees. Services required can include electrical/building inspectors, police, mental health providers, and so on. Plan should also consider the potential need for supplies such as water, food, gloves, dust masks, and so forth. Consider having preprinted informational materials for returning evacuees regarding how to return safely to their homes and businesses.
Re-entry security	Re-entry plan should include provisions for security of the evacuated area as well as safety for evacuees returning to their homes and businesses. This should include requirements for identification of residents and business owners and employees who need to gain access to the area.
Business resumption delays	Depending on circumstances, re-entry plan should consider allowing businesses to enter first so services and supplies will be available to evacuees who return, including cleanup, remediation, and reconstruction supplies and services.

Annex N Mass Evacuation Requirements Analysis (NFPA 1616)

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

N.1 Best Practice Concepts. The committee would like to credit the Ontario Ministry of Community Safety & Correctional Services. Best practice concepts were captured from some of their emergency evacuation plans that were published at www.mcscs.jus.gov.on.ca.

N.2 Risk Considerations. The decision to evacuate should be based on the reasonable assurance that evacuation to an area outside the affected area is in the best interest of the evacuees' health and safety and that the risk will be managed. The following items should be taken into consideration:

(1) Population size
(2) Persons with disabilities and other access and functional needs
(3) Timing
(4) Weather and environmental conditions
(5) Distances to safety and to shelter
(6) Transportation
(7) Communication
(8) Reunification
(9) Duration of evacuation
(10) Geography
(11) Critical services
(12) Evacuee support
(13) Safety and security
(14) Medical
(15) Essential personnel
(16) Speed of onset
(17) Animals, including pets, service animals, and assistance animals

The decision to evacuate is the responsibility of the authority having jurisdiction. Depending on the applicable laws, that authority can be delegated to an incident commander where there is an immediate danger to life and health requiring evacuation. If the authority having jurisdiction decides to call for a partial or full evacuation of a community, an appropriate declaration should be considered depending on the size and scope of the incident. The decision to evacuate might be prompted by advice based on the real-time threat assessment concerning a threat to the municipality or a private or commercial concern.

The urgency of an evacuation is determined by the immediacy of the threat to the community (i.e., life, safety, health, and welfare), the resilience of the community, and the availability of resources for evacuation or shelter-in-place options.

N.3 Speed of Onset. Speed of onset is a factor that must be accounted for when planning for evacuations. Evacuations can take place prior to (i.e., pre-emptive), during, or after an incident has occurred. Provided a community has adequate warning about a hazard, adequate resources, and the likelihood of the threat actually impacting a community, it is advisable to conduct pre-emptive evacuations. A pre-emptive evacuation might be undertaken when it is clear that if delayed, conditions (i.e., weather or other hazard) would impede evacuation, travel times, and the safety of responders and the population being evacuated. If adequate resources are not available to conduct a pre-emptive evacuation, it might still be possible and necessary to carry out an evacuation even while a threat is already affecting a community. Evacuations of this nature are done when life safety is at extreme risk and failure to conduct evacuations under rescue conditions would result in severe injury and death to the population. Evacuation under these conditions increase risks to all involved. Adequate resources are required to provide evacuation under conditions of limited time with increased hazards to the population and responders.

Emergency responders might require personal protective equipment (PPE), as responder safety will be critical. Additional assets might be required to facilitate an evacuation of this type. These assets might be obtained through mutual aid agreements, and state and federal agencies.

After a threat has already impacted a community it might be necessary to remove residents from an environment that is no longer able to sustain them, or prevent or mitigate the onset of further consequences leading to a prolonged or new emergency. As time is critical in these circumstances, the value of and advanced planning cannot be overemphasized. Determining considerations that influence when to begin or carry out an evacuation include the following:

(1) The safety of the responders
(2) The available lead time to order and complete the evacuation
(3) The time of day
(4) The potential risk to the evacuees during the evacuation
(5) The number (i.e., scale) of persons to be evacuated, which encompasses the following:
    (a) Scale refers to the number of residents or communities to be evacuated
    (b) Scale impacts the following:
        (i) Whether or not full activation of an emergency operations center would be required
        (ii) What type and quantity of resources, including host communities, are required for the evacuation and the level of planning that is required

If the evacuation is for a localized area, planning might be restricted to movements within the same general geographic area. However, the evacuation of multiple communities due to an area-wide emergency is likely to require out-of-area movements for hosting. The goal is to keep families together. When planning for evacuation, consideration should be given to reunification.

There are many factors that complicate the decision to order an evacuation, such as the following:

(1) In the early phases of an incident, information is likely to be incomplete and less accurate. It might be prudent to conduct a pre-emptive evacuation.
(2) The decision to utilize a pre-emptive evacuation provides for a controlled and effective evacuation that minimizes the exposure of the evacuated population and responders to the hazards that are present.

Factors that should be considered when determining the need to order a partial or full evacuation include the following:

(1) The level of threat to the lives and well-being of the population
(2) The availability and reliability of information and intelligence
(3) The availability of resources to conduct the evacuation
(4) The urgency of the evacuation

(5) The time frame to conduct the evacuation
(6) The ability of some of the community to self-evacuate
(7) The size of the incident (i.e., size of the community and populations to be evacuated)
(8) Meteorological conditions that can affect the evacuation including the safety of responders, evacuees, and the transportation efforts
(9) The capacity of the community to address the threat or its impact to reduce the need for an evacuation
(10) The damage to community infrastructure such that the following conditions are or could be in effect:
    (a) Food, water, and shelter are not immediately available
    (b) Debris restricts movement
    (c) Electrical power is or will be unavailable for an extended period of time
    (d) Local emergency or public communications is or will be unavailable
    (e) Health services, medical facilities, and medical transport are or will be unavailable

N.4 Shelter-in-Place. Shelter-in-place options should be considered when the incident is rapidly moving across the populated area and will dissipate under the prevailing weather conditions. Other factors that need to be evaluated for shelter-in-place options are as follows:

(1) Time of onset to the populated area
(2) The type of hazard, hazardous materials, severe weather events, flash flooding, where evacuations routes are located on low ground
(3) The availability of resources to provide timely evacuation options for transportation
(4) The number of people requiring evacuation
(5) Predictive weather patterns, such as prevailing winds, and the weather forecast for the expected duration of the incident

N.5 Population. Population size is a critical element of any evacuation for populations to be moved out of a dangerous area. It is critical that emergency managers and planners have a clear understanding of the populations that are to be evacuated prior to determining key decisions based on modes of transportation, hosting destinations, routes of transportation, and travel times.

Many critical factors that need to be examined and accounted for include, but are not limited to, the following:

(1) Number of evacuees
(2) Languages spoken
(3) Location of evacuees — seasonal activities might affect the number of people in a community
(4) Modes of transportation available or preferred by evacuees
(5) Preferences of evacuating communities with respect to location of host
(6) Potential limitations to modes of transportation (e.g., characteristics of airports, transportation centers, and capacity of the transportation vehicle)
(7) Persons who might require specialized or additional assistance
(8) Populations in known areas of high risk, such as close to fuel storage sites, hazardous materials sites, and nuclear sites
(9) Persons from diverse backgrounds

When determining population categories that might require evacuation, particular attention should be paid to, but not limited to, the following categories:

(1) Persons with disabilities, such as sensory (e.g., hearing, vision, color-blindness); mobility (visible and nonvisible); mental health (e.g., anxiety, depression); intellectual/developmental (e.g., autism, Down syndrome); or learning disabilities (e.g., dyslexia, dysgraphia)
(2) Persons with medical conditions, including females with high-risk or at-term pregnancies
(3) Persons requiring addiction services
(4) Persons requiring interpretation and translation services
(5) Incarcerated persons
(6) Temporary populations (e.g., tourists, seasonal workers, summer camps)
(7) Students and children (e.g., in colleges, schools, child-care centers, and home day care units)
(8) Persons with animals *(see Annex R)*
(9) Elderly persons at home, in retirement centers, and in nursing homes

N.6 Persons with Disabilities and Others with Access and Functional Needs. Persons with disabilities and others with access and functional needs bring complex planning issues while preparing and planning for evacuations.

Annex Q offers detailed information on addressing these populations. *(See Annex Q.)*

N.7 Weather and Environmental Conditions. Weather and environmental conditions require constant monitoring and evaluation during the planning process, actual evacuation, and the completion of re-entry. Weather can and does affect all aspects of evacuation planning. The primary reason to continuously monitor weather during evacuation planning and actual evacuations is life safety of responders and evacuees. Adverse weather conditions such as lightning, flash flooding, flood conditions along with hazardous materials releases, are immediate life safety concerns for all involved in evacuations. In addition, excessive temperatures can bring additional stress to those with medical conditions as well as responders. Heat-related illness is a factor that must be accounted for when planning for and conducting evacuations.

When considering weather and environmental conditions, adding a technical specialist to the incident management team planning section will aid in current and predictive weather that might affect the overall incident and the evacuation process. Technical experts might also be assigned in other sections of the command and general staff incident management system. Technical weather experts can include, but are not limited to, the following:

(1) The National Weather Service, www.weather.gov
(2) National Oceanic and Atmospheric Administration (NOAA), www.noaa.gov
(3) U.S. Army Corps of Engineers, www.usace.army.mil
(4) National Hurricane Center, www.nhc.noaa.gov
(5) National Interagency Fire Center, www.nifc.gov
(6) Tsunami Center, www.tsunami.noaa.gov
(7) Space Weather Prediction Center, www.swpc.noaa.gov
(8) Local university meteorology department professors
(9) Local meteorologists

N.8 Categories. When planning for evacuation, dividing the population in priority-based categories is suggested.

N.8.1 Vulnerable Population. This could include persons with disabilities, seniors, children, pregnant women, and those with debilitating medical conditions. Among these, some might require caregivers or service or assistance animals.

N.8.2 General Populations. This includes all remaining persons in the affected area that need to be evacuated.

N.8.3 Medical Evacuation. Medical evaluation is utilized for those medically compromised individuals in the evacuation area that are unable to self-evacuate without assistance. This process requires teams utilizing air and ground resources.

N.8.4 Medical Condition Consideration. The medical condition of those being evacuated is critical when determining which type of transportation will be required. When determining transportation for evacuation there are factors that should be considered. The following list is not all inclusive:

(1) Time of onset of the disaster
(2) Duration of the evacuation
(3) Time and distance to the shelters
(4) Time and distance to safety
(5) Geography in the area to be evacuated
(6) Evacuee support available during the evacuation

N.9 Communications for Responders. Communications should follow an incident management system and use clear speech and text. The use of special codes is discouraged. It should be expected to have disruption of some of the different forms of communication. Having redundancy that operates on different communicative platforms is a way to limit disruptions. State and federal agencies along with private industry might be requested to deploy high end communication assets to aid in communication.

N.10 Communications with the Public. Communication with the public prior to and during an evacuation is critical to a successful evacuation effort. Establishing a joint information center (JIC) and utilizing public information officers early in the process is critical.

The following communications options are not required but should be considered:

(1) Local media television and radio
(2) Government-owned emergency radio stations
(3) Automatic notification systems
(4) Integrated public alert warning system (IPAWS)
(5) Social media *(see Annex W for information on social media)*
(6) Emergency outdoor warning sirens
(7) Newspapers
(8) Fliers
(9) Town hall meetings
(10) Community bulletin boards (i.e., locations established where information to the public is posted on a regular basis)

N.11 Critical Service. (Reserved)

N.12 Safety and Security. (Reserved)

N.13 Medical. (Reserved)

N.14 Mandatory Evacuation and People Who Refuse to Evacuate. Many states and local jurisdictions have laws related to mandatory evacuation, and it is critical to know and understand these laws. These laws should be complied with and enforced. In addition to the applicable laws, there are many challenges to mandatory evacuation and people who refuse to evacuate. The decision whether to order a mandatory evacuation or advisory or recommended evacuation could also affect the amount of federal assistance that is available to assist in the disaster and evacuation. The Robert T. Stafford Disaster Relief and Emergency Assistance Act as amended provides the federal government the authority to assist state and local governments with disaster preparedness and relief, but specifies that the assistance is contingent on a request from the governor or state declaring the disaster is such a magnitude that effective response is beyond the capabilities of the state. This act also identifies that the state must execute the state's emergency plan, which generally includes evacuation measures. The local government maintains primary authority in the disaster when the federal government becomes involved. Disasters start local and end local in all cases.

The enforcement of evacuations needs to be carefully considered. There are moral and pragmatic reasons mandatory evacuations should not entail physical force. Officials might use a variety of nonphysical means to enforce the order for evacuation. Some means of nonphysical force include, but are not limited to, the following:

(1) Use of automatic notification systems to call and warn residents of the urgent need to evacuate the area
(2) Calls to those residents asked not to evacuate (i.e., shadow evacuations) that cause traffic congestion for those residents that really need to evacuate
(3) Use of social media such as Facebook, Twitter, and so on to warn residents of the need to evacuate
(4) Door-to-door visits by officials explaining the dangers of not evacuating and asking for information of next of kin to notify if injury or death occur from not evacuating
(5) Establish that those residents who fail to evacuate as requested bear the cost of rescue should rescue become necessary
(6) Establish by law that individuals who fail to comply with a mandatory evacuation be cited with a misdemeanor charge

The planning section of the incident management system should develop contingency plans to coordinate rescue of residents that fail to follow the mandatory evacuation if conditions would allow for safe rescue operations.

N.15 Evacuation Planning Resources. For more information see the National Governors Association (NGA) publication, "Governor's Guide to Mass Evacuation."

Annex O Sheltering Requirements Analysis (NFPA 1616)

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

O.1 Terminology.

O.1.1 Storm Shelter. A storm shelter is a building, structure, or portion(s) thereof, constructed in accordance with ICC 500, *ICC/NSSA Standard for the Design and Construction of Storm Shelters*, designated for use during a severe windstorm event such as a hurricane or tornado. [**ICC 500:**6]

O.1.2 Safe Room. A safe room is a storm shelter specifically designed to meet FEMA safe room recommended criteria and

provide near-absolute protection in extreme-wind events, including tornadoes and hurricanes. [**FEMA P-361:**B2–4]

O.1.3 Best Available Refuge Areas. Best available refuge areas are locations in an existing building that are likely to offer the greatest safety for building occupants during a hazard event. People in best available refuge areas are less likely to be injured or killed than people in other areas of a building.

O.1.4 Vertical Evacuation Refuge. A vertical evacuation refuge is a building or earthen mound that has sufficient height to elevate evacuees above the level of tsunami inundation, and is designed and constructed with the strength and resiliency needed to resist both tsunami and earthquake loads. [**FEMA P-646A:**1]

O.1.5 Hazard Area. A hazard area is an area with defined boundaries where the impact from a natural or human-made disaster may be immediately or over time dangerous to the life and health of people and animals. Boundaries for the area may be designated based on the expected or realized impact of a natural or human-made disaster.

O.1.6 Refuge of Last Resort (ROLR). A type of shelter facility that is not recommended for long-term sheltering, offering only protection or refuge from environmental hazards in the event individuals do not or cannot evacuate. ROLRs might not provide any services or support and are intended to function as a place of refuge from the elements until it is safe to return home or evacuate to another location.

O.2 Shelter Management.

O.2.1 Typical Shelter Planning and Organizational Cycle. A shelter planning and organization cycle typically consists of the following:

(1) Annual organizational meeting involving sheltering partners and stakeholders
(2) Assessment meetings, during which all aspects of the shelter plan, including planning for functional needs support services (FNSS), are reviewed and updated
(3) Training and education, which includes the following:
    (a) Material for shelter manager class is reviewed and updated.
    (b) Continuing education material for existing managers and assistant managers is posted.
    (c) Shelter manager class is held.
(4) Facility and supply review, which includes the following:
    (a) Review and update of the shelter building list
    (b) Begin shelter site surveys
    (c) Hold regional organizational meeting
    (d) Review supply inventory
(5) Final organizational meeting and exercise
(6) After-action or end-of-year meeting, which might include the following:
    (a) Review and analysis
    (b) Inventory of remaining supplies and equipment

O.2.2 Building Identification and Acquisition. The following steps should be considered when identifying and acquiring buildings for sheltering:

(1) Contact local realtors and possibly engage one.
(2) Conduct site visits and carry out an initial comprehensive, and an accessibility survey as follows:
    (a) Initial survey by the shelter operations team
    (b) Comprehensive survey by other agencies and partners, including local access and functional needs compliance agencies, public works and utilities, health services, water supply systems, local animal welfare agencies
    (c) Survey of the accessibility of the building using the "Americans with Disabilities Act (ADA) and Architectural Barriers Act (ABA) Accessibility Guidelines"
(3) Continually monitor availability of building.
(4) Consider a building's accessibility to the following:
    (a) Highways
    (b) Public transportation
    (c) Shopping
    (d) Medical facilities
    (e) Pet shelter
    (f) Reception
    (g) Proximity to neighborhoods
    (h) Schools
(5) Consider using the following resources:
    (a) Table O.2.2, which, coupled with a thorough understanding of local conditions and best practices, can serve as a guide in the decision-making process.
    (b) Comprehensive building safety assessment survey for compliance with 12.6.4(3) and 12.6.6.
    (c) Figure O.3.2.1 for inside and outside hazard area sheltering sections.
    (d) ADA *Checklist for Emergency Shelters.*
    (e) Figure O.2.2(a), which is a sample shelter site planning checklist.
    (f) Figure O.2.2(b), which is a sample equipment checklist.
    (g) Figure O.2.2(c), which is a sample school evaluation list.

O.2.3 Shelter Organization. Figure O.2.3 shows an example of a shelter organization chart.

O.2.4 Shelter Personnel.

O.2.4.1 Shelter personnel can consist of the following:

(1) Local first responders trained in ICS 100 and ICS 200, with basic medical training and with background check completed
(2) Local law enforcement, private security company
(3) Additional support staff as necessary
(4) American Red Cross and other voluntary organizations active in disasters (VOAD)
(5) Private sector, nongovernmental organizations (NGOs)

Based on training, these personnel can fill the following roles within the shelter, depending on size and needs:

(1) Shelter manager or shelter task force leader
(2) Assistant manager or assistant shelter task force leader

O.2.4.2 For safety and security, background checks should be conducted on all personnel working in the shelter.

Table O.2.2 General Considerations for Shelter Site Selection

Category	Criteria	Definition
Size and location	Suitable size	This refers to the general area, refuge area, and population capacity of the site.
Size and location	Accessibility	This refers to the ease of getting to the shelter from the affected area.
Size and location	Proximity to evacuation zones	The shelter should be evenly distributed so that citizens can arrive there quickly before and after disaster. Sites should be outside designated evacuation zones and impervious to cascade or secondary events.
Size and location	Infrastructure conditions	Shelter areas should have electrical infrastructure, water supply, evacuation roads, and sewage discharge. Have a structural engineer evaluate the facility and rate its ability to withstand local risk conditions.
Size and location	Site drainage	Drainage of surface water is a key criterion especially when considering the potential for rising water.
Size and location	Soil permeability	Swift absorption of surface water by the soil is an important factor in site selection.
Size and location	Physical layout	This refers to both the general area and effective refuge area of the site.
Size and location	Physical layout	The space must be suitable for cohabitational or colocational animal sheltering.
Disaster risk reduction	Suitable distance from hazardous areas	The shelter should be far away from anything dangerous such as structures subject to collapse, flammable and explosive substances, hazardous chemicals, radioactive substances, high-voltage transmission lines, and secondary hazards.
Disaster risk reduction	Geological hazards	When planning for shelter locations, be aware of seismic fault lines and areas prone to earthquake, landslide, collapse, debris flow, soil liquefaction, ground depression, and so on.
Disaster risk reduction	Land slope	Steep land slopes are considered to have a high risk of geo hazards; those at less severe angles are regarded as more stable and secure.
Disaster risk reduction	Elevation	Shelter data collection should indicate the shelter's aboveground elevation and surge zone so that if heavy rains, floods, or mudflow are expected, the shelter will not be selected for use for that event.
Disaster risk reduction	Building protection standards	Any building selected for use as an evacuation shelter should be in compliance with all local building and fire codes. Exceptions might be necessary but only after evaluation of each facility by the AHJ.
Disaster risk reduction	Early warning availability	There should be a suitable early warning system for cascading and secondary disasters.
Relief and rescue facilities	Water supply	The shelter should have water facilities that can supply water appropriate for drinking, domestic use, and fire protection.
Relief and rescue facilities	Suitable distance from medical centers	The shelter should be minimally capable of providing basic medical services. If possible, the site should be located near a medical center.
Relief and rescue facilities	Proximity to relief services	The shelter should be located so that they can receive relief items and are within coverage areas of essential services, i.e., fire and emergency services.
Relief and rescue facilities	Communication service	There are identifiable marking and guide signs and communication facilities such as telephones, radios, and so forth.
Feasibility	Economic consideration	The selected site generally must be economically justifiable for the cost of establishment and costs after establishment.
Feasibility	Use agreements	Agreements to use each shelter area should be prearranged and approved.
Environmental aspects	Environmental consideration	This criterion denotes seasonal variations and any related environmental hazards and diseases.
Environmental aspects	Ecological recovery	The site should not be located in an area that is ecologically or environmentally protected.
Social aspects	Culture, tradition, and composition of population groups	The sheltering program and services should respect the religious and cultural requirements of diverse populations.
Social aspects	Public opinion	This means consulting local stakeholders to avoid or limit conflict over the location of the shelter site.

SHELTER SITE PLANNING CHECKLIST

NAME OF FACILITY	ADDRESS OF FACILITY	SITE MAIN PHONE NO.
SCHOOL DISTRICT IF APPLICABLE	NAME AND TITLE OR PERSON IN CHARGE	PERSON IN CHARGE PHONE NUMBER

MANAGEMENT-SITE DIRECTOR'S OFFICE LOCATION (ROOM NO.)	SITE DIRECTOR OFFICE COMPUTER	SITE DIRECTOR'S OFFICE PHONE NO.
SECURITY-SECURITY DIRECTOR'S OFFICE LOCATION (ROOM NO.)	SECURITY DIRECTOR OFFICE COMPUTER	SECURITY DIRECTOR'S OFFICE PHONE NO.

DESCRIPTION OF FACILITY & NO. BUILDINGS, BOUNDARY STREETS, ETC.
SCHOOL DISTRICT POLICE ON SITE (INCLUDE NUMBER ON DUTY)

1. BACKUP	2. SECURITY CAMERAS	3. CLOSED CIRCUIT TELEVISION SYSTEM	4. PUBLIC ADDRESS SYSTEM	5. NO. OF PHONE LINES INTO FACILITY

COMMENTS: INCLUDE FUEL CAPACITY OF GENERATOR, LOCATION OF CAMERAS, LOCATION OF PHONE JACKS, ETC.
COMPUTERS AVAILABLE INCLUDE NUMBERS, LOCATIONS, AND INTERNET CONNECTIVITY, LAB (ROOM NO.)
ARE BUILDING DIAGRAMS AVAILABLE?
❑ YES ❑ NO
PUBLIC PARKING LOT: (LOCATION, NO. OF LOTS, NO. OF SPACES)
PUBLIC ENTRANCE
INTAKE SCREENING/TRIAGE (LOCATION)
PUBLIC QUEUING LINE:

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FIGURE O.2.2(a) Sample Shelter Site Planning Checklist.

MEDS. DISPENSING STATIONS PLACEMENT (LOCATION) INCLUDE ROOM NUMBER
PUBLIC EXIT
RESTROOMS (PUBLIC) NO. OF MALE/FEMALE/ACCESSIBLE (ARE OUTDOOR PORTABLES NEEDED?)
STAFF AND VOLUNTEER PARKING LOT: (NO. OF SPACES)
STAFF AND VOLUNTEER ENTRANCE
RESTROOMS (STAFF & VOLUNTEERS)
MEAL DELIVERY ENTRANCE
CAFETERIA FOR VOLUNTEERS
CHILD/ELDER CARE AREA FOR VOLUNTEERS (ROOM NO.)
LOADING DOCK OR SUPPLY DELIVERY AREA/ENTRANCE
SUPPLY STORAGE AND SECURE AREA
WALK-IN COOLER (LOCATION)
MEDIA STAGING AREA
EMERGENCY AMBULANCE EVACUATION POINT
HELIPAD LOCATION
RESTRICTIONS

FIGURE O.2.2(a) ***Continued***

SAMPLE EQUIPMENT CHECKLIST

Water Coolers:
Folding Tables and Chairs:
Beds or Cots:
Ice Machine:
Portable Emergency Lights:
Lockable Storage Area for Equipment:
Materials Handling Equipment (Hand Trucks, Pallet Jacks, etc.)
Portable Toilets: (outdoors)
Extension Cords:
Traffic Cones:
Traffic Barricades:
Emergency Parking Restriction Signs:
Pedestrian Control Signs:
Police Line Tape:
Phone Lines:
Fax Machine Lines:
MEGA SHELTER = 30,000 Sq feet + for sleeping area

FIGURE O.2.2(b) Sample Equipment Checklist.

School Shelter List		Date	Name
	Name	**Phone Number**	**Remarks**
Address			
School District			
School Capacity			
School District Contact			
School Dist Security Contact			
School Dist Facilities Contact			
SAPD			
RED CROSS			
Metro Health			
DCI			
SAVOAD (volunteers)			
Private security			
Other			
Number of showers			
Number of Showers-Handi-cap accessible			
Number of restrooms			
Need for paper products			
Who will provide paper products			
Custodian service Yes/No ?			
Cafeteria			
Gym HVAC ?			
Parking Spots?#			
Security issues			
Accessible building ?			
Number of accessible restrooms			
Number of accessible showers			
Number of accessible port-a-potties			
HVAC adequate			
HVAC programmed 24/7			
Water quality, flushed ?			
Hot water operating ? yes/no			
Pest problems / flies / ants / rodents ?			
Tables and chairs Yes/No Needs			
Tables and chairs provided by ?			
Other furniture needed			
Number of portable showers needed			
Number of handi-cap showers needed			
Location for portable showers			
240 V hook up for showers yes/no			
Water access for showers yes/no ?			
Drains for showers? Gravity flow			
Washer / dryer needs			

FIGURE O.2.2(c) Sample School Evaluation List.

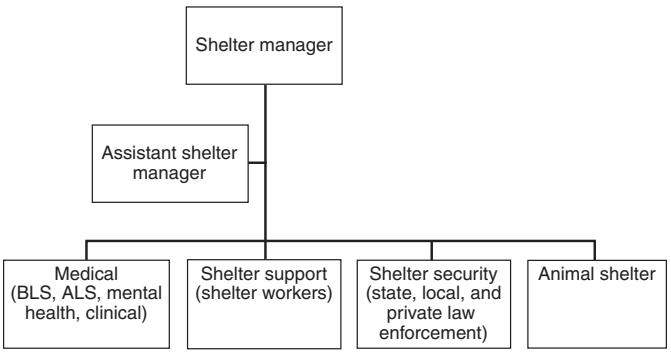

FIGURE O.2.3 Shelter Organization.

O.2.5 Shelter Manager's Responsibilities. The shelter manager should ensure that shelter guests have access to information on the status of response operations, damage assessments, and re-entry to damaged areas, as well as availability of disaster relief programs and services, and so on.

The shelter manager should ensure partner organizations are provided access to shelter facilities (as space permits) to offer shelter guests opportunities to receive disaster relief programs (e.g., registration for disaster relief services, distribution of relief items, and access to computers and mobile devices to facilitate reunification).

The responsibilities of the shelter manager are as follows:

(1) To oversee all shelter operations, which should include the following:
    (a) Facility management
    (b) Registration
    (c) Security and building access control
    (d) Parking and traffic control
    (e) Public information, public affairs, and media relations
    (f) Dormitory management
    (g) Food service
    (h) Public, medical, and mental health services
    (i) Spiritual care
    (j) Children's area
    (k) Animal sheltering liaison
    (l) Entertainment and recreation
    (m) Information technology
    (n) Recovery information and resident messaging
    (o) Family reunification
    (p) Janitorial
    (q) Building maintenance and engineering
    (r) Logistical support and dock management
    (s) Distribution of goods
    (t) Donations management
    (u) Volunteer management
    (v) Private sector coordination
    (w) Laundry service
    (x) Transportation services for shelter guests
    (y) Communication services
    (z) Building and service accessibility
(2) To manage the staff of shelter workers
(3) To coordinate with partner agencies in the shelter and solicit input on initial shelter physical setup and ongoing expectations
(4) To conduct a staff meeting at the shelter at the beginning of each shift with representatives from all agencies that includes the following:
    (a) Orientation and tour of the shelter
    (b) Discussion of issues from the previous shift
    (c) Discussion of objectives for the oncoming shift
    (d) Staffing assignments
(5) To maintain an accurate accounting of all inventory, including the following:
    (a) Specifically requisitioned items such as light plants, generators, TVs, golf carts
    (b) Each item at demobilization
    (c) Inventory needed for proper reimbursement at event closure
(6) To make the guests' stay at the shelter as stress-free as possible
(7) To provide humane animal care if collocated or cohabitational animal sheltering is part of shelter operation, or if service or assistance animals are housed at the shelter *(see Annex S)*

The following resources provide additional information on shelter operations: "Shelter Guidance Aid and Shelter Staffing Matrix"; *Mega-Shelter Planning Guide;* FEMA P-785, *Shelter Field Guide*; "Cohabitated Human/Household Pet Sheltering Toolkit"; "Pet and Animal Sheltering Capacity: Facility Supply and Equipment Requirements"; and the Sheltering Resources page of the National Mass Care Strategy website.

O.2.6 Sheltering Activation. Activating a shelter should include the following:

(1) Activation of a shelter manager/assistant manager.
(2) Check-ins at the emergency operation center (EOC) with the shelter branch director.
(3) Organizing for the pickup of radios, cell phone(s) and charger(s), laptop(s), air card(s), and any special instructions or information from the shelter branch director.
(4) Receiving the shelter location assignment along with shelter binder.
(5) Receiving and reviewing the incident action plan (IAP).
(6) Preparing for arrival of guests.
    (a) Opening the building
    (b) Conducting a walkthrough of the inside and outside of the building to assess accessibility and any needed temporary modifications
    (c) Reviewing or creating site and floor plan
    (d) Cleaning, setup costs, and so forth
(7) Beginning the development of a list of contacts for the facility (i.e., shelter).
(8) When push packs are not going to be used, ordering supplies as soon as the jurisdiction determines a shelter is needed. The push pack inventory *(see O.2.7)* will give an idea of the first things to order.
(9) Reviewing the shelter binder as follows:
    (a) Reviewing the facility site plan, floor plan
    (b) Setting up sign-in sheets for responders and outside agencies
    (c) Setting up inventory sheets for demobilization tracking
    (d) Setting up evacuee registration forms
    (e) Having on-hand information for functional needs support services (FNSS) and child-friendly policies *(see Annex R)*

O.2.7 Supplies.

O.2.7.1 Prepackaged Supplies. Prepackaged supplies are supplies designated for opening of a shelter and can include the following:

(1) Maintenance items (e.g., trash cans, trash bags, brooms, and so forth)
(2) Dry-erase boards, poster board
(3) Signage (e.g., rules, bus routes)
(4) Fans, buckets, ice chests
(5) Two-wheel dolly
(6) Folding table(s)
(7) Folding chairs
(8) Pallet jack
(9) Baby products (e.g., diapers, bottles, formula, baby food, and so forth)
(10) Water for powdered baby formula
(11) Toilet paper, facial tissue, cots for use by shelter manager and personnel
(12) Feminine products
(13) Three storage containers
(14) Office supplies (e.g., folders, paper, pens, batteries, and so forth)
(15) Fax/copy/scanner
(16) Emergency medical supplies
(17) Food service gloves
(18) Identification wrist bands, registration forms
(19) Animal care supplies
(20) Durable medical equipment such as manual wheelchairs, walkers, and shower benches
(21) Consumable medical supplies

O.2.8 Shelter Management Checklist for Health Departments. Figure O.2.8 is a checklist for items required by most health departments.

O.2.9 During-Incident Risk Assessment. Hazard incidents that occur over extended time frames, such as hurricanes, some floods, and winter storms, can present changing conditions that require re-evaluation of the risk in real-time and subsequent potential changes to decisions on which sheltering facilities to close and which to keep open. For example, a sheltering facility initially considered safe for an anticipated modest flood event on a nearby river might no longer be appropriate if the flood crest forecast increases significantly.

O.2.10 During-Incident Condition Assessment. The performance of the shelter facility should be monitored during the incident. If damage occurs, it may be necessary to move to another part of the shelter facility during the incident or even evacuate to a different shelter.

For winter storm shelters, FEMA P-957, *Snow Load Safety Guide*, provides information on warning signs of overstress conditions during a snow incident and actions that should be taken before, during, and after a snow incident.

O.2.11 Post-Incident Condition Assessment. If the shelter experiences damage during the incident, the condition of the shelter facility should be re-evaluated prior to subsequent shelter occupancy. For example, if a pre-identified shelter is located in an area experiencing significant ground shaking during an earthquake, a condition assessment should be conducted prior to use to ascertain that the building is still safe for occupancy and is capable of resisting possible aftershocks.

Methodologies for safety evaluation of buildings following an earthquake are provided in ATC-20, *Procedures for Postearthquake Safety Evaluation of Buildings,* and FEMA P-2055, *Post-Disaster Building Safety Evaluation Guidance*.

Methodologies for safety evaluation of buildings following a windstorm or flood are provided in ATC-45, *Field Manual: Safety Evaluation of Buildings after Windstorms and Floods*. These methodologies could be used if continued occupancy of the sheltering facility in the post-incident period is desired.

O.3 Existing Buildings Outside of Hazard Area.

O.3.1 General. This section provides guidance for consideration of building safety in the selection of resilient sheltering facilities, including guidance for identification of existing buildings. Application of this guidance can typically require input from one or more building safety professionals (e.g., building and fire officials, architects, engineers). Large communities may have such professionals on staff in building, planning, public works, and other departments. Small and rural communities can rely on county or state-level agencies or contracts with the private sector for building safety-related services.

This section is intended to help state and local government officials and interested citizens by providing information needed to identify resilient sheltering facilities while considering the hazards that may pose a risk to the facility and its occupants. Sheltering and refuge facilities located outside of the hazard area are ideal but not always feasible depending on the size of the population to be sheltered, the magnitude and reach of the hazard, available transportation, geography, population density, and other factors. Therefore, the entity should be knowledgeable of all the potential hazards for each location and the options available for each hazard.

O.3.1.1 Recommendations for Selection of Existing Buildings. When evaluating a site as a potential sheltering facility location, the entity should utilize the skill sets of other agencies and employees within the government if needed. For example, when selecting a building as a potential sheltering facility, the structural safety of the building should be evaluated. Even if the building is located outside of the disaster-affected area, it may be used to shelter potentially thousands of occupants and should meet minimum building code requirements that require protection from other hazards. While the entity may not have the architectural or engineering background to make such a determination, there are other resources available to provide solutions. The building department, public works department, or city engineer or architect on staff may be able to help the entity perform this task. Other resources, such as architects or engineers on contract or county or state resources, may also be helpful.

O.3.2 Risk and Condition Assessments. Paragraphs O.2.9 through O.2.11 provide guidance on pre-, during-, and post-event assessments broadly applicable to any hazard. Hazard-specific guidance on these assessments is provided in O.4.4.

SHELTER MANAGEMENT CHECKLIST

Food

Source of food: ❑ On site ❑ Catered ❑ Donated
Supply: ❑ Safe ❑ Adequate
Food temperature: <41°F (5°C) _____ ≥140°F (60°C) _____
Food reheating temperature: _____ °F (_____ °C)
Hand-washing facilities provided: ❑ Yes ❑ No
Gloves: ❑ Yes ❑ No Utensils: ❑ Yes ❑ No Gloves and utensils used: ❑ Yes ❑ No
Dishwashing: Wash _____ Rinse _____ Sanitize _____

Water

Type: ❑ Public ❑ Private ❑ Temporary ❑ Deionized ❑ Not applicable
Trained operator on duty: ❑ Yes ❑ No
System operating: ❑ Yes ❑ No
Adequate safe supply of 4 gal (15 L) per person per day: ❑ Yes ❑ No
Microbial and chemical tests conducted: ❑ Yes ❑ No
Disinfectant level measurement:
Well flooded? ❑ Yes ❑ No ❑ Not applicable
Well repaired and disinfected? ❑ Yes ❑ No ❑ Not applicable
Water being boiled or treated? ❑ Yes ❑ No ❑ Not applicable

Sanitation

Type: ❑ Sewerage ❑ Septic tank ❑ Portable
Number of toilets: _____ Number in use: _____
Toilets cleaned and disinfected: ❑ Yes ❑ No

Hand washing

Hand washing stations (indicate number): _____
Hand sanitizers available: ❑ Yes ❑ No

Shelter

Structural integrity: _____
Protection from the elements: _____
Secure facility: _____
Bedding: _____
Temperature: _____ °F (_____ °C)
Ventilation: ❑ Yes ❑ No
Overcrowded [<38 ft (23.5 m^2) per person]: _____
Free of hazards: _____
Showers, bathing facilities (indicate number): _____
Housekeeping: _____

Solid waste

Waste collection: _____
Waste storage: _____
Waste disposal: _____
Timely removal: _____

Human or animal remains

Adequate storage or disposition: _____

Disease vectors

Infestations: _____
Uncontrolled animal populations: _____
Control measures: _____

Disease control

Reports of any disease: _____

FIGURE O.2.8 Sample Shelter Management Checklist.

O.3.2.1 Pre-Incident Risk Assessment. A risk assessment should be conducted when performing pre-incident planning considerations for identification of resilient sheltering facilities as required in 12.6.4(3). A risk assessment consists of three components, assessment of hazards, vulnerabilities, and impacts. Hazard assessments should consider the likely incidents for which the potential facility may be opened. Potential shelter facilities should then be evaluated for their ability to resist the relevant hazards through a vulnerability assessment. Risk is then determined considering the hazards, vulnerabilities, and associated impacts. Figure O.3.2.1 provides general guidance for hazard assessments.

O.4 Existing Buildings Inside of Hazard Area.

O.4.1 General. This section provides guidance for consideration of building safety in the selection of resilient sheltering facilities, including guidance for identification of existing buildings. Application of this guidance can typically require input from one or more building safety professionals (e.g., building and fire officials, architects, engineers). Large communities may have such professionals on staff in building, planning, public works, and other departments. Small and rural communities can rely on county or state-level agencies or contracts with the private sector for building safety-related services.

This section is intended to help state and local government officials and interested citizens by providing information needed to identify resilient sheltering facilities while considering the hazards that may pose a risk to the facility and its occupants. Sheltering and refuge facilities located outside of the hazard area are ideal but not always feasible depending on the size of the population to be sheltered, the magnitude and reach of the hazard, available transportation, geography, population density, and other factors. Therefore the entity should be knowledgeable of all the potential hazards for each location and the options available for each hazard.

O.4.1.1 Recommendations for Selection of Existing Buildings. When evaluating a site as a potential sheltering facility location, the entity should utilize the skill sets of other agencies and employees within the government if needed. For example, when selecting a building as a potential sheltering facility, the structural safety of the building should be evaluated. Even if the building is located outside of the disaster affected area, it may be used to shelter potentially thousands of occupants and should meet minimum building code requirements that require protection from other hazards. While the entity may not have the architectural or engineering background to make such a determination, there are other resources available to provide solutions. The building department, public works department, or city engineer or architect on staff may be able to help the entity perform this task. Other resources, such as architects or engineers on contract, or county or state resources may also be helpful.

O.4.2 Considerations for Shelter Exposure to the Hazard Incident. The location of the shelter and time frame of shelter operations with respect to the location and timing of the hazard incident has implications for shelter assessment and selection.

O.4.3 Risk and Condition Assessments. Section O.2 provides guidance on pre-, during-, and post-event assessments broadly applicable to any hazard. Hazard-specific guidance on these assessments is provided in O.4.4.

O.4.3.1 Pre-Incident Risk Assessment. A risk assessment should be conducted when performing pre-incident planning considerations for identification of resilient sheltering facilities as required in 12.6.4(3). A risk assessment consists of three components: assessment of hazards, vulnerabilities, and impacts. Hazard assessments should consider the likely incidents for which the potential facility may be opened. Potential shelter facilities should then be evaluated for their ability to resist the relevant hazards through a vulnerability assessment. Risk is then determined considering the hazards, vulnerabilities, and associated impacts. Figure O.3.2.1 provides general guidance for hazard assessments.

O.4.4 Additional Assessment and Selection Considerations. This section provides additional hazard-specific guidance for risk and condition assessments.

O.4.4.1 Tornado. Tornadoes typically occur with minimal warning, on the order of minutes or at most tens of minutes. Evacuation is not generally viable. Sheltering-in-place or sheltering in nearby buildings or facilities is required. Safer options include using storm shelters designed and constructed to meet the tornado requirements in ICC 500, or using tornado safe rooms designed and constructed to meet guidelines in either FEMA P-361, *Safe Rooms for Tornadoes and Hurricanes: Guidance for Community and Residential Safe Rooms*, or P-320, *Taking Shelter from the Storm: Building a Safe Room for Your Home*. Additional safe room publications and resources, including information on community safe rooms, are available from FEMA with examples and case studies.

If tornado storm shelters or safe rooms are not nearby, best available refuge areas can be utilized. Guidance on selection of best available refuge areas can be found in FEMA P-431, *Tornado Protection: Selecting Refuge Areas in Buildings*. For more information on facility design documentation and assessment as it relates to tornados, see Figure O.4.4.1.

O.4.4.2 Hurricanes. Hurricanes and tropical storms typically occur with advanced warning. When using shelters, the safer options are storm shelters designed and constructed to meet the hurricane requirements in ICC 500, or using hurricane safe rooms designed and constructed to meet either FEMA P-361 or P-320 guidelines. Additional safe room publications and resources are available from FEMA, including information on community safe rooms with examples and case studies.

If hurricane storm shelters or safe rooms are not available, assessments should be conducted to evaluate other buildings for suitability as hurricane shelters. Guidance on performing such assessments is available on the National Mass Care Strategy's Sheltering Resources page and in Florida's *Statewide Emergency Shelter Plan*. Additional information on hurricane shelter assessments and retrofits of existing buildings to meet hurricane shelter criteria is available on the Florida Division of Emergency Management's website. For more information on facility design documentation and assessment as it relates to hurricanes, see Figure O.4.4.2.

Summary for Consideration of Building Safety in Selection of Resilient Sheltering Facilities

Documentation and Assessment Form

Potential Sheltering Facility Description

Building name: _____

Phone number: _____

Address: _____

Description: _____

Owner/operator's name: _____

Owner/operator's contact information: _____

Notes: _____

Geographic Information

Latitude: _____

Longitude: _____

Elevation: _____

In flood plain: ❑ Yes ❑ No

Landward extent of storm surge: ❑ Yes ❑ No

Construction

Materials: _____

Number of stories: _____

Windows impact resistant: ❑ Yes ❑ No

FIGURE O.3.2.1 Summary for Consideration of Building Safety in Selection of Resilient Sheltering Facilities.

Windows shutter protected: ❑ Yes ❑ No

Building plans available: ❑ Yes ❑ No

Design Information (if available): _____

Building code and year: _____

Risk category: _____

Seismic design information: _____

Roof snow load: _____

Design wind speed: _____

Additional Notes

_____

_____

_____

Requirements for All Sheltering Facilities (NFPA 1660, 12.6.5)

To be completed by the authority having jurisdiction or an approved special inspector.

Name: _____ Title: _____ Date: _____

Address: _____

Email: _____ Phone: _____

❑ Facility is appropriate for use as a temporary shelter facility for the applicable hazards and conforms to the applicable structural, fire safety, means of egress, accessibility, light, ventilation and sanitary requirements to ensure public health, safety and general welfare.

Comments:

_____

_____

_____

FIGURE O.3.2.1 ***Continued***

Shelter Design Documentation and Assessment

Pre-Event Assessment

Was the building designed as a tornado safe room (per FEMA P-361) or tornado shelter (per ICC 500)?

❑ FEMA P-361, *Safe Rooms for Tornadoes and Hurricanes: Guidance for Community and Residential Safe Rooms*

❑ ICC 500, *ICC/NSSA Standard for the Design and Construction of Storm Shelters*

If so, are the operable components in good working order? ❑ Yes ❑ No

❑ Are all operable components functional (e.g., impact resistant doors and shutters)?

❑ Yes ❑ No

If the building is not a tornado safe room or tornado shelter, describe the assessment.

❑ FEMA P-431, *Tornado Protection: Selecting Refuge Areas in Buildings*

❑ Other Assessment. Describe:

_____

Pre-Event Assessment Results

❑ Facility can be used as a tornado shelter or best available refuge area.

Limitations/Comments:

_____

Post-Event Assessment

❑ ATC-45, *Field Manual: Safety Evaluation of Buildings after Windstorms and Floods*

❑ Other Assessment. Describe:

_____

Post-Event Assessment Results

❑ Facility can be used as a tornado best available refuge area.

❑ Facility can be used as a post-event shelter.

Limitations/Comments:

_____

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FIGURE O.4.4.1 Shelter Design Documentation and Assessment.

Shelter Design Documentation and Assessment

Pre-Event Assessment

Was the building designed as a hurricane safe room (per FEMA P-361) or hurricane shelter (per ICC 500)?

❑ FEMA P-361, *Safe Rooms for Tornadoes and Hurricanes: Guidance for Community and Residential Safe Rooms*

❑ ICC 500, *ICC/NSSA Standard for the Design and Construction of Storm Shelters*

If so, are the operable components in good working order? ❑ Yes ❑ No

❑ Are all operable components functional (e.g., impact resistant doors and shutters)?

If the building is not a hurricane safe room or hurricane shelter, describe the assessment.
❑ Sheltering resources at www.nationalmasscarestrategy.org/sheltering
❑ Other Assessment. Describe:

_____

Pre-Event Assessment Results

❑ Facility can be used as a hurricane evacuation shelter.

Limitations/Comments:

_____

During-Event Assessment

❑ USGS flood alerts, https://water.usgs.gov/floods
❑ NOAA storm surge forecasts, www.nhc.noaa.gov/surge
❑ NOAA hurricane information, www.nhc.noaa.gov
❑ Monitor hurricane progress
❑ Monitor building structure
❑ Other Assessment. Describe:

_____

Post-Event Assessment

❑ ATC-45, *Field Manual: Safety Evaluation of Buildings after Windstorms and Floods*
❑ Other Assessment. Describe:

_____

Post-Event Assessment Results

❑ Facility can be used as a hurricane evacuation shelter.
❑ Facility can be used as a post-event shelter.

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FIGURE O.4.4.2 Shelter Design Documentation and Assessment.

O.4.4.3 Tsunami. Tsunami warning times can range from a few minutes to several hours. If it is not possible to evacuate the area likely to be inundated, use of a tsunami vertical evacuation refuge is the next best option. FEMA P-646A, *Vertical Evacuation from Tsunamis: A Guide for Community Officials* presents information on how vertical evacuation guidance can be used and encouraged at the state and local levels. This publication is meant to help state and local government officials and interested citizens by providing the information they would need to address the tsunami hazard in their community. 3 of FEMA P-646A, "Planning," provides guidance on vulnerability assessments, as well as other decision-making tools. 4 has details on the "Use of Existing Structures" as potential vertical evacuation facilities. In the case where the only feasible vertical evacuation is using a specially designed and constructed structure built to resist both tsunami and earthquake loads, FEMA P-646A refers the reader to its companion guide FEMA P-646, *Guidelines for Design of Structures for Vertical Evacuation from Tsunamis*. For more information on facility design documentation and assessment as it relates to tsunamis, see Figure O.4.4.3.

O.4.4.4 Snow and Winter Storms. Winter storms bring large snowfall amounts that can cause collapse of building roofs. FEMA P-957 provides guidance on building evaluation for snow load safety, preventive measures to take before the snow season, and actions that should be taken before, during, and after a snow event. For more information on facility design documentation and assessment as it relates to winter storms, see Figure O.4.4.4.

O.4.4.5 Flood. Coastal, riverine, and other inland flooding can occur with little or no warning, as in the case of flash floods, o r with weeks of warning. Because flood warning time can affect shelter operations, shelter programs should be designed and managed to accommodate a variety of floods and associated flood warning times. Whenever possible, shelters should be designated in areas located outside of mapped special flood hazard areas on FEMA's Flood Insurance Rate Maps (FIRMs). A FIRM(s) for a specific area can be viewed using FEMA's online Flood Map Service Center (MSC). More information on how to read a FIRM is available through the FEMA Flood MSC FAQ portal.

Local real-time flood conditions and flood forecasts from emergency management should also be considered before shelters are opened, which is especially important when flooding is predicted to exceed the mapped floodplain in the area. For example, flooding on large rivers is often due to a rapid snowmelt in outlying areas of the river's watershed. Locations farther downstream may have days or weeks of warning to conduct evacuations. In addition to choosing shelter locations outside of mapped special flood hazard areas, the specific flood forecasts for the coming event should be considered.

The following resources may be useful for shelter decisions involving flood: USGS Current Water Data, NWS River Observations, NWS River Forecasts, USACE flood predictions, NOAA's SLOSH Display Program, and NOAA storm surge forecasts.

Additional information on flood hazard assessment is available from FEMA Flood Insurance Studies (FISs) and nonregulatory flood risk products. Information on making critical facilities safe from flooding can be found in FEMA 543, *Design Guide for Improving Critical Facility Safety from Flooding and High Winds*.

If no suitable shelter can be identified outside of the mapped flood hazard area, shelters within the flood hazard area may be used, provided certain factors are considered:

(1) Shelters subject to wave action and high velocity flow should be avoided.
(2) Preference should be given to shelters subject to shallow flooding and ponding (low flood velocities).
(3) Shelters should be selected so that road access to and from shelters is available during flooding.
(4) Shelters should be configured such that shelter space and support areas are above the flood elevation designated for critical and essential facilities by building codes and standards.
(5) Preference should be given to shelters where power, water, wastewater, and other utilities necessary for shelter operations will be available.
(6) Shelters should be capable of resisting flood loads and conditions to which they will be subject.

More information on design requirements for shelters can be found in the following standards from the American Society of Civil Engineers: ASCE/SEI 7, *Minimum Design Loads and Associated Criteria for Buildings and Other Structures*, and ASCE/SEI 24, *Flood Resistant Design and Construction*. Both standards identify buildings used as designated emergency shelters as the highest risk because they are essential for emergency response and recovery. Additionally, if a shelter is located in a flooded area, it is important to make sure that building remains accessible and operational. Occupants, emergency vehicles, and vehicles bringing supplies should be able to access the building during flooding conditions; if the roads surrounding the shelter are inaccessible, then the location is not suitable. Power, water, and wastewater service should be functional during conditions of flooding. For more information on facility design documentation and assessment as it relates to floods, see Figure O.4.4.5.

O.4.4.6 Earthquake. Guidance on conducting pre-event risk assessments for earthquakes is available in ASCE 41, *Seismic Evaluation and Retrofit of Existing Buildings*; FEMA P-58-1, *Seismic Performance Assessment of Buildings, Volume 1: Methodology*; FEMA P-58-2, *Seismic Performance Assessment of Buildings, Volume 2: Implementation Guide;* and FEMA P-58-3, *Seismic Performance Assessment of Buildings, Volume 3: Supporting Electronic Materials and Background Documentation*. Additional information on assessment of buildings to resist earthquakes is available through the FEMA Building Science Resource Laboratory. For more information on facility design documentation and assessment as it relates to earthquakes, see Figure O.4.4.6.

O.5 New Construction Planning.

O.5.1 General. This section provides guidance for consideration of building safety in the construction of new buildings. Application of this guidance will typically require input from one or more building safety professionals (e.g., building and fire officials, architects, engineers). Large communities may have such professionals on staff, in building, planning, public works, and other departments. Small and rural communities often do not have this technical expertise in-house and rely on county or state-level agencies or contracts with the private sector for building safety-related services.

Shelter Design Documentation and Assessment

Pre-Event Assessment

Was the facility designed using FEMA P-646 Guidelines? ❑ Yes ❑ No
If so, are the operable components in good working order? ❑ Yes ❑ No

If not, describe the assessment.

❑ FEMA P-646, *Guidelines for Design of Structures for Vertical Evacuation from Tsunamis*
❑ Other Assessment. Describe:

_____

Pre-Event Assessment Results

❑ Facility can be used as a tsunami evacuation shelter.

Limitations/Comments:

_____

During-Event Assessment

❑ NOAA Tsunami Warning Center, www.tsunami.gov
❑ Pacific Tsunami Warning Center, http://ptwc.weather.gov
❑ Other Assessment. Describe:

_____

Post-Event Assessment

❑ FEMA P-646, *Guidelines for Design of Structures for Vertical Evacuation from Tsunamis*
❑ ATC-20, *Procedures for Postearthquake Safety Evaluation of Buildings*
❑ ATC-45, *Field Manual: Safety Evaluation of Buildings after Windstorms and Floods*
❑ Other Assessment. Describe:

_____

Post-Event Assessment Results

❑ Facility can be used as a tsunami evacuation shelter.
❑ Facility can be used as a post-event shelter.

Limitations/Comments:

_____

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FIGURE O.4.4.3 Shelter Design Documentation and Assessment.

Shelter Design Documentation and Assessment

Pre-Event Assessment

Identify the type of assessment conducted:

❑ FEMA P-957, *Risk Management Series: Snow Load Safety Guide*

❑ Other Assessment. Describe:

_____

Pre-Event Assessment Results

❑ Facility can be used as a snow and winter storm evacuation shelter.

Limitations/Comments:

_____

During-Event Assessment

❑ Monitor storm progress and forecasts
❑ Monitor building structure reactions and accumulation of ice and snow (see FEMA P-957)
❑ Other Assessment. Describe:

_____

Post-Event Assessment

❑ FEMA P-957, *Risk Management Series: Snow Load Safety Guide*
❑ Other Assessment. Describe:

_____

Post-Event Assessment Results

❑ Facility can be used as a snow and winter storm evacuation shelter.
❑ Facility can be used as a post-event shelter.

Limitations/Comments:

_____

FIGURE O.4.4.4 Shelter Design Documentation and Assessment.

Shelter Design Documentation and Assessment

Pre-Event Assessment

Identify flood hazard:

❑ FEMA Flood Insurance Rate Maps (FIRMs)

Flood Zone _____ Base Flood Elevation (BFE) _____

Datum _____ 500 Year Flood Elevation (if available) _____

❑ Other Assessment. Describe:

_____

_____

_____

If the facility is exposed to flooding:

a) Assess the flood hazard vulnerability, including elevations of relevant parts of the shelter facility (make sure to use or convert to the same datum as above):

b) Assess the building's resistance to flooding (see Annex Z for resources):

Pre-Event Assessment Results

❑ Facility can be used as a flood evacuation shelter.

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FIGURE O.4.4.5 Shelter Design Documentation and Assessment.