



# THE FIRE PROTECTION RESEARCH FOUNDATION

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## BEST PRACTICE GUIDANCE FOR EMERGENCY MESSAGING IN THE FIRE ALARM CONTEXT

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### **Background:**

The Technical Committees of the National Fire Protection Association responsible for NFPA 72<sup>®</sup>, *National Fire Alarm and Signaling Code*<sup>®</sup> have undertaken a major project to incorporate requirements for the planning, design, installation and use of Emergency Communications Systems. One of the goals of the Technical Correlating Committee on Signaling Systems for the Protection of Life and Property (responsible for NFPA 72) is to provide a structured approach for the development and implementation of emergency communication strategies. The work of the NFPA 72 Technical Committees has focused on providing “menus” that permit the development of communications strategies based on differing levels of risk for a variety of different hazards and threats.

The Technical Committee for Emergency Communications Systems within the NFPA 72 project has developed significant revisions to NFPA 72 (including a new chapter 24 in the 2010 edition) to address this topic which has resulted in the identification of a series of information and messaging needs. Other work, including a recent NIST workshop (NIST Pub# 1093, “*Mass Notification Messages: Workshop Proceedings*”, Mar 09) has also identified a need for further research on messaging and communications strategies. These efforts recognize that in recent years there have been major advancements in technology and systems availability and new demands on systems to meet the needs for emergency events other than fire (e.g. security, natural catastrophe, etc). Also, more recent studies of human behavior in a variety of emergency situations have increased awareness regarding the need for effective communications before and during different stages of an emergency.

**Research Objective:** Develop guidance information to facilitate the planning and implementation of effective communications strategies for buildings and building campuses for relevant hazards and threats. The strategies will be based on the threat or hazard, the stage of the event (including pre-event), the sources and recipients of the communications, recommended message content and format, and the methods of message delivery<sup>1</sup>.

**Project Scope and Tasks:** This project will focus on establishing best practices for emergency message content and delivery as a function of emergency type, temporal framework, intended audience and delivery format. The program will develop tools and templates for message providers (e.g., incident commanders, facility managers, etc.) to assist in planning and composing messages that will maximize effectiveness for the

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<sup>1</sup> The guidance information will address emergency communication system applications within the scope of Chapter 24 of NFPA 72, 2010 edition, but be informed by other related mass notification initiatives (e.g. reverse 9-1-1, Integrated Public Alert and Warning System, etc) for consistency.

method of delivery. Messaging strategies will focus on events internal to buildings or collections of buildings (e.g. campuses).<sup>2</sup> The work will be accomplished based on the following tasks:

### **Task One: Literature Review and State-of-the-Art Assessment and Development of Performance Objectives**

#### **1.1. Formation of PTP**

#### **1.2. Literature Review**

- a. Existing and planned emergency notification methods and technologies
  - i. Systems part of traditional fire alarm infrastructure (e.g. NFPA 72)
  - ii. Systems other than fire alarm (e.g. telephone, email)
  - iii. Wide area mass notification systems
- b. Summary of current messaging and notification approaches
  - i. Current approaches used by traditional fire alarm (e.g. used by NFPA 72 systems)
  - ii. Other notification approaches/frameworks (e.g. CDC, FEMA, NRC, NWS, CMAS/IPAWS)
  - iii. Compilation of terminology (i.e. commonly used and sometimes conflicting)
  - iv. Existing metrics for measuring messaging effectiveness
- c. Research on human behavior (i.e. relating to occupant messaging)
  - i. Notification behavioral issues
  - ii. Optimum signaling effectiveness
- d. Overall Incident Management (i.e. NFPA 72 relative to NIMS, etc)

#### **1.3. Assessment of Performance Issues for Messaging Systems**

- a. Identification and analysis of key issues from literature review
  - i. Messaging content based on type of event, occupancy, occupant, etc
  - ii. Messaging delivery (text, voice, graphics, information digestion, intelligibility, audibility, visibility)
- b. Assessment of needs of message recipients (e.g. bldg occupants, DARAC issues, etc)
- c. Assessment of needs of message providers (e.g. incident commanders, etc)

#### **1.4 Development of Performance Objectives for Messaging Systems – content and delivery**

### **Task Two: Development of Messaging Strategy Guidance**

#### **2.1. Development of Guidance Information and Tools (i.e. for NFPA 72 Annex)**

- a. Messaging strategies
  - i. Outline of messaging implementation protocol (for real time application)
  - ii. Define message providers and recipients
  - iii. Define notification time frames
  - iv. Develop risk framework for community message transmittal
- b. Baseline messaging templates
  - i. Portfolio of pre-established model messages based on relevant threats
  - ii. Lexicon of recommended terminology
- c. Guidance on message delivery
  - i. Formats for various delivery systems
- d. Long-term messaging issues
  - i. Methods for testing and revising message effectiveness
  - ii. Documentation, training for ICs, public education
- e. Development of guidance information (summary of above items as project deliverable)

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<sup>2</sup> Recognizing that local external events may result in the need for in-campus or in-building messaging, a framework for risk analysis to assist the campus incident commander in developing unique messages for these incidents will be provided.