In Compliance | NFPA 72

The value of a risk analysis for a mass notification system installation

BY WAYNE D. MOORE

Recent changes to the building codes and to NFPA 101®, Life Safety Code®, require a designer to perform a risk analysis prior to designing a mass notification system (MNS). From conversations with colleagues, it appears that these changes are creating concerns in the fire alarm industry.

Interestingly, NFPA 72®, National Fire Alarm and Signaling Code®, has had this requirement since the 2010 edition. For example, while the code allows the mass notification system signal to take precedence over the fire alarm signal, section 24.4.1.7.4 states in part that "priority of mass notification messages over fire alarm evacuation shall be permitted when evaluated by the stakeholders through a risk analysis in accordance with 24.4.2.2."

Obviously, no one performs a risk analysis when designing a fire alarm system because of the already established risk: we design fire alarm systems to help mitigate the risk from fire. The primary stakeholders involved in the fire alarm system decision included the building owner, as well as the code official and local authority having jurisdiction (AHJ).

With a mass notification system, the stakeholder list increases to include the following, as defined in NFPA 72: "Any individual, group, or organization that might affect, be affected by, or perceive itself to be affected by the risk." This includes the AHJ, who must agree that the risks associated with the MNS signal taking precedence over the fire alarm signal makes sense from a life safety point of view.

The worrisome part of these requirements, according to some in the industry, derives from the questions of who can perform the risk analysis and how the AHJ will evaluate and approve that risk analysis.

The answer to who can perform the risk analysis comes from the guidance for conducting a risk analysis that first appeared in the 2016 edition of NFPA 72, in section 24.3.11.1 and its associated annex material. The requirements and guidance imply that the designer of the MNS will perform the risk analysis. If the

designer feels uncomfortable performing the risk analysis, then a fire protection engineer could assist.

The 2016 edition also includes a risk analysis checklist in the annex. Understandably, a jurisdiction may not have yet adopted the 2016 or later editions of the code. However, most jurisdictions will allow the reference to a more current edition of the code when the later edition provides guidance to help meet a specific code requirement.

The risk analysis is typically not difficult to develop or approve. It simply provides the guidance necessary to ensure that the stakeholders have considered all of the reasonable and likely risks and developed appropriate actions and messages, as necessary. For approval purposes, the AHJ becomes a required stakeholder involved in all the meetings that determine the appropriate responses to each risk. Based on the process, AHJs should have little difficulty approving a document they had a part in creating. However, if the AHJ does not feel competent in the area of risk analysis, NFPA 101 in sections 4.6.1.4 and 9.14.3.2 allows the AHJ to request a third-party review.

The risk analysis becomes a part of the owner's emergency response plan. Thus, such a plan may have already completed critical elements of the risk analysis. The 2019 edition of NFPA 72 recognizes this and permits the risk analysis to serve as a baseline in preparing other risk analyses for new or renovated facilities that have similar features. In that case, the MNS—which becomes a small, but important, part of the emergency response plan—can use the previously established risk analysis.

NFPA 72 also allows the limited scope of the risk analysis to only address the communication requirements of an existing emergency response plan. Given the assistance provided in NFPA 72, especially in the later editions, requiring a risk analysis should not create a hardship or stumbling block to designing and installing a mass notification system.

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