



From: National Association of State Fire Marshals / Project FAIL-SAFE

For Immediate Release:

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## Project FAIL-SAFE Finds Sprinkler “Trade-Offs” Lead to Drop in Overall Fire Safety Scores

**-Initial data from proprietary MATRIX™ tool shows decrease in building safety -**

**(New York, NY – December 13, 2017)** Project FAIL-SAFE, the first-of-its-kind and most comprehensive review dedicated to understanding the interaction between active and passive fire protection systems, has released preliminary data from its proprietary Risk Evaluation MATRIX™ tool. This initial report shows that since the creation of the International Codes (I-Codes) in 2000, building fire safety scores have measurably decreased. Though more work is needed, and this data is still preliminary, there is potential for this decrease in safety scores to harm firefighters. Project FAIL-SAFE is administered by the National Association of State Fire Marshals Fire Research & Education Foundation (NASFM Foundation).

“More data is needed, but the early conclusions indicate an overreliance on sprinklers at the expense of passive fire safety systems, which endangers both the public and the fire service alike,” **said H. Butch Browning, President of the NASFM Foundation and Louisiana State Fire Marshal.** “NASFM is a staunch supporter of fire sprinkler systems. But we, as a nation, need to think about fire safety holistically. Thanks to Project FAIL-SAFE and the MATRIX™ tool, we can compare how fire codes have evolved over time.”

Since the creation of the I-Codes, the means of egress capacity (capacity for a building to rapidly evacuate its occupants) increased, while standpipe safety scores decreased (standpipes are vertical pipes that provide water throughout a building for firefighting purposes). Furthermore, the MATRIX measured a notable decline in passive building features such as compartmentation, tenant / dwelling separation, and travel distances. In contrast, there is now an increased reliance on active building features such as fire alarm systems and fire sprinkler systems.

The net result is that all aggregate building safety scores – fire safety, means of egress, and general safety – have decreased since 2000. Though preliminary, this data indicates a real need to carefully consider how fire safety features interact, and ensure that buildings are constructed to protect both the public and firefighters alike.

The newer fire codes prioritize rapid egress, allowing occupants to quickly evacuate. However, modern buildings behave differently once ablaze. Modern synthetic materials burn faster and hotter than legacy, natural materials, the result being much faster flashovers, which are deadly and more difficult for firefighters to battle. Furthermore, modern buildings, with open floor plans and taller ceilings, require a greater commitment of water and other firefighting resources, and can be faster to collapse.

Since 2000, fire sprinkler systems have become increasingly common, and they are invaluable life and fire safety tools. Sprinkler systems are extremely effective in protecting both life and property when they function as designed, and the NASFM Foundation endorses their use wholeheartedly. Statistically, sprinkler systems are effective in 87 percent of the fires in which they are present, provided they are properly installed and maintained. Because of the effectiveness of sprinklers, building codes such as IBC and NFPA 5000 (the National Fire Protection Association's Building Construction and Safety Code) have introduced trade-offs, or relaxation in building regulations in areas where sprinklers are present.

However, if they do not function as designed the results can be devastating. Modern buildings, especially those built since the creation of the I-Codes, often have reduced passive fire safety features. This means fire can spread more rapidly, leading to a heightened potential for a catastrophic collapse or failure.

The Risk Evaluation MATRIX™ tool was developed by the NASFM Foundation for use in Project FAIL-SAFE. It indexes fire risk based on data input concerning a building's parameters, including its dimensions, materials, occupancy, and other criteria. Testing of the MATRIX and data gathering was conducted by fire departments across the United States. The data was cross-referenced with the codes under which the buildings were designed and built.

Project FAIL-SAFE is intended to address the issue of fire sprinkler "trade-offs." One example of a trade-off is allowing flammable exterior finishes when interior sprinkler systems are present. Experience has shown that much of the exterior of a building with such finishes can catch fire before the sprinklers have a chance to activate. There have been numerous examples of such fires across the world, as detailed in a [white paper](#) published by Fire Safe North America, a fire safety and resiliency advocacy group. These fires illustrate the need for a holistic approach to fire safety, as well as the necessity of understanding how passive and active fire safety systems interact.

"These initial results from the MATRIX are telling," added Browning. "They show the need to design integrated fire safety systems, complete with complimentary active and passive systems to best protect people's lives, homes, and property."

### ***About Project FAIL-SAFE:***

Project FAIL-SAFE is a major NASFM initiative, and is designed to study the impacts on fire and life safety in structures equipped with multiple layers of both active and passive fire protection features. The goal is to understand how active and passive fire protection features interdepend on one another in providing the level of safety the public and the fire service have come to expect. For more information, visit <http://www.firemarshals.org/Project-FAIL-SAFE>.

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