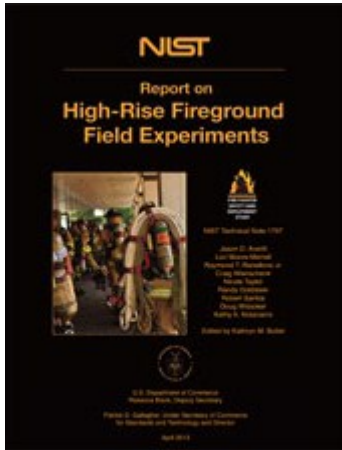


## Landmark study changes NFPA 1710, high-rise tactics

Apr. 10, 2013 [Mary Rose Roberts](#) | *Fire Chief*



**NIST's Report on High-Rise Fireground Field Experiments**

A consortium of public-safety organizations today unveiled a study that uses field and computer-modeling data to determine the minimum high-rise fire crew size. The study, along with the companion **Report on Residential Fireground Experiments**, establishes a technical basis for the deployment of resources to fireground events with varying levels of underlying hazards. It also will be used to update the next edition of NFPA 1710, a national standard for the organization and deployment of fire-suppression operations.

"This study was conducted as we watched nationally, and in Canada, decision-makers cut fire department resources with little knowledge of the impact or ramifications of their cuts," said Lori Moore-Merrell of the International Association of Fire Fighters, a co-principal investigator for the study, during a press conference. "[Participants] in the study helped us set, what we hope, will be the minimum crew-size standard in response to high-rise fires."

Funded by the **FEMA** Assistance to Firefighters Grants Program, the study was led by the **National Institute of Standards and Technology** (NIST) in partnership with the **IAFC**, IAFF, WPI, the Urban Institute and 13 Washington, D.C., area fire departments. Researchers took into account the growing rate of high-rise building construction in the U.S., and collected data to quantify the impact that different fire-crew sizes — three-person, four-person, five-person and six-person — alarm assignments and vertical-response modes had on occupant survivability, firefighter safety and property protection. Field studies were conducted in a 13-story vacant high-rise office building in Crystal City, Va., and involved 48 separate controlled experiments and computer modeling.

### **REPORT: NIST Report on High-Rise Fireground Field Experiments**

According to the report, having a five-member crew has a dramatic effect on the crew's ability to protect lives and property. The report found that when responding to a medium-growth-rate fire on the 10th floor of the high-rise structure, a three-person crew ascending to the fire floor confronted a blaze that is almost 60% larger than the fire faced by a six-member crew, which would start extinguishing a fire roughly three-and-one-half minutes earlier.

In addition to the time-to-task portion of the study, fire modeling was used to correlate time-to-task completion (by crew size, alarm size and vertical-response mode) to the degree of toxicity of the structure environment, for a range of fire growth rates.

"In general, occupants being rescued by smaller crew sizes and by crews that used the stairs rather than the elevators were exposed to significantly greater dose of toxins from the fire," according to the report. "While the exact risk exposure for an occupant will depend on the fire growth rate, their proximity to the fire, and the floor on which the fire is located, it is clear that on-scene deployment decisions can have a dramatic effect in determining the fate of building occupants."

## CHARTS: Effect of crew size on high-rise response

The results and conclusions will inform local fire chiefs and elected officials charged with matching fire risks in a community with a safe and effective fire department deployment configuration, added Dennis Compton, chairman of the National Fallen Firefighters Foundation and retired chief of the Mesa (Ariz.) Fire Department.

"To see the outcome of this work over the years we've been trying to complete this project is absolutely amazing," Compton said. "The most important thing about this study is it is going to assist fire chiefs, union officials and, just as important, city, county and district managers and elected officials in making informed decisions about the resources we send to those events."

## Related video

