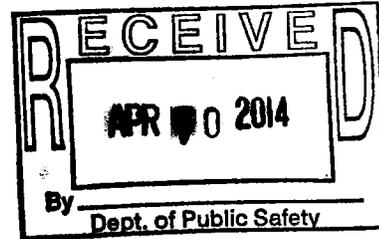




**National Fire Protection Association**

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April 4, 2014

Mr. Brian Gale, Chair  
Board of Building Regulations and Standards  
Commonwealth of Massachusetts  
One Ashburton Place, Room 1301  
Boston, MA 02108

*Re: Response to Draft White Paper on "The Cost and Effectiveness for Health, Safety, and Security of Fire Alarm Systems and Fire Sprinkler Systems in 3 to 6 Unit Residential Buildings"*

Dear Chairman Gale,

On behalf of the non-profit National Fire Protection Association (NFPA), I would like to take this opportunity to comment on the draft white paper, dated February 11, 2014. NFPA is the world's leading advocate of fire prevention and an authoritative source on public safety. We develop, publish, and disseminate more than 300 consensus codes and standards intended to minimize the possibility and effects of fire and other risks. Based in Massachusetts since our founding in 1896, NFPA's mission is to reduce the worldwide burden of fire and other hazards on the quality of life by providing and advocating consensus codes and standards, research, training and education.

I respectfully urge the board to reject the unsubstantiated assumptions in the white paper that are not based on validated research methodologies. Much of the information in the report is not relevant to fire safety, and the reader is expected to make a significant "leap of faith" to come to the conclusion that the high cost of housing in Massachusetts is a direct result of fire safety requirements. Furthermore, the draft white paper does not balance the cost of fire sprinklers with the well-documented effectiveness and benefits of such systems.

In the interest of brevity, I would like to highlight a just a few areas of concern.

- *Housing costs and housing shortage.* The white paper implies that the cost of purchasing or renting a home in Massachusetts, relative to other parts of the country, is primarily the result of fire safety regulations. It provides no evidence for this proposition, and asks the Board to ignore the obvious truth that housing costs are driven by a multitude of factors having little to do with

the cost of construction, much less the cost of safety regulations. Numerous economic factors drive housing costs, including land availability and cost, land use regulations, lending practices, competition and demand.

In recent years, efforts have been made by the construction industry to reduce construction costs by the introduction of lightweight structural components, including lightweight wooden roof trusses, stair assemblies and floor/ceiling assemblies. As a result, firefighters are experiencing the collapse of structures during the earliest stages of fire rescue and suppression operations. The intensity of fires in modern homes and apartments has increased dramatically due to the presence of synthetic furnishings and decorative materials. Occupants can be trapped and unable to self-evacuate even when functioning smoke alarms are present. The only reliable solution to balance the negative impact of lower-cost, lightweight construction and highly combustible building contents is a residential sprinkler system.

- *Sprinkler system operation.* The white paper (p. 9) states that a sprinkler system “spreads water over the flame, which attenuates, but not necessarily extinguishes the fire.” The report fails to describe the results and benefits of fire sprinkler activation, which include the following:
  - The fire is typically controlled or extinguished by the activation of one or two heads. Fire, smoke and water damage is minimized, and the building is often restored to full use within just a few hours.
  - In the absence of a fire sprinkler system, the fire grows in intensity until the arrival of the fire department. The fire department initially applies water to the area of the fire at a rate of 100 to 150 gallons per minute, while a residential sprinkler head applies water directly on the fire at a rate of 18 to 25 gallons per minute.
  - Most importantly, occupants can safely escape the building because the fire has been controlled during its earliest stages.
  - Based on 2006-2010 structure fires reported to U.S. municipal fire departments, when compared to structure fires in homes with no automatic extinguishing equipment present, analysis of home structure fires with wet-pipe sprinklers showed:
    - an **83%** reduction in **civilian deaths** per 1,000 home structure fires (from 7.3 to 1.3 deaths per 1,000 fires), and

- a **69%** reduction in **property damage** per 1,000 home structure fires (from \$20 thousand per 1,000 fires to \$6 thousand per 1,000 fires)<sup>1</sup>

These benefits can and should be included in the white paper.

- *Costs of Sprinkler Systems.* We believe that the Board would be far better served to use the two definitive studies of national home fire sprinkler costs sponsored by the Fire Protection Research Foundation (FPRF) in 2008 and 2013 (both studies are available at no charge at [www.nfpa.org](http://www.nfpa.org)).

North Andover is one of the communities evaluated in both studies. The builder cost for a complete residential sprinkler system in a new home in North Andover ranges from \$1.11 to \$1.47 per square foot, which compares favorably to the national average of \$1.35 per square foot. We also urge the Board to study the impact of the statewide mandatory requirements for fire sprinklers in California and Maryland. Neither state has seen negative effect on housing starts as a result of sprinkler requirements.

- *Conclusions.* Conclusion 1 includes the broad, unsubstantiated statement, “if building requirements are *many or unclear* then the price of a new or existing building *will be higher* than if the requirements are *fewer and clear*.” In reality, if additional requirements are added to a building code to reduce risk, mitigate hazards and improve safety (*e.g.*, fire, wind, seismic, etc.), the overall cost to the homeowner, community and state may actually be lower.
- Conclusion 4 speaks to the potential to build lower cost multi-unit residential buildings with *enhanced or equivalent* overall building occupancy life safety performance. There is substantial data to demonstrate that there is no technology or design criteria for life safety performance that is equivalent to fire sprinkler systems. NFPA would be happy to provide such information.
- *Recommendations.* Recommendation 2 effectively asks the Board to direct staff to develop a code proposal to reduce safety regulation. The white paper, however, does not even begin to demonstrate that the cost of existing safety regulation is unnecessary or that sprinkler and other safety requirements have any measurable impact on the higher cost of housing in

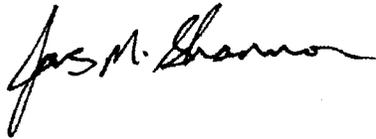
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<sup>1</sup> J. Hall, “Addendum to U.S. Experience with Sprinklers”, NFPA, May 2012.

Massachusetts relative to other parts of the country. The NFPA believes that a genuine analysis based on valid assumptions and relevant evidence would lead to the conclusion that the existing fire and life safety requirements for new construction R-2 buildings up to 6 units should *not* be reduced.

I urge the Board to reject the conclusions and recommendations of the white paper, and focus its resources on a more thorough and more accurate cost-benefit analysis of the code requirements for three to six unit residential buildings. We are happy to provide any additional technical information and the results of numerous research activities related to fire safety in residential buildings.

Sincerely,



James M. Shannon  
President & CEO

Copy: Governor Deval Patrick  
Andrea J. Cabral, Secretary of Public Safety and Security  
Thomas Gatzunis, Commissioner of the Department of Public Safety  
Senator James E. Timilty, Chair, Joint Committee on Public Safety and  
Homeland Security  
Representative Harold P. Naughton, Jr., Chair, Joint Committee on Public  
Safety and Homeland Security  
Robert M. Carasitti, P.E., Chair FFPF Committee  
Chief George Rogers, President, Fire Chiefs Association of MA  
Department of Public Safety staff: Mike Guigli  
Tom Riley  
Don Finocchio