

FIRE SPRINKLER TALKING POINTS

Fire Incidents, injuries and deaths declined dramatically in the last 30 years without the installation of fire sprinklers or the need to mandate fire sprinklers in new homes. This trend continues and the decline is even more impressive given the significant population growth and growth in housing stock our nation continues to see. The decline in fires and fire deaths occurred without the installation of fire sprinklers but because of changes in residential construction technology, improved building code requirements - especially for electrical and smoke alarm systems – consumer behavior and the concerted efforts of fire fighters, home builders and other safety advocates.

- *The latest NFPA study “[Home Structure Fires](#)” (2013) reports that home structure fires dropped 50 percent from 734,000 in 1980 to 370,000 in 2011.*
- *The drop is even greater when population growth is taken into account. The rate of reported home fires per million population fell 63 percent from 3,230 in 1980 to 1,187 in 2011.*
- *Home fire deaths hit a new low in 2011, when the estimated home fire death toll of 2,520 was 52 percent lower than 5,200 in 1980.*
- *Even more dramatic is the drop in the rate of home fire deaths per million population, falling 65 percent from 22.9 in 1980 to 8.1 in 2011.*
- *The same NFPA study also highlights that “the home fire problem is dominated by and resembles the fire experience of one- and two- family home fires”. Home fires in these dwellings declined from 591,000 in 1980 to 275,000 in 2011.*
- *The data from the NFPA report “[U.S. Experience with Sprinklers](#)” (2009) documents the minimal usage of sprinklers in fires reported in one- and two-family dwellings during that time, suggesting that sprinklers were irrelevant in the sharp reduction of fire incidents, injuries and deaths that occurred since the late 70s. According to the 2009 report, the number of fires reported in one- and two-family dwellings equipped with sprinklers was 0.2 percent in 1980 and 1.2 percent in 2006.*
- *In fact, sprinkler usage in one- and two-family home fires is so low that the most recent report “[U.S. Experience with Sprinklers](#)” (2012) does not provide separate estimates for fires in one- and two-family sprinkler-equipped dwellings but rather combines them with the fire incidents in sprinkler-equipped apartments. Still, in 2006-2010 sprinklers were present in only 6% of home fires.*

USFA and NFPA data continue to show the life-saving effectiveness of fire alarms and affirm that the vast majority of home fire fatalities occur when there are no operational smoke alarms. The number of home fires and fire deaths will continue declining as the maintenance of smoke alarms by home occupants is improved.

- *The 2011 NFPA study "[Smoke Alarms in U.S. Home Fires](#)" documents how the home smoke alarm became the fire safety success story. From 1977 to 1984, the use of home smoke alarms skyrocketed. The share of homes with at least one smoke alarm increased from 22 percent in 1977 to 74 percent in 1984 and continued to rise to 95 percent in 2004. It has hit a plateau at 96% since then.*
- *In 2005-2009, almost two-thirds of home fire deaths resulted from fires in properties without working smoke alarms. **The problem is not homes without sprinklers, the problem is homes without working smoke alarms.***
- *The 2008 NFPA Report "[Home Smoke Alarms- The Data as Context for Decision](#)" documents that when all reported fires are taken into account, the chance of surviving a reported home fire when smoke alarms are present and operating is 99.45%, compared 98.87% when no smoke alarms are present or when smoke alarms are present but not operational. The report also concludes that an additional 890 lives could be saved annually if every home had a working smoke alarm.*
- *The International Residential Code requires hard-wired, interconnected smoke alarms to be installed in all bedrooms, outside of them and on each additional story, including basements. When one alarm activates, all other alarms are activated as well. This effective early warning system is the most important way to protect occupants from fire.*
- *Smoke alarm technology is always changing and improving. Innovations in wireless technology and alternate signal noises that are easier for children and for seniors to hear will further improve the already overwhelming success of smoke alarm systems.*
- *When the firm Public Opinion Strategies asked 800 likely voters if fire sprinklers should be required in new homes, an overwhelming 89 percent said that smoke detectors already do an adequate job of protecting them in their homes*

The number of home fires and fire deaths will continue declining as more new housing stock is constructed since new homes are safer than ever before.

- *Technological innovations introduced in the last 50 years make homes far safer. Even as today's homes get older, they continue to offer fire protection because of previous code provisions for fire separation, fire blocking and draft stopping, emergency escape and rescue openings, electrical circuit breakers, capacity and outlet spacing, reduced need for space heaters in energy efficient homes, and many other improvements.*
- *The fire safety features will protect the home and occupants for the life of the home, unlike older homes that were not constructed with these important design features. New homes do not become more hazardous as they age.*

- *Little data is collected on the age of homes experiencing a fire, although there is anecdotal evidence that age of the structure is an important factor. Existing fire data showing the continued decline in the rate of fire incidents and fatalities is consistent with the retirement of homes not built to today's stringent code requirements. This trend continues.*

Fire sprinklers are expensive and not cost effective. Any jurisdiction considering mandatory fire sprinklers needs to determine and thoroughly consider what the true total cost to home buyers will be in their community (including additional fees that may be charged to water purveyors, etc) and what the constituents will pay collectively, before making any decision to mandate sprinklers.

- *The latest National Fire Protection Research Foundation's study "[Home Fire Sprinkler Cost Assessment](#)" (2008) designed to provide a national prospective and comprehensive overview of the home fire sprinklers costs found that the total sprinkler system costs to the homebuilder ranged from \$2,386 to \$16,061 with an average of over \$6,300. Costs vary significantly depending on the climate, a home's location, size, layout, number of stories, access to water, etc. In comparison, whole-house interconnected smoke alarm systems are now being installed for around \$50 per alarm.*
- *NAHB used the [Sprinkler Use Decisioning \(SPUD\)](#) tool designed by the National Institute of Standards and Technology (NIST) to compare the costs and benefits of a residential fire sprinkler system under different assumptions. The results show that sprinklers are unlikely to be economical. To generate benefits great enough to cover the sprinkler costs requires a "value of statistical life" assumption greater than those currently being used by the federal agencies or unusually inexpensive sprinkler systems with up-front costs under \$3,000¹.*
- ***Often cited average sprinkler costs of \$1.61 per square foot are misleading.*** *This average comes from the 2008 NFPA study and is based on homes with average sprinklered space of 4,118 sq ft. The NAHB analysis of the NFPA data shows that sprinkler costs per square foot are higher in smaller homes and tend to decline as homes get larger². In addition, sprinkler contractors do not typically quote prices on a per sq ft basis, and confusion may also arise because sprinklered square footage can be quite different from a home's living space, and ideas about what counts as living space and how to measure it vary.*
- ***Potential savings in infrastructure costs for local jurisdictions are not clear. Adding fires sprinklers to new homes will not reduce fire departments' staffing or equipment needs because in most jurisdictions, staff and facilities are necessary for quick response to emergency medical services (EMS) calls and other non-fire***

¹ See Paul Emrath, "[Using NIST's New Web Tool to Compare Sprinkler Costs and Benefits](#)", Housing Economics Online, September 2011.

² See Paul Emrath, "[Using NIST's New Web Tool to Compare Sprinkler Costs and Benefits](#)", Housing Economics Online, September 2011.

rescue. The 2013 NFPA report [“Trends and Patterns of U.S. Fire Losses in 2011”](#) shows that fires accounted for only 5 percent of all fire department responses, and out of these, only 20 percent were fires in one- and two-family homes.

- *Some development tradeoffs in the form of relaxed standards for new subdivisions, like allowing narrower streets, cul-de-sacs and fewer fire hydrants, could reduce costs for buyers of new homes with sprinklers but are difficult to negotiate for. However, allowing reductions in passive fire safety provisions if sprinklers are mandated is further evidence that fire safety provisions in building codes and planning are already adequate.*

Fire Sprinklers have a dramatic negative effect on housing affordability. Mandatory fire sprinklers will make new homes prohibitively expensive and disqualify thousands of home buyers from buying new homes that are generally safer than old existing homes, even without sprinklers.

- *The total sprinkler system costs incurred by the homebuilders are ultimately passed on to the new home buyers in the form of a higher home price. The final price of the home to the buyers will increase by additional 16 percent because other costs such as commissions and financing charges will automatically rise as well³. This suggests that the home buyers will have to pay from \$2,768 to \$18,631, with an average of \$7,308, more for a new home with sprinklers, automatically disqualifying thousands of home buyers from buying a new home⁴.*
- *Studies have shown those at greatest risk of residential fire injury or death include residents who live in substandard housing, where preventive maintenance is less likely. Poorer, less educated Americans are more likely to live in substandard housing than wealthier, educated Americans who are in a position to buy a new home. **Residential fire sprinklers mandated in wealthier communities are least likely to protect those who could benefit by them the most.***

Significant technical problems still exist.

- *The NFPA report [“U.S. Experience with Sprinklers”](#) (2009) lists situations when the sprinkler system will not be able to prevent the loss of life:*
 1. *When the victim is too close to the source of ignition.*
 2. *When the system is damaged by the fire or an accompanying explosion.*
 3. *When the fire originates in concealed combustible locations.*
 4. *When foreign objects shield the fire from the effective coverage area of the sprinkler.*

³ See the notes to Table 3 and the Appendix in [“How Government Regulation Affects the Price of a New Home”](#) Housing Economics Online, July 2011

⁴ [The NAHB Priced Out Model](#) shows that that nationally just a \$1,000 increase in the home price leads to pricing out about 232,447 households out of the market for a median-priced new home.

- *Unlike smoke alarms, there is no way to test sprinklers other than applying heat. Occupants must press the test button or use products that simulate smoke to verify that the smoke alarm is properly functioning and ready to alert occupants. Sprinkler manufacturers must rely on test sampling to see if the sprinkler will react to the presence of heat and activate. Defects with the sprinkler will not be known until the sprinkler fails to activate in a fire and reports are issued later for the recall of the defective sprinkler.*
- *The fire sprinkler valves must be checked periodically to verify the system is activated. Sprinkler heads must be checked to make sure they are clear of obstacles. Homeowners must be careful not to block them or paint over them. Also, if a backflow prevention device is installed as can be required, an expensive annual inspection may be mandated by the local water purveyor.*
- *Standards also specify that sprinkler pipes in the antifreeze-type systems installed in colder climates should be emptied and then refilled with an antifreeze solution every winter, and that monthly inspections and tests of all the water flow devices, pumps, air pressure and water level be performed.*
- *Having sprinklers provides no guarantee that fire hoses will not be used, flooding even more water into the house. Sprinklers will discharge water until the fire department has been notified, arrives on the scene, evaluates and determines the structure is safe, and then locates and turns off the water supply. Claims that less damage will be caused by a sprinkler than a fire hose are unsubstantiated.*
- *Additional home flooding risks come from the vulnerability of the pressurized sprinkler heads.*
- *They can activate if they are dislodged or disturbed, when there's horseplay or other types of negligence. Local requirements for water storage tanks and additional plumbing in the home open up the specter of frozen, pressurized pipes in some parts of the country. Adequately protecting against these problems adds further to the cost of sprinkler systems.*
- *The reliability of residential fire sprinklers is also questionable. There is no study that shows how long sprinkler systems will last. After smaller recalls by other companies in 1998 and 1999, a major fire sprinkler manufacturer recalled 35 million fire sprinkler heads in 2001. By now, any requirements that the manufacturer notify owners of homes where these defective heads have been installed have expired.*
- *Accidental discharge of sprinkler systems is another major concern. While accidental discharge due to a manufactured defect is rare, there have been several reported incidents where sprinklers have discharged when fire was not present or the cause of the discharge. Typically the sprinkler activated due to overheating, freezing, mechanical damage, corrosion, and deliberate sabotage.*

- *Sprinkler systems are expected to work in the event of the fire, but like any system maintenance is required to ensure it will operate when a fire is detected. Proponents claim that a NFPA 13 D requires no maintenance and that the system can be installed and forgotten. The fact is that all sprinkler systems, whether they are commercial or residential, require routine maintenance and inspection. NFPA 13 D states that it is the responsibility of the installer to provide the owner all the maintenance information and educate the owner how the fire suppression system works.*
- *If homeowners are led to believe that no precautions are necessary and no preventive maintenance needs to be performed, this will lead to a false sense of security.*

Fire sprinklers mandates should remain an option for state and local jurisdictions. This option is already adequately provided for in the appendix of the IRC.

- *Should a jurisdiction wish to mandate residential sprinkler systems, a provision for them to do so is now available in the IRC via adoption of Appendix P. Allowing state and local jurisdictions to decide for themselves based on the specific needs and concerns of their communities is the most appropriate approach. That approach was overwhelmingly endorsed by the ICC at the previous Final Action Hearings, where inclusion of the appendix was approved for that very reason -- even by the building officials who do believe sprinklers should be mandated – and that action should be honored and upheld.*
- *The IRC clearly states, “The purpose of this code is to provide minimum requirements to safeguard life or limb, health and public welfare.” The IRC Commentary states that the IRC is intended to provide reasonable minimum standards that reduce the factors of hazardous and substandard conditions that would otherwise put the public at risk to damaging their health, safety or welfare. Any imposition of a mandated sprinkler requirement is excessive and is not a reasonable minimum standard for meeting the “purpose” of the code. It is important to remember that the code is composed of many life-safety standards that have been proven to meet the “purpose” of the code. Proposals to mandate sprinklers as a requirement in the body of the IRC rather than an adoptable appendix exceed this “purpose” and should not approved.*