

The Impact of Mandating Residential Fire Sprinkler Systems





This report provides information and guidance to aid in the discussion and consideration of mandating fire sprinkler systems in new homes in Illinois. It seeks to present a thorough understanding of the impact that this mandate would have on property owners in this state. This brochure will:

- Express the questions and concerns of the new-home buying population and the residential development community
- Examine costs associated with a fire sprinkler mandate
- Suggest alternative policy measures to a fire sprinkler mandate

We hope that you will take the time to read this piece to develop a better understanding of this important public policy debate.



The Impact of Mandating Residential Fire Sprinkler Systems

REALTOR® associations and homeowners across Illinois have great concerns about proposed local ordinances that mandate fire suppression sprinkler systems in new single-family homes. [Requiring new construction homes to include sprinkler systems has the potential to impact the affordability of housing, limit consumer choice and infringe on property rights.](#)

It is important to note that REALTORS® are not opposed to sprinkler requirements for high-risk, high-occupancy properties, such as multi-family and commercial buildings (new construction). With so many people occupying one building, there is a clear need for sprinklers in those buildings.

However, new construction of single-family homes poses a relatively low risk for fires and fire-related death or injury. Today's new homes have improved standard safety features, including: fire retardant materials; electrical installations and systems; heating systems; framing and blocking techniques; egress; and the installation of interconnected hardwired smoke/ fire detectors.

■ Due to improvements in residential construction technology, improved building code requirements (especially for electrical and smoke alarm systems), consumer awareness of fire safety, and better training for firefighters, home builders and other safety advocates, the number of fire fatalities has dropped dramatically in the last 20 years.

■ This ongoing decline is even more impressive given the significant population and housing stock growth nationwide. According to the US Census, the number of

■ total housing units rose by 13% between 2000 and 2010 while the number of fires in residential buildings dropped by 8% in that same period.

In Illinois, the statutory requirement for the installation of smoke detectors in all residential units has helped significantly since its enactment in 1988. Additional municipal requirements regarding home features such as an egress have also been instrumental in enhancing fire safety.

■ Even more dramatic is the drop in the actual death rate per million persons from house fires. According to the U.S. Fire Administration, fire deaths in Illinois declined by 47% from 2000 to 2010. That trend is expected to continue as more homes are built with required fire safety features.

Requiring new construction homes to include sprinkler systems has the potential to impact the affordability of housing, consumer choice and inherent property rights.

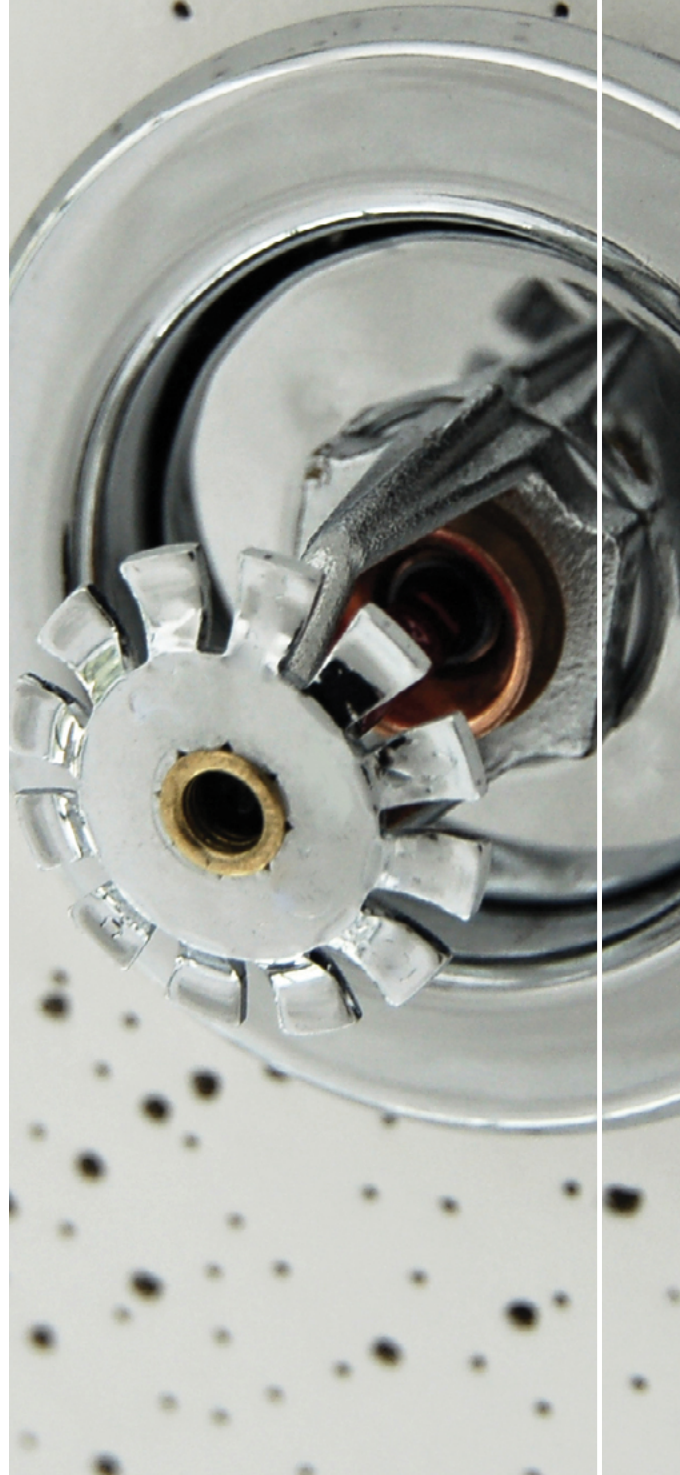
Action by the International Code Council

Despite safety improvements in new home construction, the International Code Council (ICC) in 2008 supported a residential fire sprinkler requirement for all new one- and two-family homes and townhouses beginning in 2011. This sprinkler mandate first appeared in the 2009 International Residential Code (published in late 2008).

The ICC is a membership association dedicated to building safety and fire prevention, and develops suggested codes for local governments in the construction of residential and commercial buildings, including homes and schools. Most US cities, counties and states that adopt codes choose building safety codes developed by the ICC.

This action by the ICC means that when a municipality adopts the 2009 International Residential Code in its entirety, this sprinkler mandate will be a part of that municipality's laws.

The 2009, 2012, 2015, 2018 and 2021 editions of the International Residential Code (IRC) join the National Fire Protection Association's (NFPA) Life Safety Code and the NFPA Building Code in requiring fire sprinklers to be installed in all new homes. [The NFPA codes](#) have included this requirement since 2006.



Sprinkler Installation Mandate

The Best Public Policy for Fire Prevention?

The National Fire Sprinkler Association, a sprinkler mandate advocate, advises in its guide, *Residential Fire Sprinklers: A Step by Step Approach for Communities*, that “statistics can often confuse a decision and make the public officials question what otherwise would have been a 5-0 vote to pass a fire sprinkler requirement.”

On the contrary, we believe that factual statistics rather than emotion should govern this debate. Simply put, [new construction single-family homes have a proportionately, significantly lower instance of fires than older homes](#). While no fire fatality is acceptable, the downward trend is clear.

The Canada Mortgage and Housing Corporation (CMHC), a government agency, has found a sharp decrease in residential fire incidents over the years despite a growth in housing stock. Moreover, the study “did not find evidence to suggest that newer houses will become less safe as they age.”

The same is true in the United States. From 1980 to 2005, the one- and two-family housing stock grew by over 45 percent, but the number of residential fires has decreased by around 40 percent. Among the reasons are improved electrical equipment and appliances, safer heating equipment, better home construction, and reduced smoking rates. In fact, firefighting constitutes only a minute fraction of the job of a modern day fire fighter.

The Best Use of Resources?

The CMHC has recommended against fire sprinkler mandates, stating that while “it is impossible to eliminate risk completely, the challenge is to use resources wisely.”

Elliot F. Eisenberg, Ph.D., writes in *Fire Prevention Engineering* magazine that fire prevention efforts should be directed toward older housing stock and poor households; to do otherwise, Eisenberg says, “wastes resources and withholds help from those who stand to benefit from it most.”

The chair of Duke University’s Department of Economics, Thomas J. Nechyba, Ph.D., writes that residential sprinkler mandates enhance the sprinkler industry’s profits while increasing the longevity of the most dangerous housing and dampening local economic activity.

“A thorough economic analysis of the unintended consequences of broad local mandates for fire suppression systems in home construction and renovation suggests that such a policy gives rise to precisely these undesirable results while creating an industry protected from competitive market forces,” Nechyba says.

Sprinkler Mandates and “Creating” a Market

It is clear from statements made by sprinkler industry leaders that mandates will net business and profit opportunities for sprinkler installers and manufacturers. We find nothing wrong with seeking out new profit opportunities. But should they be sought through a government requirement where the consumers—in this case, purchasers of new homes—have no choice as to whether to have sprinklers in their homes?

Creating markets by advertising your products and their effectiveness and usefulness is to be expected from entrepreneurs; however, the creation of a market by advocating for a government mandate should be viewed with some skepticism.

If this industry can gain market share and increase profits through free market principles, we take no issue. REALTORS® are concerned when those gains are realized by advocating for local building code mandates like fire sprinkler systems.

Simply put, new construction single-family homes have a significantly lower instance of fire fatalities than older homes.



Modern Construction Has Made New Homes Safer

A leading reason for the significant decline in residential fire fatalities and injuries can be attributed to the many safety features in new homes, including:

- Hardwired smoke/fire detectors
- Improved fire blocking and stopping
- Superior heating and electrical design
- Better planned egress
- Enhanced fire ratings on interior furnishings and building materials

Although wood framing is a combustible material, when it burns, a layer of char is created which helps to protect the wood and maintain the strength and structural integrity of the wood inside. This is the reason why a heavy timber system can be left exposed and still achieve a fire-resistance rating of up to 90 minutes. Wood frame walls, floors and roofs using conventional wood framing, wood trusses and wood I-joists, can be designed to provide fire resistance ratings up to two hours. For items first ignited and representative of the most deadly fires, upholstered furniture was almost seven times more deadly than structural members.¹

These newer features provide protection at a level never previously reached in residential housing. It is precisely because of these qualities that newer homes are less susceptible to fire and provide a wider timeframe and easier means of escape.

¹ Fitzgerald, Robert W., Fundamentals of Fire Safe Building Design, *Fire Protection Handbook*, National Fire Protection Association, Quincy, MA.

For a copy of the studies mentioned in this section, please ask the Government Affairs representative of the local Association of REALTORS®.



Calculating the Real Costs of Fire Sprinkler Installation

Review of Actual Bids for Installation

Quite often, the public discussion regarding fire sprinkler installation costs is confusing and misleading. The cost-per-square-foot numbers can lead to confusion and manipulation depending on whether the total dollar estimate is applied to “living space” or the total space of the home.

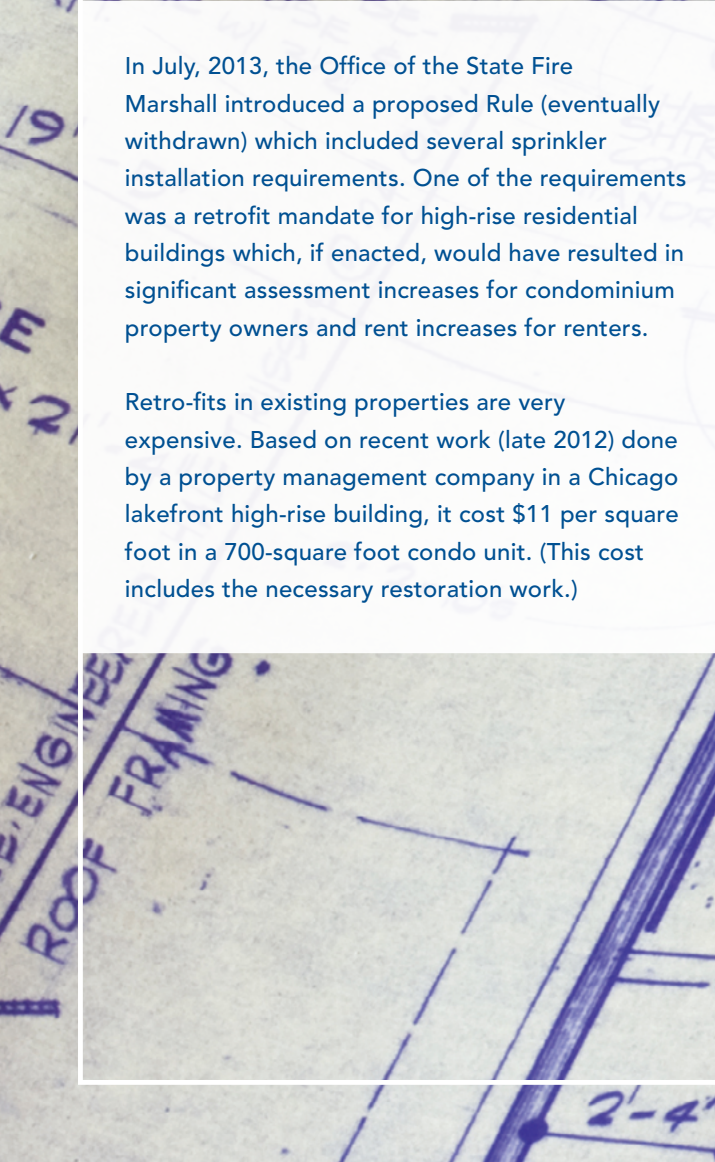
A review of bids provided to the Illinois Association of REALTORS® for installation costs in a sampling of single-family homes shows the financial impact.

- Single-family home with a total of 4,000 square feet; Lake County, Illinois:
Bid for installation, January, 2024 = \$19,160
- Single-family home with a total of 3,700 square feet; DuPage County, Illinois:
Bid for installation, January, 2024 = \$18,900
- Single-family home with a total of 2,500 square feet; Peoria County, Illinois:
Bid for installation, January, 2024 = \$30,000 (minimum)
- Single-family home with a total of 3,000 square feet; St. Clair County, Illinois:
Bid for installation, January, 2024 = \$27,000.

The amounts above are for the direct costs: labor, pipes, fittings, hangers and all other components of installation. In addition, there are the indirect costs associated with installation. Items such as; 1) time spent coordinating inspections between fire officials and building officials; 2) time spent coordinating the sprinkler installer with other trades; 3) fire sprinkler system testing prior to inspections; 4) post-installation monitoring and maintenance; 5) possible addition of water pressure pump and/or a secondary water line on exterior of house. All of this adds up and contributes to the ultimate price/cost of the home to the purchaser.

Impact to the Municipality

A municipality considering a mandatory fire sprinkler ordinance must consider the oversight and cost required to administer such a program. This includes pre-construction review, post-construction review and the potential need for city inspectors to check homes for ongoing compliance.



In July, 2013, the Office of the State Fire Marshall introduced a proposed Rule (eventually withdrawn) which included several sprinkler installation requirements. One of the requirements was a retrofit mandate for high-rise residential buildings which, if enacted, would have resulted in significant assessment increases for condominium property owners and rent increases for renters.

Retro-fits in existing properties are very expensive. Based on recent work (late 2012) done by a property management company in a Chicago lakefront high-rise building, it cost \$11 per square foot in a 700-square foot condo unit. (This cost includes the necessary restoration work.)

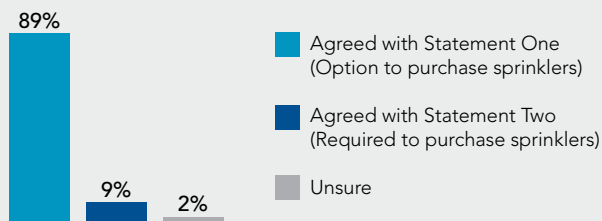
Sprinkler Mandates Not Popular with the Public

A public opinion survey was conducted in Illinois in July, 2013 on this issue. Likely voters (sample size of 706, distributed throughout the State) were asked in a telephone survey the following questions:

Which of the following statements is closer to your personal view:

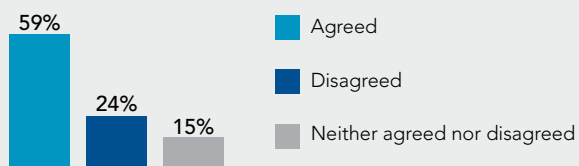
Statement One: Potential homebuyers should have the option to purchase an indoor sprinkler system if they choose.

Statement Two: The government should require potential homebuyers to have indoor sprinkler systems installed in their new home.



In the next question, respondents were asked if they agree or disagree with the following statement:

Requiring new homes to have sprinklers installed will severely limit a homebuyer's choices and property rights because it will force them to spend a lot of money on sprinklers.*



**Those being surveyed were given a cost-of-installation figure of \$5,000.*

The results of this public opinion survey indicate a strong preference for homebuyer choice in the matter of sprinkler installation. As a public policy, there is little support for a sprinkler mandate in Illinois.

For a copy of the full public opinion survey that was conducted, please ask the Government Affairs representative of the local Association of REALTORS®.





Public Policy Alternatives to Sprinkler Mandates

REALTORS® and builders want people to be safe in their homes and are committed to improving the quality of life in the communities where we live and work. The decision to install sprinkler systems should be left to the new homebuyer who, in the end, has the potential to be burdened with the high costs. There are public policies that can enhance that choice and serve as an alternative to a sprinkler mandate.

Some alternatives that should be considered include the following:

Mandatory Offer of Sprinkler Installation

Under this plan an ordinance would require each developer/builder to offer the option of a sprinkler system installation to a buyer. The buyer would, upon consideration of the offer, sign a document indicating that they were offered the system and either accepted or declined the installation. Providing an educational piece explaining the benefits of a sprinkler system to buyers could also be a required part of the process.

This type of requirement will enhance consumer choice and generate awareness and education about sprinklers and fire prevention. It will also enable the buyer to make the decision that is most appropriate for their situation and finances.

Financial Incentives for Sprinkler Installation

Some municipalities in Illinois have offered waivers of specific development-related fees as an incentive for the builder and homebuyer to install sprinkler systems. This option could be explored.

Also, Public Act 95-800 allows fire protection districts to give grants for sprinkler systems. This could be explored as another form of assistance that would serve as an incentive.

Fire Prevention Educational Campaign

The municipality could launch an education campaign targeting residents of older homes. This could include an effort to educate residents about the importance of working smoking detectors (checking batteries, replacing batteries, etc.). Several recent fires and fire deaths could have been prevented if the smoke detectors in the home were functional.

Educating the public about safety and sprinkler systems is well worth the effort. Recently, the US Fire Administration (USFA), a division of the Federal Emergency Management Agency (FEMA), produced a comprehensive public fire safety campaign that emphasizes fire alarms and includes a segment on fire sprinklers.

Materials can be downloaded at www.usfa.dhs.gov/smokealarms (English) or www.usfa.dhs.gov/detectoresdehumos (Spanish). The Campaign Toolkit disc with all campaign materials is available from the USFA Publications Center at www.usfa.dhs.gov or by calling (800) 561-3356.

We encourage local policymakers to explore what resources are available to educate residents on fire safety and explain steps they can take to protect themselves and their families.

As awareness grows, the potential for increased demand for sprinklers will grow as well, allowing free market principles to expand this industry rather than forcing the consumer to purchase a product they simply may not want through a mandate.

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