

THE FINAL FRONTIER

Despite the efforts of advocates and code requirements supporting the cause, the question persists: How can this life-saving technology make it into all new homes?

BY FRED DURSO, JR.



RON COLEMAN CAN TELL YOU the instant he became a believer in home fire sprinklers.

It was the early 1970s, and Coleman was a battalion chief with the Costa Mesa, California, Fire Department. Responding to a call, he arrived at the scene of an already contained home fire and approached his weary-looking captain, Ray Gallagher, in the driveway. A seasoned veteran firefighter, Gallagher was typically guarded with his emotions, but now he was crying. Coleman entered the home and saw what had provoked Gallagher's reaction: the body of a 13-year-old girl, lodged between a wall and a couch inside her bedroom. Her attempts to escape the fire had led her there, where she died. Gallagher had a daughter about the same age.

Coleman was immediately reminded of another incident the week before, when he had responded to a fire at a yacht factory. Sprinklers had controlled the fire, the fire department squeegeed the floors, and the factory resumed business that day.

"Not a single, solitary thing was lost in that building," says Coleman, a former state fire marshal for California who now consults for a handful of fire protection firms. "How is it that we can save a damn fiberglass boat, but we can't save a 13-year-old child? That was the galvanizing moment when I became a really strong fire sprinkler advocate."

More than four decades later, Coleman and today's top safety experts cannot grasp why these kinds of events remain common today. Businesses, restaurants, hotels, concert venues—most of these settings have embraced the power of sprinkler protection for decades. Fire sprinklers in new homes, advocates say, should be a non-issue, since homes are where today's biggest fire problem occurs—close to 3,000 annual fire deaths, or 80 percent of all U.S. fire deaths, happen in homes. In 2015 alone, NFPA reported more than 365,000 home fires resulting in \$7 billion in property loss. Research also confirms that today's homes are burning faster than ever due to open-concept designs, engineered building materials, and



Fires in unsprinklered homes can grow with remarkable speed and ferocity, experts say, upholstered furniture that has been likened to "foam gasoline."

As dire as the home fire problem is, the solution exists. Since 2009, all U.S. model building codes have included the requirement—not the option—to sprinkler new homes, steps considered by safety advocates as historic advancements in improving home fire safety. If fire sprinklers are the answer, why hasn't this life-saving technology been fully embraced? "Quite frankly, we are outgunned and outspent by the homebuilding industry when it comes to influencing policy makers," says Tim Travers, a regional sprinkler specialist for NFPA.

The housing industry tends to balk at fire sprinkler requirements, basing its opposition on

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numerous sprinkler myths, including claims of inflated installation costs that it argues will price people out of homes. According to a recent article by ProPublica, an independent investigative journalism organization, homebuilders have spent more than \$517 million in the last decade on state politics that have been influential in thwarting sprinkler requirements in at least 25 states. Sprinkler opponents are also influencing state legislators and affecting code-making decisions. Moreover, other groups with a potential stake in fire sprinklers—those overseeing community water resources, for instance—believe these myths or are swayed by their own sprinkler misperceptions, which can negatively impact installations.

These setbacks have only energized safety advocates, who are on a coordinated mission to promote the truth about home fire sprinklers. Building on momentum initiated by NFPA and others in the 1970s, legions of advocates have been joining forces, creating an effective grassroots movement localizing fire sprinkler education and advocacy. The efforts of the [Home Fire Sprinkler Coalition](#) (HFSC), a nonprofit sprinkler education group founded 20 years ago, have led to a more informed public on the need for sprinklers and their affordability and operation. Sprinkler advocacy coalitions have been formed in more than half of all U.S. states. Hundreds of communities and two states have adopted sprinkler requirements with support from NFPA's [Fire Sprinkler Initiative](#), a campaign aimed at increasing sprinkler requirements for new homes.

"Home fire sprinklers are the final frontier in the effort to reduce the fire problem," says Lorraine Carli, NFPA's vice president of Outreach and Advocacy and president of the HFSC. "Sprinklers have become commonplace in virtually every other type of building, except where the majority of fires are happening. Our work to see home fire sprinklers become as prevalent as sprinklers in other types of buildings will nearly eliminate fire deaths."

The more things change...

In 1973, the National Commission on Fire Prevention and Control released "[America Burning](#)," a broad and bluntly critical look at the country's fire problem. A key recommendation of the landmark report supports "improved automatic extinguishing systems that would find ready

acceptance by Americans in all kinds of dwelling units." The emphasis on sprinklers supported a central tenet of NFPA: fire sprinklers had led to NFPA's formation in 1896, when a group of insurers, witnessing the value of this technology, standardized sprinkler installation in commercial settings and created provisions that would become NFPA 13, Installation of Sprinkler Systems.

Heeding the recommendation in "America Burning," NFPA created a committee in 1973 to develop a standard for sprinklering one- and two-family dwellings. Home fire data then were largely similar to current trends: about 80 percent of all fire deaths from 1977 to 1981 were the result of fires that occurred in homes. Though more people died in home fires then—more than 7,000 people annually—a person's risk of dying from these incidents has remained about the same. Understanding that fire sprinklers can significantly cut this risk, fire safety experts began extolling the benefits of sprinklers in homes.

In 1975, NFPA issued [NFPA 13D, Installation of Sprinkler Systems in One- and Two-Family Dwellings and Manufactured Homes](#). The 1980 edition was the first to require the use of listed home fire sprinklers during installation. A year later, according to Popular Science, Grinnell developed the first listed sprinkler for home use. In a prescient assessment, a 1980 issue of NFPA's membership magazine, then known as Fire Journal, stated that "residential sprinkler technology... will dramatically improve in the near future, and interest in it will greatly increase. The fire service could act as an educator of this concept to the public."

After leaving Costa Mesa to become fire chief of the San Clemente, California, Fire Department, Ron Coleman embraced the educator role when he began his mission to sprinkler every new home in town. "Our city manager told me [in the mid-1970s], 'we're going to quadruple the size of the city in 10 years. I'd like you to do whatever you can to limit the fire problem.'" Coleman advocated for a home fire sprinkler ordinance; over the course of five years, he organized close to 50 live demonstrations for his city council using sprinklered and unsprinklered structures.

Pushback was swift, and included resistance from Coleman's colleagues in the fire service.

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AFFORDABLE PROTECTION Research has found that the cost of installing home fire sprinklers is on average about one percent of a home's total construction cost.

“Several fire chiefs told me my fire service career was over due to my advocacy for fire sprinklers,” he says, adding that some fire service members still believe fire sprinkler ordinances will make their jobs obsolete. “Most of the arguments also being articulated by the National Association of Home Builders at the time haven’t changed significantly since 30 years ago. They still say [fire sprinkler ordinances] will kill housing.”

Coleman’s relentless mythbusting and tailored demonstrations paid off; San Clemente’s ordinance to sprinkler its new homes, the country’s first, was passed in 1979. More than 150 California communities passed similar local ordinances over the next two decades, making the passage of a statewide requirement in 2010 palatable to both the state’s fire service and the local homebuilding association. Countering the popular homebuilder claim that sprinkler requirements stall housing development, California built more than 130,000 single-family homes and more than 150,000 multi-family homes between 2011, when the statewide requirement took effect, and 2014, according to published sources.

“[Sprinkler education] is an ongoing experience that you can’t afford to slack off on,” says Coleman, who works with the California Fire Sprinkler Coalition to educate residents on sprinkler operation. “It’s like painting the Golden Gate Bridge. You start at one end, and by the time you get to the other end you’ve got to start painting the bridge all over again. We’re never done.”

From educators to advocates

Over the decade following San Clemente’s ordinance, other U.S. communities followed suit. In 1986, Scottsdale, Arizona, began requiring sprinklers in its new homes, and Prince George’s County, Maryland, passed a similar ordinance in 1992. Both have researched the outcomes; Scottsdale’s property losses due to fire are a fraction of the national average, and Prince George’s County has experienced no fire deaths in its sprinklered homes since the ordinance was passed.

“We didn’t use the word ‘advocacy’ back then, but where appropriate, we assisted those who tried to put sprinkler provisions forward,” says Gary Keith, former NFPA vice president of Field Operations and Education who joined NFPA’s staff in 1995 and served as HFSC president while he was with NFPA. “Since sprinklers in new homes were not a code requirement at that point, it was unusual for NFPA to be out in front of the codes. We had some discussions on whether that was OK, and determined that it was because of the importance of the issue.” Other organizations, including the American Fire Sprinkler Association (AFSA) and the National Fire Sprinkler Association (NFSA), were also championing for sprinklered homes, but Keith admits the educational messaging from all three organizations was disjointed and none could devote the attention to it that was needed.

As a way to coordinate efforts and provide a unified voice for home sprinklers, the Home

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Fire Sprinkler Coalition (HFSC) was formed in 1996, with founding members including NFPA, AFSA, and NFSA. In keeping with the mission it developed 20 years ago, HFSC offers free and unbiased educational resources for the fire service, homebuilders, and other stakeholders—all housed on its newly revamped website. Through the years, HFSC has expanded its board to include property insurers, fire service organizations, and others.

As a community's most trusted safety source, the fire service has been the biggest promoter of HFSC materials and the home fire sprinkler message. Through HFSC's Built for Life Fire Department Program, 2,800 U.S. and Canadian fire departments have pledged to make home fire sprinklers a priority of their outreach.

A popular tactic by these departments has been conducting live side-by-side flashover/sprinkler demonstrations for the public and community decision makers. In these demonstrations, two eight-by-eight-foot structures—one equipped with fire sprinklers, one without—are set ablaze as audiences watch and compare the outcome. These side-by-side events display a startling fact: today's home fires can become deadly in as little as two minutes.

This is in part due to the materials and methods used to construct many new homes. Today's building material of choice, engineered lumber, is made of wood fibers and other materials bonded together and utilized as part of a building process commonly referred to as "lightweight construction." While the materials are considered environmentally friendly and as structurally sound as traditional dimensional lumber, they behave very differently when subjected to fire; studies document this material collapsing under fire in about six minutes, compared to about 19 minutes for homes built with traditional dimensional lumber. Compounding the problem is modern furniture stuffed with synthetic materials, including highly combustible polyurethane foam, that burn quicker than the wool and cotton used in older "legacy" furniture. While aesthetically pleasing, today's large, open-concept homes can also lead to rapid fire spread.

As a result of HFSC's public education efforts, code-making bodies eventually took notice of this deadly trio and how fire sprinklers can reduce the risk of fire deaths by more than 80 percent. The 2006

edition of NFPA 5000®, Building Construction and Safety Code, was the first U.S. model building code to include a provision requiring sprinklers in new one- and two-family homes. "This was the first time any national model code process said, 'this is the right thing to do,'" says Keith, who is now vice president of Engineering Standards at FM Global and represents FMG on HFSC's board. The International Code Council's International Residential Code included the requirement in its 2009 edition following an overwhelming majority vote. Subsequent editions of each code have included the requirement to sprinkle new homes. Getting the sprinkler requirement adopted by states and towns was the next step, but NFPA knew it needed an army of advocates to make that happen.

There was no better model than NFPA's Coalition for Fire-Safe Cigarettes Campaign, the association's initial foray into advocacy, which was launched in 2006. With more than 50 national and state fire safety groups on board, the coalition fought the powerful tobacco lobby to help pass legislation requiring the manufacture of fire-safe cigarettes in all U.S. states. Following that success, NFPA asked the fire service what else it should address on a national level. Their answer was resounding: home fire sprinklers.

In 2009, NFPA launched the Fire Sprinkler Initiative, which links advocates with resources to promote fire sprinkler requirements to code-making bodies and legislators. The initiative offers on-the-ground support and free resources, including HFSC material, via its website. NFPA research on home fire sprinklers has also furthered the cause; its two landmark reports on sprinkler installation costs place the national average at about one percent of a home's total construction cost.

"We thought we'd be on an offensive strategy in proposing statewide adoptions," says Keith, who oversaw the launch of the initiative. "What quickly happened in the first two years, thanks to efforts by the local homebuilding associations, was a defensive strategy to try to fight roadblocks and challenges to get provisions adopted."

For instance, a requirement to sprinkle Pennsylvania's new homes was slated to take effect in 2011, but lobbyists supporting the

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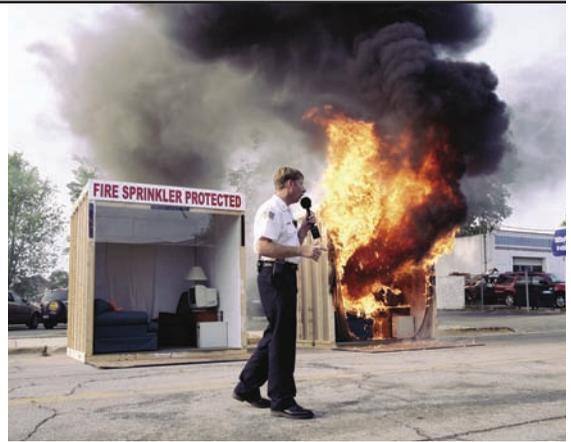
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homebuilding industry helped to repeal the requirement that year. In other states, legislators have removed the ability for communities to adopt requirements locally. “Both California and Maryland [the other state requiring home fire sprinklers] benefited from the fact that the state allowed local adoptions,” says Keith. “Therefore, you have more support for it at the state level. In many states, that situation can’t occur because you can’t have any jurisdiction passing it locally. You don’t have the advantage of that slow-and-steady support that could lead to a statewide provision.”

Another challenge has been some fire service members who are not fully on board for the cause—as Coleman noted, some argue home fire sprinklers will diminish the need for firefighters, thereby placing them out of a job. In other cases, fire service members admit to experiencing “firefighter fatigue” when it comes to battling the opposition or local politicians who don’t support sprinkler requirements, thereby leading them to remain silent on the issue. “While many fire service leaders are supportive of home fire sprinklers, there are some at the local level who aren’t—even though sprinklers address a huge firefighter safety issue,” says Jeffery Hudson, an NFPA regional sprinkler specialist.

Addressing these and other setbacks are close to 30 state sprinkler coalitions. Comprising fire safety groups and sprinkler supporters, the coalitions organize public outreach to promote home fire sprinklers and strategize on how best to influence local officials. As a member of each coalition, NFPA has supported their efforts with its Bringing Safety Home Grants, awarding \$200,000 over the past two years to further sprinkler education and advocacy efforts. NFPA is currently working with safety advocates in Canada to initiate the country’s first provisional coalitions.

These efforts are gradually converting the opposition. The Connecticut Fire Sprinkler Coalition, for instance, organized a special summit for local water purveyors and building officials last year to dispel sprinkler myths. “I was pleasantly surprised that the Massachusetts Fire Sprinkler Coalition organized a similar event, resulting in the Massachusetts Building Commissioners and Inspectors Association openly supporting home fire sprinklers on both the legislative and regulatory



PROOF IN THE DEMO Demonstrations of fires in unsprinklered furnished rooms vs. sprinklered rooms offer dramatic proof of the benefits of home fire sprinklers. Photograph: Jonathan Zalkin, Krull & Associates

fronts,” says NFPA’s Tim Travers.

These local efforts have led to increased sprinkler acceptance and installation, but NFPA’s Lorraine Carli admits a more unified acceptance across North America will take time. “There is a long history of resistance to adding fire safety measures in homes using the same erroneous arguments—that they cost too much, they thwart building, they aren’t necessary,” says NFPA’s Carli. “We saw it with smoke alarms and electrical safety. In order to overcome resistance to home fire sprinklers, we need consumers to demand homes that are up to code, builders who embrace safety as a market differentiator, and fire service members who talk about the benefits of sprinklers the way they talk about the value of working smoke alarms.”

Coleman is confident advocates will accomplish these tasks. “We have made huge inroads in the last 10 to 20 years,” he says. “I used to joke that we could hold a meeting for sprinkler advocates in a telephone booth. Now there are many advocates generating a lot of enthusiasm and support for the cause.”

FRED DURSO, JR., is communications manager for NFPA’s Fire Sprinkler Initiative. For more information on the Fire Sprinkler Initiative, visit FireSprinklerInitiative.org. Follow him on Twitter @FredDursoJr. Top Photograph: Cherie Diaz, St. Petersburg Times