

**NFPA**

# Commentary on the “NAHB Recommended State & Local Amendments to the 2009 International Residential Code (IRC)”

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[This document provides commentary on the referenced NAHB homebuilder document. It is intended to update information, examine analyses for validity, and express NFPA’s position with regards to the inclusion of residential fire sprinklers in the code. NFPA commentary (in blue) follows the area of the document being commented on.]

# National Association of Home Builders Recommended State & Local Amendments to the 2009 International Residential Code (IRC)

**Issue:** Automatic Fire Sprinkler System

**2009 IRC Section - R313**

## **Recommended Amendment**

*Delete the Section in its entirety as shown below:*

### **~~R313 AUTOMATIC FIRE SPRINKLER SYSTEMS~~**

**~~R313.1 Townhouse automatic fire sprinkler systems.~~** An automatic residential fire sprinkler system shall be installed in townhouses.

**~~Exception:~~** An automatic residential fire sprinkler system shall not be required when additions or alterations are made to existing townhouses that do not have an automatic residential fire sprinkler system installed.

**~~R313.1.1 Design and installation.~~** Automatic residential fire sprinkler systems for townhouses shall be designed and installed in accordance with Section P2904.

**~~R313.2 One- and two-family dwellings automatic fire sprinkler systems.~~** Effective January 1, 2011, an automatic residential fire sprinkler system shall be installed in one- and two-family dwellings.

**~~Exception:~~** An automatic residential fire sprinkler system shall not be required for additions or alterations to existing buildings that are not already provided with an automatic residential fire sprinkler system.

**~~R313.2.1 Design and Installation.~~** Automatic residential fire sprinkler systems shall be installed in accordance with Section P2904 or NFPA 13D.

## **Reason:**

The purpose of this amendment is to delete the reference of the mandatory requirement of residential sprinkler systems in all one- and two- family dwellings and townhouses. This change will provide the homeowner with the continued ability to choose whether or not a

residential fire sprinkler system is appropriate for their situation.

NAHB strongly disagrees with the fire services perception of America's fire problem and the proposed solution to reduce the number of fire fatalities that occur each year. In 1977, less than 0.008% of the housing market was affected by structure fires. In 2005, that number was reduced to less than 0.002%. Over the past three decades, there has a substantial decrease in the number of residential structure fires in relation to the growth of American housing. No one can predict when or where a fire will occur, but to require every home to be equipped with a residential sprinkler system based on the figures below is not cost-effective.

**NOTE:**

In 2005, there were 76-84 million occupied housing units in year-round one- or two-family dwellings and 85-95 million total housing units in one- or two-family dwellings. There were 287,000 reported one- or two-family dwelling structure fires. That is about 3-4 per thousand. NAHB says the ratio was "less than 0.002%". That is 2 per *hundred* thousand. They are off by a factor of more than a hundred. And they didn't say *reported* structure fires; they just said structure fires. That means unreported fires fall within their scope and the correct ratio is more like 1 in 10 to 1 in 14. NAHB reaches its conclusion about cost-effectiveness of sprinkler systems by underestimating the size of the problem by a factor of more than a hundred.

Consideration as to whether the requirement for fire sprinklers in dwellings be mandatory should remain a local issue. The sole purpose of an Appendix P in the 2006 International Code was to provide local jurisdictions with the means to adopt a code or standard that is applicable to their community. Not every jurisdiction agrees that radon resistant construction, patio coverings, and safety inspections of existing appliances need to be regulated or inspected in their jurisdiction. Contrary to the belief of some activists, several jurisdictions have decided that Appendix P (the provisions for residential sprinkler systems) is not applicable to their state or local jurisdictions. Of the 47 states that have adopted the International Residential Code, none have adopted the 2006 IRC with the inclusion of

Appendix P. During the adoption process in six states, there was a proposal put forth to include appendix P in the formal adoption of the 2006 IRC and the proposal was voted down every time.

According to the U.S. fire administration more than half states in America are below the national fire death rate of 13.6 per million and over the past ten years the number of one- and two- family dwelling fires, deaths and injuries have fallen (6%, 18% and 26% respectively).

**NOTE:**

Roughly half the states have a fire death rate below the national average. That is exactly what one expects in a distribution around the average, but that fact has no relevance to this issue. NFPA statistics show comparable declines in the number of fires, civilian deaths, and civilian injuries in fires in one- or two-family dwellings. But again, by themselves, these declines say nothing about the need for, or value of, home sprinklers.

While the fire service and sprinkler advocates acknowledge that the median age of a home is 32 years, the connection between fire deaths and the age of the home is elusive. For several years data has been collected for several relevant facts about fires. The cause of the fire, whether smoke alarms were present and were working, type of smoke alarm present, whether the fire was confined and did not activate the sprinkler system.

**NOTE:**

The second half of the following sentence is important: "...the connection between fire deaths and the age of home is elusive." This is a much softer and less definitive statement than NAHB usually makes and suggests that they are not so sure of the connection as their previous statements have indicated. NAHB economists have conducted complex multi-variable statistical models to try to make the point that risks are lower in newer homes. NFPA has pointed out the flaws in those models and shown that significant results are only found when newer homes correlate with wealthier, better educated occupants.

While there have been no studies conducted to investigate whether fire fatalities are less likely to occur in newer homes, there is supporting evidence of this in reports issued by NFPA regarding the performance of smoke alarms. According to these reports, there is a significant difference in the number of fatalities and the number of fires when the smoke alarm present. This includes information regarding smoke alarms that were either battery operated, hardwired with battery backup or hardwired.

**NOTE:**

“While there have been no studies conducted to investigate whether fire fatalities are less likely to occur in newer homes, there is supporting evidence of this in reports issued by NFPA regarding the performance of smoke alarms.” The first part of this sentence is erroneous, as noted above; NAHB and NFPA have both conducted studies on any link between fire fatalities and age of home. The second part of the sentence is misleading.

What the cited NFPA analysis shows is this: Smoke alarms work, and advanced features of smoke alarms (e.g., hard-wiring, interconnection) work better. Because smoke alarms are easily retrofitted, as are many of the advanced features of smoke alarms, this fact says nothing about new homes other than that they are statistically more likely to have smoke alarms and to have them with advanced features. NFPA analyses have increasingly shifted to estimating the impact of home sprinklers when added to homes with smoke alarms, and those results demonstrate anew the tremendous benefits achieved by sprinklers *on top of* the benefits already achieved by smoke alarms.

According to April 2007 Report “U.S. Experience with Smoke Alarms and other Fire Detection/Alarm Equipment” by Marty Ahrens, 65% of the reported residential home fire deaths occurred in homes where there was no smoke alarm present (43%) or did not operate (22%). Of the 35% fire fatalities that occurred when a smoke alarm was present and operated, it was reported that two-thirds of the non-confined home structure fires occurred in dwellings with battery operated smoke alarms with the remaining third evenly divided between homes with hardwired and hardwired with battery backup.

Source	Code Cycle Required	# of Fires	# of Fatalities	# of Injuries	Property Damage in Millions
Battery Only	Before 1982	88,300	1,230	5,850	\$2,353
Hardwired only	1982-1992	19,900	170	1,300	\$743
Hardwire/Battery	1992-Present	18,000	210	1,490	\$568

Reference: April 2007 Report "U.S. Experience with Smoke Alarms and other Fire Detection/Alarm Equipment" by Marty Ahrens

**NOTE:**

This table does *not* show what NAHB claims it shows – that there are fewer fires with advanced-feature smoke alarms – because it does not show how many housing units are so equipped. (This is a recurring theme in many of the analyses performed by NAHB. Important variables needed to make the conclusions valid and place them in proper context are missing).

From this information we can see that as the requirements for smoke alarms changed, as well as other requirements over the years, that the newer stock has had fewer fires and fewer fire fatalities. Along with improvements to the power source, the *National Fire Code* has also increased the number of required smoke alarms in a one- and two- family dwelling over the years. In 1992 it required that all smoke alarms be interconnected.

When you consider the advances made in the requirements of smoke alarms and look at the results in reducing the number of fire fatalities, the solution is educating the public about the importance of working smoke alarms and practicing proper fire prevention.

**NOTE:**

NAHB would prefer an exclusive emphasis on a strategy of educating homeowners, which would not involve any requirements on them. But they have offered no evidence of the cost-benefit comparison for sprinklers or for an educational program on smoke

alarms, let alone of a joint strategy to do both.

The most cost-effective means of reducing the loss life is through increasing the public's awareness on the use and maintenance of smoke alarms. According to NFPA reports an estimated 890 lives could be saved annually if homes were equipped with working smoke alarms. 65% of the reported fire fatalities from 2000-2004 occurred in homes where smoke alarms were either not present or were present but failed to operate. CPSC surveys have shown that while 88% of the households screened had at least one smoke alarm, 72% of these smoke alarms were battery powered only.

**NOTE:**

It probably is true that the *most* cost-effective strategy to reduce fire deaths is to build on smoke alarm successes. But that is not the *only* cost-effective strategy and it certainly is not the *most* effective strategy, i.e., the strategy that will produce the greatest reduction in fire deaths. This is nothing more than a bait-and-switch pitch dressed up with irrelevant, inaccurate or misleading statistics designed to confuse readers or confirm people in a position they already hold but not to make or support a serious case for their position.

The U.S. Fire Administrations' [Solutions 2000](#) report clearly concludes that, "To effectively address the fire safety needs of any population, the three E's, **education, engineering, and enforcement**, must be addressed." The report explains that there are some fire risks that may be best dealt with through educational efforts, but others may require increased enforcement or engineering techniques. On its own, each of the three E's "exerts a synergistic effect on the others, however, and together they are much more effective than individually." Effective solutions for community risk reduction must include the three E's collectively, in order "to reduce the effects of fire, if not prevent them."

Our position is: Smoke alarms work well and have saved thousands of lives. Sprinklers (as the single most important engineering technique) will save thousands more lives and

billions of dollars in property. With these huge benefits – more than any other fire safety strategy can offer – sprinklers are well worth the money. There is nothing in this piece that seriously engages that position.