



## **Fire Safety and Residential Sprinklers Points/Counterpoints NAHB Points in Black, Fire Team USA Counterpoints in Blue**

- The National Association of Home Builders opposes mandatory requirements for fire sprinkler systems in one- and two-family construction because mandating sprinklers for all homes nationwide or in any jurisdiction has not been demonstrated to be a cost effective improvement to fire safety in homes meeting today's residential building code requirements - and because such mandates distract from or ignore other proven efforts such as fire safety education initiatives that focus on preventing fires in the first place.

*CounterPoint:* There exists many reports prepared by non-stakeholders that provide clear and concise data that fire sprinklers installed in one- and two-family homes are exceptionally cost-effective. Most notable is the Scottsdale, Arizona report Automatic Sprinklers – A 10 Year Study, which reports the average loss per sprinklered incident at \$1, 945 compared to the non-sprinklered average loss per incident at \$17,067. But this report was published in 1989 and today's data from Scottsdale shows an average loss with fire sprinklers present at \$2,166 and non-sprinkler losses at \$45,019. Or stated another way, the difference between the average loss showed an 88.6% reduction when sprinklers were present in 1989 and today that difference shows a 95.2% reduction. Factually, adding fire sprinklers in one- and two-family homes benefits all except maybe the homebuilder wishing to retain the fire damaged home rebuild market.

- There have been significant improvements to the fire safety of homes over the past few decades leading to a dramatic and continued decrease in fire incidents, injury, death and property loss. There is no data to suggest that sprinklers will significantly improve this decline.

*CounterPoint:* The NAHB is attempting to take credit for the life saving results of smoke detection. It is significant to note that the NAHB also opposed installing smoke detection devices when they surfaced in the one- and two-family home market. And while the success of smoke detection devices have been remarkable,

*one cannot overlook the fact that smoke detectors are effective only to the point where the occupants are cognitively and physically capable to respond in the very limited timeframe of rapid fire growth. National statistics have shown disproportionate fire deaths for the young and the elderly for decades. A detailed study in Wisconsin showed the inability of some young to respond to the audible smoke alarm during tests. While smoke detectors gives one the “chance” to escape provided there are no mental or physical impairments, fire sprinklers will control the fire and does save lives. A detailed study by the non-stakeholders National Institute for Science and Technology (NIST) reported over 20 years ago that by placing a fire sprinkler next to the smoke detector, fire deaths in our nation would reduce by 83%. And since this report, the quick-response residential fire sprinkler has been developed. The benefits of the new quick-response fire sprinkler technology is underscored by the marked improvements in fire sprinkler losses verses non-sprinkler losses as reported by Scottsdale Arizona and others. The statement that there is no data to support fire sprinkler effectiveness is clearly false.*

- The value and effectiveness of these improvements is clearly demonstrated by the consistent decrease in overall residential fires and resulting injury, death, death rate and property loss. For example:
  - Since 1960, the total number of fire deaths has decreased by almost 60% and the fire death rate based on population size has decreased by over 72%. This trend continues because of fire prevention education and the retirement of housing stock without these improved fire safety features.

*CounterPoint: The reduction in fire deaths can be attributed to the installation of smoke detectors which has occurred in both new and existing homes. There is no national plan to retire older housing stock.*

- Several examples of the fire safety improvements to residential construction that have led to these reductions in fire incident, injury and death include:
  - . Interconnected, Hardwired Smoke Alarm Systems
  - . Improved Electrical Systems
  - . Improved Heating Systems
  - . Improved Framing and Fire Blocking Techniques
  - . Improved Fire Ratings on Interior Furnishings and Building Materials

*CounterPoint: Yes, smoke alarms are a factor in reduced fire deaths. And yes, one does not find aluminum wire used instead of copper in electrical systems. And yes there are improved ratings on building material but often these higher rated building materials do not find there way into the one- and two-family home. The fact is the three main causes of fire are men, women, and children – people cause fires – and notwithstanding when the home was built or fire safety awareness programs, the carelessness of occupants is the problem. The person careless enough to leave a grease filled pan on the heated stove is not restricted*

*to only older homes; this happens in newer homes on a just as frequent per capita basis.*

- The value of these improvements is further substantiated by the fact the majority of residential fires that occur today are in older homes that generally do not have many of the improved fire safety features required in today's construction. These incidents therefore should not form the basis for requiring sprinklers since they were in homes not constructed to today's codes and many of them would likely have been prevented had they been.

*CounterPoint: Yes, there are more fires in older homes than newer homes simply because there are more older homes than new ones. The substantive issue is when is a new home considered old? With respect to the aluminum wiring issues, revisions to the electrical code resolved this problem over 30 years ago. Yes, there is new technology and as a result of new technology fire safety has improved to the extent that poor installation practices are more common issues. But the substantive issue is buildings just do not catch on fire – people cause fires.*

- Sprinkler advocates will cite aggregate statistics on fire incidents, injury, death and property loss that could have been prevented by sprinklers, but ignore the fact that these occurred in homes lacking many or most of the currently required fire protection features, or how these fires could have prevented otherwise.

*CounterPoint: Code provisions did not change overnight. Many of the fire safety features purported by the homebuilders as the cure-all have been in place for over 30 years. The provisions of the new edition of the Life Safety Code require fire sprinklers in one- and two-family homes. And these new fire sprinkler requirements for new one- and two-family homes are in the code because fire sprinkler data proves the minor added cost is insignificant when one looks at life safety and property protection.*

- Sprinkler advocates will also argue that "new homes become old." However, that argument lacks substance because it does not acknowledge that the fire safety features required in today's construction are permanent as is the protection they provide.

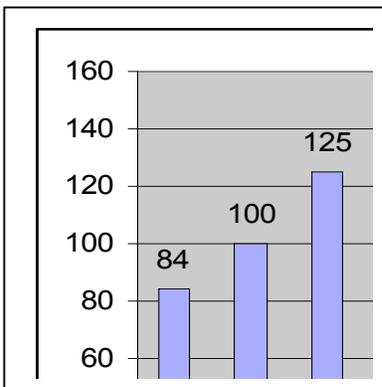
*CounterPoint: Of course new homes become old; fire protective barriers become breached by the owner, telephone or cable workers. Electrical power loads per circuit deemed appropriate 20 years may not be reflective of today's electrical demand. But the substantive issue again is that people cause fires.*

- While residential fire deaths have decreased consistently over recent decades due in large part to these improved safety features, other fire prevention efforts have also been successful such as targeted fire safety/prevention education programs. Programs of this nature should be considered first since they will

ultimately prevent more fires and property loss and more importantly injury and death. For example:

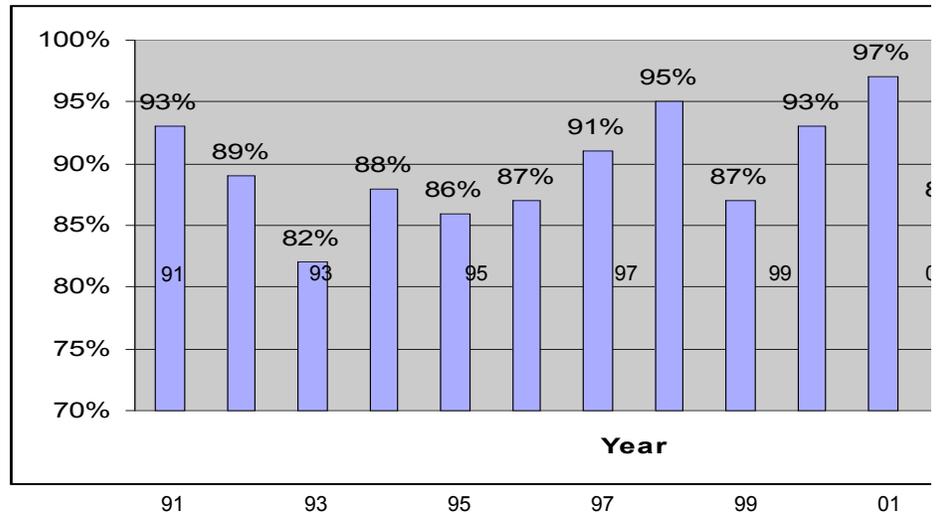
- The State of South Carolina successfully implemented a fire safety program entitled "Get Alarmed South Carolina." As a result their fire death rate dropped 41% from 1996 to 1998. The program included a smoke alarm distribution component.

*CounterPoint: Fire death data fluctuates from year to year and with any data set one can choose to pick only that which makes a point. Truthfully, there is little change in fire death rates in South Carolina, some good years and some bad years. The following table shows the fire date rates from 1991 to 2004 giving one a good picture of the true fire death rate in South Carolina:*



Fire Death Rate, South Carolina

*Most interesting is the percentage of fire deaths that occur in one- and two-family homes in South Carolina compared to other occupancy classifications. Excluding occupied vehicle, apartment and business occupancy fire deaths – focusing on single-family homes and duplexes – the percentage of deaths in homes when compared to other occupancies is shown in the following:*



Percentage of total fire deaths from one- and two-family homes, South Carolina

*The percentage of fire deaths when smoke detectors were present is also increasing;*

|            |            |            |            |
|------------|------------|------------|------------|
| 1991 – 12% | 1992 – 12% | 1993 – 17% | 1994 – 28% |
| 1995 – 28% | 1996 – 24% | 1997 – 22% | 1998 – 33% |
| 1999 – 22% | 2000 – 22% | 2001 – 37% | 2002 – 26% |
| 2003 – 37% | 2004 – 34% | 2005 – 33% |            |

*Thus, there are ebbs and tides in actual fire deaths each year. While the homebuilders isolated two consecutive downtrend years, if one looks at multiple years a true picture of fire death rates in South Carolina evolves. And if one looks at the percentage of fire deaths in one- and two-family homes compared to other occupancies such as apartments, all years from 1991 to 2004 except one year exceeds the national average of 82%. And there is clear evidence of an increase presence of smoke detectors but coupled with this increase presence is an obvious picture that smoke detectors are not the cure-all as the number of fire deaths when smoke detectors are present is also increasing.*

- Fire prevention education programs work, especially for those homes and home environments at greatest risk. Sprinkler mandates apply only to those homes at least risk. Furthermore, based on National Fire Protection Data, the risk of death in a home with sprinklers is still close to 30% and property loss is still substantial and would still be far less overall than the overall cost of sprinklers under mandatory requirements.

*CounterPoint: There is absolutely no data that supports this 30% figure and should it be used the simple response is show me the data. People are dying in non-sprinkler occupancies, not fire sprinkler occupancies. And yes, fire prevention programs do work but they are far from the cure-all. The young, the elderly, and those whose abilities to respond to a smoke alarm through alcohol impairment are the homes with the greatest according to the National Fire Protection Association. An elderly person who cannot quickly exit a burning building because of a physical impairment is a perfect example.*

- The NAHB supports fire safety education programs for Consumers as one the most effective and reasonable means to Preventing residential fires and reducing death, injury and property loss well as cost-effective residential fire protection technologies that are required by current codes.

*CounterPoint: Fire sprinklers are low cost systems. Scottsdale, Arizona reports costs as low as \$0.59 per square foot. Being a large residential sprinkler market, the prices in the Phoenix Basin are low but prices around a dollar per square foot are common. As the market grows, the prices will go down as they have in the Phoenix Basin.*

- The average cost of installing residential sprinklers varies on average at around \$1.50 or more per square foot. Maintenance adds additional costs though this is difficult to determine because the sprinkler industry has not been clear on exactly

what maintenance is required, the frequency of it and how it needs to be performed.

*CounterPoint: There is no substantive maintenance for a residential fire sprinkler system. The owner is responsible to maintain the system readiness as they are responsible to maintain other appliances in their homes. The simple task of periodically observing the water pressure gauge - if it reads zero then call a contractor – is not onerous or expensive.*

- While sprinkler advocates argue those costs would come down, there has been no substantiation that they will. Furthermore, the sprinkler industry has resisted attempts by NAHB and others to reduce sprinkler costs by developing low cost one- and two-family sprinkler standards.

*CounterPoint: Putting one fire sprinkler head in a kitchen is not effective fire sprinkler protection. The national low-cost standard, NFPA 13D, has been developed and has over 25-years field experience – it is working. This standard contains combination systems as well as stand alone systems and was developed with the intent to lower fire sprinkler costs.*

- Other questions that should be asked of jurisdictions considering mandates include whether or not their constituents desire such a mandate and what impact such a mandate would have on the municipal water utility, i.e. does it have the capacity to maintain the pressure required to operate sprinklers properly.

*CounterPoint: The lowest fire sprinkler working pressure allowed by UL listings is mere 7 psi. The consumption of water is significantly reduced when fire sprinklers are present. For many occupancies including homes, the amount of water used to fight a fire with fire department hoses is ten-fold more than the small amounts needed for fire sprinkler protection. And the design standards allow for water storage tanks that can be less costly than some lengthy underground water line. Water utilities, once they grasp the effectiveness of fire sprinklers should warmly embrace these systems.*

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*Vickie Pritchett, December 2007*