



**NFPA Comments on IRC Proposals
RB53-09/10, RB54-09/10, RB56-09/10, RB75-09/10**

RB53-09/10

The rationale for this proposal includes a number of statements, none of them substantiated and some of them demonstrably false. The petitioner does not provide any supporting evidence for the claim that high risk (elderly or low-income) households constitute a large or disproportionate share of new small-townhouse developments or that the communities hosting those developments “often” have limited water supplies available. Older adults and low-income households tend to be *under*-represented in new housing generally. Households below the poverty line are *less* likely than households in general (8% vs. 12%) to have a well-based water supply.

Without supporting evidence, there is no substantial basis for claiming that water supply provision for sprinklers in small townhouses will be more difficult or more costly than in other developments nor that the cost, whatever it is, creates an economic hardship.

The petitioner also does not provide any substantiation for the claim that small townhouses “do not have a history of unsatisfactory fire performance” nor any definition of what level of fire loss he would consider unsatisfactory.

The second part of the code change seeks to strengthen the fire-resistance-rated wall requirements in sprinklered townhouses on the grounds that foreclosures lead to water supply shut-offs and that unoccupied buildings have a higher fire risk. There is no substantiation for the implied claim that a 2-hour fire wall will compensate for the loss of sprinklers, and the premise that unoccupied homes have a higher fire risk is false. While there may be greater vulnerability to arson, any such increase in risk has been shown to be more than offset, statistically, by the decline in risk of fires due to all other causes, presumably because other causes arise from the heat sources used by people actively occupying the property. In sum, the petitioner proposes a solution that will adequately address the problem which he is not substantiated and whose size is predicated on a false premise of the effect of vacancy on fire risk.

RB54-09/10 and RB56-09/10

This pair of changes are intended to replace the mandatory requirement of sprinklers in townhouses and one- and two-family dwellings with an optional appendix on installation requirements.

The petitioner begins by saying that “NAHB strongly disagrees with the fire service’s perception of America’s fire problem and the proposed solution to reduce the number of fire fatalities that occur each year.” In these words, NAHB plainly states its belief that there is no need to reduce the annual fire death toll in this country. In other words, 3,000 home fire deaths a year – including nearly 2,500 deaths a year in one- and two-family homes and townhouses – are safe enough. Most Americans would disagree, which is why the NAHB attempts to shift attention from an easily understood death toll to a more abstract and positive sounding survival rate.

Fire sprinkler opponents have been using a statistic of 99.45 percent to illustrate the effectiveness of smoke alarms in reducing home fire deaths. This NFPA statistic estimates the likelihood of surviving a home fire when a working smoke alarm is present. Taken completely out of context, a number like 99.45% sounds very high. But consider this:

- The total home fire death toll of roughly 3,000 deaths a year occurs in roughly 400,000 reported home fires a year. Therefore, the likelihood of surviving a home fire is over 99% without regard to the presence of smoke alarms or any other fire safety provisions. Does that mean 3,000 deaths are acceptable? Most people would say no.
- Back in 1977, the first year where we have comparable statistics, the annual home fire death toll was nearly 6,000 per year and less than one home in four had smoke alarms, but the survival rate from reported fires was 99.2%. Does that mean we should not have bothered with smoke alarms either?
- Each year, there are an estimated 12,000 deaths due to falls in homes and an estimated 11 million fall injuries in the home. The likelihood of surviving a fall is 99.9%. Does that mean 12,000 deaths are acceptable? Most people would say no.
- Each year, there are an estimated 42,000 deaths due to motor vehicle crashes and an estimated 6 million reported motor vehicle crashes. The likelihood of surviving a motor vehicle crash is 99.3%. Does that mean 42,000 deaths are acceptable? Most people would say no.
- Each year, 2.4 million people die of any cause in the country compared to a total U.S. resident population of 300 million. The likelihood of surviving every hazard, threat and illness for a year is 99.2%. Does that mean 2.4 million deaths are acceptable to the sprinkler opponents – that nothing at all should be done to protect Americans from anything, especially when technology exists that could save lives? Most people would say no.

The petitioner claims these “figures” prove sprinklers are not cost-effective. By his logic, there has never been a cost-effective safety requirement of any kind since building codes began.

The petitioner includes a statement that more than half the states have fire death rates below the national average. The petitioner appears to believe that the discovery that roughly half the states are below average represents some kind of relevant or useful insight rather than being inherent in the very definition of “average”.

The petitioner includes a couple paragraphs attempting to state that newer homes have lower risks of fire fatalities. It is not clear what this has to do with the petitioner’s proposal, but it seems to be consistent with the general claim that new homes are safe enough already. There are many studies of the link between age of housing and fire risk (or fatal fire risk). These studies tend to show a correlation in simple analyses, but if you properly and fully adjust for the lower risk characteristics of typical occupants of newer homes, the correlation disappears.

The petitioner then dwells at some length on the promise of working smoke alarms as preferable to sprinklers, even though, as noted, his argument that homes are already safe enough does not require that sprinklers be replaced with any other feature or strategy. He does not deal in any depth or seriousness in the costs involved in assuring that all homes have working smoke alarms – suffice it to say that education is not the only element needed to achieve such reliability and successful, effective education requires a lot more seriousness of purpose and cost than the petitioner’s casual remarks begin to encompass.

Buried in the petitioner’s rationale statement is his real argument. These are the sentences regarding the adoption history of these still-new provisions of the IRC. At the end of the day, none of the petitioner’s technical arguments are new or persuasive.

RB57-09/10

The petitioner’s rationale is a very concise and densely packed collection of false statements. The only way to deal with them all in a manageable space is to address each one but be brief with each one:

Petitioner: “You heard that sprinkler systems won’t freeze in cold climates (unfortunately that does happen).” Fact: No one said sprinkler systems won’t freeze, only that freezing rarely causes problems, and the data on experience shows that is true.

Petitioner: “...there won’t be any increase in water tap fees...”. Fact: No one said there won’t be any such increase, only that there was no defensible engineering or economic basis for such fees, and so it should be possible to avoid them.

Petitioner: "...that sprinklers add only a few hundred dollars to the cost of a home...". Fact: The Fire Sprinkler Initiative® never claimed the cost was that low and now can provide detailed substantiation for the figure of \$1.61 average cost per square sprinklered foot, a modest figure that will not significantly impact home affordability. The opponents' cost figures were and are often ludicrously inflated and solicited through surveys whose wording seemed designed to elicit just such exaggerated results.

Petitioner: "...that the public feels sprinklered homes are desirable...". Fact: Sprinkler supporters have surveys that say the public would like sprinklers, and sprinkler opponents have surveys that say the public would not like sprinklers. The public's interest in, support for, and reservations regarding sprinklers are similar to what we saw with smoke alarms at the same point in their early growth in usage. Where it exists, resistance is often a result of bad information (e.g., I won't have a fire, sprinklers are unaffordable), which also was true for smoke alarms, and those misimpressions can be swept away in time by accurate information.

Petitioner: "...that more people die in older homes because there are more of them...". Fact: As stated, that claim – if it was made – is true. Presumably, the petitioner is intending to attack what he considers an illegitimate rebuttal to his later "fact" that "homes built today are inherently more fire resistant than the homes built 50 years ago". The fact is that the "inherent fire resistance" of homes ranks well down any list of leading factors in the century-long decline in home fire deaths – behind changes in the fire performance of burnable products generally, the safety of potential heat sources, the knowledge and behaviors of ordinary Americans, and the effectiveness and reliability of fire protection equipment – like sprinklers.

Petitioner: "...that a shocking 45% of firefighter deaths occur on the fireground at residential occupancies, almost always 1- and 2-family dwellings..." The petitioner goes on to elaborate his rebuttal of this claim for more than a page. Fact: This lengthy rebuttal is directed at a presentation by some sprinkler advocates of a true statement, which is that [about] 45% of firefighter fireground deaths [in a typical year] occur at residential occupancies, mostly 1- and 2-family dwellings.

Petitioner: "...that smoke alarms aren't reliable enough as they age to protect a home...". Fact: Most if not all sprinkler supporters are also among the loudest and most consistent champions of smoke alarms. Smoke alarms *have made* an enormous difference in America's fire death toll. Sprinklers *will make* an enormous difference in the still-considerable fire death toll that remains.

Petitioner: "...that homes without a public water supply can always involve design changes to accommodate sprinklers...". Fact: That statement is entirely correct, and some, perhaps many, homes without a public water supply may still have enough pressure or flow (for other reasons, such as clothes washers and dishwashers) that they will not need any special accommodations.

Petitioner: "...that use of fire hydrants, not residential sprinkler systems are the cause of some water contamination...". Fact: It is unlikely that fire hydrants are the principal culprit in

instances of water contamination or that most sprinkler supporters said any such thing. It is true that engineering analysis of the question of increased risk of water contamination from sprinklers does not support the need for costly backflow preventers. This issue should have been put to rest long ago in the discussions surrounding sprinklering of properties other than homes.

Petitioner: "...that putting the rules in place will drive down the cost of sprinkler systems...".

Fact: That is a more-than-reasonable expectation and has been the American experience with every type of technological innovation for as long as most of us have been alive. The burden of proof is on those who would argue that sprinklers will emerge as the one exception to this long tradition. Furthermore, the cost-benefit case for sprinklers has not been premised on specific expectations for cost savings through volume but on current costs, properly substantiated.

Petitioner: "...that sprinkler systems are maintenance free...". Fact: If you go through the detailed maintenance requirements for a sprinkler system, many are not needed for a standard home sprinkler design and the rest can be accomplished with a simple visual inspection. That is less "maintenance" than you need in order to keep your clothes dryer safe.

Petitioner: "...that there are plenty of trained installers and inspectors to install and monitor sprinkler systems...". Fact: There have been more than enough so far, and there are no reasons to expect the supply chain to create problems for the orderly implementation of a sprinkler mandate.

Petitioner: "...that sprinkler systems won't leak...". Fact: Same as the earlier comment on freezing. No one said they won't leak, only that they rarely leak. There is data from experience to support the statement that water damage from leaks or other releases not involving fires will add only a modest amount to the greatly reduced fire loss figures one can expect with sprinklers.

Petitioner: "...and that moving sprinkler requirements from the appendix to the body of the code is necessary because municipalities aren't adopting the appendix chapter quickly enough." Fact: The appendix option is appropriate if code writers want only to assure that any sprinklers are installed in accordance with applicable standards. The body option is appropriate if code writers want to assure that all properties receive the sprinkler protection they need. It has nothing to do with speed of adoption but with the purposes of adoption.

Petitioner: "...there are no statistics to project how many lives could be saved in residential dwellings if sprinklers were required...". Fact: Of course there are, and they have been presented, updated, and enhanced at every step of the process. The petitioner's speculation that losses would decline only 2% and that that would not be cost-effective would have been far behind the existing best analysis 30 years ago, let alone now.

Petitioner: "You didn't hear why, if smoke alarms aren't as effective as they age or when they are disabled, the same wouldn't occur with sprinkler systems." Fact: These are two different with two different, established reliability histories and principal factors in reliability. In their

analyses, sprinkler advocates have addressed these reliability factors in increasing detail. To cite just one example, nuisance alarms give many occupants a reason to disable smoke alarms; there is no counterpart to this situation with sprinklers. At the same time, as noted above, sprinkler supporters are typically also loud and consistent champions of smoke alarms and avoid exaggerated claims, good or bad, for both types of equipment.

Petitioner: "...you didn't hear why the fire service doesn't engage in a nationwide effort to have operating smoke alarms in every home in the country. That could be accomplished for a fraction of the cost...". Fact: The fire service *has* long been engaged in a nationwide effort, including smoke alarm giveaways, replacement battery giveaways and installation offers, and spotlighted attention in the themes of Fire Prevention Week in a number of years. These programs have been very successful, but the homes without smoke alarms are down to the hardest and costliest to reach and even the best (and costliest) adult education programs are able to achieve only marginal success in changing behavior (to keep smoke alarms operational) or even in reaching target audiences. The petitioner clearly does not know what has been done, what is being done, or what it would cost to be fully effective along this route – and even then, there would be many hundreds of lives a year that sprinklers would save that working smoke alarms alone could not save. This includes especially the high-risk populations – such as young children, the disabled, and older adults – who need assistance or considerable extra time in order to escape.

Petitioner: "You didn't hear projections that if sprinkler systems were installed in all new homes that the number of fires in residences would decline by any specific amount." Fact: That is because sprinkler systems are not designed to prevent fires but to reduce severity – fewer lives lost, less property destroyed – when fires do occur. The petitioner's statement is like asking the developers of a new burn treatment protocol to project how many burns they will prevent.

Petitioner: "The reliability of sprinkler systems was argued to be superior and necessary because of the failure of smoke alarms." Fact: No, not because of the *failure* of smoke alarms but because of the *limitations* of even working smoke alarms. Sprinklers will save some lives because the circumstances of the victims would not have allowed them to benefit from working smoke alarms; they could not act effectively to save themselves. Sprinklers will also save some additional lives because their high (though less than perfect) reliability will cause them to work in some fires where smoke alarms, with their also high (and also less than perfect) reliability will not.

Petitioner: "If the leading cause of fatal fires is arson, would sprinkler systems impact those numbers is tampering is a possibility?" Fact: Arson is not the leading cause of *home* fatal fires, but it is *a* leading cause. Most home arson is juvenile firesetting by older juveniles and is not motivated by any explicit desire to assure great damage nor informed by any deep understanding of how fires or sprinklers work. There is a small fraction of homes fires that develop under circumstances where sprinklers are unlikely to be effective, but these have also been factored

into the analyses that support the very high impact statistics cited by sprinkler supporters. They are the reasons those impact percentages are not even higher.

Petitioner: “You heard a lot of emotional testimony on this issue. But these decisions should not be based on emotion but on science and facts. And the facts tell a story contradicting the emotional testimony. The housing industry is in a fragile state. Residential builders are struggling and failing as are building materials suppliers.” Fact: The first three sentences reject emotionalism in favor of facts; the immediately following two sentences present a nakedly and purely emotional appeal. It takes a certain kind of mind-set not to see the contradiction in these two adjoining statements. What we can see is the real value system of the petitioner, one which he shares with other sprinkler opponents. The petitioner’s sympathy and concern are reserved exclusively for home builders and allied industries. He doesn’t need facts to reject appeals from fire survivors, victims’ families, and the fire service; he never had empathy for their losses to begin with. The question is not, and never has been, what arguments would reach or move people like the petitioner or the interest group he comes from and symbolizes. The question is and always has been why anyone – like a building official or other code official – charged with responsibility for an entire community – for the safety of ordinary people as well as or even more than the prosperity of its leading industries – would find merit in the thin, unsubstantiated, sometimes invented, often deceptive, often demonstrably false, arguments of the sprinkler opponents. It can’t be a matter of going where the evidence leads, but the evidence does not lead there.

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