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**To:** Board of Supervisors <bos@co.mendocino.ca.us>  
**Date:** 12/10/2017 7:44 PM  
**Subject:** Data on Residential Fire Sprinklers for Standing committee meeting 11-11-2017  
**Attachments:** SprinklersvsNonSprinkler\_2000-2017.pdf

I would like to thank the County of Mendocino the opportunity to present information on residential fire sprinklers. I am sending of the information that I referenced during the meeting.

Here is some data on the basic cost with fire sprinklers in single family dwellings:

### California All Incident Reporting System (CAIRS) data

In California through CAIRS program (which is the mandated fire reporting through the State Fire Marshal):

Fires in only One and Two Family Dwellings from 1/1/2000 through 6/30/2017 (apx. 17 years)

Total reported fires: 97,891

Total # of civilian deaths: 864

Total # of civilian injuries: 5,198

Total # of civilian deaths in homes with fire sprinklers: 0

Total # of civilian injuries in homes with fire sprinklers: 2

I have attached the pdf copy of the year to year data report from the California All Incident Reporting System.

### New Regulations for the 2016 Intervening Code Cycle

The Office of the State Fire Marshal is continually working to make residential fire sprinklers affordable.

In the 2016 Intervening Code Cycle we have adopted regulations to address systems with water supply issues by the use of a tank and pump systems. The regulations can be found at (see item 1 & 2):

<https://www.documents.dgs.ca.gov/bsc/2016InterCycle/CommissionReview/August/SFM-01-16-Pt2/SFM-01-16-FET-Pt2.pdf>

And the Statement of Reasons at (see Item 1 & 2): <https://www.documents.dgs.ca.gov/bsc/2016InterCycle/CAC/BFO-SDLF/SFM/SFM-02-16-Pt2.5/SFM-02-16-Pt2.5-ISOR.pdf>

### The installation cost of Residential Fire Sprinklers

Information from the **Fire Protection Research Foundation** – Home Fire Sprinkler Cost Assessment – 2013, <http://www.nfpa.org/news-and-research/fire-statistics-and-reports/research-reports/suppression/home-fire-sprinkler-cost-assessment-final-report>

The study showed the national average for a residential fire sprinkler is \$1.35 ft<sup>2</sup>.

California and Maryland (the two states with mandatory fire sprinkler in new homes) has an average of **\$1.16**.

Here is part of the study:

Comparing states with statewide sprinkler requirements to those without provides insight into the impact of statewide ordinances on system cost. Combining the 2013 data from Maryland and California, the cost for sprinkler systems is \$1.16 per ft<sup>2</sup> sprinklered space, and \$4,091 average total cost. By comparison, in all other communities the cost is \$1.53 per ft<sup>2</sup> with a total cost of \$7,877. Lower costs for systems in states with statewide requirements may be a result of more widespread acceptance of sprinkler systems and increased experience in installation and design practices. Market demand could also lead to lower costs as increased demand leads to competitive contractor pricing.

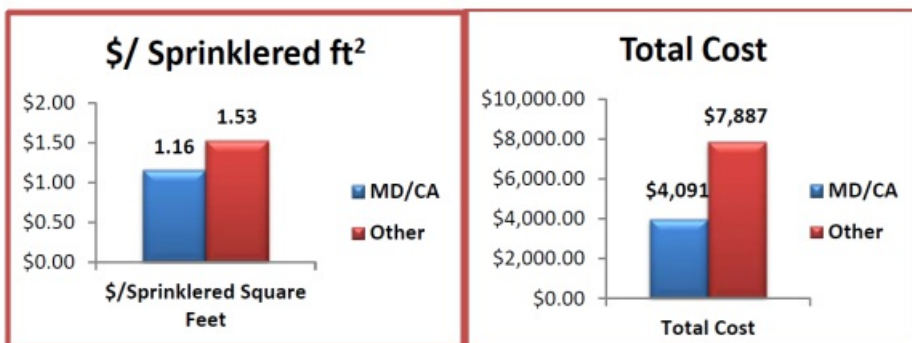


Figure 7. Cost by presence of statewide ordinance (Maryland/California vs. Other)

### The cost of fires

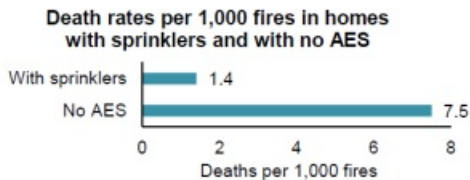
NFPA – Fire Loss in the United States During 2015, <http://www.nfpa.org/news-and-research/fire-statistics-and-reports/fire-statistics/fires-in-the-us/overall-fire-problem/fire-loss-in-the-united-states>

In 2015 there was reported in the U.S. 270,500 fires in one and two family homes (not including wildfires) with: **2,155 civilian deaths, 8,050 civilian injuries and 5.8 billion direct property damage.**

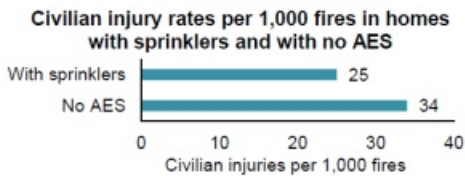
The 5.8 billion does not include the indirect losses.

The following data is for U.S. homes including: one and two family dwelling, apartments and multi-family homes. **Important Note: This study includes all residential occupancies: including, apartments, condominiums, hotels which have demonstrated to be a greater hazard.**

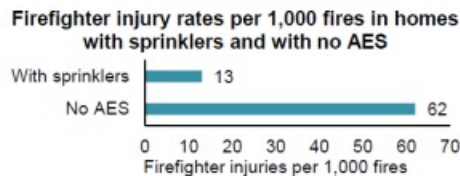
## Impact of Sprinklers



The civilian death rate of 1.4 per 1,000 reported fires was 81% lower in homes with sprinklers than in homes with no AES.



The civilian injury rate of 25 per 1,000 reported fires was 31% lower in homes with sprinklers than in homes with no AES. Many of the injuries occurred in fires that were too small to activate the sprinkler or in the first moments of a fire before the sprinkler operated.

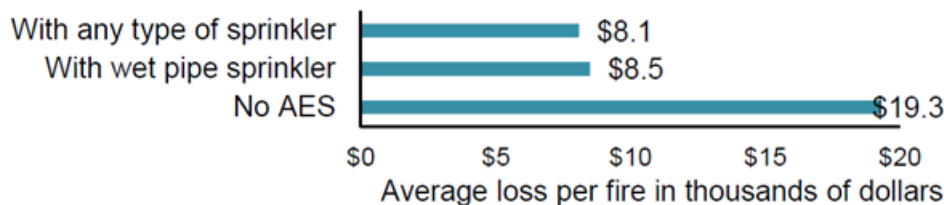


The average firefighter injury rate of 13 per 1,000 reported home fires was 79% lower where sprinklers were present than in fires with no AES.

When sprinklers were present in reported home fires, the average property loss per fire was less than half the average in homes with no AES.

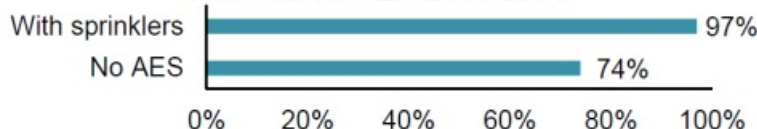
Figure 22 shows that when any type of fire sprinkler was present in reported fires, the average loss was \$8,100 per fire. This was 58% lower than the \$19,300 average in home fires in which no AES was present. When wet pipe sprinklers were present, the average loss of \$8,500 was 56% lower than in homes with no AES.

**Figure 22. Average loss per fire in homes with sprinklers and with no AES 2010-2014**



When sprinklers were present, flame damage was confined to the room of origin in 97% of fires compared to 74% of fires without AES. See Figure 23. In a change from previous editions of this report, fires with NFIRS incident types indicating confined structure fires (NFIRS incident type codes 113-118) were all considered to have been confined to the room of origin.

**Figure 23. Percent of fires confined to room of origin in homes with sprinklers and with no AES 2010-2014**



More data can be found at the California Residential Fire Sprinkler Coalition's website: <http://www.firesprinklerinitiative.org/sprinkler-coalitions/california.aspx>

I am sure that you will find this data helpful in your ordinance adoption process.

Greg Andersen, Division Chief  
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