

# Nuisance Alarms

NFPA 72® Chapter 29 Requirements



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## Agenda

- **History** of Smoke Detection Installation Requirements
- **Importance** of Smoke Detection
- **Concern** with Nuisance Alarms
- **NFPA 72** Nuisance Alarm Requirements
- **FPRF Nuisance Alarm** Project
- **Challenge** Facing FPRF Project



## Installation Requirements

The initial push to get smoke alarms **installed in every home** was spurred by the landmark report, *America Burning: The Report of The National Commission on Fire Prevention and Control*, in 1973.

### **Report Recommendations:**

- Formation of the U.S. Fire Administration (USFA)
- Urged Americans to protect their homes with smoke alarms
- Called for regulatory action to mandate the installation of smoke alarms



## Installation Requirements

**1976:** UL 217 was published

**1976:** NFPA 101 required smoke alarms in all one- and two-family dwellings

**1979:** Regional model building codes required smoke alarms in all one- and two-family dwellings

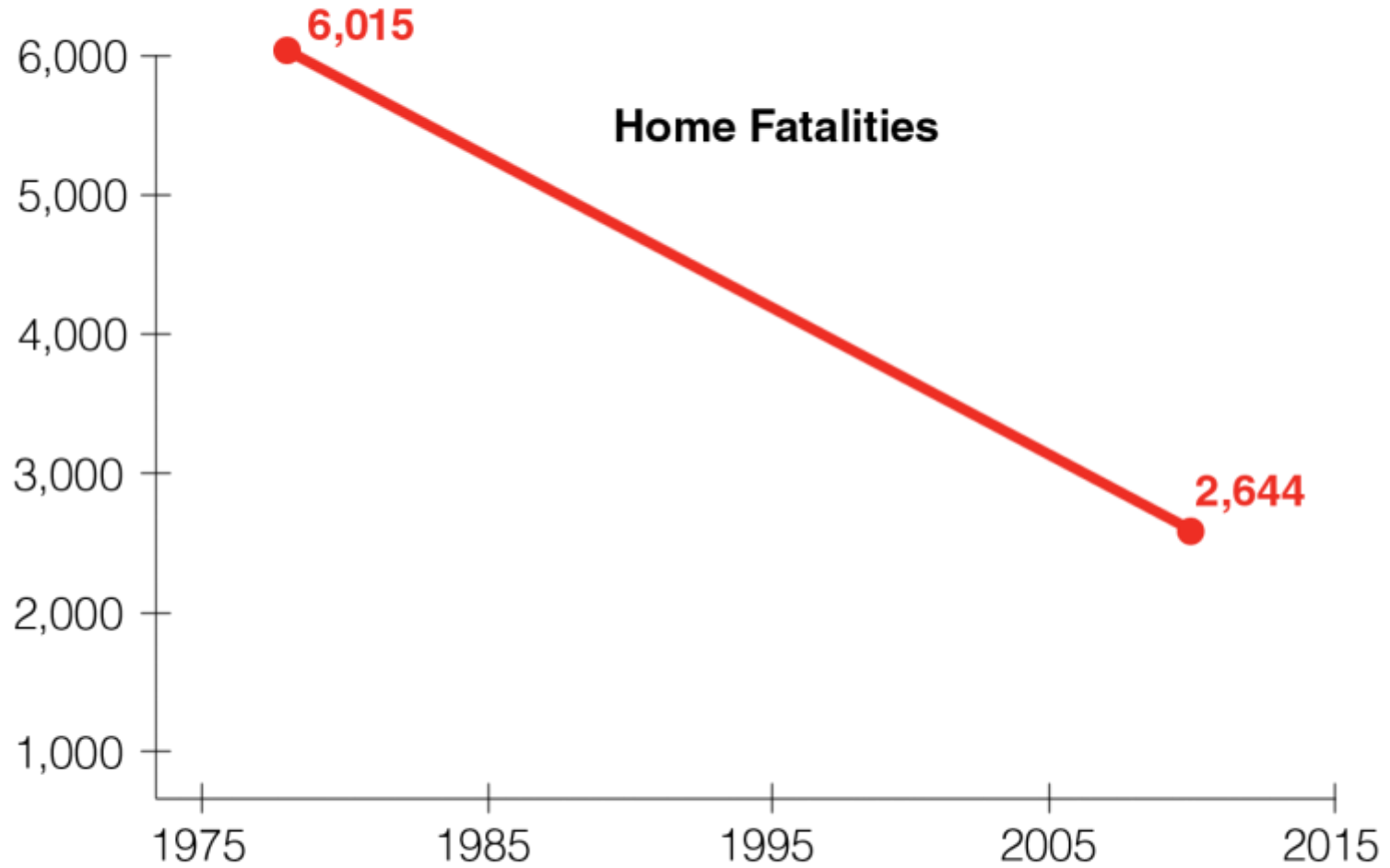
**2004:** Smoke Alarm penetration in U.S. homes\*:

- 22% in 1978 to 96% in 2004

\* NFPA - Smoke Alarms in U.S. Home Fires Report 2011



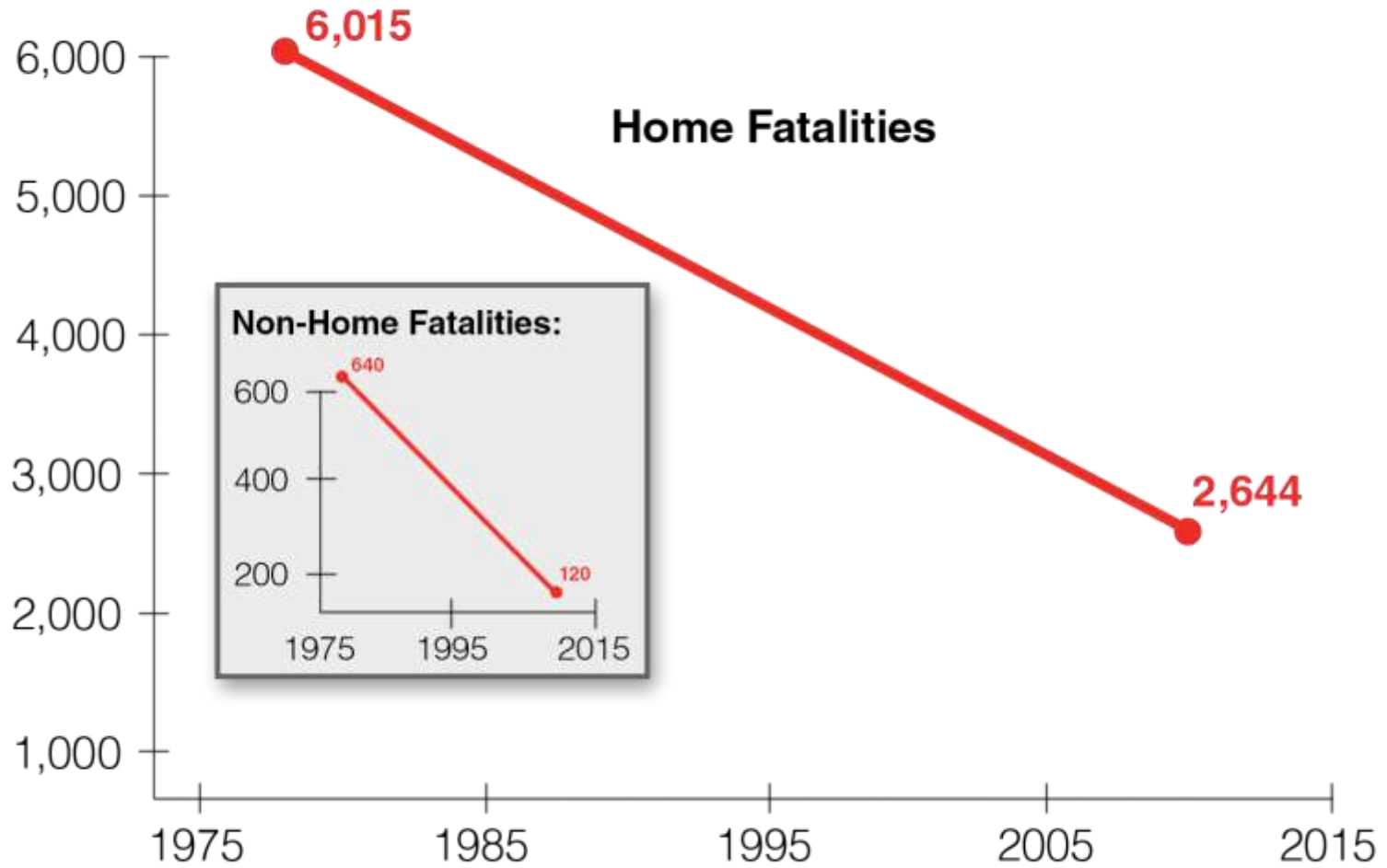
## Importance of Smoke Detection



**Source:** *Fire Loss in the U.S. During 2010*, NFPA Michael J. Karter, Jr. Sept. 2011

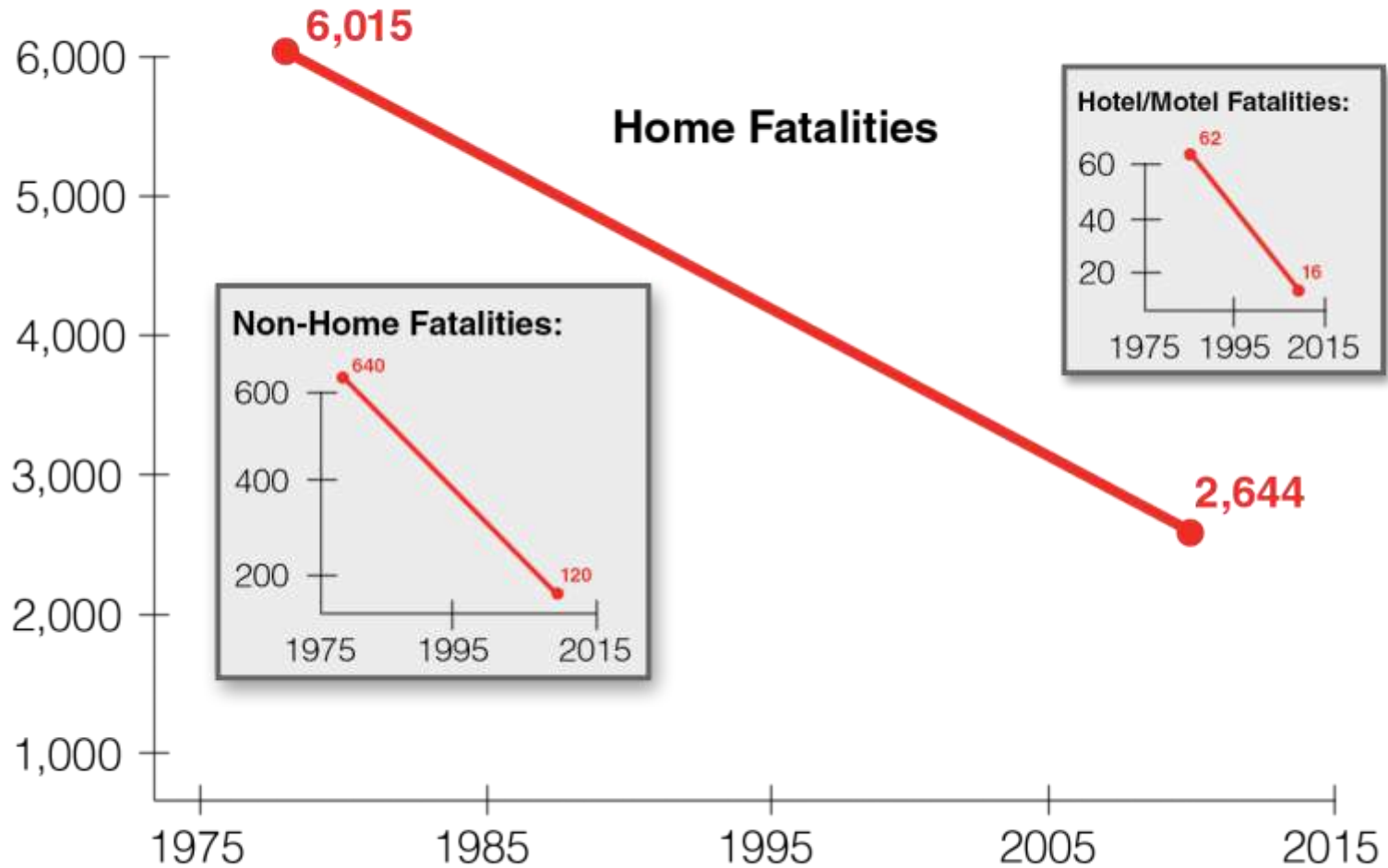


# Importance of Smoke Detection

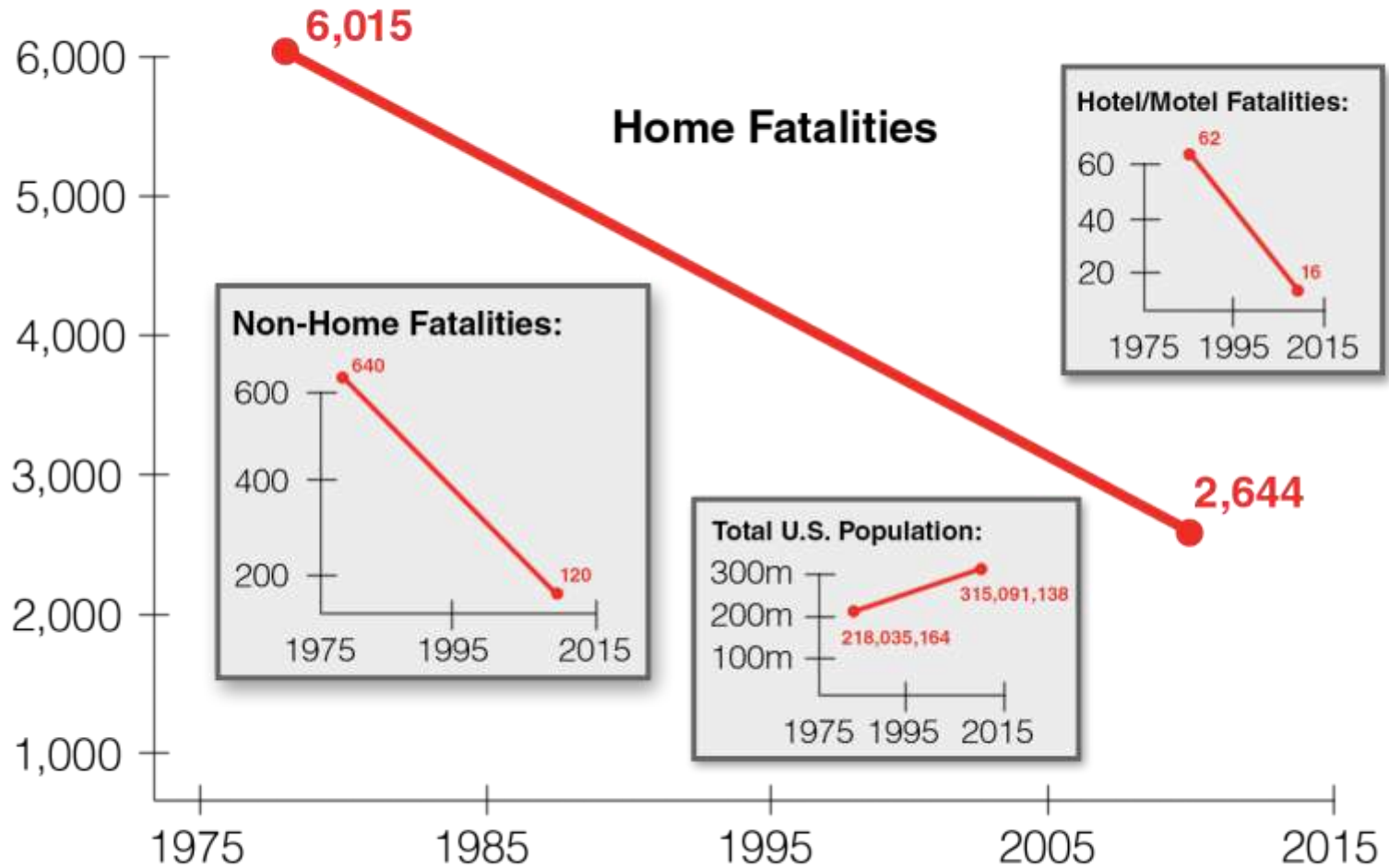


Sources: NFPA [non-home structure fires](#)

# Importance of Smoke Detection



# Importance of Smoke Detection





## Concern with Nuisance Alarms

In 2007, in reference to **Single- and Multiple-Station Alarms and Household Fire Alarm Systems**, the NFPA 72 Technical Committee appointed a Task Group (TG) to:

- Review the **effectiveness of smoke detection** used in dwellings for life safety and escape
- Develop guidance or provisions to further **address the nuisance alarm issues** attributable to the installation of smoke alarms near a cooking appliance



## Concern with Nuisance Alarms

### Report **Observations:**

- Nuisance alarms are the leading cause of occupants disabling their smoke alarms
- Disabled smoke alarms account for 20% of the smoke alarms installed in U.S. homes
- Cooking is the leading cause of nuisance alarms
- Ionization and photoelectric technology are both sensitive to cooking aerosols
- Ionization technology installed too close to a cooking appliance have a higher frequency of nuisance alarms than photoelectric type detectors



## Concern with Nuisance Alarms

### Report **Observations:**

- A nuisance alarm may be the activation of a properly functioning smoke detection device to a **non-hazardous source not imminently threatening to life or property**
- Smoke alarm is actually detecting **particles of combustion** that may not be visible to the occupant
- Occupant perceives frequent nuisance alarms as annoying and **disconnect the power** from the smoke alarm
- If left unattended, the non-hazardous fire could quickly transition to a **life-threatening fire**



## Concern with Nuisance Alarms

### Report **Recommendations:**

- Restrict the use of ionization-type detector smoke alarms or detectors within 25 feet of a **cooking appliance**, unless listed for this application
- Restrict the use of any smoke alarm or detector within a certain distance from cooking appliances



## NFPA 72-2010 Requirements

### **29.8.3.4 Specific Location**

**Requirements.** The installation of smoke alarms and smoke detectors shall comply with the following requirements:

- 4) Smoke alarms and smoke detectors shall not be installed within an area of exclusion determined by a 10 ft radial distance along a horizontal flow path from a stationary or fixed cooking appliance, unless listed for installation in close proximity to cooking appliances. Smoke alarms and smoke detectors installed between 10 ft and 20 ft long a horizontal flow path from a stationary or fixed cooking appliance shall be equipped with an alarm-silencing means or use photoelectric detection.



**NFPA 72**

2010 Edition

# **NATIONAL FIRE ALARM ( ( ( ( (and) ) ) ) ) ) SIGNALING CODE**





## NFPA 72-2010 Requirements

### **29.8.3.4(4) Specific Location Requirements**

**Exception:** *Smoke alarms or smoke detectors that use photoelectric detection shall be permitted for installation at a radial distance greater than 6 ft from any stationary or fixed cooking appliance when the following conditions are met:*

- a. *The kitchen or cooking area and adjacent spaces have no clear interior partitions or headers*
- b. *The 10 ft area of exclusion would prohibit the placement of a smoke alarm or smoke detector required by other sections of this code*



**NFPA 72**

2010 Edition

# **NATIONAL FIRE ALARM ( ( ( ( (and) ) ) ) ) ) ) SIGNALING CODE**





## NFPA 72-2013 Requirements

**Nuisance alarms** were a hot topic during the 2013 revision cycle

International Fire Chiefs Association (IAFC) submitted over **40 proposals to reduce nuisance alarms:**

- Fire department budgets have not kept pace with this rising volume of workload
- Concern about the cost of unnecessary responses

Automatic Fire Alarm Association (AFAA) submitted a proposal to require smoke alarms to be **resistant to cooking aerosols**

# National Fire Alarm and Signaling Code

2013 EDITION

## NFPA 72-2013 Requirements

**29.8.3.4(5)** Effective **January 1, 2016**, smoke alarms and smoke detectors used in household fire alarm systems installed between 6 ft (1.8 m) and 20 ft (6.1 m) along a horizontal flow path from a stationary or fixed cooking appliance shall be listed for resistance to common nuisance sources from cooking.

**29.7.3** Effective **January 1, 2019**, smoke alarms and smoke detectors used in household fire alarm systems shall be listed for resistance to common nuisance sources.



# National Fire Alarm and Signaling Code

2013 EDITION



## NFPA 72-2013 Requirements

### **Concern with requirements:**

- At present there are no test protocols in UL 217/268 for cooking resistance
- Requirements need to be translated into **UL 217/268** performance tests
- The January 1, 2016 is unachievable

### **Timeline Needed:**

- Research - 1 year
- UL Task Group Proposal – 3 to 6 months
- UL STP consensus process – 6 months
- Manufacturers design and list product – 3 years

# National Fire Alarm and Signaling Code

2013 EDITION

## FPRF Nuisance Alarm Project

**In 2013** the FPRF established a project to characterize cooking nuisance sources for the development of new test protocols in UL 217/UL 268 to meet the NFPA 72-2013 cooking resistant requirement



## Challenge Facing FPRF Project

Collaboration between FPRF Nuisance Alarm Project and UL Polyurethane Project is necessary to ensure any changes in the activation limits do not result in:

- Delaying the alarm signal when a real fire occurs
- Reducing the available safe escape time (ASET) for the building occupant
- Increasing nuisance alarms

FPRF Nuisance Alarm project **may** result in reduced smoke detection sensitivity

UL Polyurethane Project **may** necessitate increasing smoke detection sensitivity





# Nuisance Alarms

NFPA 72® Chapter 29 Requirements

## Questions or Comments?

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