



U.S. Fire Administration

Residential Fire Sprinkler Activation Report

A Database of Residential Fire Sprinkler Activations

January 1, 2003 to June 30, 2007



FEMA

U.S. Fire Administration

Mission Statement

As an entity of the Federal Emergency Management Agency (FEMA), the mission of the U.S. Fire Administration (USFA) is to reduce life and economic losses due to fire and related emergencies, through leadership, advocacy, coordination, and support. We serve the Nation independently, in coordination with other Federal agencies, and in partnership with fire protection and emergency service communities. With a commitment to excellence, we provide public education, training, technology, and data initiatives.



RESIDENTIAL FIRE SPRINKLER ACTIVATION REPORT

A database of residential fire sprinkler activations



January 1, 2003 to June 30, 2007



*United States Fire Administration
National Association of State Fire Marshals
National Institute of Standards and Technology
Residential Fire Safety Institute*



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About This Project

The Residential Fire Sprinkler Activation project, completed by the National Association of State Fire Marshals (NASFM) & The Residential Fire Sprinkler Institute, (RFSI) was made possible by a grant from the U.S. Fire Administration (USFA) (EME-2006-GR-0288).

The purpose was to gather current and relevant data pertaining to the activation of residential fire sprinklers, information necessary to assess the performance of these systems in real-life, non-laboratory conditions.

It should be noted clearly that this data collection system is the only system to collect detailed fire sprinkler activation information. When analyzed, these data can provide a clear and detailed justification for the growing presence and effectiveness of residential fire sprinklers.

The project was initiated and system oversight provided by the following:

Larry Maruskin, *U.S. Fire Administration*

Daniel Madrzykowski, *National Institute of Standards and Technology*

Dan Carlson, *NASFM Project Manager*

Roy Marshall, *Executive Director, RFSI*

Frank McGarry, *NASFM Sr. Policy Manager*

The reporting system is an online, Web-based system, located on the NASFM Web site (www.firemarshals.org), and consists of a forced-choice, drop-down menu that includes 18 data fields, with menu choices as listed below:

1. Type of residential occupancy (apartment, 1- or 2-family residence, condo, townhouse, or dormitory).
2. Number of stories (1, 2, 3, 4, 5, 6, more than 6, or unknown).
3. Story of origin (1, 2, 3, 4, 5, 6, more than 6, basement, or unknown).
4. Room of origin (kitchen, bedroom, living room, garage, bathroom, family room, work room, basement, dining room, other, or unknown).
5. Area of room of origin (0-100 sq ft, 101-150 sq ft, 151-200 sq ft, 201-250 sq ft, 251-300 sq ft, 301-350 sq ft, 351-400 sq ft).
6. Width of room of origin (1 thru 20 feet in 1-foot increments or, unknown).
7. Length of room of origin (1 thru 20 feet in 1-foot increments or, unknown).

8. Number of sprinkler heads in room of origin (1, 2, 3, 4, 5 or more, or unknown).
9. Number of sprinkler heads activated (1, 2, 3, 4, 5 or more, or unknown).
10. Type of sprinkler head activated #1 (exposed, concealed, or unknown).
11. Type of sprinkler head activated #2 (fast response, standard, or unknown).
12. Type of sprinkler head activated #3 (pendent, sidewall, or unknown).
13. Reason for activation (fire, system malfunction, vandalism, or unknown).
14. Smoke detector present (yes, no, or unknown).
15. Did smoke detector operate (yes, no, or unknown).
16. Estimated number of lives saved by activation (numerical amount to be entered).
17. Incident dollar-loss range (0-1,000, 1,001-5,000, 5,001-10,000, 10,001-50,000, 50,001-100,000, 100,001-250,000, more than 250,000, or unknown).
18. Estimated range of dollars saved by activation (0-1,000, 1,001-5,000, 5,001-10,000, 10,001-50,000, 50,001-100,000, 100,001-250,000, more than 250,000, or unknown).

Please take note!

Throughout this report the “N/A” field was an option to users and was applied in some cases as “not available,” in others as “not applicable,” and in others as “unknown.”

The “N/A” selection also was used by some reporting officials in fields in which the report called for an opinion or estimate, such as lives and dollar loss averted by sprinkler activation. This accounts for the high percentage of “N/A” in certain categories.

Any fire department experiencing a residential fire sprinkler activation was invited to participate. Because it was apparent that the most activations and, therefore, the greatest amount of data, would come from areas having the largest number of residential sprinklers, efforts to solicit project participants were focused primarily on political subdivisions having residential fire sprinkler ordinances.

The RFSI’s (www.firesafehome.org) listing of communities with sprinkler ordinances was used for this purpose, with assistance in identifying additional subdivisions provided by the NASFM, the National Fire Protection Association (NFPA), the International Association of Fire Chiefs (IAFC), and numerous associations of State fire prevention officers. Without their assistance in identifying users, this project could not have been successful.

In this phase of the project (2006-2007) 89 additional fire departments participated in the reporting of more than 150 additional activations when compared to the earlier phase of the project 2003-2005.

The following graphs depict the data gathered from January 1, 2003 through August 31, 2007. While these graphs represent the compilation of all 556 incidents, the program is designed to enable each user and each State to obtain individual or specialized reports of incidents organized by State, or by any of the data elements captured by the system.

The initial grant was extended for a period of 1 year to continue gathering residential sprinkler activations to expand the base of data collected. That base now can be used to identify what information is documented and retrievable and what is not, from fire department records. With the knowledge gained from the project, we now can modify the database to make the data-entering process more user-friendly, resulting in increased reported activations.

Activation of Residential Sprinklers

TYPE OF RESIDENTIAL OCCUPANCY

This category asks for the type of residential occupancy of the fire/ incident. Choices for the collected data were apartment, 1 or 2 family (stand alone), condo's, townhouses, or N/A. As the project was searching for permanent housing incidents, hotel/ motel data were not solicited, as that is regarded as temporary/transient type occupancies.

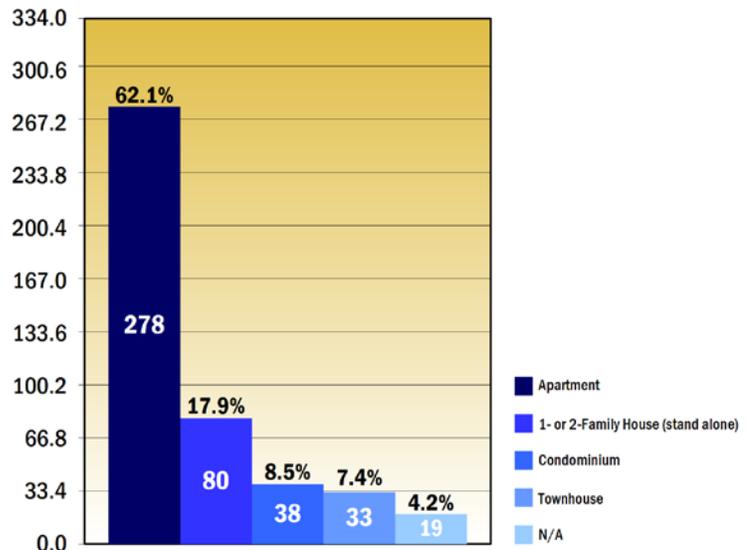


Figure 1. Type of Residential Occupancy

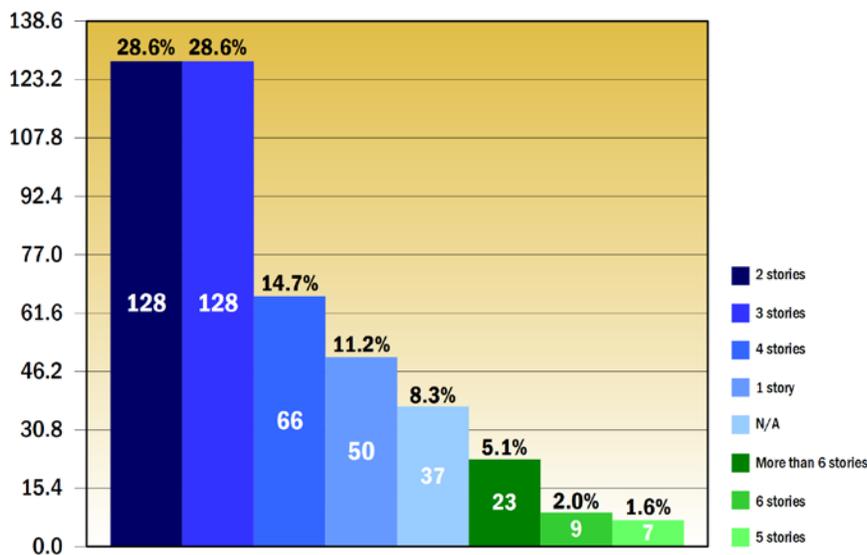


Figure 2. Number of Stories

NUMBER OF STORIES

This category indicates the number of stories (levels) the occupancy had, starting at ground level.

STORY OF ORIGIN

This category indicates the floor level or story on which the fire/incident actually occurred.

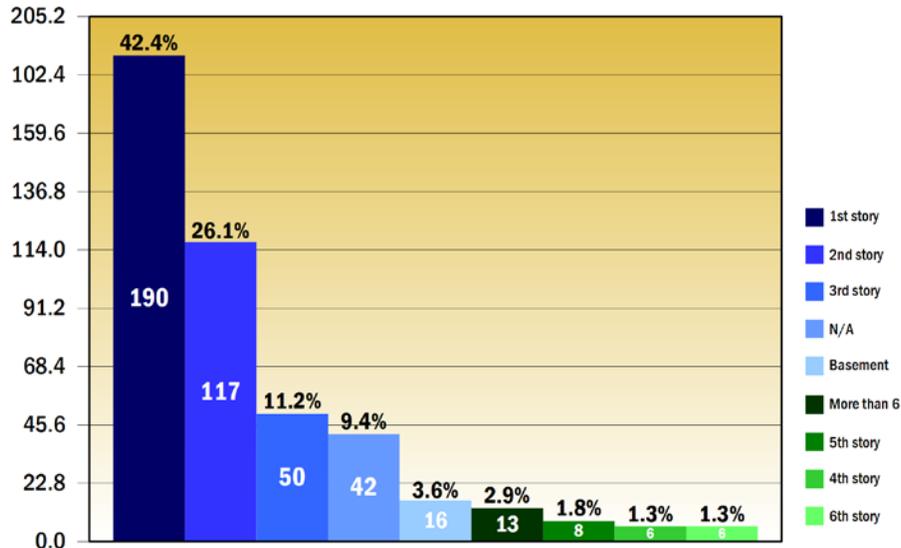


Figure 3. Story of origin

ROOM OF ORIGIN

This category indicates in which room of the occupancy the fire/incident originated.

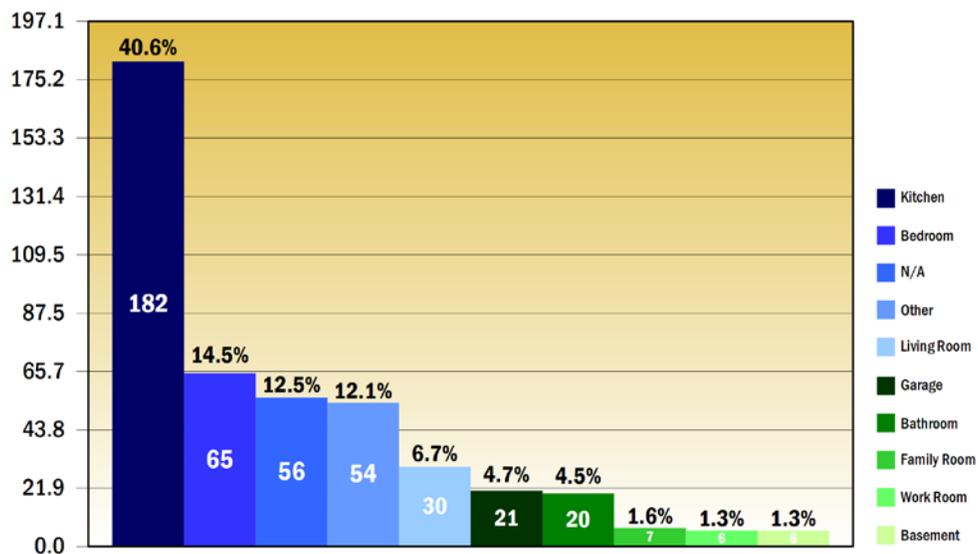


Figure 4. Room of origin

AREA OF ROOM OF ORIGIN

This category asks for the area of the room of origin of the fire/incident in square footage.

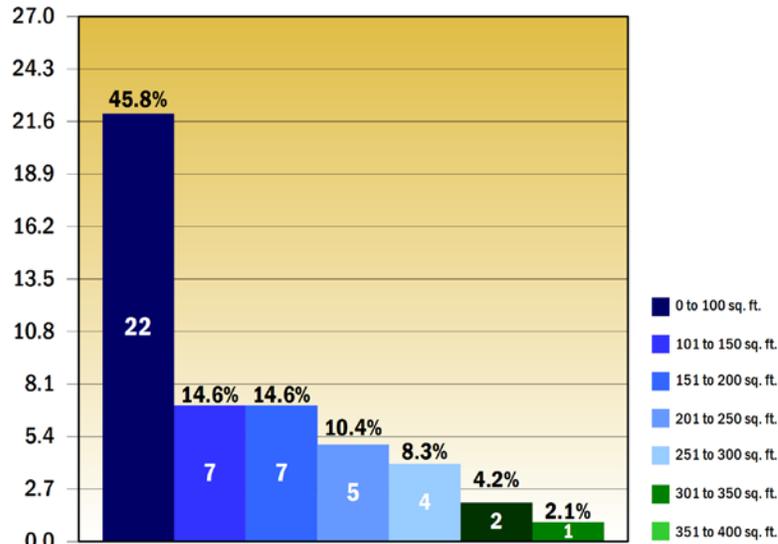


Figure 5. Area of the room of origin

WIDTH OF THE ROOM OF ORIGIN

The data show the length of the room in linear feet.

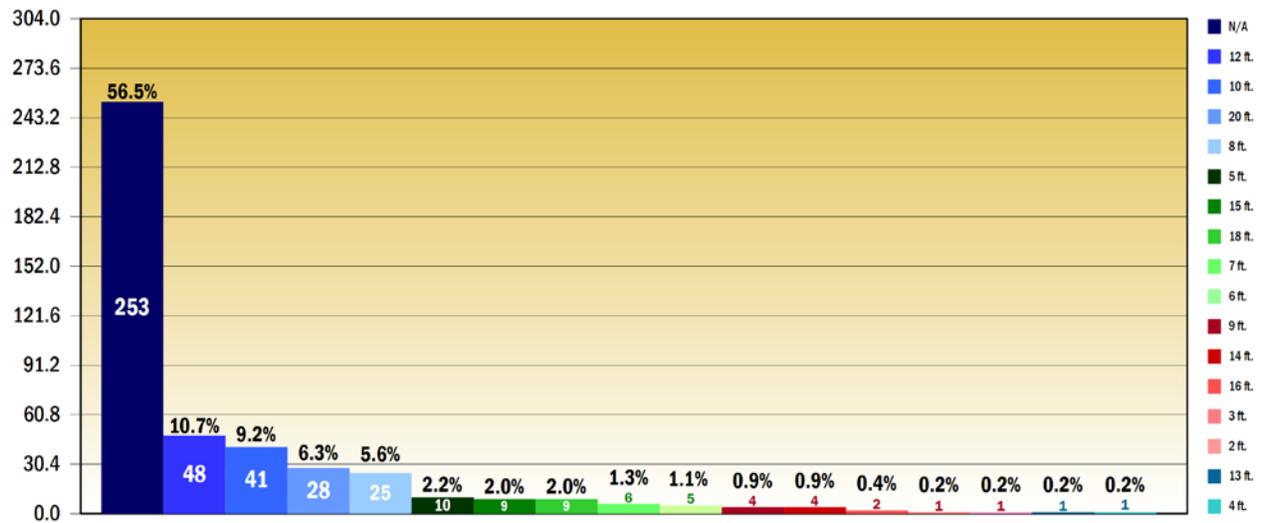


Figure 6. Width of the room of origin

LENGTH OF ROOM OF ORIGIN

The data show the length of the room of origin in linear feet

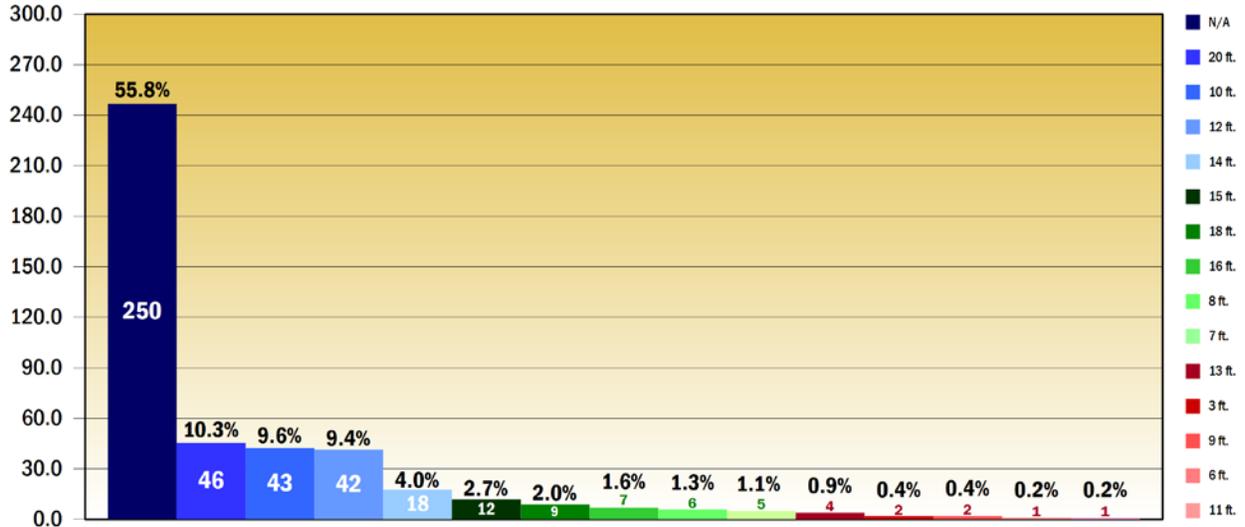


Figure 7. Length of the room of origin

NUMBER OF SPRINKLER HEADS IN ROOM OF ORIGIN

This category was to collect the data indicating how many sprinkler heads were present in the room of origin of the fire/incident.

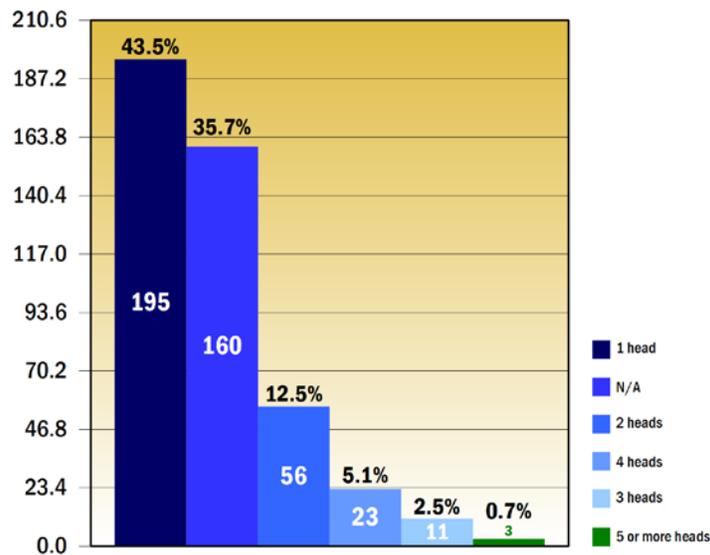


Figure 8. Number of sprinkler heads in room of origin

NUMBER OF HEADS ACTIVATED

This category indicates the number of sprinkler heads activated during the fire/incident.

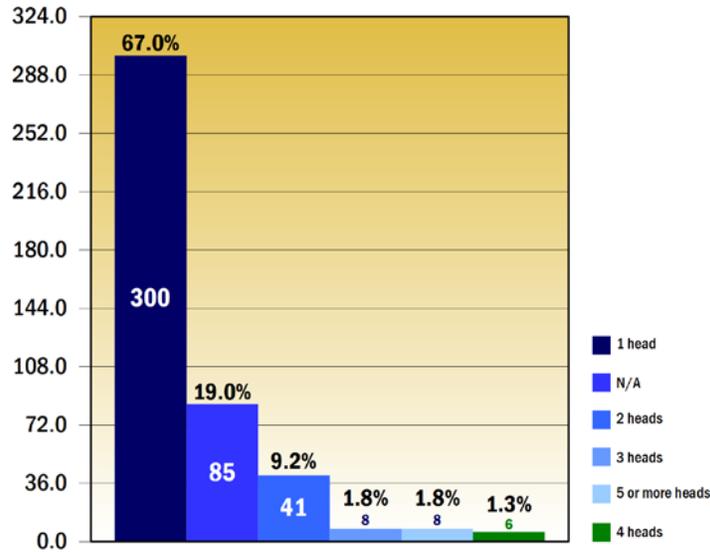


Figure 9. Number of heads activated:

TYPE OF HEAD ACTIVATED #1

This category indicates the type of head activated during the fire/incident.

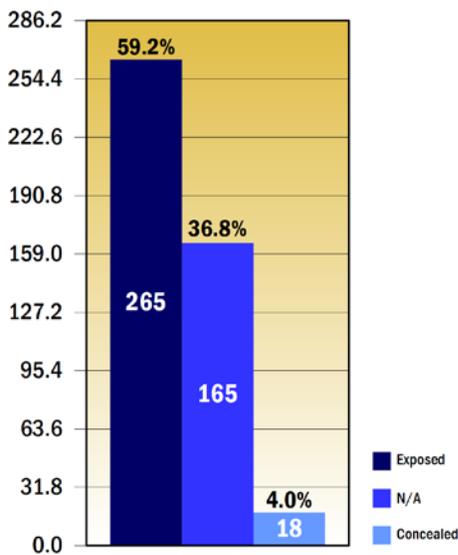


Figure 10. Type of head activated #1

TYPE OF HEAD ACTIVATED #2

This category indicates the type of head activated, either fast response or standard response.

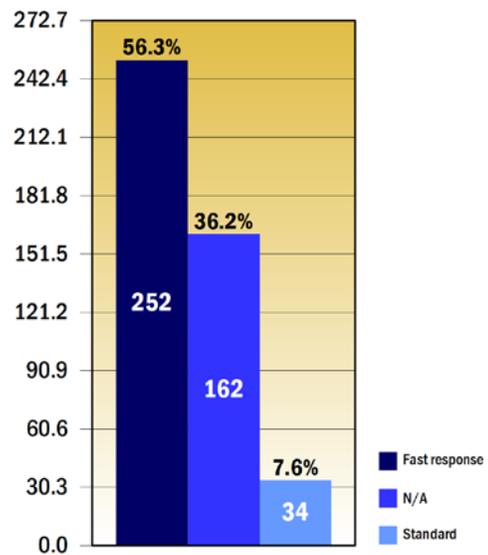


Figure 11. Type of head activated #2

TYPE OF HEAD ACTIVATED #3

This category indicates the type of head activated, either pendant or side wall.

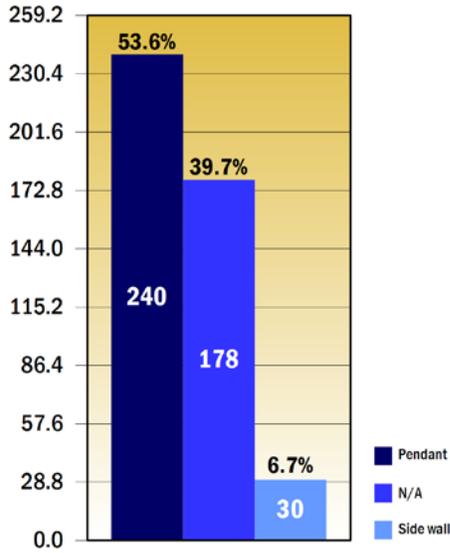


Figure 12. Type of head activated #3

REASON FOR ACTIVATION

This data field collected the different reasons for a sprinkler head to be activated.

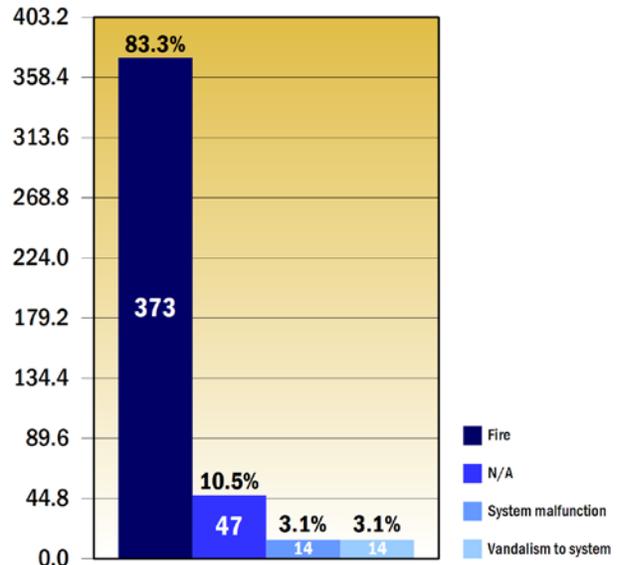


Figure 13. Reason for activation

SMOKE DETECTOR PRESENT

In this category it was asked if a smoke detector was present or not present in the structure.

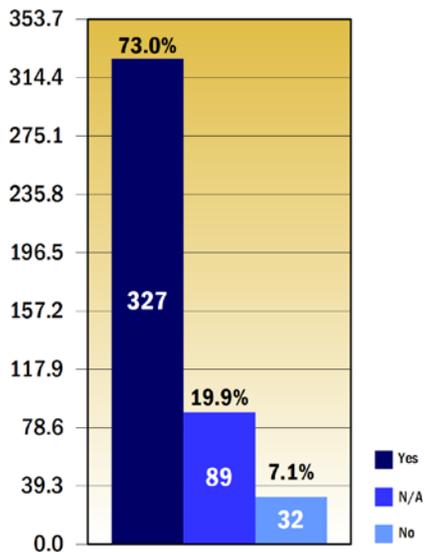


Figure 14. Smoke detector present

DID THE DETECTOR OPERATE?

In this category it was asked if the smoke detector operated.

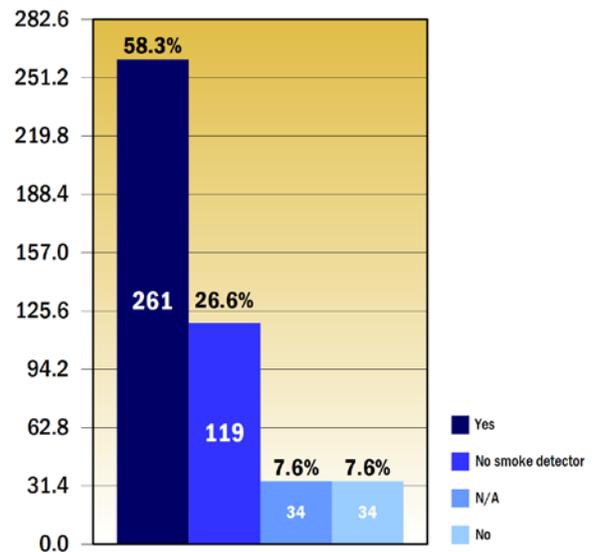


Figure 15. Did the detector operate?

ESTIMATED RANGE OF DOLLARS SAVED BY ACTIVATION

In this category the same choices were given to estimate the dollars (SAVED) by the sprinkler head(s) activations as in the dollar (LOSS) category. The number of “not reported” responses can be attributed to the fact that the fire service, as well as the insurance industry, normally tracks dollars LOST and not dollars SAVED.

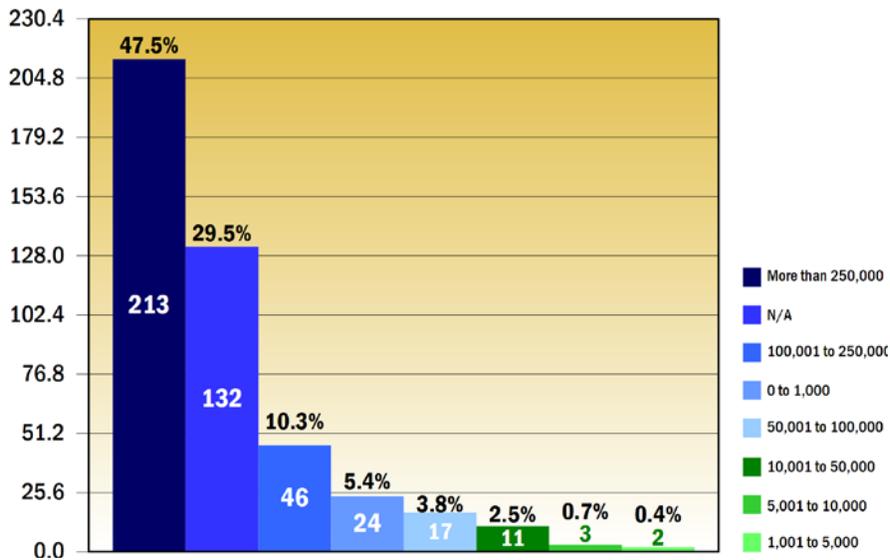


Figure 16. Estimated range of dollars saved by activation

INCIDENT DOLLAR LOSS

This category was included in the project to ascertain the dollar loss resulting from the fire/incident.

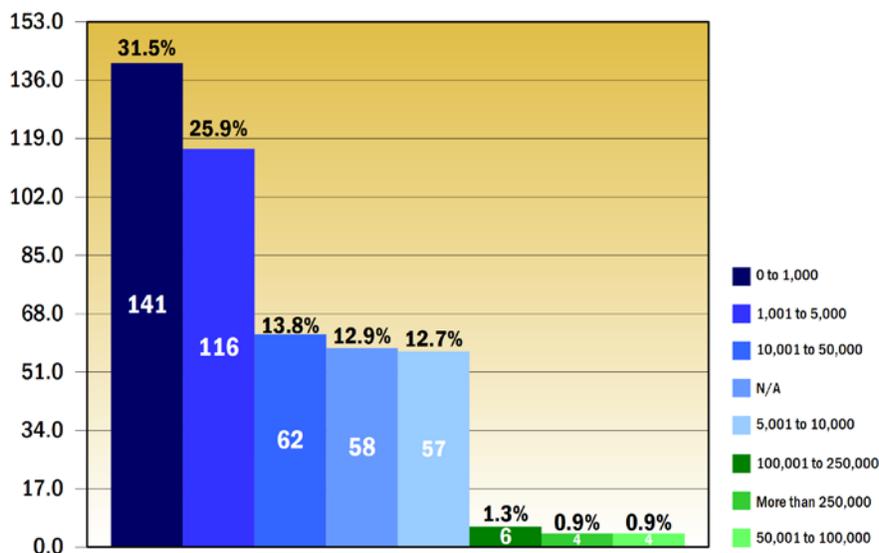


Figure 17. Incident dollar loss range

ESTIMATED LIVES SAVED BY ACTIVATION

This category was included in the project to try to determine/estimate how many lives were saved as the result of the fire sprinkler activations in residential occupancies. This category was suspected to be the most difficult to obtain conclusive data.

A criteria or qualifier was not set for determining the number of lives saved. It did not specify if that number should include the total occupancy of the structure, the total occupants at the time of the incident, or the number of occupants in the room/area of the incident where there was eminent danger of losing their life.

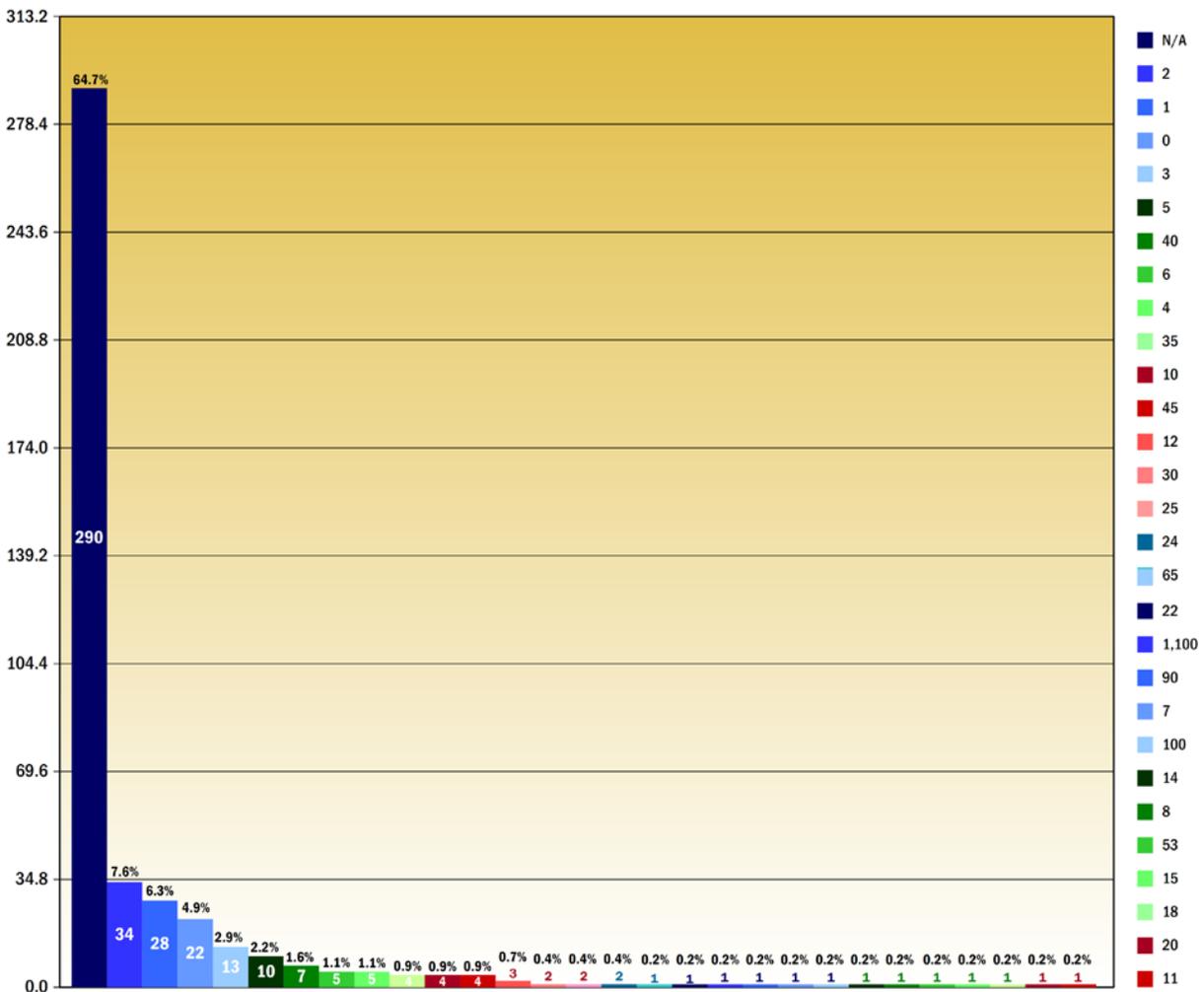


Figure 18. Estimated number of lives saved by activation

State Regulations for Contractors, Designers and Installers of NFPA 13D Systems

The RFSI has compiled a list of State licensing requirements for fire sprinkler contractors. The purpose of this project was to determine the impact on the regulations on contractors who install NFPA 13D systems. The scope of NFPA 13D, *Standard for the Installation of Sprinkler Systems in One- and Two-Family Dwellings and Manufactured Homes*, is limited to one- and two-family homes, for both site-built and manufactured homes. This project was funded by the USEA under Cooperative Agreement EME-1998-CA-0476.

The goals of the project were two-fold. The first goal was to identify State licensing requirements that apply to NFPA 13D contractors. Some States do not regulate contractors at all, while others have adopted very stringent requirements that serve to limit the number of contractors who can install NFPA 13D systems. The limitations usually arise where the regulations do not differentiate between contractors who limit their work to 13D systems and those who install sprinklers in highrise or high-hazard occupancies as well. Consequently, every contractor who is authorized to install 13D systems must have the capability to design and install the most sophisticated type of fire sprinkler systems.

The second goal was to list the specific State licensing requirements so that proponents of residential fire sprinklers could determine if the requirements were reasonable and applicable to NFPA 13D contractors. This will assist them in addressing regulations that unduly restrict otherwise qualified contractors from installing 13D systems. The list shows that some States have created separate licensing requirements for contractors who want to limit their work to 13D systems. These may be used as models for other States.

Modifications to the 1999 edition of NFPA 13D are proving to encourage the use of multipurpose systems, which combine a home's fire sprinklers with the plumbing system. To perform this work, contractors must be qualified both to install residential fire sprinklers and to work on potable water systems. The list shows that most of the existing State regulations make it very difficult for a contractor with a plumbing license to achieve the qualifications necessary to include fire sprinklers with a plumbing system. Many of those State regulations were adopted long before residential sprinkler systems were anticipated, let alone sprinkler systems that are part of potable water systems. The list does reveal a few States that have addressed the potable water limitation by establishing lesser sprinkler requirements for 13D contractors. This is making it easier for a contractor who is licensed to work on potable water systems to become licensed to install 13D systems.

In those States with regulations that include the installation of residential fire sprinkler systems, the qualifications from State to State bear a rough resemblance to each other. Contractors typically need to have a business license, which has insurance and bonding requirements. As for competence in

installing residential sprinkler systems, most of the State regulations do not specifically require that the owner of the business have the competence. Rather, they require that someone in a supervisory position in the company have that competence. There are a variety of names used for that individual, such as Qualifying Party, Responsible Managing Employee, Certificate Holder, etc., but they all refer to the same thing.

Some States have different qualifications for sprinkler system designers than the qualifying party, but they generally require that the designer be an employee of the contractor. Others have specific qualifications for installers that differ from a company's qualifying party. The following list of State regulations is organized to describe the specific licensing qualifications for company owners, qualifying parties, designers and installers.

ALABAMA

Contractor qualifications: A contractor must have a State Fire Marshal Permit. To acquire it, the contractor must be or employ a Certificate Holder.

Certificate Holder qualifications: A Responsible Managing Employee (owner, partner, officer, or employee who is actively in charge of the work) who has a NICET Level III certificate for a sprinkler layout technician.

Designer qualifications: The certificate holder can design the plans.

Installer qualifications: No information.

Reciprocity: Contingent upon other States signing a reciprocity agreement. Georgia and Louisiana have reciprocity agreements.

Regulating Authority: State Fire Marshal.

Discussion: None.

ALASKA

Contractor qualifications: Must have a State Fire Marshal Permit, Class II-B or II-C, or employ a person who holds a permit.

Permit holder qualifications: Two years' experience in fire sprinkler installation and a NICET Level II certificate in sprinkler layout.

Designer qualifications: Two years' experience in fire sprinkler installation and a NICET Level III certificate in sprinkler layout.

Installer qualifications: Must be supervised by permit holder.

Reciprocity: No information.

Regulating Authority: State Fire Marshal.

Discussion: Local jurisdictions that have home rule authority may adopt regulations that are more restrictive than the State Fire Marshal regulations.

ARIZONA

Contractor qualifications: The contractor must have a C-16 (fire sprinklers) or a C-37 (plumbing) license, which requires that the contractor be or employ a Qualifying Party.

Qualifying Party qualifications: For a sprinkler contractor, 4 years' experience in fire sprinkler installation. For a plumbing contractor, 4 years' experience in plumbing installation.

Designer qualifications: No information.

Installer qualifications: No information.

Reciprocity: None.

Regulating Authority: State Registrar of Contractors.

Discussion: The Arizona Registrar of Contractors issues rules governing the contractor classifications and license requirements. R4-9-103, titled "Residential Contracting License Classifications and Scope of Work," includes C-37, the license for residential plumbing. The scope of the work allowed under the C-37 license includes fire protection systems in the definition of plumbing.

ARKANSAS

Contractor qualifications: The contractor must be or employ a Responsible Managing Employee.

Responsible Managing Employee qualifications: Must have a Certificate of Registration from the State Fire Protection Licensing Board, which requires a NICET Level III certificate for sprinkler system layout technicians.

Designer qualifications: The Certificate Holder is authorized to design systems.

Installer qualifications: None reported.

Reciprocity: No information.

Regulating Authority: State Fire Protection Licensing Board.

Discussion: None.

CALIFORNIA

Contractor qualifications: The contractor must have a C-16 license. To get a C-16 license, the contractor must be or employ a Qualifying Individual.

Qualifying Individual qualifications: Journeyman sprinkler fitter or 4 years' experience and pass an exam that covers the trade, State law, and business law.

Designer qualifications: Must be a Qualifying Individual.

Installer qualifications: Journeyman or apprentice sprinkler fitter.

Reciprocity: No information.

Regulating Authority: Contractors State License Board.

Discussion: There are approximately 1,200 contractors in the State who have both a C-16 and C-36 license.

COLORADO

Contractor qualifications: The contractor must have a contractor's license. No experience is required for the license. The contractor also must register with the State Fire Marshal. See the discussion section for local requirements.

Permit holder, Managing Employee qualifications: No requirements.

Designer qualifications: No requirements.

Installer qualifications: No requirements.

Reciprocity: No information.

Regulating Authority: State Fire Marshal.

Discussion: Plans must be reviewed and approved by a State-certified fire inspector. The State of Colorado allows local codes and regulations that are more restrictive than the State requirements. Jurisdictions in the Colorado Springs region have adopted the Pikes Peak Regional Building Code, which contains requirements for fire sprinkler contractors that are more restrictive than the State requirements.

CONNECTICUT

Contractor qualifications: Contractors must provide evidence of 2 years' experience as a journeyman in the sprinkler trade.

Permit holder or Managing Employee qualifications: No requirements.

Designer qualifications: Must have a NICET Level III certificate for fire sprinkler layout or be a registered engineer.

Installer qualifications: Journeyman sprinkler fitter or have 4 years' experience and pass exam.

Reciprocity: No information.

Regulating Authority: Consumer Protection Department.

Discussion: None.

DELAWARE

Contractor qualifications: Contractor must be or employ a Certificate Holder.

Certificate Holder qualifications: Must have a Class IV certificate, which covers sprinklers in 1- and 2-family homes. The exam for the Class IV certificate covers Delaware State Fire Marshal regulations and NFPA 13D.

Designer qualifications: Class IV certificate.

Installer qualifications: No information.

Reciprocity: No information.

Regulating Authority: State Fire Marshal.

Discussion: None.

DISTRICT OF COLUMBIA

No State licensing laws or regulations.

FLORIDA

Contractor qualifications: The contractor must have a Florida Occupational License and either be or employ a Certificate Holder with a Level IV certificate from the State Fire Marshal. If the contractor has more than one business location, then there must be a Certificate Holder at each location.

Certificate Holder qualifications: Must have a Level IV certificate. For sprinkler contractors, this requires passing a 13D exam and 2 years' experience with a Level I, II, III or IV contractor. For plumbers, the State Fire Marshal will accept 4 years' work experience with a licensed plumbing contractor, attendance at a residential fire sprinkler workshop that has been approved by the state, and passing the Level IV exam.

Designer qualifications: Must have a Level IV certificate.

Installer qualifications: No information.

Reciprocity: No information.

Regulating Authority: State Fire Marshal.

Discussion: The State Fire Marshal will accept a NICET Level III certificate in fire sprinkler layout as an alternate to the experience requirements. The exam for the Level IV certificate is multiple choice and open-book. In addition to NFPA 13D, the exam covers State and Federal laws, workplace safety standards, administrative procedures, and pertinent technical data.

GEORGIA

Contractor qualifications: The contractor must either be or employ a Certificate Holder. If the contractor has more than one business location, a Certificate Holder is required at each location.

Certificate Holder qualifications: Must pass a competency exam.

Designer qualifications: Must be a registered professional engineer.

Installer qualifications: Must be directly supervised by the Certificate Holder

Reciprocity: Yes, if the other State has comparable rules.

Regulating Authority: State Fire Marshal.

Discussion: None.

HAWAII

Contractor qualifications: The contractor must have a C-20 license, which requires that the contractor be or employ a Responsible Managing Employee.

Responsible Managing Employee qualifications: Must document 4 years of supervisory experience in sprinkler installation during the past 10 years and pass exam. The documentation consists of notarized statements from three individuals who will attest to the supervisory experience.

Designer qualifications: No information.

Installer qualifications: No information.

Reciprocity: No information.

Regulating Authority: State Fire Marshal.

Discussion: None.

IDAHO

Contractor qualifications: The contractor must be or employ a Managing Employee.

Managing Employee qualifications: Pass the State Fire Marshal exam, show proof of installing (or supervising the installation of) four sprinkler systems with 200 sprinklers each, or have a NICET Level III certificate for fire sprinkler system layout.

Designer qualifications: A Managing Employee is authorized to design systems.

Installer qualifications: Must document 1,000 hours work experience per year for 3 consecutive years and pass exam.

Reciprocity: No information.

Regulating Authority: State Fire Marshal.

Discussion: None.

ILLINOIS

No State licensing laws or regulations.

INDIANA

No State licensing laws or regulations.

IOWA

No State licensing laws or regulations.

KANSAS

No State licensing laws or regulations.

KENTUCKY

Contractor qualifications: The contractor must be or employ a Certificate Holder.

Certificate Holder qualifications: Must have a NICET Level III certificate for a fire sprinkler layout technician.

Designer qualifications: Certificate Holders are authorized to design systems.

Installer qualifications: Must be supervised by a Certificate Holder.

Reciprocity: No information.

Regulating Authority: Department of Housing, Buildings and Construction.

Discussion: None.

LOUISIANA

No State licensing laws or regulations.

MAINE

Contractor qualifications: The contractor must be or employ a Responsible Managing Employee.

Responsible Managing Employee qualifications: Must be a registered professional engineer with 5 years' experience, or have a NICET Level III certificate for fire sprinkler layout technicians.

Designer qualifications: A Responsible Managing Employee is authorized to design sprinkler systems.

Installer qualifications: No information.

Reciprocity: No information.

Regulating Authority: State Fire Marshal.

Discussion: Each installation must be inspected by a certified inspection technician. Inspection technicians must pass a 25-question multiple-choice open-book test.

MARYLAND

Contractor qualifications: The contractor must have a Class II sprinkler contractor's license, which requires that the contractor be or employ a Responsible Managing Employee.

Responsible Managing Employee qualifications: Must have a NICET Level II certificate for fire sprinkler layout technicians.

Designer qualifications: The Responsible Managing Employee is authorized to design sprinkler systems.

Installer qualifications: No information.

Reciprocity: No information.

Regulating Authority: State Fire Marshal.

Discussion: None.

MASSACHUSETTS

Contractor qualifications: The contractor must be or employ a Managing Employee.

Managing Employee qualifications: Must have a NICET Level III certificate for sprinkler layout technicians with 5 years' experience and pass an oral exam, or pass a written and oral exam.

Designer qualifications: A Managing Employee is authorized to design sprinkler systems.

Installer qualifications: Must be a journeyman sprinkler fitter, which requires 8,000 hours in an approved apprenticeship program.

Reciprocity: No information for contractors or designers. Sprinkler fitters with out-of-State journeyman certificates can take an exam.

Regulating Authority: Bureau of Pipefitting and Refrigeration Technicians.

Discussion: None.

MICHIGAN

Contractor qualifications: The contractor must have a Fire Suppression Contractors license, and be or employ a Qualifying Employee.

Qualifying Employee qualifications: Must have a NICET Level III certificate for fire sprinkler layout technicians and document experience in fire sprinkler installation.

Designer qualifications: A Qualifying Employee is authorized to design sprinkler systems.

Installer qualifications: No information.

Reciprocity: No information.

Regulating Authorities: Bureau of Construction Codes; State Fire Marshal.

Discussion: None.

MINNESOTA

Contractor qualifications: The contractor must be or employ a Managing Employee.

Managing Employee qualifications: Must have 8,000 hours of installation experience and have a NICET Level III certificate for fire sprinkler layout technicians.

Designer qualifications: Must have a NICET Level IV certificate for fire sprinkler layout technicians.

Installer qualifications: Must have 8,000 hours experience or be an apprentice working under the supervision of a journeyman installer or the Managing Employee.

Reciprocity: No information.

Regulating Authority: State Fire Marshal.

Discussion: None.

MISSISSIPPI

Contractor qualifications: No licensing requirements for contractors building one-family homes or multifamily homes under three stories, or with less than 50 occupants.

Permit holder qualifications: None required.

Designer qualifications: No information.

Installer qualifications: No information.

Reciprocity: No information.

Regulating Authority: State Board of Contractors.

Discussion: None.

MISSOURI

No State licensing laws or regulations.

MONTANA

Contractor qualifications: The contractor must have or employ a person who has a NICET Level II certificate for fire sprinkler layout technicians.

Responsible Managing Employee qualifications: Not required.

Designer qualifications: No information.

Installer qualifications: Installers must have a NICET Level II certificate for fire sprinkler layout technicians and pass an exam.

Reciprocity: No information.

Regulating Authority: Bureau of Professional and Occupational Licensing.

Discussion: None.

NEBRASKA

Contractor qualifications: The contractor must be or employ a Responsible Managing Employee.

Responsible Managing Employee qualifications: Must have a Water-Based Fire Protection System Certificate, which requires a NICET Level III certificate for fire sprinkler layout technicians and passing an exam.

Designer qualifications: Responsible Managing Employees are authorized to design systems.

Installer qualifications: No information.

Reciprocity: No information.

Regulating Authority: State Fire Marshal.

Discussion: None.

NEVADA

Contractor qualifications: The contractor must be or employ a Certified Employee.

Certified Employee qualifications: Must have a J certificate (installation of NFPA 13D systems) from the State Fire Marshal, which requires passing an exam on NFPA 13D. Only contractors or installers with C-1, C-1(b) or C-41 licenses are allowed to take the State Fire Marshal's test for a J certificate.

Designer qualifications: No information.

Installer qualifications: Must be directly supervised by a Certified Employee.

Reciprocity: No information.

Regulating Authorities: State Contractors Board; State Fire Marshal.

Discussion: None.

NEW HAMPSHIRE

No State licensing laws or regulations.

NEW JERSEY

No State licensing laws or regulations.

NEW MEXICO

Contractor qualifications: The contractor must have a mechanical contractor's license and be or employ a Qualifying Party.

Qualifying Party qualifications: Mechanical contractor's license.

Designer qualifications: No information.

Installer qualifications: No information.

Reciprocity: No information.

Regulating Authority: Construction Industries Division.

Discussion: None.

NEW YORK

No State licensing laws or regulations.

NORTH CAROLINA

Contractor qualifications: The contractor must be or employ a person who has a NICET Level III certificate for fire sprinkler layout technicians.

Qualifying Party qualifications: Term not used.

Designer qualifications: No information.

Installer qualifications: No information.

Reciprocity: No information.

Regulating Authority: State Board of Examiners of Plumbing, Heating & Fire Sprinkler Contractors.

Discussion: None.

NORTH DAKOTA

No State licensing laws or regulations.

OHIO

Contractor qualifications: The contractor must be or employ someone who is a Certificate Holder.

Certificate Holder qualifications: Must pass an exam.

Designer qualifications: No information.

Installer qualifications: No information.

Reciprocity: No information.

Regulating Authority: State Fire Marshal.

Discussion: None.

OKLAHOMA

Contractor qualifications: Must be or employ a Fire Sprinkler Company Manager.

Fire Sprinkler Company Manager qualifications: Must have a NICET Level III certificate for fire sprinkler layout technicians.

Designer qualifications: Fire Sprinkler Company Managers are authorized to design systems.

Installer qualifications: Must have a Fire Sprinkler Technician license.

Fire Sprinkler Technician qualifications: Must document experience with installation of fire sprinklers.

Reciprocity: No information.

Regulating Authority: Department of Health Occupational Licensing Service.

Discussion: The current State regulations for fire sprinkler contractors are contained in the fire alarm regulations. Those regulations only require State licensing for contractors who connect a fire alarm to a sprinkler system, and thus do not appear to regulate contractors who install NFPA 13D systems that do are not connected to alarm systems.

OREGON

Contractor qualifications: The contractor must be registered with the Oregon Construction Contractors Board and be or employ a Responsible Managing Individual.

Responsible Managing Individual qualifications: Must document experience and qualifications to work in field of fire sprinkler system installation.

Designer qualifications: No information.

Installer qualifications: No information.

Reciprocity: No information.

Regulating Authorities: Oregon Construction Contractors Board; State Fire Marshal.

Discussion: None.

PENNSYLVANIA

No State licensing laws or regulations.

RHODE ISLAND

Contractor qualifications: Must be or employ a Sprinkler Journeyman Class I with 1 year's experience.

Sprinkler Journeyman Class I qualifications: 10,000 hours on-the-job experience and 144 hours of related training per year of experience.

Designer qualifications: No information.

Installer qualifications: Must be a Sprinkler Journeyman Class I or an apprentice.

Reciprocity: No information.

Regulating Authority: State Fire Marshal.

Discussion: None.

SOUTH CAROLINA

No State licensing laws or regulations.

SOUTH DAKOTA

No State licensing laws or regulations.

TENNESSEE

Contractor qualifications: Must be or employ a Responsible Managing Employee.

Responsible Managing Employee qualifications: Must have a NICET Level III certificate for fire sprinkler layout technicians.

Designer qualifications: Responsible Managing Employees are authorized to design systems.

Installer qualifications: No information.

Reciprocity: No information.

Regulating Authority: State Fire Marshal.

Discussion: None.

TEXAS

Contractor qualifications: The contractor must be or employ a Responsible Managing Employee—Dwellings.

Responsible Managing Employee—Dwellings qualifications: Must be a registered professional engineer and complete a course on NFPA 13D systems, or be a master plumber with a NICET Level II certificate for fire sprinkler layout technicians.

Designer qualifications: Responsible Managing Employees are authorized to design systems.

Installer qualifications: No information.

Reciprocity: No information.

Regulating Authority: State Fire Marshal.

Discussion: None.

UTAH

Contractor qualifications: A contractor must have 2 years' experience in fire sprinkler installation or equivalent experience as determined by the Division of Occupational & Professional Licensing.

Qualifying Party qualifications: Not required.

Designer qualifications: No information.

Installer qualifications: No information.

Reciprocity: No information.

Regulating Authority: Department of Commerce, Division of Occupational & Professional Licensing.

Discussion: None.

VERMONT

Contractor qualifications: Must be certified by the State Fire Marshal as a Technically Qualified Person.

Technically Qualified Person qualifications: Must be a journeyman sprinkler fitter or pass an exam.

Designer qualifications: Must have a NICET Level III certificate for sprinkler system layout technicians.

Installer qualifications: Must be a Technically Qualified Person.

Reciprocity: No information.

Regulating Authority: State Fire Marshal.

Discussion: None.

VIRGINIA

No State licensing laws or regulations.

WASHINGTON

Contractor qualifications: The contractor must be or employ a Certificate of Competency Holder, Level I.

Certificate of Competency Holder qualifications: Must pass an open-book exam on NFPA 13D or have a NICET Level II certificate for fire sprinkler layout technicians.

Designer qualifications: Certificate of Competency Holders are authorized to design systems.

Installer qualifications: Must be supervised by Certificate of Competency Holder.

Reciprocity: None.

Regulating Authority: State Fire Marshal.

Discussion: None.

WEST VIRGINIA

Contractor qualifications: A contractor must have a specialty contractor license for Sprinklers and Fire Protection.

Specialty License qualifications: Must pass a 100-question test.

Designer qualifications: No information.

Installer qualifications: No information.

Reciprocity: No information.

Regulating Authority: Contractor Licensing Board.

Discussion: None.

WISCONSIN

Contractor qualifications: The contractor must have a master plumber's license and attend a 16-hour workshop on NFPA 13D systems.

Qualifying Party qualifications: Not required.

Designer qualifications: No information.

Installer qualifications: Must be a journeyman plumber who has attended a 16-hour workshop on NFPA 13D systems.

Reciprocity: No information.

Regulating Authority: Department of Commerce, Plumbing Codes Division.

Discussion: None.

WYOMING

No State licensing laws or regulations.

Jurisdictions with Sprinkler Ordinances

ORDINANCES THAT COVER ONE AND TWO-FAMILY HOMES

The following table lists jurisdictions by State that require residential fire sprinklers in one and two-family homes. Some ordinances have specific conditions that must be met before sprinklers are required. Please read the *explanatory notes* at the bottom of the table. When no specific conditions are posted, this information was not provided by the AHJ.

	All	All R	All R-3	Notes	Adopted
ALASKA					
Ketchikan	X ¹			1. Over 8,000 sq ft	
ARIZONA					
Chandler	X				1986
Drexel Heights		X ^{1,2}		1. When < 500 gpm 2. When > 500 ft from hydrant	
Fountain Hills	X				1996
Paradise Valley	X				2000
Peoria			X ¹	1. Over 5,000 sq ft	
Scottsdale	X ¹			1. All R-3 since 1985	1974
Sedona			X ¹	1. Over 5,000 sq ft	
CALIFORNIA					
Agoura Hills			X ¹	1. LA County ordinance	
Albany			X ¹	1. Over 1,500 sq ft	
Alhambra					2003
Aliso Viejo					
Alto-Richardson Bay	X				
Aptos/La Selva	X				
Arcadia		X			
Arroyo Grande					

	All	All R	All R-3	Notes	Adopted
Auburn	X ¹			1. Over 10,000 sq ft	
Aurora	X ¹			1. Over 7,500 sq ft	
Bakersfield		X ¹		1. Over 10,000 sq ft	
Belmont					
Beverly Hills	X				
Brentwood			X		1999
Buena Park			X		2003
Burbank			X		
Cambria	X ¹			1. 5,000 sq ft threshold	
<i>Carmel Highlands</i>					
<i>Carpenteria</i>					
<i>Central</i>					
<i>Cloverdale</i>					
<i>Claremont</i>					
<i>Coronado</i>					
Corte Madera	X ¹			1. Water < 500 gpm	1980
Covina					
Culver City	X				1990
Cypress			X ¹	1. Over 3,600 sq ft	2003
Dana Point			X		
Daly City	X				
<i>Desert Hot Springs</i>					
<i>Downey</i>					
El Cerrito	X ¹			1. Over 5,000 sq ft	
El Monte	X ¹			1. Over 500 sq ft	
<i>Encinitas</i>					
<i>Escondido</i>					
<i>Eureka</i>					
<i>Folsom</i>					
Fontana			X		

	All	All R	All R-3	Notes	Adopted
Foothill		X ¹		1. Over 7,500 sq ft	
Foster City	X				
Fountain Valley					
Fremont			X ¹	1. Over 5,000 sq ft	1995
Fresno					
Gilroy	X ¹			1. Over 3,000 sq ft	1995
Glendale		X			1989
Hawthorne					
Healdsburg					
Huntington Beach					
Irvine			X ¹	1. Over 5,500 sq ft	
Kentfield					
Laguna Hills					
Laguna Niguel			X ¹	1. Over 5,500 sq ft	
Laguna Woods			X ¹	1. Over 5,500 sq ft	
La Habra Heights					
Lake Forest			X ¹	1. Over 5,500 sq ft	
Lakeside					
La Palma			X ¹	1. Over 5,500 sq ft	
Larkspur					
Livermore			X		
Loma Linda					
Los Alamitos			X ¹	1. Over 5,500 sq ft	
Los Angeles			X ¹	1. Access	
Los Angeles County			X ¹	1. Distance, access, water	
Malibu					
Manteca-Lathrop			X ¹	1. Over 4,000 sq ft	1987
Marin County					
Millbrae			X ¹	1. Over 5,000 sq ft	
Mill Valley					

	All	All R	All R-3	Notes	Adopted
<i>Milpitas</i>					
Mission Viejo			X ¹	1. Over 5,500 sq ft	
<i>Montclair</i>					
<i>Montebello</i>					
<i>Monterey</i>					
Napa		X			
Newark	X ¹			1. Over 500 sq ft	
Norco	X ¹			1. Over 2,500 sq ft	
North County		X	X		1996
Novato Fire		X			1995
<i>City of Orange</i>					
Orange County			X ¹	1. Over 5,500 sq ft	
Oxnard	X				
<i>Pacific Grove</i>					
Palm Springs	X ¹			1. Over 3,000 sq ft	1982
Pebble Beach			X		1999
<i>Petaluma</i>					
Pismo Beach		X ¹		1. Over 4,500 sq ft	
Placentia			X		
<i>Rancho Cucamonga</i>					
Rancho Santa Fe	X				
Rancho Santa Margarita					2003
<i>Redlands</i>					
Redondo Beach	X ¹			1. Over 750 sq ft	1990
<i>Redwood</i>					
Richmond	X ¹			1. Over 10,000 sq ft	
Riverside					REPEAL PENDING 2005
<i>Ross Valley</i>					
Sacramento County			X		
<i>Salinas</i>					

	All	All R	All R-3	Notes	Adopted
Salinas Rural		X			1995
<i>San Bernadino</i>					
San Bernadino County			X ¹	1. Access, water	
<i>San Bruno</i>					
<i>San Carlos</i>					
San Clemente			X		1979
<i>San Diego</i>					
<i>San Gabriel</i>					
San Jacinto					PENDING 2005
San Juan Capistrano			X ¹	1. Over 5,500 sq ft	
San Luis Obispo		X			1987
San Marcos			X ¹	1. Over 5,000 sq ft	
<i>San Mateo</i>					
San Miguel			X		1988
<i>San Rafael</i>					
<i>Sanger</i>					
<i>Santa Barbara</i>					
Santa Clara County					
Santa Cruz	X				1996
Santa Monica	X				1992
Santee	X				
<i>Saratoga</i>					
<i>Sausalito</i>					
<i>Sierra Madre</i>					
Seal Beach			X ¹	1. Over 5,500 sq ft	
Sonoma (www.sonoma-county.org)	X				2003
Stanton			X		
Sunnyvale		X			
<i>Tamalpais Valley</i>					
<i>Thunderbolt</i>					

	All	All R	All R-3	Notes	Adopted
Tiburon	X				1982
Tustin			X ¹	1. Over 5,500 sq ft	
Unincorporated Orange County					
Union City	X				1995
Vacaville					
Ventura					
Ventura County					
Villa Park			X ¹	1. Over 5,500 sq ft	
West Hollywood					
Westminster			X ¹	1. Over 5,500 sq ft	
Woodland		X			
Yolo County			X		1995
Yorba Linda			X ¹	1. Over 5,500 sq ft	
COLORADO					
Aspen	X1,2,3			1. Over 5,000 sq ft 2. Two or more stories 3. Access	
Basalt	X ¹			1. Over 5,000 sq ft	
Boulder					
Denver					
Fort Collins					
Hermosa Cliffs				1. Apparatus cannot get within 150 feet of home 2. Greater than 3 stories in height to a finished floor 3. Home greater than 3,600 sq ft	1995
CONNECTICUT					
Wethersfield	X ¹			1. Over 2,000 sq ft	
FLORIDA					
Altamonte Springs			X ¹	1. Over 3,500 sq ft	
Boca Raton	X ¹			1. Over 12,000 sq ft	
Casselberry	X ¹			1. Over 3,000 sq ft	

	All	All R	All R-3	Notes	Adopted
Flagler Beach	X ¹			1. Over 10,000 sq ft	
Jackson/Teton County	X ¹			1. Over 5,000 sq ft	
Jacksonville Beach	X ¹			1. Over 7,000 sq ft	
Orange County					
Orlando	X ¹			1. Lake Nona subdivision	
Oviedo	X ¹			1. Over 15,000 sq ft	
<i>Palm Beach</i>					
Palm Beach County			X ¹	1. Over 10,000 sq ft	
St. Lucie County		X			1996
GEORGIA					
Covington					
Marrietta					
Morrow			X		1999
HAWAII					
Honolulu	X				
IDAHO					
Ketchum	X ¹			1. Over 6,000 sq ft	
ILLINOIS					
<i>Barrington</i>					
<i>Buffalo Grove</i>					
Clarendon Hills			X		2000
Deerfield-Bannockburn		X ¹		1. Over 7,500 sq ft	1984
Glen Ellyn	X ¹			1. All new residential	2002
Glenview					
Hazel Crest	X ¹			1. Over 3,500 sq ft	
Hickory Hills					January 2005
Highland Park		X	X		
Hoffman Estates		X			
Lake Barrington					
Lombard	X ¹			1. Over 1,000 sq ft	

	All	All R	All R-3	Notes	Adopted
Long Grove	X				
Mount Prospect		X			
Oak Park	X ¹			1. Over 3,500 sq ft	
Park Ridge		X			2000
Round Lake Beach					
Tinley Park					
Wheeling	X			1. All new structures, regardless of occupancy type or size	
West Dundee					
Wood Dale		X ¹		1. Over 7,500 sq ft	
IOWA					
Iowa City	X				
KANSAS					
Leawood	X ^{1,2}			1. If hydrant > 500 ft 2. Over 1,000 sq ft	
Lenexa			X ¹	1. If water < 1,000 gpm	
MAINE					
Town of South Berwick	X				
MARYLAND					
Baltimore					
Frederick County					
Howard County			X		1992
Montgomery County	X	X			2003
Prince George's County		X			1988
MASSACHUSETTS					
Marblehead	X ¹		X ²	1. Over 7,500 sq ft 2. If sideyard setback < 20 ft	1983
North Andover		X			
MICHIGAN					
Fenton	X				

	All	All R	All R-3	Notes	Adopted
MINNESOTA					
Plymouth	X ¹			1. Over 2,000 sq ft	
St. Paul					
NEVADA					
<i>Incline Village</i>					
NEW HAMPSHIRE					
Atkinson			X ¹	1. All units within rural residential cluster development	1991
City of Claremont				1. New or renovated multifamily dwellings	
Derry				1. Modified sprinkler requirement for areas that do not have a municipal water supply	
Dover					REPEALED 2002
Durham				1. All private dormitory buildings	1991
Laconia				1. New homes over 3,600 sq ft 2. Any new building over 8,000 sq ft	Ordinance rescinded 3 weeks after passage
New Boston				1. Large developments of single-family homes 2. Multi-tenant structures (3 or more)	
Town of Newton				1. All new senior and elderly housing—includes "over 55 developments"	2005
Town of Petersborough					FIGHTING REPEAL EFFORTS
Salem				1. All new R-1 and R-2 use groups 2. All existing R-1 and R-2 use groups when substantially remodeled 3. All apartments or condominiums with four or more units and/or three stories or more 4. Residential care facilities with 5 to 16 clients 5. All new residential development of three or more lots	
Town of Strafford					Pending

	All	All R	All R-3	Notes	Adopted
NEW JERSEY					
Colts Neck					
NEW MEXICO					
Sante Fe					
Sante Fe County					
NEW YORK					
Dobbs Ferry					
Fairview					
Greenburgh	X				1982
Harrison					
Issaquah			X ¹	1. Over 2,500 sq ft	1992
OHIO					
Colerain Twp.	X ¹			1. Over 5,000 sq ft	
OREGON					
All residences over 3,600 sq ft statewide					
Cannon City		X ¹		1. Congregate care > 2 stories	1999
Portland					
PENNSYLVANIA					
Broomall		X ¹		1. Over 1,500 sq ft	
Buckingham Twp.			X		
Conewago					REPEAL PENDING 2005
Lower Merion Twp.			X ¹	1. If truss joists used	1989
Plymouth					
Upper Dublin Twp.			X		1998
Upper Merion Twp.		X			1987
Warrington Twp.			X		1985
West Whiteland Twp.		X			1989
SOUTH CAROLINA					
Mount Pleasant		X ¹		1. Over 4,000 sq ft	1985
North Myrtle Beach					

	All	All R	All R-3	Notes	Adopted
TENNESSEE					
Collierville		X ¹	X2	1. With three or more dwelling units. 2. Over 4,500 sq ft, or > 2,000 sq ft and > 300 feet from public road	1991
Germantown			X ^{1,2}	1. Over 35 feet high 2. Over 7,500 sq ft	
Pleasant View					
TEXAS					
Addison	X				1992
Bellaire			X ¹	1. Over 2 stories	1999
Bunker Hill Village	X				2000
Hedwig Village	X				2000
Hilshire Village	X				1999
Hunter's Creek	X				2000
Lewisville			X ¹	1. Duplexes only	2000
Lockhart			X		1998
Piney Point Village			X		1998
Plano					
Spring Valley	X				2000
Sugar Land	X ¹			1. Over 7,500 sq ft	
VERMONT					
Montpelier	X				
WASHINGTON					
Auburn					
Black Diamond			X ¹	1. Over 2,500 sq ft	
Bothell					
Dupont			X		
King County Fire Dist. 4	X ¹			1. Over 10,000 sq ft	
King County Fire Marshal			X ¹	1. Over 2,500 sq ft	
Olympia	X ¹			1. Over 12,000 sq ft	
Port Angeles					

	All	All R	All R-3	Notes	Adopted
Redmond	X ¹			1. Over 6,000 sq ft	
Tacoma					
WISCONSIN					
<i>Madison</i>					
Shorewood Hills	X				

EXPLANATORY NOTES

Note 1. This data represents information gathered by the Residential Fire Safety Institute (RFSI) from fire departments and other sources. Based on the response to our inquiries, we estimate that the actual number of ordinances is substantially higher.

Note 2. Jurisdictions printed in italics may have ordinances covering 1-2 family homes, but this has not been verified. The RFSI staff is verifying the information and will continue to revise the list.

Note 3. An entry in column 2, "All," means that sprinklers are required in all structures including 1 & 2-family homes.

An entry in column 3, "R," means that sprinklers are required in all residential occupancies including 1 & 2-family homes.

An entry in column 4, "R3," means that sprinklers are required in all 1 & 2-family homes.

Note 4. An entry with a superscript indicates a restrictive note in column No. 8. For example, in Corte Madera, CA, the X in column No. 2 indicates that sprinklers are required in all occupancies, but the requirement only applies when the water flow is less than 500 gpm

Note 5. The table does not include

- Jurisdictions that offer incentives for sprinkler installation, but do not require them by ordinance.
- Jurisdictions that require sprinklers on a case-by-case basis, such as a decision by a zoning board.
- Jurisdictions that require sprinklers only in model homes and leave sprinklers as a homebuyer's option.