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REPORT TO THE CITY COUNCIL

AGENDA ITEM NO. 10:15am

COUNCIL MEETING 01-10-06

APPROVED BY

DEPARTMENT DIRECTOR Randy R. Bruegman

CITY MANAGER

January 10, 2006

FROM: RANDY R. BRUEGMAN, Fire Chief  
Fire Department

SUBJECT: DISCUSSION AND APPROVAL OF OUTLINED RECOMMENDATION REGARDING THE  
UTILIZATION OF FIRE SPRINKLERS

KEY RESULT AREA: 0204001000

Public Safety

RECOMMENDATION

Staff recommends Council approve Option 3 of this report and direct staff to bring forward the necessary Fresno Municipal Code amendments for implementation.

EXECUTIVE SUMMARY

The Public Safety Commission (commissioned by the Mayor and City Council) presented a report to the City Council on May 11, 2004 on the needs of public safety for the community through 2025. One of the strategic initiatives in the report was the use of sprinklers to control fire risk and enhance community safety.

Utilization of Sprinklers in All Occupancies

The recommended option incorporates the concept that the City of Fresno would work with the local Building Industry Association (BIA) and other stakeholder organizations to develop a consensus on the use of sprinklers as a means to reduce long-term fire risk within the community. As the city is projected to almost double its population in the next 20 years, the City has the opportunity to use technology such as sprinklers and alarms effectively in all new construction and develop strategies by which target hazards such as multi-family residential occupancies can be retrofitted with this lifesaving technology. This strategy will ultimately produce a safer community in the year 2025. The recommended option has been designed around the extensive utilization of sprinkler systems in all new occupancies within the city.<sup>1</sup>

Over the past 12 months the Fresno Fire Department and numerous City departments have worked with the Building Industry Association (BIA) in an effort to determine options that would include some level of fire sprinklers use in all new construction. The BIA is not in support of any of the options presented in this report.

<sup>1</sup> Public Safety Commission Report, 2025 Plan

Fires kill more people in the United States every year than all natural disasters combined. Over eighty (80) percent of all fire deaths occur in the home. Seventy-eight (78) percent of those fires are started in the living room/family room, bedroom, and kitchen. The single most effective way to prevent fire-related deaths is the installation of residential fire sprinklers. When combined with smoke alarms, sprinklers cut the risk of dying in a home by 82 percent. During the past five years, the city of Fresno has experienced 250 civilian injuries, 114 firefighter injuries, and 12 civilian deaths as a result of single- and multiple-family dwelling fires.

There is little argument the use of fire sprinklers would enhance the protection in our homes and to our citizens in the city of Fresno. Understandably, the financial aspect and how it will impact the building industry and the cost of housing must also be considered. Those considerations have been identified in the proposal(s) presented to Council in this report.

### **KEY OBJECTIVE BALANCE**

This proposal provides gains in all three Key Objectives of Customer Satisfaction, Employee Satisfaction and Financial Management. Customer Satisfaction is achieved through the enhancement of protection to our citizens. Employee Satisfaction is enhanced by providing an increased level of fixed fire protection thus reducing the risk to our firefighting personnel. Financial Management benefits from the recommendation are improved as less firefighters will be needed than reported in the Public Safety Commission Report of 2004.

### **BACKGROUND**

In 1864 the first automatic sprinkler head was designed; however, its practical use did not occur until 1874 when Henry Parmele invented sprinklers that could control what heads discharged water to protect his piano factory.

Automatic fire sprinklers have been in existence for over 130 years. Their application in residential structures is more recent; however, their value and life-saving abilities are unquestionable. Statistically, 80-90 percent of all fire deaths will occur in single and/or multi-family residences, and homes that are equipped with smoke detectors and sprinklers have reduced the loss of life by 98.5 percent, an increase of 48.5 percent over when only smoke detectors are in use.

To meet the mission of the City, "Fresno is a culture of excellence where people get the best every day," strategies to provide the best fire protection for its citizens must be included. This includes proactive and progressive steps to prevent fires before they happen and to minimize the losses once they start.

As outlined in the 2025 Public Safety Master Plan over the course of the next 20 years, the fire department will need 26 fire stations, 36 staffed fire companies, and 264 new personnel. With these increases, the department's sworn staffing levels will be .66/1,000 population, still far below the national average of 1-1.5 firefighters per 1,000 population. The deployment strategy recommended in this report was based on incorporating the use of fire sprinklers in all new construction including single- and multi-family residential occupancies. Without the incorporation of such technology, more personnel, equipment, and fire stations will have to be added to provide fire protection to the citizens of Fresno. Based upon the comparative average of the peer cities and Fresno's historic fire loss, I would recommend a minimum of one firefighter per 1,000 population ratio. This would increase the number of firefighters needed by 272 firefighters over what was proposed by the 2025 Plan. This equates to an annual increase to the department operating cost of \$27 million in today's dollars.

### The Scottsdale, Arizona, Experience

- Scottsdale, Arizona, is a perfect example of the effectiveness of the use of fire sprinklers as a community strategy to enhance community safety and reduce long-term cost of fire protection and loss as a result of fire.
  - Scottsdale, Arizona, lies in a desert, a climate (hot, dry) that intensifies fire risk. In many ways Scottsdale is similar to Fresno. However, its residents pay half as much as the national average to support their local fire department. In addition, there are noticeable savings on home insurance coverage, and experience on per capita fire loss is less than one-fourth the national average. In the past ten years, in spite of nearly a 60 percent population growth, the city has managed to lower its fire loss by 84 percent.

A study commissioned by the Scottsdale City Council in 1990 provided a number of insightful comparisons.

- At that time the national annual per capita property loss from fire was \$33.10. In cities between 100,000 and 250,000 population (Scottsdale's range), the annual per capita loss was somewhat lower (\$21.30). Meanwhile, Scottsdale's annual per capita loss was \$8.95
- Scottsdale citizens pay 49 percent less for fire protection than the national average.
- Fire sprinkler activations from January 1, 1986 through December 30, 1990 provided the following statistics: In over 90 percent of the activations the fire was controlled by one sprinkler, and 95 percent of the time the fire was controlled by three or fewer heads.
- Based on known residential and commercial fire sprinkler flows (18 gpm to 25 gpm each), those one-sprinkler activations deposited an average of 276 gallons of water in the structure, compared to an estimated average of 4,767 gallons that would have been sprayed by fire department hoses had sprinklers not been available. Tests by various fire departments and the U. S. Fire Administration have proven that sprinklered properties have far less damage from water than unsprinklered properties (up to 85 percent).
- Total property loss from fire in Scottsdale averages \$1,390,337, compared to a national average (for same-size cities) of \$3,114,300. In comparison the city of Fresno's fire loss for the last six years has been as follows:
  - 1999 - \$12,200,000
  - 2000 - \$12,800,000
  - 2001 - \$15,400,000
  - 2002 - \$17,800,000
  - 2003 - \$32,800,000
  - 2004 - \$22,061,719Five-year average of \$19,897,620

A city of rapid growth, Scottsdale's population has increased from 107,900 in 1985 to approximately 170,000 in 1995. A study conducted by the independent consulting firm of Reese-Carr showed that when Scottsdale's development is totally complete, the fire sprinkler ordinance will have saved taxpayers over \$7.2 million in infrastructure water transmission costs, alone.

How? The community has one of the most progressive fire protection ordinances in the nation. In 1986 the city enacted an ordinance that required the installation of fire sprinklers in all new buildings. The ten-year anniversary of the sprinkler ordinance was celebrated in 1996. Statistical information provided by the City of Scottsdale show the following:

- o Average fire loss per sprinklered incident = \$2,280 vs. average fire loss per non-sprinklered incident = \$17,067.
- o Total people saved by sprinkler activation: 8 definite, 64 possible.
- o Cost of sprinkler installation has reduced over a period of time from the original \$1.14 per square foot (1986) to \$.52 - .85 per square foot (1993).

Scottsdale Insurance Company Discounts for Residential Sprinkler Systems		
Allstate	10% of total premium	Sprinklers, smoke detectors, deadbolts, fire extinguisher
Aetna	Up to 45%	New home with central station monitoring and burglar alarm
Prudential	2% - 14%	Sprinklers and smoke detectors
Sentry	20% - 10%	All areas/no attic
Independent Ins. Agents	8% - 13% 10% average	Average for industry 14 of 15 companies now offer some type of discount
Source: City of Scottsdale		

National Statistics

- Ninety-eight (98) percent of all fires in homes are controlled with the activation of one sprinkler head.
- Only one in 16 million sprinkler heads discharge accidentally without being damaged by some other means than fire.
- Homes that are equipped with smoke detectors and sprinklers have reduced the loss of life by 98.5 percent, an increase of 48.5 percent over when only smoke detectors are in use.

- Fire sprinklers activate at 155 degrees. This temperature can only be reached in a home with a true fire, not by any other means.
- Smoke, a by-product of fire, is almost always the cause of death to building occupants. Although smoke is produced as sprinklers extinguish a fire, the amounts of smoke are much less than those that would be produced by a fire permitted to grow.
- The technology is available to reduce the loss of life caused by fires in residential structures. Just as the invention and installation of air-bags in automobiles was challenging at first so, too, will be the installation of residential sprinkler systems. However, today, we (society) would not consider purchasing a car without an air-bag system installed.

Over the last 20 years the city of Fresno has doubled in size. Estimates predict that over the next 20 years, the city may double again to over 800,000 by 2025. The city has an opportunity to change the course of fire loss through the implementation of a residential fire sprinkler ordinance.

#### National Code Changes

Over the past 20 years many communities throughout California and the United States have adopted a variety of residential sprinkler code requirements. Earlier this year the National Fire Protection Association and the International Code Council adopted codes that recommend fire sprinklers in new construction of one- and two-family dwellings. With the adoption of the codes and the provisions in the National Code, it is anticipated that during the next code adoption cycle within the state of California, these provisions may be adopted at the state level, thus becoming a requirement at the local level. The time line this will occur will be during the next three to five years.

#### Options Explored

As we conducted our meetings with the BIA and the City stakeholders, three options emerged and were explored. (Attachment A)

**Option 1:** The first option discussed was the utilization of a fully compliant National Fire Protection Association (NFPA) 13D sprinkler system. Initiatives and trade-ups were explored for the BIA to offset the cost to incorporate sprinklers in all residential occupancies regardless of size.

**Option 2:** The second option was the use of a limited residential sprinkler system that would be installed in the living areas, where the highest percentage of fire deaths occur. These areas include living/family rooms, entertainment rooms, bedrooms, and kitchens. The department explored the cost of a limited system versus a full system and found that there was only an approximately 15 cents per square foot difference between fully sprinklering a residential occupancy to that of utilizing a limited area system.

**Option 3 – Recommended Option:** The third option explored was the use of a single sprinkler head or State Fire Marshal (SFM) listed wet chemical extinguishing system to be installed in the kitchen area in all new occupancies. This option would include that full sprinkler systems be installed in all model homes and other related code adjustments as outlined be made. In addition, a commitment is needed by the BIA and the Fire Department to jointly develop

materials to promote the use of NFPA 13D sprinklers systems in all new construction, which includes offering sprinklers as an option to home buyers.

### Why Option 3

Option 3 is recommended for several reasons. First, the annual fire statistics provided by NFPA indicate the kitchen is the highest fire hazard in our homes; therefore, it should be the primary focus in a risk-reduction strategy. Nationally, over the past ten years, more than 15 percent of all residential fire deaths, more than 29 percent of all injuries, and 30 percent of all residential fires were the direct result of kitchen fires. This statistical information holds true for the city of Fresno as well as outlined in Attachments B and C. As noted from October 1, 2005 to December 31, 2005, the city of Fresno had 65 kitchen fires, which resulted in \$964,855 fire loss, 1 fire fatality, 4 civilian injuries, and 0 firefighter injuries. The second reason Option 3 is recommended at this time is to allow the business community time to develop the infrastructure for the installation of residential sprinklers. Staff believes by taking the first step of installing a single sprinkler head in all new homes, a market will be created for the installation of residential sprinkler systems and related business will develop the infrastructure to support wide-spread application of residential sprinkler use in the future. Today, most of the sprinkler contractors are primarily focused on commercial installations. Third, staff understands the concerns of the BIA of the impact this will have on the cost to the housing market. Staff believes utilizing Option 3 is the first step toward a more comprehensive program if the national code is adopted at the state level and allows time for the building industry to prepare and adapt to the proposed changes.

### **Option 3 Specifics**

#### Single-Family Homes under 5,000 Square Feet

- All model homes will be built with NFPA 13D sprinkler systems installed.
  - All home builders will offer sprinkler systems as an option in new homes.
  - Joint marketing effort between the BIA and FFD to promote the installation of sprinkler systems in all new homes.
  - Minimum 1-1/2-inch domestic water service, with 1-inch or 1-1/2-inch meter for tract homes.
  - System recognized for insurance credit.
- Installation of a single sprinkler head or State Fire Marshal listed wet chemical extinguishing system in the kitchen area of all homes.
  - Sprinkler head can be installed by a C-16 licensed plumber or a fire sprinkler contractor. The design specs to be provided by the Fire Department.
  - Wet chemical extinguishing system would be installed by a C-16 contractor.
- Fire sprinkler permit fee waived (first two years of program).

Note: No further sprinkler requirements will be initiated for single-family homes **less than 5,000 square feet** unless new requirements are adopted as part of the national code adopted for use by the State of California. Exception: Fire sprinkler installations required for mitigation of fire station response distance over three miles, inadequate water supply, and limited firefighting access.

Single-Family Homes/Duplex over 5,000 Square Feet

- 13R fire sprinkler system required.
- System recognized for insurance credit.
- Minimum two-inch domestic water service and meter required.

Multi-Family Homes

- All multi-family units with three or more units (R-1) shall require fire sprinkler systems.
- System recognized for insurance credit.

Note:

California Building Code (CBC) currently requires sprinklers in all new apartment buildings (R-1) with five or more units.

Current FMC requires fire sprinklers in all apartments over 5,000 square feet (total building square footage).

Retroactive Provisions – Residential and Commercial

- Fire damage repairs to all commercial and single family/duplex (R-3) over 5,000 square feet and multi-family (R-1) exceeding 50 percent of current valuation will require sprinkler systems to be installed.
- Additions exceeding 25 percent of current square footage of existing building will require complete sprinkler systems to be installed.
- The 25 percent threshold shall be cumulative over the life of the building.
- For buildings over 5,000 square feet, a change of occupancy to a more hazardous use based on the life-safety requires fire sprinkler system throughout (existing provision).

Incentives or Trade-Ups for the BIA

- Public/private partnership to promote community investment in life safety.
- Value added to the home by providing the customer the opportunity to protect his/her investment.

- Sprinkler permit fee waived for initial two-year period for single homes and duplexes.
- Hydrant spacing to 800 feet.

Attachment A is the detailed matrix of the three options.

### FISCAL IMPACT

Immediate impact to the General Fund is negligible as a result of the waiving of permit fees for the residential sprinkler for the first two years of the program. However, long-term impact in respect to the adopted 2025 Plan would be significant. As outlined in the Public Safety Commission Report, the deployment strategy approved by the Commission was developed with the use of sprinkler technology in new construction. Therefore, the firefighters per 1,000 ratio is substantially lower than our peer cities in California (.81/1,000) and as compared to the national average (1.5/1,000). Without the incorporation of this technology, a new deployment strategy would need to be developed. Based upon the comparative city rate of firefighters per 1,000, we would anticipate the need to add a minimum of 120 additional firefighters over the course of the plan. Due to our socio-economic factors and historical fire loss trend, a ratio of 1/1,000 is more appropriate. This would add an additional 272 firefighters over the course of the plan. The fiscal impact to the building industry to install the residential kitchen sprinkler system is \$600 to \$800 per unit. It is anticipated the cost will go down once a market is created for residential sprinklers. For the subsequent option of installing a wet chemical system in lieu of a single sprinkler head in the kitchen cost range between \$1,200 to \$1,500 per unit.

RRB/mc

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### Attachment

- Attachment A: Proposed Additions to FMC Relating to Fire Sprinkler Use
- Attachment B: Residential Fires (Single- and Multi-Family Dwellings)
- Attachment C: Kitchen Fires – City of Fresno October 1, 2005 – December 31, 2005
- Attachment D: NFPA/City of Fresno 10-Year Average Residential
- Attachment E: List of California Cities with Residential Sprinkler Ordinance
- Attachment F: Peer City Statistics
- Attachment G: Home Fire Sprinkler Information
  - G1: Letter from Lora Huntington – Riverside, California
  - G2: Home Fire Sprinkler - Orange County Fire Authority
  - G3: Cost Information – Harold Rodger, Sprinkler Contractor
- Attachment H: Cost/Benefit to Society for Having Sprinklers in One- and Two-Family Dwellings
- Attachment I: Letter: Single Head Fire Sprinkler Installation
- Attachment J: Letter: Fire Sprinkler Contractors



PROPOSED ADDITIONS TO THE CITY OF FRESNO MUNICIPAL CODE (FMC) RELATING TO FIRE SPRINKLERS USE

Option 1: Full NFPA Compliant Sprinkler System in All Residential Occupancies and Recommended Enhancement to the FMC	Option 2: Limited Residential Sprinkler System and Recommended Enhancement to the FMC	Option 3: Recommended Option Install a Single Sprinkler Head or SFM Wet Chemical System in the Kitchen; Promote a Joint Marketing Effort for Use of Residential Sprinkler Systems in New Homes; and Recommended Enhancement to the FMC	Current Fresno Municipal Code
<p><b>Single-Family Homes under 5,000 sq. ft.</b> Install a nationally recognized residential sprinkler system, 1/2 inch</p>	<p><b>Single-Family Homes under 5,000 sq. ft.</b> Sprinklers installed in living areas that result in the highest percentage of fire deaths: - living/family/entertainment rooms - all bedrooms - kitchen</p>	<p><b>Single-Family Homes under 5,000 sq. ft.</b> All model homes will be built with sprinkler systems installed will require 1-1/2-inch domestic water service, with 1-inch or 1-1/2-inch meter Utilization of sprinkler in kitchen area will require 1-inch domestic water service with 1-1/2-inch or 1-1/2-inch meter Joint marketing effort between the BIA and FFD to promote the installation of sprinkler systems in all new homes Fire sprinkler permit waived (first two years of program)</p>	<p>No current amendments</p>
<p>Eligible for insurance credits</p>	<p>System may not be recognized for insurance credit</p>	<p>System may not be recognized for insurance credit</p>	
<p>Sprinklers in all rooms in the home, including garages 1-1/2-inch domestic water service, with 1-inch or 1-1/2-inch meter</p>	<p>One-inch domestic water service and meter acceptable BIA and FFD market the positive benefits of sprinklers Exterior bell by FFD requirements</p>	<p>Fire sprinkler permit waived (first two years of program)</p>	
<p><b>Single-Family Duplex over 5,000 sq. ft.</b> Full 1/2R system required with four head calculation System recognized for insurance credit Two-inch domestic water service and meter required</p>	<p><b>Single-Family Duplex over 5,000 sq. ft.</b> Full 1/2R system required with four head calculation System recognized for insurance credit Two-inch domestic water service and meter required</p>	<p><b>Single-Family Duplex over 5,000 sq. ft.</b> Full 1/2R system required with four head calculation System recognized for insurance credit Two-inch domestic water service and meter required</p>	<p>No current amendments</p>
<p><b>Multi-Family Homes</b> Apartments, triplexes, etc. (R-1), shall require sprinkler systems Eligible for insurance credit</p> <p>Note: *California Building Code (CBC) currently requires sprinklers in all new apartment buildings (R-1) with five or more units. *Current FMC requires fire sprinklers in all apartments over 5,000 square feet (total building square footage).</p>	<p><b>Multi-Family Homes</b> Apartments, triplexes, etc. (R-1), shall require sprinkler systems Eligible for insurance credit</p> <p>Note: *California Building Code (CBC) currently requires sprinklers in all new apartment buildings (R-1) with five or more units. *Current FMC requires fire sprinklers in all apartments over 5,000 square feet (total building square footage).</p>	<p><b>Multi-Family Homes</b> Apartments, triplexes, etc. (R-1), shall require sprinkler systems Eligible for insurance credit</p> <p>Note: *California Building Code (CBC) currently requires sprinklers in all new apartment buildings (R-1) with five or more units. *Current FMC requires fire sprinklers in all apartments over 5,000 square feet (total building square footage).</p>	<p>Current FMC amendment requires R-1 (triplex and up) over 5,000 to have sprinklers. (California Building Code [CBC] requires sprinklers for five or more units.)</p>
<p><b>Future Consideration: Retrofitting</b> All existing multi-family homes (apartments, triplexes, etc. [R-1]) - By 2015 all multi-family homes shall be retrofitted with sprinkler systems - Explore block grant or other matching funds to accomplish retrofitting</p>	<p><b>Future Consideration: Retrofitting</b> All existing multi-family homes (apartments, triplexes, etc. [R-1]) - By 2015 all multi-family homes shall be retrofitted with sprinkler systems - Explore block grant or other matching funds to accomplish retrofitting</p>	<p><b>Future Consideration: Retrofitting</b> All existing multi-family homes (apartments, triplexes, etc. [R-1]) - By 2015 all multi-family homes shall be retrofitted with sprinkler systems - Explore block grant or other matching funds to accomplish retrofitting</p>	<p>No current amendment</p>

Option 1 (Continued)	Option 2 (Continued)	Option 3 (Continued)	Current Fresno Municipal Code (Cont)
<p><b>Commercial</b></p> <p>Fire damage repairs to all commercial and single family/duplex (R-3) over 5,000 sq. ft. and multi-family (R-1)</p> <ul style="list-style-type: none"> <li>- Repairs of fire damaged occupancies, exceeding 50 percent of current valuation will require sprinkler systems to be installed</li> </ul> <p>* Additions exceeding 25 percent of current square footage of existing building will require sprinkler systems to be installed</p> <p>* The 25 percent threshold shall be cumulative over the life of the building</p> <p>In addition to occupancies specified in the building code over 5,000 square feet require fire code.</p> <p>In existing buildings over 5,000 sq. ft. where a change in building code occupancy group is more hazardous based on fire and life safety (office, night club); fire sprinklers are required.</p>	<p><b>Commercial</b></p> <p>Fire damage repairs to all commercial and single family/duplex (R-3) over 5,000 sq. ft. and multi-family (R-1)</p> <ul style="list-style-type: none"> <li>- Repairs of fire damaged occupancies, exceeding 50 percent of current valuation will require sprinkler systems to be installed</li> </ul> <p>* Additions exceeding 25 percent of current square footage of existing building will require sprinkler systems to be installed</p> <p>* The 25 percent threshold shall be cumulative over the life of the building</p>	<p><b>Commercial</b></p> <p>Fire damage repairs to all commercial and single family/duplex (R-3) over 5,000 sq. ft. and multi-family (R-1)</p> <ul style="list-style-type: none"> <li>- Repairs of fire damaged occupancies, exceeding 50 percent of current valuation will require sprinkler systems to be installed</li> </ul> <p>* Additions exceeding 25 percent of current square footage of existing building will require sprinkler systems to be installed.</p> <p>* The 25 percent threshold shall be cumulative over the life of the building.</p>	<p>No current amendment</p> <p>Current FMC amendments require retrofit with any addition. (Some minor exceptions.)</p> <p>Current FMC amendment (minor revisions required for R-3 depending on option chosen)</p> <p>Current FMC amendment; not changes proposed.</p>
<p><b>Incentives or Trade-Ups for the BIA</b></p> <p>Smaller lot sizes</p> <p>Reduced front/back and side-yard setbacks</p> <p>Increased cul-de-sac lengths (650 feet)</p> <p>Increased hydrant spacing (800 feet)</p>	<p><b>Incentives or Trade-Ups for the BIA</b></p> <p>Community investment in life safety</p> <p>Value customers by providing enhanced system to protect their investment</p> <p>Sprinkler permit fee waived</p> <p>Increase hydrant spacing (800 feet)</p>	<p><b>Incentives or Trade-Ups for the BIA</b></p> <p>Community investment in life safety</p> <p>Value customers by providing every opportunity to protect their investment</p> <p>Sprinkler permit fee waived for 24 months</p> <p>Increase hydrant spacing (800 feet)</p>	<p>N/A</p>
<p><b>Realized Value for the BIA</b></p> <p>On average developers would gain 0.82 lots per acre. This increase to a 40-acre development would realize 32 additional homes. Assuming the value of each lot is \$50,000, the developer would realize \$1.6 million additional dollars (32 x \$50,000).</p> <p>Cost for fire sprinkler installation is \$1.25-1.50/square foot. On a 2,000 square foot home, the cost would be \$3,000. The same 40-acre development would now have 172 homes (up from the original 140) (172 homes x \$3,000 sprinkler systems cost = \$516,000). With the installation of sprinkler systems in each home, the developer realizes an additional \$1 million.</p> <p>An additional \$51 savings per lot would be realized by increasing cul-de-sac lengths and hydrant spacing.</p>	<p><b>Public/private partnership to promote community investment in life safety.</b></p> <p>Value added to the home by providing the customer the opportunity to protect his/her investment.</p> <p>Sprinkler permit fee waived for initial two-year period for single homes and duplexes.</p>	<p>NA</p>	<p>NA</p>

Fresno Residential Fires (Single- and Multi-Family Dwellings)										
	1996		1997		2001		2002		2003	
	# of Fires	% of Total	# of Fires	% of Total	# of Fires	% of Total	# of Fires	% of Total	# of Fires	% of Total
Living Room	52	8.31%	39	6.23%	27	5.27%	19	3.71%	37	8.49%
Sleeping Rooms	81	12.94%	74	11.82%	74	14.45%	73	14.26%	59	13.53%
Kitchen	186	29.71%	207	33.07%	162	31.64%	190	37.11%	143	32.80%
Garage	52	8.31%	48	7.67%	23	4.49%	44	8.59%	32	7.34%
<b>Total No. of Fires</b>	<b>626</b>		<b>626</b>		<b>512</b>		<b>512</b>		<b>436</b>	

#### A Retroactive Life Safety Tool for the Local Communities

**Background:** This is a position statement to secure the fire community support to address the problem of kitchen fires in over 140,000,000 dwellings that do not have sprinkler fire protection in the U.S. alone.

The magnitude of the kitchen fire problem can be best understood by looking at the NFPA ten-year average residential fire data. This data reveals that over 15 percent of residential fire deaths, over 29 percent of the injuries, and approximately 30 percent of residential fires are the result of fires originating in the kitchen. In 2001, home cooking fire resulted in 370 civilian deaths, 4290 civilian injuries, and \$453 million in property loss.

It is interesting to note that the kitchen fire problem may be getting worse. In 2001 there were 134,400 fires originating in the kitchen of which 117,000 were cooking fires. The number of kitchen fires in 2001 greatly exceeded the preceding ten-year average. Successful kitchen activations would promote the use of NFPA 13D Systems for new residential construction. This is a desired goal for the entire fire community.

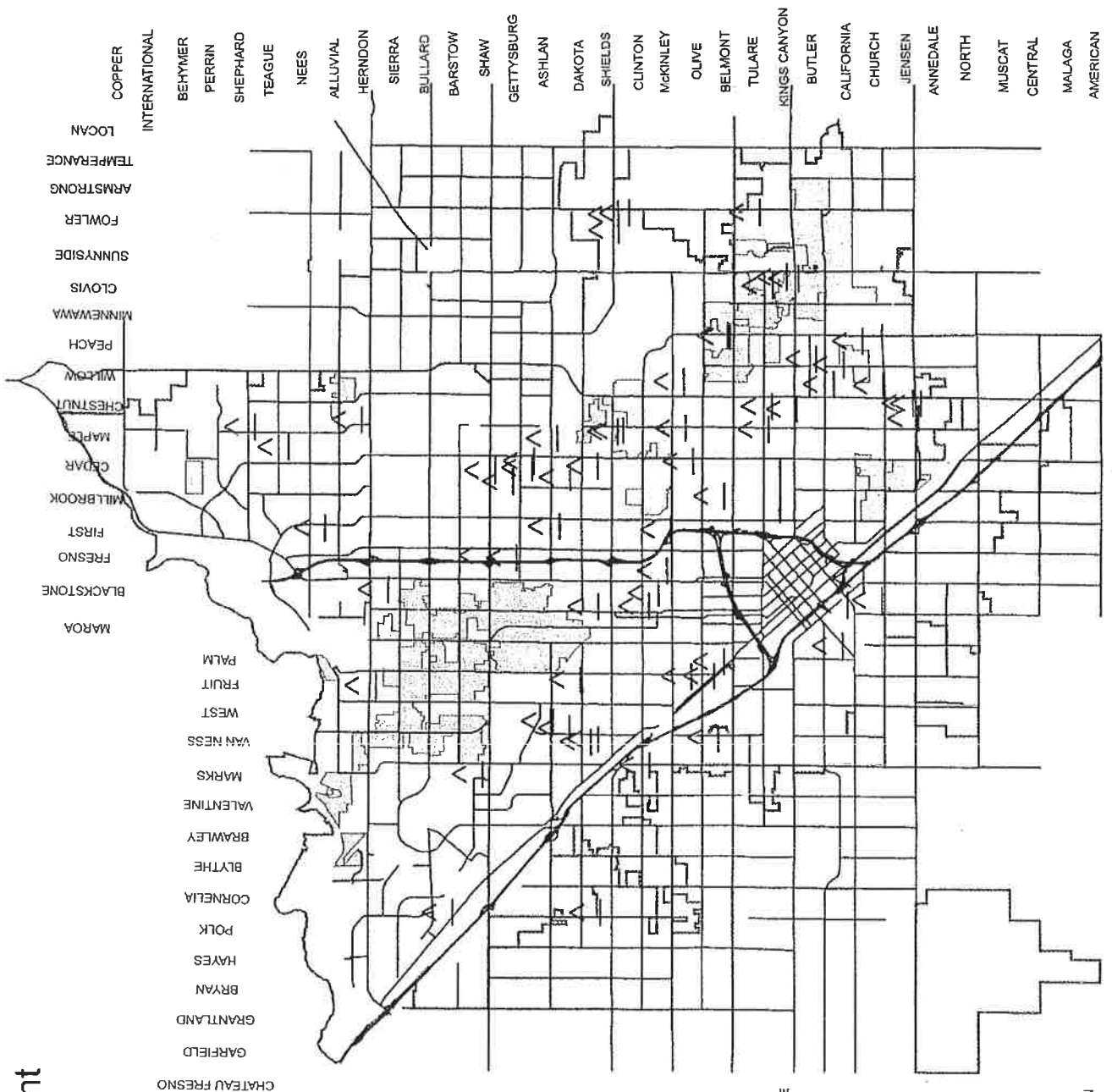
**Kitchen Sprinkler Designs:** According to NFPA fire data for 1999-2002, a single sprinkler head operated effectively in 88 percent of all kitchen/cooking fires. Installation of a kitchen sprinkler is not limited to only one approach. However, all approaches must have properly placed sprinklers with minimum GPM and PSI equivalent of their UL Listing. Systems can be pre-packaged engineered kits or direct lines from the water input manifold.

Another point of interest is the sprinkler industry is in the process of promoting an NFPA 13D retrofit program. In order to save lives, perhaps the industry should also offer a "Kitchen only System." Compared to a full NFPA 13D System retrofit, a kitchen retrofit should be a very simple installation. The acceptance test for a retrofit kitchen system would be the same as for an NFPA 13D System.

**Summary:** The kitchen fire is a very significant part of the overall residential fire problem. We have proven that residential sprinkler technology can address the kitchen fire problem. The solution will save many lives, reduce injuries and reduce property losses.

Since life safety is a primary concern of the fire community, every effort should be made to assure a nationwide kitchen retrofit program with full support from the sprinkler industry. With a successful five year marketing program, the kitchen sprinkler could do more for life safety than the full NFPA 13D System has done after 30 years.

# Fresno City Fire Department Kitchen Fires - 2005



- City Limits
- County Islands
- Kitchen Fires - 4th qtr

<b>Oct 1 - Dec 31, 2005</b>	
65 Kitchen Fires	
Property Loss -	\$726,270
Content Loss -	\$238,585
<b>Total Fire Loss -</b>	<b>\$964,855</b>
<b>Average Loss per Fire -</b>	<b>\$14,844</b>
<b>Civilian Injuries -</b>	<b>4</b>
<b>Civilian Fatalities -</b>	<b>1</b>
<b>Firefighter Injuries -</b>	<b>0</b>

<b>2005 Total</b>	
171 Kitchen Fires	
Property Loss -	\$1,593,920
Content Loss -	\$409,220
<b>Total Fire Loss -</b>	<b>\$2,003,140</b>
<b>Average Loss per Fire -</b>	<b>\$11,714</b>
<b>Civilian Injuries -</b>	<b>14</b>
<b>Civilian Fatalities -</b>	<b>1</b>
<b>Firefighter Injuries -</b>	<b>1</b>

- HERNDON
- SIERRA
- BULLARD
- BARSTOW
- SHAW
- GETTYSBURG
- ASHLAN
- DAKOTA
- SHIELDS
- CLINTON
- MCKINLEY
- OLIVE
- BELMONT
- NIELSEN
- WHITES BRIDGE
- KEARNEY
- CALIFORNIA
- CHURCH
- JENSEN
- ANNADALE
- NORTH
- MUSCAT
- CENTRAL
- MALAGA
- AMERICAN



NFPA 10-Year Average Residential Fire Data															
Fresno Residential Fire Data: Single and Multi-Family Dwellings															
	1996			1997			2001			2002			2003		
	# of Fires	% of Total	# of Fires	% of Total	# of Fires	% of Total	# of Fires	% of Total	# of Fires	% of Total	# of Fires	% of Total	# of Fires	% of Total	
Living Room	52	8.31%	39	6.23%	27	5.27%	19	3.71%	37	8.49%					
Sleeping Rooms	81	12.94%	74	11.82%	74	14.45%	73	14.26%	59	13.53%					
Kitchen	186	29.71%	207	33.07%	162	31.64%	190	37.11%	143	32.80%					
Garage	52	8.31%	48	7.67%	23	4.49%	44	8.59%	32	7.34%					
Total Number of Fires	626		626		512		512		436						
Provisions of Recommended Option:															
<p><b>Single Family Homes UNDER 5,000 Square Feet</b></p> <ul style="list-style-type: none"> <li>- Single sprinkler head or SFM listed wet chemical extinguishing system in kitchen</li> <li>- All model homes will be built with NFPA 13D sprinkler systems installed</li> <li>- Fire Sprinkler Permit Fee waived (first two years of program)</li> </ul> <p><b>Single Family Homes/Duplex OVER 5,000 Square Feet</b></p> <ul style="list-style-type: none"> <li>- 13R fire sprinkler system required</li> <li>- Minimum two-inch domestic water service and meter required</li> </ul> <p><b>Multi Family Homes</b></p> <ul style="list-style-type: none"> <li>- All multi-family units w/ three or more units (R-1) shall require fire sprinkler systems</li> </ul> <p><b>Additional Provisions for Residential and Commercial</b></p> <ul style="list-style-type: none"> <li>- Fire damage repairs to all commercial and single family/duplex (R-30 over 5,000 square feet and multi-family (R-1) exceeding 50 percent of current valuation will require sprinkler systems to be installed</li> <li>- Additions exceeding 25% of current square footage of existing building will require complete sprinkler systems to be installed</li> <li>- The 25% threshold shall be cumulative over the life of the building</li> <li>- For buildings over 5,000 square feet, a change of occupancy to a more hazardous use based on the life-safety requires fire sprinkler system throughout (existing provision)</li> </ul>															
Staffing Impact of Utilization of Fire Sprinklers															
<p>The 2025 Public Safety Report recommended options included the use of sprinkler technology in projecting staffing and equipment needs that will equate to a .66 staffing ratio over the 2025 plan</p>															
<p>Fire Suppression staffing additions required to reach the peer city average staffing ratio of .81 per 1,000</p>															
<p>Fire Suppression staffing additions required to reach staffing ratio of 1.0 per 1,000</p>															
<p>Fire Suppression staffing additions required to reach staffing of NFPA recommended ratio of 1.5 per 1,000</p>															
<p>120 Minimum</p>															
<p>272 Minimum</p>															
<p>450 Minimum</p>															

- Over 15% of residential fire deaths, 29% of injuries and approximately 30% of residential fires result from fires originating in the kitchen
- For the period 1999-2002, a single sprinkler head operated effectively in 88% of all kitchen/cooking fires

LIST OF CALIFORNIA CITIES WITH RESIDENTIAL SPRINKLER ORDINANCES

**Question:** Does your fire jurisdiction have sprinkler requirements, which requires "ALL" newly constructed Single-Family Dwellings to be sprinklered?  
**ANSWER:** YES!

**Alameda County:**

01040 City of Fremont F/D  
01045 City of Hayward F/D  
01065 Livermore-Pleasanton F/D  
01079 City of Newark F/D  
01090 City of Piedmont F/D

**Los Angeles County:**

19005 City of Alhambra F/D  
19010 City of Arcadia F/D  
19025 City of Beverly Hills F/D  
19030 City of Burbank F/D  
19050 City of Culver City F/D  
19075 City of Glendale F/D (\*)  
19110-01 City of Agoura Hills  
19110-06 City of Glendora  
19110-11 City of West Hollywood  
19130 City of Montebello F/D  
19155 City of Redondo Beach F/D  
19165 City of San Gabriel F/D  
19180 City of Santa Monica F/D  
19185 City of Sierra Madre F/D

**Marin County:**

21015 Town of Corte Madera F/D  
21040 City of Mill Valley F/D  
21055 Novato FPD  
21065 Ross Valley F/D  
21100 Tiburon FPD  
21105 County of Marin F/D

**Monterey County:**

27010 Carmel Highlands FPD  
27015 City of Carmel by-the-Sea F/D  
27024 Cypress FPD  
27055 City of Marina DPS (\*)  
27060 City of Monterey F/D (\*)  
27065 City of Pacific Grove F/D  
27075 Salinas Rural FPD

**Napa County:**

28010 City of Napa F/D

**Orange County:**

30025 City of Fountain Valley F/D  
30065-04 City of Dana Point  
30065-13 City of Placentia  
30065-15 City of San Clemente  
30065-18 City of Stanton

**Placer County:**

31115 Northstar (CSD) F/D

**Riverside County:**

33075 City of Riverside F/D

**San Bernardino County:**

36107 City of Highland F/D  
36140 City of Montclair F/D  
36145 Monte Vista FPD  
36180 City of Redlands F/D (\*)

**San Diego County:**

37075 North County FPD  
37135 Rancho Santa Fe FPD  
37139 San Diego Rural FPD  
37165 San Miguel Consolidated FPD

**San Luis Obispo County:**

40075 City of Templeton CSD

**San Mateo County:**

41010 City of Brisbane F/D  
41020 Hillsborough F/D  
41035 City of Daly City F/D  
41040 City of Foster City F/D  
41055 City of Millbrae F/D  
41065 City of Pacifica F/D  
41095 City of South San Francisco F/D (\*)

**Santa Clara County:**

43105 City of Sunnyvale DPS

**Santa Cruz County:**

44055 City of Santa Cruz F/D  
44065 Central FPD of Santa Cruz County

**Sonoma County:**

49075 Russian River FPD  
49080 City of Healdsburg F/D  
49115 City of Petaluma F/D  
49170 Rincon Valley FPD  
49200 City of Sonoma F/D  
49201 Sonoma County DFS & CSA-40

**Tulare County:**

54010 City of Dinuba F/D

**Ventura County:**

56010 City of Oxnard F/D

56015 City of Santa Paula F/D

**Yolo County:**

57075 City of Woodland F/D

**Note:**

- 1) (\*) Denotes addition to list after Executive Summary Report was completed.
- 2) Population (\*) was not added to Executive Summary Report figures.

Source: Residential Summary Report on 2003 California Fire Sprinkler Ordinance Survey, conducted by Steven Hart, consultant for the National Automatic Sprinkler Industry



Notable Statistics by Peer City							Sprinkler Ordinance Information by Peer City				
City	2004-2005 Department Budget	Population	Dollar Fire Loss	Per Capita Fire Loss	Per Capita Expenditure	Ratio (Population to Sworn Firefighters)	All Commercial Buildings	Apartments	Single Family Residential	Notes	Adopted
Oakland	\$ 96,734,541	412,318	\$ 20,450,000	\$ 50	\$ 235	1.23					None
Sacramento	\$ 74,411,513	452,959	\$ 21,405,507	\$ 47	\$ 164	1.00	X (See Note)	X (See Note)		All new buildings over 4,999 sq feet retroactive for 20% additions or change of occupancies	1994
Santa Ana	\$ 41,405,020	351,697	\$ 11,086,435	\$ 32	\$ 118	0.63	X (See Note)	X (See Note)		All "A" occupancies over 100 sq feet and all "H" occupancies; All R-1 over 2 stories	1990 w/2004 update for "A" occupancies
Bakersfield	\$ 28,339,085	295,893	\$ 8,803,642	\$ 30	\$ 96	0.61	X (See Note)	X (See Note)		All Commercial over 10,000 sq feet; All assembly buildings over 4,000 sq feet; All new and existing 1.2.1 occupancies	
Riverside	\$ 32,682,893	285,537	\$ 7,068,311	\$ 25	\$ 114	0.77	X (See Note)	X (See Note)		All 8,000 single family homes sprinklered	1993
Anahelm	\$ 38,870,507	345,317	\$ 5,841,947	\$ 17	\$ 113	0.66					None
Long Beach	\$ 76,805,240	481,564	\$ 6,343,411	\$ 13	\$ 156	0.93	X (See Note)			All retail occupancies over 5,000 sq feet	1988
Stockton	\$ 39,412,597	279,513	\$ 1,513,950	\$ 5	\$ 141	0.82	X (See Note)	X (See Note)		All buildings (except R-3) over 6,000 sq feet	1991
Comparative Average	\$ 55,606,971	376,469	\$ 11,571,322	\$ 31	\$ 148	0.92					
Fresno	\$ 32,034,500	464,727	\$ 22,061,719	\$ 47	\$ 69	0.64					

Summary of Comparative Statistics		Fresno
Average 2004 Fire Experience by Communities (250,000 to 1,000,000) as reported by NFPA	Nationwide - \$12,157,300	2004 - \$22,061,719 5 Year Avg - \$19,807,620
Average Fire Experience for All Peer Cities	Peer City Average - \$11,571,322	2004 - \$22,061,719 5 Year Avg - \$19,807,620
Per Capita Fire Loss for All Peer Cities	Peer City Average - \$31	\$
Per Capita Fire Loss for Peer Cities with Sprinkler Ordinance	w/ Sprinkler Ordinance - \$26	\$
Per Capita Fire Loss for Peer Cities without Sprinkler Ordinance	w/o Sprinkler Ordinance - \$35	\$

Date: 11/26/2005 1:38 AM  
From: [momma2triplets@aol.com](mailto:momma2triplets@aol.com)  
To: [Randy.bruegman@fresno.gov](mailto:Randy.bruegman@fresno.gov)  
Subject: Fire Sprinklers

ATTACHMENT G1

On Tuesday February 10th, 2004, I took my 3 year old triplets upstairs to take a nap. I decided to lay down in the room with them to rest, and to make sure that they all three did take their nap. About five minutes, or so, later, the smoke detector downstairs started to beep loudly. The children started asking me what the noise was, I got up and opened the door to see what was going on downstairs, and was hit by smoke in the hallway, and the stairway. I ran downstairs and saw that the curtains in the living room were on fire, and that the smoke was thick. I went into the kitchen and got some water in a bowl and threw it on it onto the fire, which seemed to make the fire worse. I then realized that the kids were still upstairs and that they needed to get out of the house. Running up stairs I heard the spray of the fire sprinkler as it popped from the ceiling. The stairway became very smoky, and water was spraying everywhere. Once I was back in the girls room, where all three were to be napping, I found them hiding under their covers really scared. Smoke was inside the room, and it seemed to be getting worse, so I closed the door and opened the window to let out the smoke, by this time the fire bell on the outside of the house was ringing very loudly, and this scared the kids even worse. It was then that I realized that it wasn't going to be easy getting 3 small children out of the house. I called 911. I knew that the fire was out, so I was more concerned with keeping them calm and in the room, with the door closed than trying to get them out. The fire department showed up, and that is when I was able to get the kids out of the house as it was easier to get them to go down the stairs knowing the firemen were outside waiting for them. It wasn't until later when my husband came home from work in a rush, that if it wasn't for the fire sprinklers in my house, that my husband would have been coming home to a house burned to the ground, a dead wife, and three dead children. I thank God that we bought the house with fire sprinklers as they saved my life, my children's lives, and the house from serious fire damage.

My husband and I have made a decision that we will not buy a house unless there are fire sprinklers installed in it, as this experience has shown us that no matter how much the cost of fire sprinklers, it is well worth it when it comes to the lives of ourselves, and our children.

A simple installation of some PVC, Thermal nozzles, and a pressure gauge could mean the difference between life and death for many families in this nation. These sprinkler systems are required in public buildings, why not personal residence? Isn't the family just as important as a corporate building?

74% of fatal fires occurred in structures, 94% of these on residential properties. (1)

65% of deaths were males; 23% were older adults (over 64); 14% were children under 10. (1)

Just makes me glad that the city of Riverside had a fire sprinkler ordinance in place when my house was built.

1) U.S. Fire Administration/National Fire Data Center  
Fatal Fires  
Topical Fire Research Series, Volume 5 - Issue 1  
March 2005  
<http://www.usfa.fema.gov/downloads/pdf/tfrs/v5i1.pdf>

Lora Huntington



## Sprinkler Myths

Some homeowners are reluctant to install sprinklers because of misconceptions about their operation. The reality is that sprinklers are a proven, effective, and reliable technology.

**Myth:** All the sprinklers in a system activate at the same time.

**Reality:** Only the sprinkler head closest to the fire will activate. Approximately 90% of all fires are extinguished by a single sprinkler head.

**Myth:** Setting off a smoke detector will cause the sprinkler system to activate.

**Reality:** Sprinklers are heat-sensitive and only activate when a fire is present.

**Myth:** Accidental activation is common.

**Reality:** The rate of accidental activation is approximately 1 in 16 million. One study concluded that sprinkler accidents are generally less likely and less severe than mishaps involving standard home plumbing systems.

**Myth:** The water damage from sprinklers is worse than the fire.

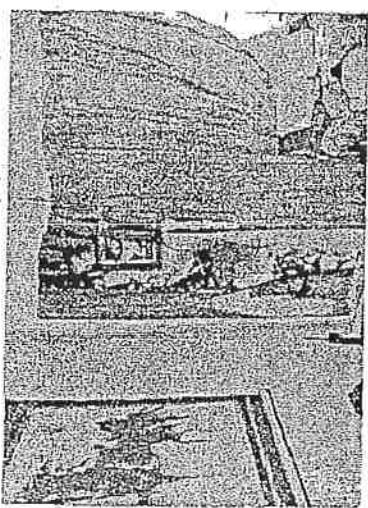
**Reality:** A sprinkler will control a fire with a tiny fraction of the water used by the fire department, typically around 20 gallons per minute. And since the sprinkler activates earlier than the fire department can respond, the fire is kept smaller and, as a result, smoke and fire damage are kept to a minimum.

**Myth:** Sprinklers are ugly.

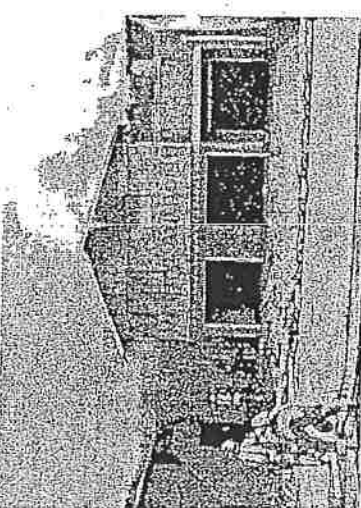
**Reality:** Modern residential sprinklers are inconspicuous. Many residential sprinklers can even be concealed with a cap that blends into the ceiling. Just like regular plumbing, pipes can be completely hidden behind ceilings or walls.

## Sprinklers in Action

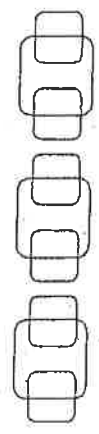
On January 6, 2004, the OCFA performed a demonstration burn in two residential units at the decommissioned Tustin Marine Corps Air Station. A fire was started in the bedroom in each unit, simulating the effects of a candle that had been accidentally knocked over. The units were identical, except that the sprinklers had been removed from one unit and were operational in the other. Fire department dispatch, travel, and operations set-up time were based on OCFA averages and were comparable for each response.



A single sprinkler completely extinguished the fire within approximately two minutes and the atmosphere in the room remained survivable. Water and smoke damage was minimal and was contained to the bedroom.



Fire completely destroyed the bedroom and all its contents in the unsprinklered unit. Damage from the fire and firefighting operations was extensive throughout the unit. The smoke and heat in the bedroom became lethal within two minutes, and peak temperatures exceeded 1200 degrees at floor level.



## HOME FIRE SPRINKLERS

Protect what you value most



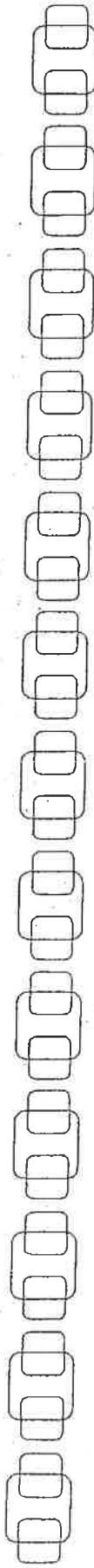
Sprinklers and smoke detectors save lives.



For additional information contact:

Orange County Fire Authority  
Planning & Development  
1 Fire Authority Road  
Irvine, CA 92602  
714-573-6108  
www.ocfa.org

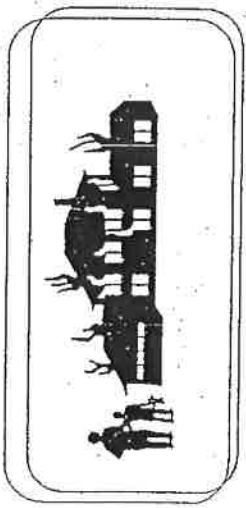
Home Fire Sprinkler Coalition  
1 Batterymarch Park  
PO Box 9101  
Quincy, MA 02269-9101  
www.homefiresprinkler.org



## Home Fire Sprinklers Save Lives

Fire kills more people in the United States annually than all natural disasters combined. In fact, more than 2,600 individuals perish in fires each year, and, ironically, most fire deaths occur in the very place where we feel safest—our own homes. Home fires often happen at night when people are sleeping. In less than four minutes, a room can become engulfed in flames before anyone awakes. Those most at risk are the very young and older adults, who may have difficulty making a quick escape. Sadly, on an average day in this country, four children will die from fire.

Although smoke detectors are essential in every household, they're designed to detect, not control, a fire. Home fire sprinklers complement the detectors' work, providing a way to fight flames immediately. In less time than it would take most fire departments to arrive at your home, fire sprinklers can contain and even extinguish a fire. There's less damage and less chance of deadly smoke and gasses reaching your family.



## Fire Sprinklers: A Safe, Smart Choice

Fire sprinklers are mandatory in many commercial and public buildings, and people are now demanding the same level of protection for their homes. Home fire sprinklers save lives, reduce property loss, and can even help cut homeowners' insurance premiums.

*A properly designed, installed, and maintained sprinkler system...*

*...saves lives*

A fire death occurs every three hours. 80% of these fire deaths occur in the home. Built-in fire sprinklers will stop the flames before the fire has a chance to grow out of control. There has never been a recorded fire-related death in a single-family residence equipped with a properly maintained sprinkler system.

*...protects property*

A properly maintained sprinkler system is nearly 100% effective in controlling or extinguishing a fire, usually before firefighters arrive.

*...reduces damage caused by fire, smoke, and firefighting operations*

Sprinklers activate promptly, slowing or preventing the spread of fire beyond the room of origin, reducing smoke damage, and reducing the amount of water that must be used to extinguish the fire. Sprinklers typically use 20 gallons of water per minute (gpm), compared to 250 gpm used in standard firefighting operations.

## Affordable Protection

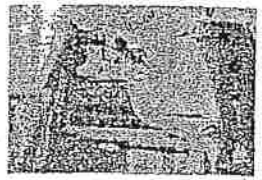
When building or buying a home, you make choices to upgrade carpeting, install new or upgraded appliances, or add an extra bathroom. For about the same expenditure, you can select a home fire sprinkler system to safeguard your family. No other option provides you with the peace of mind that fire sprinklers can. It's better than having your own firefighter standing by 24-hours-a-day.

*How much do they cost?*

Tract homes (new)	\$0.65 - \$1.00 / sq. ft.
Custom homes (new)	\$1.00 - \$1.20 / sq. ft.
Residential (retrofit)	\$1.25 - \$2.50 / sq. ft.
Commercial (new)	\$0.80 - \$1.20 / sq. ft.
Commercial (retrofit)	\$2.00 - \$5.00 / sq. ft.
Industrial/hazardous	\$1.00 - \$1.50 / sq. ft.

Over the life of a mortgage, the cost of installing sprinklers is around \$3 a month — about the same as a cup of gourmet coffee! When you consider the degree of built-in reliability and responsiveness that home fire sprinklers offer, the investment is a wise one.

*To ensure sprinkler system reliability, be sure to use a qualified contractor who adheres to NFPA codes and standards and local fire safety regulations.*



> >>> "Harold Rodgers" <[haroldr@fireinc.net](mailto:haroldr@fireinc.net)> 12/02/05 10:27 PM >>>

We do at least 5,000 sfr's per year

----- Original Message -----

From: "Byron Beagles" <[Byron.Beagles@fresno.gov](mailto:Byron.Beagles@fresno.gov)>

To: "Harold Rodgers" <[haroldr@fireinc.net](mailto:haroldr@fireinc.net)>

Sent: Friday, December 02, 2005 10:01 AM

Subject: Re: Costs for 13D fire sprinkler systems

Thanks for the help. Could you provide us also with the approximate number of single family homes per year your company does?

> >>> "Harold Rodgers" <[haroldr@fireinc.net](mailto:haroldr@fireinc.net)> 12/01/05 7:32 PM >>>

Dear Byron:

My apologies for the delay in responding. Fire Sprinkler Systems, Inc. is one of the largest sub-contractors doing residential fire sprinkler installations. We have been specializing in this since 1990. The costs of a system is less today than it has ever been. The demand that has increased over the last several years has enabled manufacturers to reduce cost and ultimately pricing. The cost of a wets sytem is between .60 and .80 cents per square foot with the average around .70 cents. this is for tract work.

Custom homes will range from .90 to 1.50 per square foot. The reason for the range is the complexity created by some architectural features found in large homes. The average custom is about 1.10. Other factors that will influence cost is plan check fees, permit fees, winterization if required, types of backflow or check valves required, etc. The city of Scottsdale, Arizona has a very good study on the effectiveness of these systems. If you do not have a copy, I believe you can obtain one from them. Also, I would suggest you contact Mr. Kurt Volmer of Tyco Fire Products and enlist his assistance in gathering information. His office number is 800-310-3366 and his cell number is 714-328-0271. I hope this helps.

If you need any thing else from me please advise.

Respectfully,

Harold Rodgers

----- Original Message -----

From: "Byron Beagles" <[Byron.Beadles@fresno.gov](mailto:Byron.Beadles@fresno.gov)>

To: <[haroldr@fireinc.net](mailto:haroldr@fireinc.net)>

Sent: Monday, November 28, 2005 4:15 PM

Subject: Costs for 13D fire sprinkler systems

Thank you for taking the time to share your experience with home fire sprinkler installations in Southern. Our Department is presenting to our City Council a proposal on residential fire sprinklers and would like to obtain up to date information on the costs of installation by contractors with extensive experience in the 13D residential sprinkler market. Any information you can share is appreciated.

# Cost/Benefit to Society for Having Sprinklers in One- and Two-Family Dwellings – A Pessimistic Analysis

BY KENNETH E. ISMAN, P.E.

The National Fire Sprinkler Association (NFSA), at the request of the NFPA Technical Committee on Residential Occupancies, performed a Cost/Benefit analysis regarding sprinklers for all new one- and two-family dwellings for the development of the 2006 editions of the Life Safety Code (NFPA 101) and the Building Construction and Safety Code (NFPA 5000). The analysis was first submitted with Proposal 101-502 for the 2006 edition of the Life Safety Code. It was criticized by several of the committee members in their negative ballots on that proposal. The analysis was refined to take these concerns into account and resubmitted for the ROC during the public comment phase. The analysis was also presented at the NFPA Fall Meeting in Miami Beach, FL and has been further refined following the comments and suggestions made at that meeting. Through all of these refinements, one conclusion has been constant; fire sprinkler systems are cost effective.

The purpose of this analysis is not to show how well sprinklers perform, nor is the purpose of this analysis to show when residents of sprinklered homes might begin to see a financial benefit to their sprinkler systems. Instead, the purpose of this analysis is to show that even if all of the pessimistic things that opponents of mandatory sprinkler protection predict will come true actually do come true, fire sprinkler systems are still cost-beneficial (as well as life safety beneficial) to society at large.

The NFSA honestly believes that residential fire sprinkler systems will prove to be even more cost-beneficial than this analysis reveals, but wanted to show that even if

the opponents of sprinkler systems are correct, a complete program to sprinkler all new homes built in the future will pay off for the general public in less than 40 years.

One of the criticisms to this analysis at the proposal stage for NFPA 101 was that the NFSA stated that its analysis was not "definitive". To that we respond that the information that we have presented is true and accurate. The non-definitive aspects of this analysis are those that would improve the benefits of sprinkler performance, but are difficult to quantify. Since these benefits have not been quantified, they have been eliminated from this analysis. If these intangible items could be clarified, the situation would be even more beneficial to fire sprinklers.

Another of the criticisms was that the data submitted was contradictory. To that, we respond that the data is not contradictory. Many different studies were presented to show the wide range of data and information in existence. In each case, for the cost/benefit analysis, the NFSA chose the most conservative value for input.

For each of the decisions in this cost/benefit analysis, the NFSA has taken the most conservative (non-beneficial to sprinklers) in order to show that fire sprinklers can be cost effective, even if everything our opponents says about them is true. We know that many of these issues are much better and more favorable towards sprinklers, but have attempted to utilize the most conservative approach possible.

The data for this analysis is presented in two tables. Table 1 shows the number of homes (sprinklered and unsprinklered) as well as the fires that would happen in those

homes, the numbers of lives that would probably be saved and the numbers of injuries that would probably be prevented. Table 2 shows the values for the savings and adds them up, comparing them to the total costs. The following is a complete description of each of the items in the cost/benefit analysis:

**Year** – This analysis looks at the costs and benefits to fire sprinkler systems over a 40 year period. The assumptions that go into this analysis are that the homes (with the sprinkler systems in them) are built and paid for on the first day of each year while the sprinkler systems are not put in service until the last day of the year. Therefore, in each year, all of the costs associated with the sprinkler system start with the first year the home is proposed, but the benefits don't begin until the next year. In reality, sprinkler systems will be put in service before the end of the year and the benefits will begin before the end of the year, but this assumption is more conservative.

**Number of Sprinklered Homes** – The assumption is that all of the 1.9 million homes built in the United States will be sprinklered.

CONTINUED ON PAGE 30

**Kenneth E. Isman, P.E.**

Assistant Vice President,  
Engineering for NFSA  
Ken represents NFSA on the  
NFPA Technical Committee  
on Sprinkler Systems  
Installation Criteria.

CONTINUED FROM PAGE 29

According to the National Association of Homebuilders, this is the typical number of homes built in each year. While this number starts out as a relatively small percentage of total homes, after 40 years, the number of sprinklered homes grows to approximately 45% of the total housing stock, a substantial number that will have a significant effect on future fire losses. If the analysis were continued out to 50 years, more than 50% of the housing stock would be sprinklered.

**Total Number of Homes** – The total number of homes (one- and two-family dwellings) has been reported by the National Association of Home Builders (NAHB) at 90 million prior to the start of this analysis. As 1.9 million new homes are built each year, the total number of homes grows at the same rate. The assumption in this analysis is that the new homes built are not replacements for existing homes.

**Number of Fires in Sprinklered Homes** –

This variable is almost a ratio of the number of sprinklered homes to the total number of homes. The NFPA fire incident data has shown that the number of fires each year in one- and two-family dwellings has averaged 300,000 fires per year fairly consistently. The NFSA believes that the number of fires in sprinklered homes should be a direct proportion of the number of sprinklered homes. However, the NAHB has contended that new homes are safer than older homes (a statement they have never been able to justify). Never-the-less, this analysis will agree with the NAHB position and state that fires are 50% less likely to occur in homes that are 10 years old or less. For the first 10 years of this analysis, the number of fires in sprinklered homes is calculated by taking the ratio of sprinklered homes to the total housing stock, multiplying by the number of fires (300,000) and then dividing that number in half. Starting with the 11th year of the analysis, the homes that are at least 10 years old experience fires as a direct ratio to the housing stock, while

the homes that are not yet 10 years old continue at the reduced rate.

**Number of Fires in Unsprinklered Homes**

– Since fire sprinklers do not actually prevent the fire from occurring, the total number of fires still has to add up to 300,000. So, the total number of fires in unsprinklered properties each year is equal to 300,000 minus the number of fires in sprinklered homes.

**Number of Lives Saved** – According to NFPA fire data, there is approximately 1 death for every 100 fires and this figure has remained relatively constant for many

years. The number of potential lives that would be lost in sprinklered buildings is then a straight ratio of the number of fires that occur in sprinklered buildings. The NFSA has never stated that fire sprinklers will save 100% of the people who die due to a fire. Estimates of sprinkler effectiveness have ranged from 63% to 99% by different sources. The 63% effectiveness estimate (the lowest of any estimate) was made by NIST on a theoretical analysis (prior to the widespread installation of residential sprinklers) of the kind of deaths that occur in fires and the theoretical performance of what residential sprinklers might be able to do. We know now, with more than 20 years of experience, that the NIST study was extraordinarily conservative. For example, the NIST study states that no person that is intimate with ignition will ever be saved by a fire sprinkler. In reality, there have been a significant number of fires in sprinklered homes where people have been intimate with ignition and have been saved by the sprinklers and there has only been one reported situation where a person in a sprinklered home was intimate with ignition and died (an older home sprinklered with standard response sprinklers). There are many people walking around today who were intimate with ignition and a fire sprinkler saved their life, in direct opposition to the NIST estimate. Even knowing that the NIST estimate is needlessly conservative, we have used 63% as an estimate of the number of lives that will be saved by the sprinkler systems. Note that this analysis only looks at civilian deaths and does not take into account fire fighter fatalities.


**Number of Injuries Prevented** – The NFPA estimates that there are 4.3 injuries per every 100 fires that occur in one and two family dwellings. The number of injuries that could happen in sprinklered buildings would be expected to be proportional to the number of fires that occur in sprinklered homes. Similar to the number of lives saved, the number of injuries that can be prevented by fire sprinklers has been estimated between 44% and 99%. Once again, the worst estimate comes from the NIST study that was performed as a theoretical analysis prior to residential sprinkler systems actually being installed. Even though we disagree with

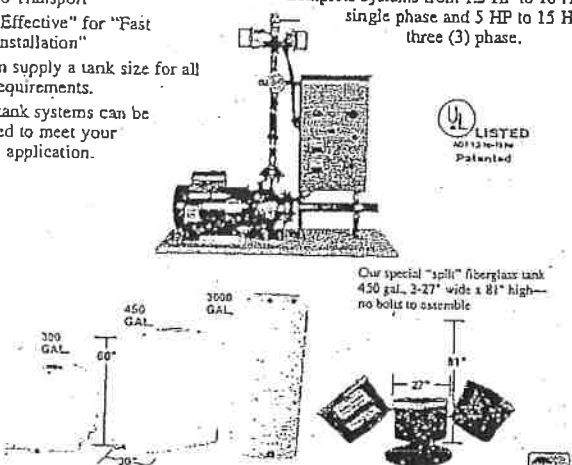
CONTINUED ON PAGE 34

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# TECHNICALLY SPEAKING

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this low percentage, we will use this value in our analysis. Note that this analysis only takes into account civilian injuries and does not take into account fire fighter injuries.

**Value of Lives Saved** – While the value of a human life is constantly debated, the NFSA has used \$2 million in this analysis. The \$2 million per life saved has been utilized by three independent sources as the aver-

age value of a human life. The first source has been settlements from large loss fires (some of these fires happened over 20 years ago, so the present value of those settlements might be more than \$2 million per life in 2005 dollars). The second source is the Federal Government for sponsoring cancer research (if the cost of the research per life saved is \$2 million or less, the government will fund the research). And the third

source is the 9-11 commission that paid families after the events of September 11, 2001. The commission awarded an average of a little over \$2 million for each life lost during that tragic day. In comparison, Dr. Hall of the NFPA has stated in correspondence with the NFSA that he uses a figure of \$5 million per life saved in his experience when trying to determine the value of a human life.

**Value of Injuries** – The most difficult variable to quantify in this analysis has been the dollar value of an injury. First, in order to qualify as an injury, the person has to have been hospitalized (this definition of an injury is consistent with NFPA and NFIRS definitions, injuries that do not require hospitalization also occur during fires and cost the public in lost wages, medical bills and reduced productivity as well as reduced quality of life, but those injuries are not accounted for in this study). With hospital costs continuously rising, keeping this analysis constant over 50 years is extremely conservative. The value of \$30,000 per injury was taken from an OSHA website as the average of the kind of injuries that occur in a fire. However, burn injuries are extremely expensive as multiple surgeries for skin grafts are frequently needed. It is quite possible that fire sprinklers can save many times what is estimated in this analysis. For comparison, Dr. Hall at the NFPA has stated in correspondence with the NFSA that he uses more than \$200,000 per injury in his experience.

**Value of Property Saved** – This value comes directly from fire department reports and compares the average loss in a fire in an unsprinklered building (\$17,000) to the average loss in a fire in a sprinklered building (\$1900). Note that fire departments only estimate the direct property loss (value of building and value of items that burned).

**Value of Indirect Savings** – As stated above, the property saved only deals with the value of the building and the value of the items that burned. What also needs to be taken into account is the value of the goods and services that need to be used while a person's home is being rebuilt after a fire. The Red Cross provides temporary housing on

CONTINUED ON PAGE 38

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# TECHNICALLY SPEAKING

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a short term basis (which needs to be paid for) then people may need to stay in alternative housing for a longer period of time while their home is rebuilt. All kinds of other indirect losses build up including longer commutes to work/school from alternate locations and replacement costs for items exceeding costs covered by insurance. The value of indirect losses that can be saved by sprinklers is estimated as \$5000 per fire and is only taken for 90% of the fires, again in recognition that in some small percentage of fires, sprinklers might not be so effective.

**Value of Insurance Savings** – The NFSA received some criticism of the value used in the ROP in this column. Even though we stand behind the value used in the ROP, we have lowered the value used in this analysis to \$75 per home per year. Actual discounts for fire sprinkler systems vary by insurance companies between 8% and 15%. If the average homeowner's policy is \$750 per year and the average savings is 10%, the average savings of \$75 per year is extremely defensible, and most definitely lower than actual experience.

**Value of Construction Savings** – The NFSA also received some criticism for the value we estimated that builders could take advantage of regarding construction savings. While it is true that there are limited construction savings in the Life Safety Code, it is also true that there are many opportunities for builders to take advantage of zoning and site development incentives to reduce the total cost of construction and to increase their profit while installing fire sprinklers. This analysis assumes that half of the homes built each year will not be able to find any savings. The other half will only save an average of \$2500 per home, an incredibly low number considering the tremendous power of zoning and site development incentives. Such incentives include the savings of the infrastructure including the downsizing of underground mains and the separation of fire hydrants. In previous issues of Sprinkler Quarterly, an example showed how site development incentives could save over \$12,000 per home in a small development with only six houses. This is a powerful example of how easy it should be to

meet this target of averaging \$2500 in savings per home for only half of the homes built.

**Value of Fire Department On-Scene** – Where fires occur in sprinklered buildings, fewer man-hours are spent fighting the fire. As such, fire fighters are freed up to handle other tasks necessary of the fire department without having to employ additional personnel. Also included in this category are the savings in materials used to fight a fire such as fuel for fire trucks, which are left running during a fire event, and water, which costs the utility money to clean and make available at the hydrant. Fires in buildings with sprinkler systems use thousands of gallons of water less than fires that occur in unsprinklered property. The value that we have used in this analysis of \$10,000 per fire is extremely conservative given the value of labor, the number of fire fighters necessary to fight house fires and the value of materials like fuel and water. In addition, we have accounted for the fact that some sprinkler systems may not work and will therefore not save the fire department any money. The savings have only been taken for 90% of the fires that occur in sprinklered buildings.

**Income Tax Savings** – The increase to the cost of the building for the fire sprinkler system is rolled into the cost of the mortgage. The interest on the mortgage is tax deductible at the income tax rate of the individual paying the mortgage. See the "Cost" section of this analysis for the exact details of the mortgage assumptions. The tax bracket in this analysis is 28%. In addition, the amount of interest is assumed to be constant from year to year, the number that has been used is the average amount of interest across all 30 years of the mortgage. This assumption is extremely conservative given the fact that all mortgage lenders "front-end load" their mortgages so that the interest is substantially more in the first years of the mortgage rather than in the last years. In reality, the interest paid at the beginning of the mortgage is much more than the average, which would only improve the tax savings presented in this column in real life.

**Savings of Sprinklers** – The total of all of the savings columns for each year.

**Cost of Sprinkler Systems** – The average home is 2500 sq ft according to the NAHB. Sprinkler systems average less than \$2.00 per sq ft, but we will use \$2.00 per sq ft in this analysis, or \$5,000 per home. However, people don't pay cash for homes. Instead, the home is financed over a period of time. This analysis is based on someone putting 10% of the cost of the home down and financing the rest over a 30 year period. The sprinkler system is expected to be a proportional amount of that down payment and monthly mortgage bill. In addition, this analysis assumes that people don't hang onto their homes for 30 years. Instead this analysis assumes that after 15 years, the person has sold their home at a profit and paid off the original mortgage. The new buyer does not pay specifically for the sprinkler system in the existing house since it is rolled into the general value of the property. The assumption that people will stay in their homes for 15 years is extremely conservative given that there are current studies that show that the average homeowner moves once every 5 years.

**Net Cost** – The total cost of the sprinkler systems minus the savings for each year.

**Cumulative Net Cost** – The net cost added from year to year to show that the total money spent on sprinkler systems is recouped by a community over time (approximately 38 years).

Another criticism that the NFSA has received regarding this analysis is that there is no cost associated with the maintenance of the sprinkler system. To that we respond that the sprinkler system in a one- or two-family dwelling does not need the same level of scrutiny that the sprinkler system in a commercial property needs. The maintenance items are more a function of what not to do to the system. As long as somebody does not paint the sprinklers, hang items from the sprinklers or close the control valve, there is nothing extra that needs to be done for maintenance. Since there isn't a cost associated with NOT doing things to a system, there is no cost in this analysis.

Finally, the NFSA has received some criticism of the fact that we have not included

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any factor for inflation in this analysis. To that we reply that the main focus of this exercise has been to calculate the costs and the benefits for each year and to determine which is higher in any given year. If we were to apply a correction factor for inflation, it would be applied to both the costs and the benefits equally for each year, which would not change the final outcome of assessing which number was higher. While the correction factor for inflation might have some small effect on the cumulative net cost, it would appear to be a variable that adds a layer of complexity without providing any significant additional information. In the long run, the analysis shows that the sprinkler systems have more benefits than costs. Any consistent application of a correction factor would still provide the same result, just with a slightly different order of magnitude.

**Analysis**

Once all of the variables have been defined,

it is time to start putting numbers into each column for each year (see Table 1 and Table 2). It is interesting to note that the first seven years of the analysis show a negative Cumulative Net Cost (meaning that society is making money right from the start) but that this number turns positive from years 8 to 37. This is because of the numbers of people paying their mortgages. Consider the first year, only the people that purchased homes with sprinkler systems in this year are paying mortgages that include sprinkler systems. In the second year, there are two sets of people paying mortgages that include sprinkler systems, those that purchased a home in year 1 and those that purchased a home in year 2. This situation continues to grow until year 15, when people start selling their homes.

The Cumulative Net Cost column peaks at year 25 with a total cost of \$23.9 billion spent putting sprinkler systems into homes. But that money is recouped by year 38 and people begin to make money on the fact that sprinklers are installed. By year 40, society

makes a total of \$10.6 billion because sprinklers are installed. If the analysis were continued to include additional years, the amount of money made by society would continue to climb. By year 50, society would be making a profit of \$6.2 billion per year for a total cumulative profit of \$62.8 billion.

**Conclusion**

Fire sprinkler systems are worth the money that is paid for them. Even using the pessimistic assumptions of the opponents to sprinkler requirements, it can be shown that sprinklers are cost effective. In less than 40 years, the value of the sprinkler systems can be returned to the general public that paid for them.

In addition, placing sprinklers in all residential homes will significantly save lives. Using the pessimistic analysis here, hundreds of lives will be saved each year and tens of thousands will be saved over the 40 year period of the study. Using more realistic data on the effectiveness of sprinklers, the total number of lives saved is impressive. ©



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Table 2 - Cost/Benefit to Society for Having Sprinklers in One- and Two-Family Dwellings - A: Pessimistic View:

Year	Value of lives saved (\$Mill)	Value of no injuries (\$Mill)	Value of saved property (\$Mill)	Value of Indirect (\$Mill)	Value of Insurance (\$Mill)	Value of Const. Sav. (\$Mill)	Value of FD on scene (\$Mill)	Income Tax Savings (\$Mill)	Savings of Sprinklers (\$Billions)	Cost of Sprinklers (\$Billions)	Net Cost (0.0) (\$Billions)	Cumulative Net Cost (\$Billions)
1	0.0	0.0	0.0	0.0	0.0	2375.0	0.0	94.2	2.5	1.6	-0.9	-0.9
2	39.1	1.8	46.8	14.0	142.5	2375.0	27.9	188.4	2.8	2.2	-0.6	-1.5
3	76.6	3.4	91.8	27.3	285.0	2375.0	54.7	282.6	3.2	2.8	-0.4	-1.9
4	112.6	5.1	134.9	40.2	427.5	2375.0	80.4	376.8	3.6	3.4	-0.1	-2.0
5	147.2	6.6	176.4	52.6	570.0	2375.0	105.1	471.0	3.9	4.1	0.2	-1.9
6	180.5	8.1	216.3	64.4	712.5	2375.0	128.9	565.2	4.3	4.7	0.4	-1.5
7	212.5	9.6	254.6	75.9	855.0	2375.0	151.8	659.4	4.6	5.3	0.7	-0.8
8	243.3	11.0	291.6	86.9	997.5	2375.0	173.8	753.6	4.9	5.9	1.0	0.2
9	273.1	12.3	327.3	97.5	1140.0	2375.0	195.1	847.8	5.3	6.5	1.3	1.5
10	301.8	13.6	361.6	107.8	1282.5	2375.0	215.5	942.0	5.6	7.2	1.6	3.1
11	362.4	16.3	434.3	129.4	1425.0	2375.0	258.9	1036.2	6.0	7.8	1.7	4.8
12	420.9	19.0	504.5	150.3	1567.5	2375.0	300.7	1130.4	6.5	8.4	1.9	6.7
13	477.5	21.5	572.3	170.5	1710.0	2375.0	341.1	1224.6	6.9	9.0	2.1	8.9
14	532.2	24.0	637.8	190.1	1852.5	2375.0	380.2	1318.8	7.3	9.6	2.3	11.2
15	585.2	26.4	701.3	209.0	1995.0	2375.0	418.0	1318.8	7.6	10.3	2.6	13.8
16	636.4	28.7	762.6	227.3	2137.5	2375.0	454.6	1318.8	7.9	10.3	2.3	16.2
17	686.0	30.9	822.1	245.0	2280.0	2375.0	490.0	1318.8	8.2	10.3	2.0	18.2
18	734.1	33.1	879.7	262.2	2422.5	2375.0	524.3	1318.8	8.5	10.3	1.7	19.9
19	780.7	35.2	935.5	278.8	2565.0	2375.0	557.6	1318.8	8.8	10.3	1.4	21.3
20	825.8	37.2	989.7	294.9	2707.5	2375.0	589.9	1318.8	9.1	10.3	1.1	22.5
21	869.7	39.2	1042.3	310.6	2850.0	2375.0	621.2	1318.8	9.4	10.3	0.8	23.3
22	912.3	41.1	1093.3	325.8	2992.5	2375.0	651.6	1318.8	9.7	10.3	0.6	23.9
23	953.6	43.0	1142.8	340.6	3135.0	2375.0	681.1	1318.8	10.0	10.3	0.3	24.1
24	993.8	44.8	1190.9	354.9	3277.5	2375.0	709.8	1318.8	10.3	10.3	0.0	24.1
25	1032.8	46.5	1237.7	368.9	3420.0	2375.0	737.7	1318.8	10.5	10.3	-0.3	23.9
26	1070.8	48.2	1283.2	382.4	3562.5	2375.0	764.8	1318.8	10.8	10.3	-0.5	23.3
27	1107.7	49.9	1327.5	395.6	3705.0	2375.0	791.2	1318.8	11.1	10.3	-0.8	22.5
28	1143.6	51.5	1370.5	408.4	3847.5	2375.0	816.9	1318.8	11.3	10.3	-1.1	21.5
29	1178.6	53.1	1412.5	420.9	3990.0	2375.0	841.9	1318.8	11.6	10.3	-1.3	20.2
30	1212.7	54.6	1453.3	433.1	4132.5	2375.0	866.2	1318.8	11.8	10.3	-1.6	18.6
31	1245.9	56.1	1493.1	444.9	4275.0	2375.0	889.9	1318.8	12.1	10.3	-1.8	16.8
32	1278.2	57.6	1531.8	456.5	4417.5	2375.0	913.0	1318.8	12.3	10.3	-2.1	14.7
33	1309.7	59.0	1569.6	467.8	4560.0	2375.0	935.5	1318.8	12.6	10.3	-2.3	12.4
34	1340.5	60.4	1606.4	478.7	4702.5	2375.0	957.5	1318.8	12.8	10.3	-2.6	9.8
35	1370.4	61.7	1642.3	489.4	4845.0	2375.0	978.9	1318.8	13.1	10.3	-2.8	7.0
36	1399.7	63.1	1677.4	499.9	4987.5	2375.0	999.8	1318.8	13.3	10.3	-3.1	3.9
37	1428.2	64.3	1711.6	510.1	5130.0	2375.0	1020.2	1318.8	13.6	10.3	-3.3	0.6
38	1456.1	65.6	1745.0	520.0	5272.5	2375.0	1040.1	1318.8	13.8	10.3	-3.5	-2.9
39	1483.3	66.8	1777.6	529.8	5415.0	2375.0	1059.5	1318.8	14.0	10.3	-3.8	-6.6
40	1509.9	68.0	1809.5	539.3	5557.5	2375.0	1078.5	1318.8	14.3	10.3	-4.0	-10.6

Table 1 - Numbers of Homes (Sprinklered and Unsprinklered), Fires, Lives Saved, and Injuries Prevented.

Year	# of Spr. Homes (Millions)	# of Total Homes (Millions)	# of Fires Sprinklered Homes	# of Fires Unsprinklered Homes	# of Lives Saved	# Injuries Prevented
1	0	90.0	0	300,000	0	0
2	1.9	91.9	3,101	296,899	20	59
3	3.8	93.8	6,077	293,923	38	115
4	5.7	95.7	8,934	291,066	56	169
5	7.6	97.6	11,680	288,320	74	221
6	9.5	99.5	14,322	285,678	90	271
7	11.4	101.4	16,864	283,136	106	319
8	13.3	103.3	19,313	280,687	122	365
9	15.2	105.2	21,673	278,327	137	410
10	17.1	107.1	23,950	276,050	151	453
11	19	109.0	28,761	271,239	181	544
12	20.9	110.9	33,408	266,592	210	632
13	22.8	112.8	37,899	262,101	239	717
14	24.7	114.7	42,241	257,759	266	799
15	26.6	116.6	46,441	253,559	293	879
16	28.5	118.5	50,506	249,494	318	956
17	30.4	120.4	54,444	245,556	343	1030
18	32.3	122.3	58,258	241,742	367	1102
19	34.2	124.2	61,957	238,043	390	1172
20	36.1	126.1	65,543	234,457	413	1240
21	38	128.0	69,023	230,977	435	1306
22	39.9	129.9	72,402	227,598	456	1370
23	41.8	131.8	75,683	224,317	477	1432
24	43.7	133.7	78,871	221,129	497	1492
25	45.6	135.6	81,969	218,031	516	1551
26	47.5	137.5	84,982	215,018	535	1608
27	49.4	139.4	87,912	212,088	554	1663
28	51.3	141.3	90,764	209,236	572	1717
29	53.2	143.2	93,541	206,459	589	1770
30	55.1	145.1	96,244	203,756	606	1821
31	57	147.0	98,878	201,122	623	1871
32	58.9	148.9	101,444	198,556	639	1919
33	60.8	150.8	103,946	196,054	655	1967
34	62.7	152.7	106,385	193,615	670	2013
35	64.6	154.6	108,765	191,235	685	2058
36	66.5	156.5	111,086	188,914	700	2102
37	68.4	158.4	113,352	186,648	714	2145
38	70.3	160.3	115,565	184,435	728	2186
39	72.2	162.2	117,725	182,275	742	2227
40	74.1	164.1	119,835	180,165	755	2267

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December 12, 2005

Byron Beagles  
Fresno Fire Department

Subject: Single-Head Fire Sprinkler Installation.

File: 1140-05

Dear Mr. Beagles:

Your letter requesting a determination has been received for review and response. You wish to verify if a C-16 license is required for the installation of a single head fire sprinkler. Currently, your department is proposing amendments to the Fresno Municipal Code where it provides that every new home kitchen must be fitted with a single head fire sprinkler. You have opined that because this is merely a single head installation, it should not be treated as a fire protection "system" thereby allowing a C-36 licensee to undertake such work.

While the opinion you expressed appears to have merit, unfortunately, the provisions of the Business and Professions Code, section 7026.12, is controlling. While this section specifies installation of a fire protection system, the legislature contemplated that "installation" embodies all that pertains to fire protection -- namely the repair or maintenance of such systems not exclusive to installations alone.

Accordingly, "system" was not so identified in the section to be an exception. It is implied that less sophisticated installations or merely the installation of a single head sprinkler be included within the parameters of section 7026.12.

Section 7026.12 is a statute of special application as it carves a niche for C-16 licensees and owners of property under specific conditions. It would be improper for any person to attempt to install any fire protection device, component, or system as provided under section 832.16 of the California Code of Regulations without holding a C-16 license.

Until December 31, 1994, C-36 licensees were permitted to take on fire sprinkler installations. After this date, Board policy as well as the amendment to section 7026.12 (effective January 1, 1995) precluded C-36 licensees from engaging in these activities.

This determination is based on current laws, regulations and rules. We trust that the foregoing information is useful to you.

Sincerely,

A handwritten signature in black ink, appearing to read "Robert Lucas". The signature is fluid and cursive, written over a light background.

Robert Lucas  
Licensing Division

January 4, 2006

Jerry Duncan, Fresno City Council President  
2600 Fresno Street, Room 2097  
Fresno, CA 93721-3600

SUBJECT: FRESNO FIRE DEPARTMENT FIRE SPRINKLER INITIATIVE

Dear Mr. Duncan:

We the undersigned, are local fire sprinkler contractors with extensive experience in the installation of residential fire sprinkler systems. For over 100 years, fire sprinklers have provided reliable and effective fire protection for industrial, commercial and institutional properties. With the introduction of fire sprinkler standards for multi-family and single family dwellings by the National Fire Protection Association (NFPA) in the 1980s, this time proven technology is now available in a cost effective design for residential structures. The fire protection equipment industry has responded to the residential market by introducing plastic fire sprinkler pipe and providing UL approved residential fire sprinkler heads that are small and unobtrusive. We have installed such systems in thousands of multifamily units and hundreds of homes throughout the State of California.

The fire sprinkler trade is unique in the construction industry as we are responsible for the installation of a building mechanical system that protects a structure and its' occupants from the devastating effects of fire. Yes, we do make our living from such installations; however, we are firmly committed to the fact that fire sprinklers will provide a homeowner or apartment occupant with a state of the art, cost effective technology that protects their lives and property and assists the Fire Department in doing their job. The fire sprinkler industry has a zero tolerance for death by fire.

We support the Fresno Fire Department's Fire Sprinkler Initiative and look forward to working with the development community in implementing this important step in making Fresno a fire safe community.



Richard Sever, MS Fire Protection



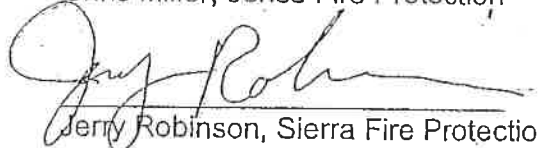
Kent Schaak, Fire Protection Enterprises



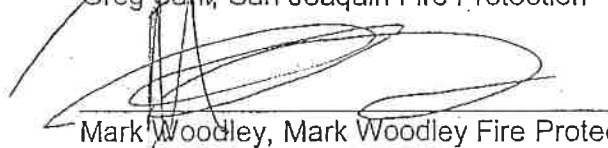
Chris Miller, Jerico Fire Protection



Greg Sani, San Joaquin Fire Protection



Jerry Robinson, Sierra Fire Protection



Mark Woodley, Mark Woodley Fire Protection

- c: Tom Boyajian, District 1 Councilmember  
Brian Calhoun, District 2 Councilmember  
Cynthia Sterling, District 3 Councilmember  
Larry Westerlund, District 4 Councilmember  
Mike Dages, District 5 Councilmember  
Henry T. Perea, District 7 Councilmember