

Agenda
Village of Glen Ellyn
Village Board Workshop
Monday, January 17, 2011
7:00 P.M. – Galligan Board Room
Glen Ellyn Civic Center

1. Call to Order
2. Public comments?
3. Fire Sprinkler Discussion – Planning and Development Director Hulseberg **(Pages 2-42)**
4. Review of January 24 Village Board Agenda
5. General Fund Update – Interim Finance Director Noller (Attachment to come in FIP) **(Pages 43-48)**
6. Other Items?
7. Motion to adjourn to Executive Session for purposes of discussing the appointment, employment, compensation, discipline, performance, or dismissal of specific employees of the public body, adjourning thereafter without returning to open session. *(Trustee Comerford)*

Board Workshop
1/17 11
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MEMORANDUM

TO: Steve Jones, Village Manager

FROM: Staci Hulseberg, Director of Planning & Development
Joe Kvpil, Building and Zoning Official

DATE: November 29, 2010

SUBJECT: Fire Sprinkler Requirements in Remodeled Single-Family Homes

At the Village Board Meeting on October 25, 2010, the Village Board adopted the 2009 ICC International Fire Code including amended Section 4603.4.5 that required, among other things, the installation of a fire sprinkler system throughout an existing home if the cost of remodeling work within a home exceeds \$200,000. This trigger for sprinklers in remodeled homes is the same as in the prior code adopted in 2002. This memo is intended to provide supplemental information regarding fire sprinkler requirements in remodeled single-family homes and a staff recommendation for consideration as requested by the Village Board.

The Village of Glen Ellyn was the 11th Illinois municipality to require fire sprinklers in new single-family homes in 2002. Since then, 70 Illinois municipalities require fire sprinklers in new single-family homes (see attached list and map). In the 2009 ICC International Residential Code which is scheduled for adoption early next year, a fire sprinkler system will be required in new townhomes and in new single-family homes. This will mandate such fire sprinkler requirements in all municipalities that adopt this current code. In existing single-family homes, the ICC codes require that remodeling work be completed in a manner that maintains the level of fire protection in the existing home. Therefore, existing homes without fire sprinklers will not be required by the 2009 IRC to install fire sprinklers in the remodeled area or in an addition. In 2002, the Village Board approved Amendment 4-1-10(D)4 (copy attached) to the Building Code which required fire sprinklers in existing homes when the cost of remodeling work exceeds \$200,000.

Since 2002, our building and fire code amendments are based on a concept that requires progressive improvements and upgrades (including fire sprinklers) to an existing building in proportion to the magnitude of the change to the existing building. These are referred to as Class I, Class II or Class III remodeling, alteration and addition projects. Any Class III project must be upgraded to meet the code requirements for a new building which includes fire sprinklers. A remodeling project becomes a Class III when the remodeling cost exceeds \$200,000, an alteration project becomes a Class III when more than 75% of the exterior walls and roof are structurally altered, and an addition project becomes a Class III when more than 150% of new floor area is added.

We researched our records for all building permits with project costs in excess of \$200,000 since we began recording this data in the MUNIS system in January 2008. We found 18 commercial projects and no single-family home projects exceeding \$200,000 in project costs. Therefore, in the last 3 years there were no residential remodeling projects that triggered the sprinkler

requirement. It is possible that to avoid the required building upgrades, some single-family home projects have been purposely limited in scope and cost or divided into separate projects. In a few cases, we have verified project costs by requesting and receiving copies of construction contracts.

We submitted an email survey message to many of the municipalities that require fire sprinklers in new homes requesting information about their requirements for adding fire sprinklers in existing homes undergoing remodeling or additions. The results (copy attached) show that most municipalities do not require fire sprinklers in remodeled areas of single-family homes and approximately one-half of the municipalities require fire sprinklers in additions when they reach a specific size.

We submitted a mail survey form to 7 community builders and 9 fire sprinkler contractors requesting cost estimates to install a fire sprinkler system in a new single-family home and throughout an existing remodeled single-family home (copy attached). While we have not yet received a significant number of responses, we have attached cost information for a new single-family home sprinkler system from a memo dated January 13, 2003 from Dale Wilson to Gary Webster (copy attached). The estimated cost for a sprinkler system in a new single-family home at that time was approximately \$1.60 per square foot. While some costs associated with fire sprinkler systems have increased since 2002, there have also been some cost reductions such as the use of less expensive plastic pipe in lieu of copper pipe.

Property insurance company agents were contacted to determine the impact a fire sprinkler system had on homeowner's insurance premiums. The results are:

AAA Insurance	Helen Gomez	Approx. a 10% reduction
Allstate Insurance	Barbara Wilcox	Minimum reduction 3% up to 13%
State Farm Insurance	Mary Trynzolyn	10% reduction if all areas are covered
Nationwide Insurance	Gary Mays	Reduction varies between 5% and 15%

The water supply requirement for a single-family home fire sprinkler system was researched and reported in a memo dated October 19, 2010 (copy attached). Most existing older homes in the Village are served with a 5/8" or 3/4" water supply service. It is reasonable to assume that a \$200,000 remodeling project would require a 1" water supply service for additional plumbing fixtures or bathrooms beyond one and one half baths. Therefore, the cost of a water service upgrade is generally the result of additional plumbing fixtures associated with the remodeling work and would be expended even if a fire sprinkler system was not required. A fire sprinkler system requires a 1-1/2" water supply service. The increased cost for the water service connection fee, meter and pipe from 1" to 1-1/2" is approximately \$1,200.

Please find below the section of the text of the recently adopted Fire Code relating to remodeling projects and fire sprinkler requirements. Based on our survey of other municipalities, we would recommend retaining the requirement to add fire sprinklers in remodeled areas but to make it even less restrictive than the requirements in place since 2002. We recommend a change to the 2009 ICC International Fire Code amending Section 4603.4.5 to reduce the requirement for a fire sprinkler system as follows:

“4603.4 Sprinkler systems. An automatic sprinkler system shall be provided in existing buildings in accordance with Sections 4604.4.1 through 4603.4.5.

4603.4.5 Remodeling in existing buildings and structures.

1. In buildings of Use Groups A, B, M, R, F, H, I or S, an approved automatic sprinkler system shall be provided throughout the remodeled interior area if the hard cost of all remodeling work exceeds \$1,000,000 or 25% of the market value of the building or structure.

2. In one- and two-family dwellings and townhouses, an approved automatic sprinkler system shall be provided throughout the ~~existing building~~ **remodeled interior area** ~~and any addition~~ if the hard cost of all remodeling work exceeds ~~\$200,000~~ **\$300,000.**”

This recommended change is also based on a re-interpretation of code Amendment 4-1-10(D)4 that does not clearly state that fire sprinklers are required throughout the existing home and a letter dated September 14, 2001 from Richard Dunn, Director of Planning & Development, to Gary Webster, Village Manager, (copy attached) that excludes any requirement for fire sprinklers in Class III remodeling projects. Although this proposed change requires fire sprinklers to be installed only in the remodeled area, it is possible that fire sprinklers would be installed throughout the existing home since a \$300,000 remodeling project could include most or all of the interior spaces depending on the type of work and size of the home. The cost to sprinkler a room or area that is not remodeled would be offset by the insurance premium discount available when the entire home is sprinklered.

Attached is a copy of a brochure published by the Home Fire Sprinkler Coalition that provides general information about fire sprinkler systems in single-family homes and a copy of an executive summary of a current report by The Fire Protection Research Foundation that identifies incentives for the use of fire sprinklers in homes. Also attached is a memo dated September 7, 2001 from Gary Webster to the President and Board of Trustees recommending that our fire sprinkler requirement be included in annexation agreements, a memo dated September 7, 2001 from Chris Clark to Gary Webster with other supporting information and a memo dated August 22, 2008 from Scott Raffensperger to Vicki Hase and the Board of Trustees in support of our current fire sprinkler requirements.

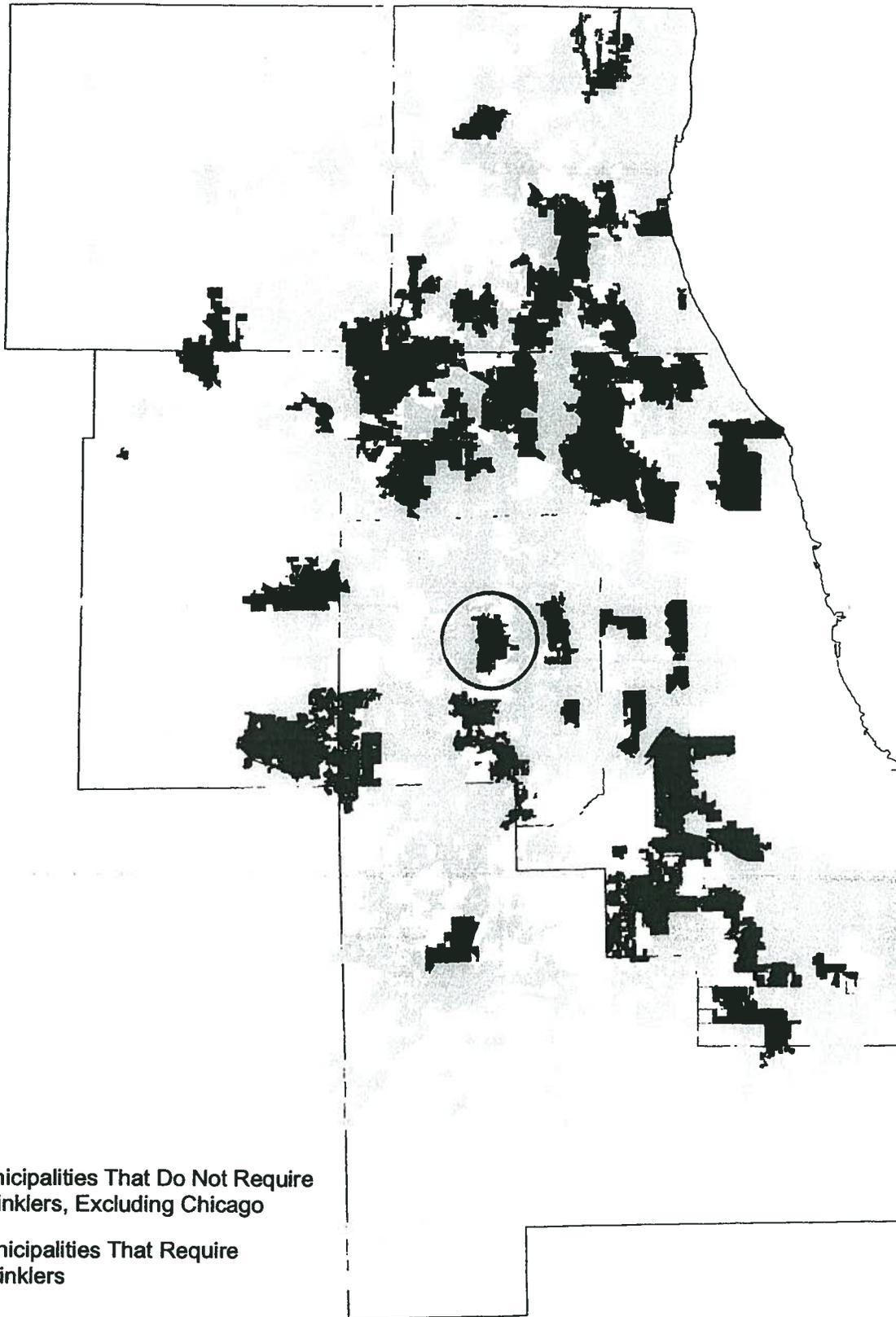
Attached:

- List of municipalities requiring fire sprinklers in new homes
- Map of municipalities requiring fire sprinklers in new homes
- 4-1-10(D)4 original 2002 building code sprinkler requirement
- Email survey of Municipality fire sprinkler requirements
- Mail survey of fire sprinkler costs
- Memo dated January 13, 2003 regarding fire sprinkler costs
- Memo dated October 19, 2010 regarding water service size
- Memo dated September 14, 2001 regarding fire sprinklers in homes
- Brochure by the Home Fire Sprinkler Coalition
- Executive summary report by The Fire Protection Research Foundation
- Memo dated September 7, 2001 regarding fire sprinklers in subdivisions
- Memo dated September 7, 2001 regarding fire sprinkler benefits
- Memo dated August 22, 2008 supporting current fire sprinkler requirements

MUNICIPALITIES/DISTRICTS WITH SINGLE-FAMILY HOME RESIDENTIAL
FIRE SPRINKLERS ORDINANCES FOLLOWING NFPA 13D

No.	CITY	DATE	COMMERCIAL/RESIDENTIAL SQUARE FEET
1	Long Grove (Municipality)	April, 1988	0/13D
2	Barrington Fire Protection District	September, 1997	0/13D
3	Lake Barrington	December, 1997	0/13D
4	Wheeling	July, 2000	0/13D plus manufactured homes
5	Clarendon Hills	August, 2000	2000/13D
6	Village of Barrington	December, 2000	0/13D
7	Park Ridge	March, 2001	0/13D
8	West Dundee	August, 2001	4,000/13D - all 1-2 family new con.
9	Glenview	2001	13D/3,000 square feet
10	Hoffman Estates	January, 2002	1,000 for all use groups & 13D
11	Olen Elyn	March, 2002	0/13D
12	Round Lake Beach	March, 2002	0/13D
13	Streamwood	June, 2002	1,000 Commercial/13D
14	LaGrange Park	Aug-03	0/A; E, H, I, R1, R2; 2,000/13D
15	Mount Prospect	June, 2003	0/13D + condo conversions & mfg. homes
16	Berkeley	November, 2003	A, E, H, P, R, S - 0/13D / M, B, I - 3000
17	Rolling Meadows	2003	4,000 square feet
18	Vernon Hills	2003	5,000 square feet
19	Matteson Fire Department	January, 2004	0/13D
20	Countryside Fire Protection District	March, 2004	0/13D
21	Huntley Fire Protection District	July, 2004	0/13D
22	North Maine Fire Protection District	July, 2004	0/13D
23	Indian Creek (Countryside FPD)	Feb-00	0/13D
24	Skokie	October, 2004	5,000/13D
25	Long Grove Fire Protection District	November, 2004	13D
26	Hickory Hills	January, 2005	0/13D/multi-family retrofit
27	Justice	February, 2005	0/13D
28	Des Plaines	March, 2005	0/13D
29	Libertyville (Municipality)	March, 2005	1,000/13D
30	Sunnycrest FPD (Flossmoor)	January, 2005	13D
31	Bedford Park Fire Department	July, 2005	0/13D
32	St. Charles/Countryside FPD	August, 2005	0/13D
33	Oak Forest	August, 2005	0/13D / 50% Commercial
34	Lincolnwood	October, 2005	5,000/13D
35	Libertyville Fire Protection District	November, 2005	0/13D
36	Bridgeview	November, 2005	0/13D, mfg. homes
37	River Forest	March, 2006	5000/13D + 50% single family
38	Glenwood	June, 2006	0/13D + 50% assessed valuation retrofit/ownership changes
39	Palos Hills	August, 2006	0/13D / Apartment to Condo
40	Villa Park	August/October, 2006	1,500/13D
41	Oak Brook Terrace (Municipality)	December, 2006	0/13D, 50% Addition
42	Prospect Heights	December, 2006	0/13D
43	Northbrook	February, 2007	5,000/13D plus Townhomes
44	Bellwood	January, 2007	0/13D + 50% Retrofit Apartment to Condo
45	Lake Bluff	March, 2007	0/13D, 75% Additions
46	Lake Zurich Rural Fire Protection District	April, 2007	13D
47	Lincolnshire/Riverwoods Fire Protection District	May, 2007	13D
48	Orland FPD	2007	Unincorporated No Water Supply, 5,000
49	Highwood	August, 2007	0/13D
50	Eisle-Woodridge FPD	October, 2007	5,000 sq. ft.
51	Alsip	October, 2007	0/13D
52	Palatine Rural FPD	November, 2007	0/13D
53	Chicago Ridge	December, 2007	0/13D
54	Pleasantview FPD	January, 2008	Single exit subdivision
55	Country Club Hills	January, 2008	0/13D
56	Park Forest	September, 2008	0-13D
57	Newport Township FPD (Wadsworth)	January, 2009	0/13D
58	Green Oaks	February, 2009	13D
59	Riverside	March, 2009	13D
60	Palos Heights FPD	June, 2009	13D
61	Lake Zurich	September, 2009	13D
62	Palos Fire Protection District	October, 2009	13D/5,000
63	Crest Hill	December, 2009	0 sqft commercial/ all 13D
64	Normal	January, 2010	13D
65	Burlington Fire Protection District	April, 2010	13D
66	Riverwoods	April, 2010	13D
67	Wilmette	May, 2010	13D/Lightweight Construction
68	Aurora	May, 2010	13D/5,000
69	Forest Park	May, 2010	0 Sq Ft / 13D
70	St Charles	July, 2010	13D ineffective 2012

Fire Sprinkler Requirements for New Single-Family Homes in Chicagoland



Municipalities That Do Not Require
Sprinklers, Excluding Chicago

■ Municipalities That Require
Sprinklers

Created By: Andrew Lueck
November 29, 2010
Projection: State Plane
Illinois East NAD 1983 Feet

0 10 20 40 Miles



(2) A Knox box shall be installed.

(3) All exposed combustible framing members, combustible voids or similar spaces in existing structure shall be covered with five-eighths inch (5/8") type X gypsum board or equivalent if the building is not equipped with an NFPA approved sprinkler system.

(4) Install an NFPA approved sprinkler system.

A. In class II additions: To the addition only or to the existing and new buildings if the floor area is increased to five thousand (5,000) square feet or greater.

B. In class II alterations: To existing and new structures.

C. In class II change of use: To the new use area only. (Ord. 4746, 8-9-1999; amd. Ord. 5214, 12-15-2003, eff. 3-1-2004)

3. Class III Additions And Class III Alterations: Class III additions, class III alterations, and the existing principal building being affected and site shall comply or shall be upgraded to comply with all provisions of the village codes, regulations and ordinances for a new building and as required for class II additions, class II alterations, class II remodelings or class II change of use. (Ord. 5017, 11-26-2001, eff. 1-1-2002; amd. Ord. 5214, 12-15-2003, eff. 3-1-2004)

4. Class III Remodelings: Class III remodelings shall comply or shall be upgraded to comply with all provisions of the village codes, regulations and ordinances for a new building. The following improvements are considered essential to the health, safety and welfare of a structure's occupants or

general public as they pertain to structural, fire, and sanitary aspects of a structure. The following items shall be completed to and around the remodeled area in accordance with the current village standards:

Building Improvements (Commercial Property):

(a) A Knox box shall be installed.

(b) Install an NFPA approved sprinkler system to the remodeled area only.

(c) Install a standpipe in buildings greater than two (2) stories or buildings that are greater than two hundred feet (200') from the nearest fire department access. (Ord. 4746, 8-9-1999; amd. Ord. 5214, 12-15-2003, eff. 3-1-2004)

5. New One- And Two-Family Dwellings: All new one- and two-family dwellings shall comply with all provisions of the village codes, regulations and ordinances for a new building and as required for class III additions, class III alterations and class III remodelings. The following items shall be installed in the new structure in accordance with the current village standards:

Building Improvements: Install and maintain an NFPA 13-D approved fire protection sprinkler system throughout the structure. The system shall be installed meeting the requirements of the NFPA 13-D standards amended as follows:

(a) Install an interior six inch (6") water flow bell mounted to the return duct of each furnace.

(b) Install an exterior ten inch (10") water flow bell mounted on the street side of the structure. (Ord. 5017, 11-26-2001, eff. 1-1-2002; amd. Ord. 5214, 12-15-2003, eff. 3-1-2004)

4-1-10(D)4

(E) Hazardous Index Table:

HAZARDOUS INDEX

<u>Occupancy</u>	<u>Class</u>	<u>Index Number</u>
Assembly, theaters	A-1	6
Assembly, nightclubs	A-2	7
Assembly, halls, recreation centers, terminals, restaurants	A-3	6

SURVEY FIRE SPRINKLER REQUIRMENTS**MUNICIPALITIES THAT REQUIRE FIRE SPRINKLERS IN NEW SINGLE FAMILY HOMES**

MUNICIPALITY	SINGLE FAMILY HOMES	
	IN REMODELED AREAS	IN ADDITIONS
GLEN ELLYN	IF REMODLING COST EXCEEDS \$300,000	IF AREA INCREASE EXCEEDS 150%
WHEELING	NO REQUIREMENT	IF AREA INCREASE EXCEEDS 110%
HOFFMAN ESTATES	IF ALL DRYWALL IS REMOVED	NO REQUIREMENT
WEST DUNDEE	NO REQUIREMENT	NO REQUIREMENT
ST. CHARLES	NO REQUIREMENT	NO REQUIREMENT
LAGRANGE PARK	NO REQUIREMENT	NO REQUIREMENT
LAKE ZURICH	ONLY IN TOWNHOMES	IF AREA INCREASE EXCEEDS 3,000 SF
FOREST PARK	NO REQUIREMENT	IF AREA INCREASE EXCEEDS 50%
JUSTICE	IF REMODEL AREA EXCEEDS 50%	IF AREA INCREASE EXCEEDS 50%
OAKBROOK TERRACE	NO REQUIREMENT	IF AREA INCREASE EXCEEDS 50%
NORTHBROOK	NO REQUIREMENT	NO REQUIREMENT
MATTESON	NO REQUIREMENT	NO REQUIREMENT

Builders and General Contractors

The Village of Glen Ellyn is currently in the process of reviewing the 2009 edition of the ICC codes for amendment and adoption. We are seeking input from you and other contractors in our community to assist us in our evaluation of the current and proposed amendments requiring fire sprinklers in single family homes. Specifically, we would appreciate your conceptual cost estimate (+ - 50%) to install a fire sprinkler system in new and existing single family homes. So that all estimates represent the same general scope of work, please use the following scoping conditions and provide a conceptual cost estimate of the project:

New single family home-

First floor: living, family, kitchen, dining, laundry, ½ bath in 1, 200 square feet (sprinklered).

Second floor: 3 bedrooms, 1 full bath, 1 master bedrm, master bath in 1,200 square feet (sprinklered).

Unfinished basement of 1,200 square feet (sprinklered).

Unfinished attic space (unsprinklered).

Detached garage (unsprinklered).

Water service sized at 1-1/2" as required by IL plumbing code for plumbing fixture count and as required for fire sprinkler service.

New home conceptual cost estimate for fire sprinkler work only: \$ _____

New home conceptual cost estimate (exclude land costs): \$ _____

Existing single family home remodeled and altered-

Existing one-story, 2 bedrooms, 1-1/2 baths with 1,200 square feet on first floor.

Add second floor, 3 bedrooms, 1 full bath, 1 master bedrm, master bath in 1,200 square feet (install sprinklers).

Remove existing first floor bedrooms and reconfigure first floor living, family, kitchen, dining, areas in 1,200 square feet (add sprinklers).

Existing unfinished basement of 1,200 square feet (add sprinklers).

Unfinished attic space (unsprinklered).

Detached garage (unsprinklered).

Existing 5/8" or ¾" water service increased to 1-1/2" as required for plumbing fixture count and as required for fire sprinkler service.

Existing home remodel conceptual cost estimate for fire sprinkler work only: \$ _____
(exclude water service size upgrade work to meter)

Existing home remodel conceptual cost estimate for all work: \$ _____

Please email the information to me at jkvapil@glenellyn.org or fax this page to 630-547-5370. I appreciate your time and attention in providing this assistance.

Joe Kvapil
Building and Zoning Official

Fire Sprinkler Contractors

The Village of Glen Ellyn is currently in the process of reviewing the 2009 edition of the ICC codes for amendment and adoption. We are seeking input from you and other contractors in our community to assist us in our evaluation of the current and proposed amendments requiring fire sprinklers in single family homes. Specifically, we would appreciate your conceptual cost estimate (+ - 50%) to install a fire sprinkler system in new and existing single family homes. So that all estimates represent the same general scope of work, please use the following scoping conditions:

New single family home-

First floor: living, family, kitchen, dining, laundry, ½ bath in 1, 200 square feet (sprinklered).

Second floor: 3 bedrooms, 1 full bath, 1 master bedrm, master bath in 1,200 square feet (sprinklered).

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Unfinished attic space (unsprinklered).

Detached garage (unsprinklered).

Water service sized at 1-1/2" as required by IL plumbing code for plumbing fixture count and as required for fire sprinkler service.

New home conceptual cost estimate for fire sprinkler work only: \$ _____

Existing single family home remodeled and altered-

Existing one-story, 2 bedrooms, 1-1/2 baths with 1,200 square feet on first floor.

Add second floor, 3 bedrooms, 1 full bath, 1 master bedrm, master bath in 1,200 square feet (install sprinklers).

Remove existing first floor bedrooms and reconfigure first floor living, family, kitchen, dining, areas in 1,200 square feet (add sprinklers).

Existing unfinished basement of 1,200 square feet (add sprinklers).

Unfinished attic space (unsprinklered).

Detached garage (unsprinklered).

Existing 5/8" or ¾" water service increased to 1-1/2" as required for plumbing fixture count and as required for fire sprinkler service.

Existing home remodel conceptual cost estimate for fire sprinkler work only: \$ _____
(exclude water service size upgrade work to meter)

Please email the information to me at jkvapil@glenellyn.org or fax this page to 630-547-5370. I appreciate your time and attention in providing this assistance.

Joe Kvapil
Building and Zoning Official

Memo

To: Gary Webster, Village Manager
From: Dale Wilson, Building & Zoning Official
Date: January 13, 2003
Subject: Fire Sprinkler Systems Costs

Per your request, I have acquired the actual cost for the installation of a sprinkler system in several single-family dwellings in Glen Ellyn. Several fire protection companies were contacted. United States Fire Protection Illinois Incorporated provided the most comprehensive information, and One other company provided a single project price, which was determined to be comparable with the attached information. The projects in the attached list are completed or are in the process of being completed. The table provides the project location, contract amounts in dollars, square footages of the sprinkler areas, and square foot costs for each system.

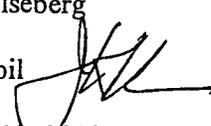
The represented costs, to install a new fire sprinkler system, are based on the actual areas of new home that are protected by the system. The average price per square foot was calculated at \$1.57 for protected areas. Basements and all other finished interior spaces are required to be protected excluding attached garages, unfinished attic spaces, and small closets or bathrooms. This actual average cost is consistent with data presented to the Village Board when they contemplated approving the fire protection ordinance. In a memo to the Village Board dated February 2, 2001, Gary Webster indicated that fire sprinkler systems costs range between \$1.50 - \$2.00 per square foot.

Note: It's important to remember that the average cost can be manipulated if the floor area is not accurately depicted. For instance, the same cost above would have a greater average if the livable space only were calculated (i.e. without the basement). Conversely, the average cost would decrease if all interior spaces were included in the calculations (i.e. attached garage areas, bathroom and small closets).

Cc: Richard Dunn, Planning and Development Director

X:\Plandev\BUILDING\DALE\MEMOS\SPRINKLERSYSTEM-costs.doc

MEMORANDUM

TO: Staci Hulseberg
FROM: Joe Kvapil 
DATE: October 19, 2010
SUBJECT: Domestic and Sprinkler Water Service Size Comparisons
 Village Board Workshop Meeting October 18, 2010

At this workshop meeting a statement was made by Trustee Ladesic that he calculated an existing home with a typical 3/4" size water supply service pipe can be remodeled to include up to six bathrooms without upgrading the size of the water service and meet the plumbing code requirements. My calculation of the maximum number of bathrooms/plumbing fixtures differs as follows:

Kitchen:	
Kitchen sink	2 water supply fixture units
Dishwashing machine	1 water supply fixture unit
Laundry:	
Laundry tray (tub)	3 water supply fixture units
Laundry machine (clothes washer)	2 water supply fixture units
Full Bathroom:	
Lavatory (sink)	1 water supply fixture unit
Combination fixture (tub/shower)	3 water supply fixture units
Water closet (toilet)	3 water supply fixture units
Half Bath:	
Lavatory (sink)	1 water supply fixture unit
<u>Water closet (toilet)</u>	<u>3 water supply fixture units</u>
Total	19 water supply fixture units

*1" to 1 1/2"
 Water service \$1,000.
 Meter 1.25 LF \$50
 Pipe + 50 FT \$62*

The Illinois Plumbing Code Table N specifies that a maximum of 16 water supply fixture units are permitted to be served by a 3/4" water supply service pipe. Since the table indicates a 1" water supply service pipe is required for 20 water supply fixture units we have permitted up to 19 water supply fixture units to be served by a 3/4" water supply service pipe. (reference code sections attached)

A maximum of 1-1/2 bathrooms in a home can be served with a 3/4" or less water supply service pipe. This is far less than the 6 bathrooms calculated by Trustee Ladesic. I stated that extensive remodeling of an existing older home usually includes the additional of more bathrooms and plumbing fixtures beyond the maximum permitted for a typical 3/4" water supply service pipe. This requires the upgrade of the water supply service pipe size to 1". A fire sprinkler system usually requires a 1-1/2" water supply service pipe size. My point was that the cost to upgrade the size of the water supply service pipe for a fire sprinkler system would only be the difference in cost between 1" and 1-1/2" pipe material since all other associated work is identical.

Section 890. APPENDIX A PLUMBING MATERIALS, EQUIPMENT, USE RESTRICTIONS AND APPLICABLE STANDARDS

Table N Water Supply Fixture Units (W.S.F.U.) for a Supply System with Flush Tanks

W.S.F.U.	Demand (GPM)	Water Supply Fixture Units (W.S.F.U.) for a Supply System with Flush Tanks		
		Pipe Size (Inches)	Pressure Loss (PSI/100' of Pipe)	Velocity (Ft./Sec.)
2	2	1/2"	4.2	2.7
4	3	1/2"	8.7	4.2
6	5	3/4"	22.5	7.0
8	6.5	3/4"	6.3	4.3
10	8	3/4"	9.0	5.4
12	9.2	3/4"	11.5	6.1
14	10.4	3/4"	15.0	6.9
16	11.6	3/4"	18.0	7.7
20	14	1"	7.2	5.6
25	17	1"	10.0	6.6
30	20	1"	13.6	8.0
35	22.5	1 1/4"	5.8	5.7
40	25	1 1/4"	7.0	6.3
45	27	1 1/4"	8.2	6.9
50	29	1 1/4"	9.5	7.4
60	32	1 1/2"	5.0	5.8
70	35	1 1/2"	6.2	6.4
80	38	1 1/2"	7.0	7.2
90	41	1 1/2"	8.0	7.5
100	43.5	1 1/2"	8.7	7.8
120	48	2"	2.7	5.0
140	52.5	2"	3.1	5.4
160	57	2"	3.6	5.8
180	61	2"	3.9	6.1
200	65	2"	4.5	6.6
225	70	2"	5.2	7.1
250	75	2"	6.0	7.7
275	80	2 1/2"	2.6	5.5
300	85	2 1/2"	2.9	5.8
350	95	2 1/2"	3.5	6.5
400	105	2 1/2"	4.2	7.1
450	115	2 1/2"	5.0	8.0

Section 890.1200 Water Service Sizing

a) Water Service Pipe Sizing. The water service pipe from the street main (including the tap) to the water distribution system for the building shall be sized in accordance with Appendix A, Tables M, N, O, P and Q. Water service pipe and fittings shall be at least 3/4 inch diameter. Plastic water pipe shall be rated at a minimum of 160 psi at 73.4°F. If flushometers or other devices requiring a high rate of water flow are used, the water service pipe shall be designed and installed to provide this additional flow.

(I-15)

77 ILLINOIS ADMINISTRATIVE CODE, PART 890
ILLINOIS PLUMBING CODE (02/04)

b) Demand Load. The calculation of the water service demand load for a building shall be based on the total number and types of fixtures installed in the building, assuming the simultaneous use of such fixtures.

c) Unused sections of water service or water distribution piping ("dead ends"), where the water in the piping may become stagnant, are prohibited. A developed length of more than 2 feet shall be considered a dead end.

(Source: Amended at 28 Ill. Reg. 4215, effective February 18, 2004)

Section 890.APPENDIX A PLUMBING MATERIALS, EQUIPMENT, USE
RESTRICTIONS AND APPLICABLE STANDARDS

Table M Load Values Assigned to Fixtures

Fixture	Occupancy	Type of Supply Control	Load Values Assigned to Fixtures		
			Load Values in Water (Supply Fixture Units)		
			Cold	Hot	Total
Water Closet	Public	Flush Valve	10	-	10
Water Closet	Public	Flush Tank	-5	-	5
Urinal	Public	1" Flush Valve	10	-	10
Urinal	Public	3/4" Flush Valve	5	-	5
Urinal	Public	Flush Tank	3	-	3
Lavatory	Public	Faucet	1.5	1.5	2
Bath tub	Public	Faucet	3	3	4
Shower Head	Public	Mixing Valve	3	3	4
Service Sink	Offices, etc.	Faucet	2.25	2.25	3
Kitchen Sink	Hotel/Restaur.	Faucet	3	3	4
Drinking Fountain	Office, etc.	3/8" Valve	0.25	-	0.25
Water Closet	Private	Flush Valve	6	-	6
Water Closet	Private	Flush Tank	3	-	3
Lavatory	Private	Faucet	0.75	0.75	1
Bath tub	Private	Faucet	1.5	1.5	2
Shower Stall	Private	Mixing Valve	1.5	1.5	2
Kitchen Sink	Private	Faucet	1.5	1.5	2
Laundry Trays (1 to 3)	Private	Faucet	2.25	2.25	3
Combination Fixture	Private	Faucet	2.25	2.25	3
Dishwashing Machine	Private	Automatic	-	1	1
Laundry Machine (8 lb)	Private	Automatic	1.5	1.5	2
Laundry Machine (8 lb)	Public/General	Automatic	2.25	2.25	3
Laundry Machine (16 lb)	Public/General	Automatic	3	3	4

Note: For fixtures not listed, loads shall be assumed by comparing the fixtures to one listed using water in similar quantities and at similar rates. The assigned loads for fixtures with both cold and hot water supplies are given for separate cold and hot water loads and for total load.

MEMORANDUM

TO: Gary Webster, Village Manager
FROM: Richard L. Dunn, Director of Planning & Development
DATE: September 14, 2001
SUBJECT: Fire Sprinkler Systems in New Homes and Subdivisions

Discussion: At the September 10, 2001, Village Board Workshop, the Village Board Trustees discussed a recommendation to require all new subdivisions to include in their Annexation Agreement a clause which would require all new structures, residential and commercial, to install an NFPA approved fire protection sprinkler system. The discussion expanded to included sprinklers in all new homes. The Village Board policy direction was that sprinklers should be installed in all new single-family homes, Class III Additions and Class III Alterations constructed in Glen Ellyn or Subdivisions in the unincorporated areas.

The following examples are provided to clarify Class III:

Class III Alteration: This classification is defined as removing or modifying more than 75% of the exterior walls and roof of the existing home. This results in practically demolishing the entire home except the basement and one wall.

Class III Addition: This classification is defined as adding an addition equal to 1-1/2 times the size of the existing house. Another way to say this is that the resulting structure has more than doubled in size.

Note: Since August 1999, when the construction classifications were established, no one has requested a permit for a Class III Addition or Alteration. Current regulations require fire protection sprinkler systems in all new buildings and significant additions to all buildings constructed in Glen Ellyn except single-family homes.

Sprinkler Systems: To help clarify the intent of sprinkler systems staff is including some general concepts to consider. Sprinkler systems in single-family homes will be required to be installed in accordance with the National Fire Protection Association (NFPA) standards with appropriate amendments. The basic concepts and components for the installation of these systems include the following standards:

- The entire house except the attic, garage and rooms less than 50 square feet must be covered by the sprinkler systems.
- Plastic pipe may be used throughout the home.
- The sprinkler system can be connected to the domestic water service line.
- The system will have exterior alarms.

Gary Webster, Village Manager

September 14, 2001

Page 2

Review Process: Based on the Village Board discussion, staff was directed to begin the review process and develop language and ordinance(s) for the Village Board to consider. New text and regulations are being prepared for the following:

- Resolution No. 92-7, a resolution to establish an Annexation Policy for the Village of Glen Ellyn.
- The Village Code, TITLE 4: BUILDING REGULATIONS, LOCAL AMENDMENTS
- Subdivision Regulation Ordinance No. 2479

Note: The Village Attorney is reviewing the appropriateness of including a “building code” requirement (fire sprinklers) in the Subdivision Code.

cc: Chief Scott Raffensparger, Volunteer Fire Company
Stuart Stone, Assistant Chief, Volunteer Fire Company
Dale Wilson, Building & Zoning Official
Chris Clark, Building Inspector

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Village Board agenda on September 24, 2001 at 6:30 p.m. and for consideration at 8 p. m.

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Village Board agenda on September 24, 2001 at 6:30 p.m. and for consideration at 8 p. m.



Home Fire Sprinkler

GLOBAL LITTELLION

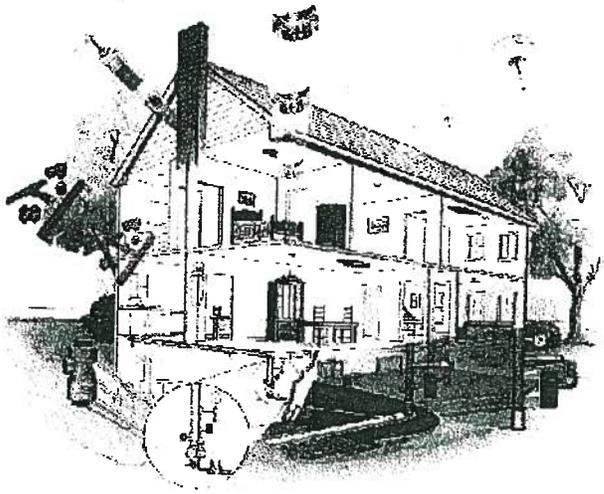
Protect What You Value Most

HOME FIRE
SPRINKLER SYSTEMS

fire safe



6 of 7



UNDERSTANDING FIRE SPRINKLER PROTECTION FOR HOMES

Fire sprinkler systems provide powerful protection from fire. They work automatically and immediately; before a fire spreads. Sprinklers put water right where it is needed, slowing or stopping the flames and poisonous smoke, so people can get out safely.

Fire sprinkler systems have been saving lives and protecting property for more than 130 years. Over the past two decades, sprinklers have been specially adapted to simplify installation and use in homes. Today, you can find fire sprinklers in homes of every size and style.

“Fire sprinklers give me peace of mind, especially at night when my children are sleeping.”

SANDRA KUHN, HOMEOWNER

The ideal time to install fire sprinkler systems is during new construction. Many homeowners opt to install, or retrofit, sprinklers when they remodel their homes.

You are at Greatest Danger from Fire at Home

According to the National Fire Protection Association (NFPA), more than eight out of 10 fire deaths happen at home. Many people don't realize how fast a home fire grows and spreads from room to room. Too often, people think they'll have plenty of time to get out.

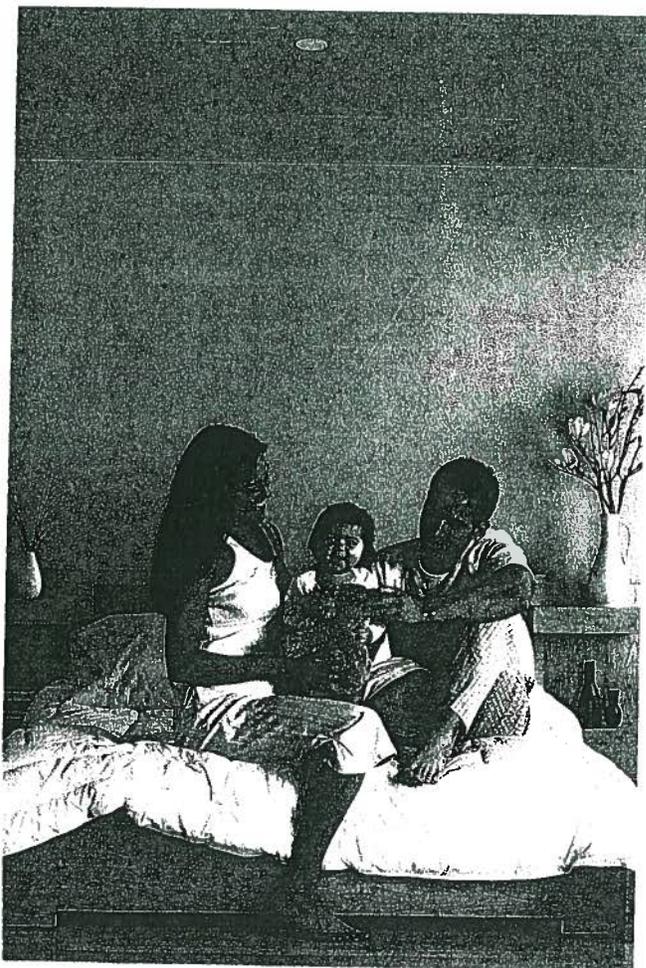
Having fire sprinklers installed at home can save your life if fire strikes. In fact, when fire strikes at home, it can become deadly in as few as three minutes. Most fatal fires take place at night when people are sleeping. A fire sprinkler system is like having a firefighter on duty 24 hours a day.

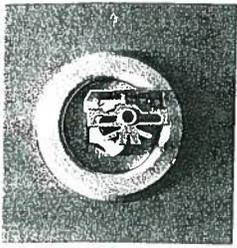
Watch a video that demonstrates how fast a home fire can become deadly online at HomeFireSprinkler.org.

A Total System of Safety

Sprinkler systems are the ultimate home fire safety technology available today. Experts agree the most comprehensive protection from a home fire is a total system of safety:

- Prevention
- Early warning (working smoke alarms on every level)
- Quick Evacuation (well planned and practiced home fire drills)
- Suppression (fire sprinkler system)

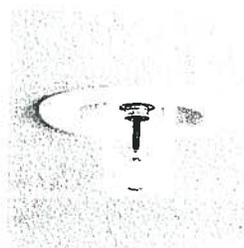




Sidewall Sprinkler



Concealed Sprinkler



Pendent Sprinkler

HOW FIRE SPRINKLERS WORK

Fire sprinklers protect your home around the clock, automatically. Each fire sprinkler system is unique to the home where it's installed. Most fire sprinkler systems are connected to the household water main. If the water supply is from a well or if the water pressure is too low, a water storage tank may be needed.

Fire sprinklers are linked throughout the home by a network of piping. Most home systems today use a strong, non-combustible plastic pipe known as CPVC. Just like plumbing, sprinkler piping is typically hidden behind walls and ceilings. In unfinished basements, you may be able to see the piping in the ceiling; and it may be copper rather than plastic.

There are several types of fire sprinklers made just for homes. They can be installed on walls or in ceilings. Some sprinklers are concealed by a plate. Home fire sprinklers are much smaller than the types of sprinklers used in commercial properties.

Heat Activates a Sprinkler, Not Smoke

Each sprinkler has a temperature-sensitive element and is individually activated by heat. Water flows from the sprinkler when the temperature reaches between 135°-165°F. In the vast majority of fires in sprinklered homes, only a single sprinkler will operate.

Smoke, cooking vapors or steam cannot cause home fire sprinklers to activate. Only the high temperature of a fire will operate the sprinkler.

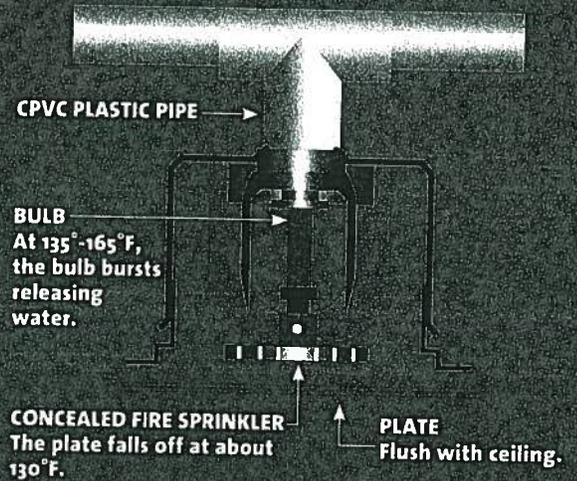
Maintenance is a Snap

Some fire sprinklers require very little maintenance. It's essential to keep the water valve turned on, so a simple visual inspection should be done routinely to ensure the valve is open. (Keeping the valve unlocked in the "on" position is a good idea.)

Inspect the pipes and sprinklers occasionally to make sure nothing is obstructing them.

Every home sprinkler system should have a water flow test on a regular basis. It's a simple test that can be done by the homeowner or a fire sprinkler contractor.

A SPRINKLER COVERS A MINIMUM 12 X 12 FOOT AREA. EXTENDED COVERAGE SPRINKLERS CAN COVER A MAXIMUM AREA OF 20 X 20 FEET.



SPRINKLERS ARE LINKED BY A NETWORK OF PIPING, TYPICALLY HIDDEN BEHIND WALLS AND CEILINGS AND USUALLY DRAWING UPON HOUSEHOLD WATER SOURCES.

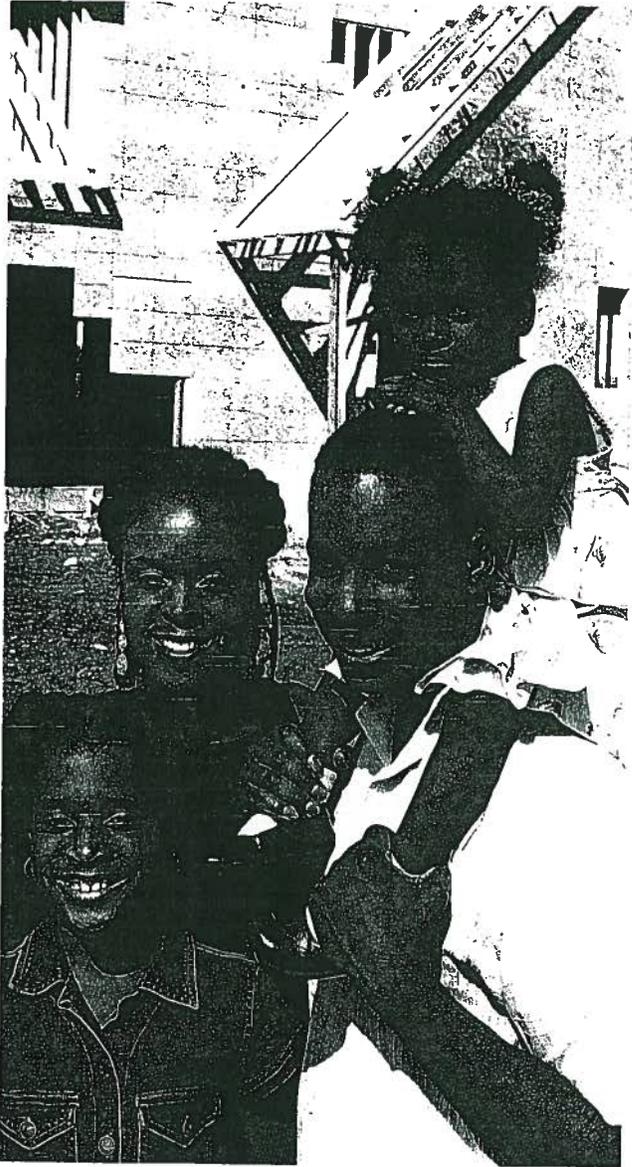


Each sprinkler protects an area below, and when heated by fire, activates.



Only the sprinkler closest to the fire will activate, spraying water directly on the fire.

“An electrical short started a fire in our house. That fire was so fast and furious. The sprinkler system activated immediately. Our house is still standing. We are all still alive including our pets.” JIM MCCOLLISTER, AZ



THE ADVANTAGES OF A HOME FIRE SPRINKLER SYSTEM

With Fire Sprinklers

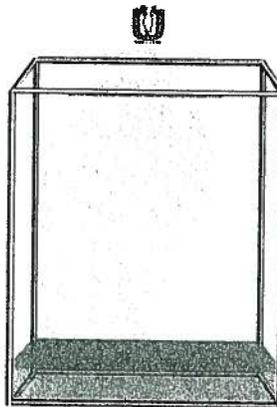
- The sprinkler closest to the fire activates
- Water contains or extinguishes fire
- Residents have time to safely escape
- Surrounding rooms are protected from damage

Fire sprinklers work so fast they often put out a home fire before the fire department arrives. Instead of launching a major fire suppression effort, arriving firefighters will simply turn off the sprinkler system and mop up the water.

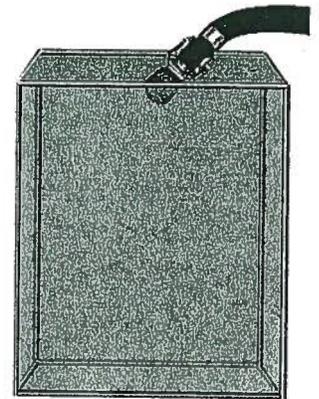
Without Fire Sprinklers

- Flames grow and move room to room
- Heat and toxic gases spread
- In as few as three minutes, the fire becomes deadly
- Flashover occurs and the gases and combustible materials burst into flames

It typically takes 9-12 minutes from the time a fire starts to the time the fire department arrives. In that time, the fire will be so advanced that firefighters will have to use high pressure hoses, applying water at 250 gallons per minute. Even if the family is lucky enough to get out unharmed, the home will likely be lost and the family displaced.



Sprinkler - 25 Gallons of Water/Minute



Fire Hose - 250 Gallons of Water/Minute

Learn more about how home fire sprinkler systems work online at HomeFireSprinkler.org.

HOME FIRE SPRINKLERS ARE A SMART CHOICE

Homebuilders know that homeowners are safety conscious. They want to protect their families and they want to secure their investment. That's why more and more homebuilders are offering their customers the option of installing a fire sprinkler system in new homes. A home fire sprinkler system is a smart choice. Unlike the many upgrades that are available in new construction – such as gourmet kitchen amenities, whirlpool tubs and high end flooring – only a home fire sprinkler system can save your life if there is a fire. And, the fire sprinkler system also protects your home and your valuables. No other upgrade can do that.

Nearly 70% of homeowners believe having a fire sprinkler system increases the value of a home, according to a recent survey conducted by Harris Interactive. Nearly half say a sprinklered home is more desirable than an unsprinklered home.

Affordable Fire Protection

The cost to install a fire sprinkler system is rolled into a new home mortgage, as are the plumbing and electrical systems.

Sprinklered homes qualify for valuable discounts on homeowner insurance premiums. Discounts vary by company and by state, so shop around to find the best discount in your area.

The cost to install a home fire sprinkler system also varies by region. Nationally on average, the cost to install sprinklers is 1 to 1.5 percent of the total cost of new construction. Retrofitting a home with sprinklers is typically higher. In many municipalities, increased installations have brought the cost down significantly.

Unmatched Peace of Mind

Home fire sprinklers are proven lifesavers. In Scottsdale, AZ, sprinklers have been required in new homes since 1986. A 15-year study of fire losses in Scottsdale since then found that no deaths occurred in the fires that took place in sprinklered homes during the period; 13 people died in unsprinklered homes.

Fire sprinklers also protect property and valuables. The Scottsdale study showed that where fires occurred in sprinklered homes, there was less fire damage and less water damage from suppression. The average loss per sprinklered single-family home fire was \$2,166, compared to \$45,019 for the unsprinklered home fires.

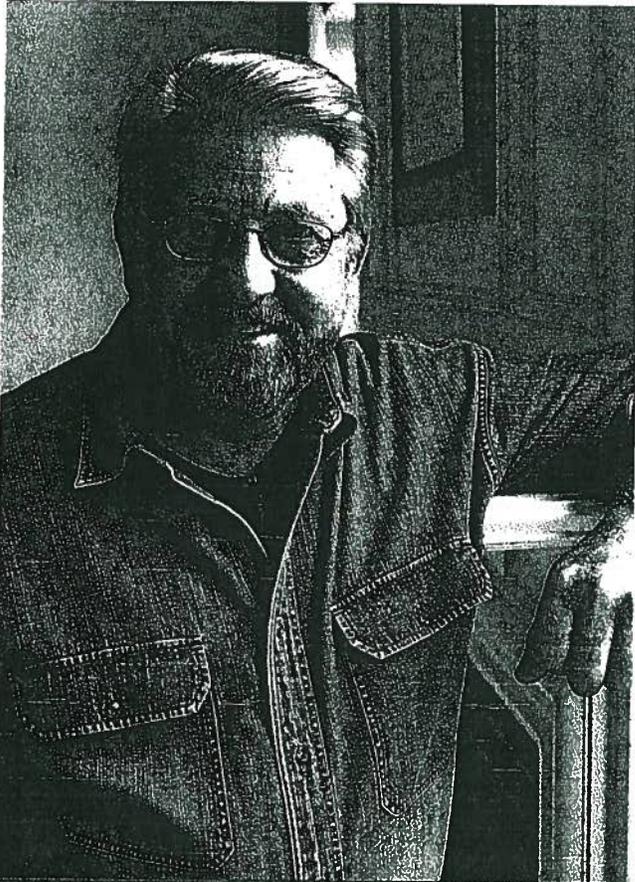


HARRIS INTERACTIVE® SURVEY FINDINGS

- 69 PERCENT OF HOMEOWNERS BELIEVE HAVING A FIRE SPRINKLER SYSTEM INCREASES THE VALUE OF A HOME.
- 38 PERCENT SAY THEY WOULD BE MORE LIKELY TO PURCHASE A NEW HOME WITH SPRINKLERS THAN WITHOUT.
- 45 PERCENT SAY A SPRINKLERED HOME IS MORE DESIRABLE THAN AN UNSPRINKLERED HOME, MOST OFTEN BECAUSE OF THE ADDED SAFETY PROVIDED BY THE SPRINKLERS (51 PERCENT).
- IF OFFERED, 36 PERCENT WOULD CHOOSE FIRE SPRINKLERS OVER HARDWOOD FLOORS; AND 35 PERCENT WOULD CHOOSE THEM OVER CABINET UPGRADES.
- FOR 43 PERCENT, THE ABILITY TO INCLUDE THE COST OF INSTALLING SPRINKLERS IN THE MORTGAGE IS AN INSTALLATION INCENTIVE.
- HOME BUILDERS WHO OFFER FIRE SPRINKLERS ARE SEEN BY HOMEOWNERS AS BEING "SAFETY CONCERNED" (70 PERCENT), "INNOVATIVE" (52 PERCENT) AND "CARING" (51 PERCENT).

NATIONAL SURVEY CONDUCTED IN DECEMBER 2005;
COMMISSIONED BY HFSC

“We’ve lived in a sprinklered home for 25 years – nothing has made us feel safer.” JAN AND RICH GRATTON, CA



“IT’S COMFORTING TO KNOW THAT OUR TWO CHILDREN ARE LIVING IN A HOME PROTECTED WITH FIRE SPRINKLERS.”

RON HAZELTON
HFSC SPOKESPERSON

RECOGNIZED AS HOME IMPROVEMENT EDITOR,
ABC’S GOOD MORNING AMERICA

HOME FIRE SPRINKLER FAQS

If one sprinkler goes off, will they all go off?

No. Sprinklers activate independently; only the sprinkler(s) closest to the fire will activate. In most home fires only one sprinkler is needed to control a fire.

If I burn the toast will the sprinkler activate?

No. Fire sprinklers do not respond to smoke; they respond to the high temperature of a fire – about 135° to 165°F. Smoke caused by cooking or cigars cannot and will not cause a sprinkler to activate.

Will my sprinklers leak?

Sprinkler mishaps are generally less likely and less severe than conventional home plumbing system problems. Choose an experienced residential sprinkler contractor to install your system. Contractors follow national installation standards, which help ensure proper operation.

Is post-fire water damage from sprinklers worse than fire damage would be without sprinklers?

Fire damage and water from high-pressure fire hoses are far greater. A residential sprinkler flows 10-26 gallons of water per minute, for approximately 10 minutes (or less if the fire department turns the water off sooner). An uncontrolled fire will cause far greater fire destruction and smoke damage, requiring a tremendous amount of water from fire department hoses – more than 10 times the water per minute. The property loss in a sprinklered home fire is typically only a fraction of the loss in an unsprinklered home fire.

Won’t the fire department be able to put out the fire and save my things?

From the time the fire starts, it typically takes about 9-12 minutes for the fire department to arrive. In that time, an uncontrolled fire will have grown and spread through the home, causing tremendous smoke and fire damage before the fire department can get there.

Will my sprinklers freeze in the winter?

Freezing is not a problem with proper installation. The national sprinkler installation standard provides guidance for proper installation in cold regions, including appropriate additional insulation and anti-freeze usage.

Since I have smoke alarms, why do I need fire sprinklers?

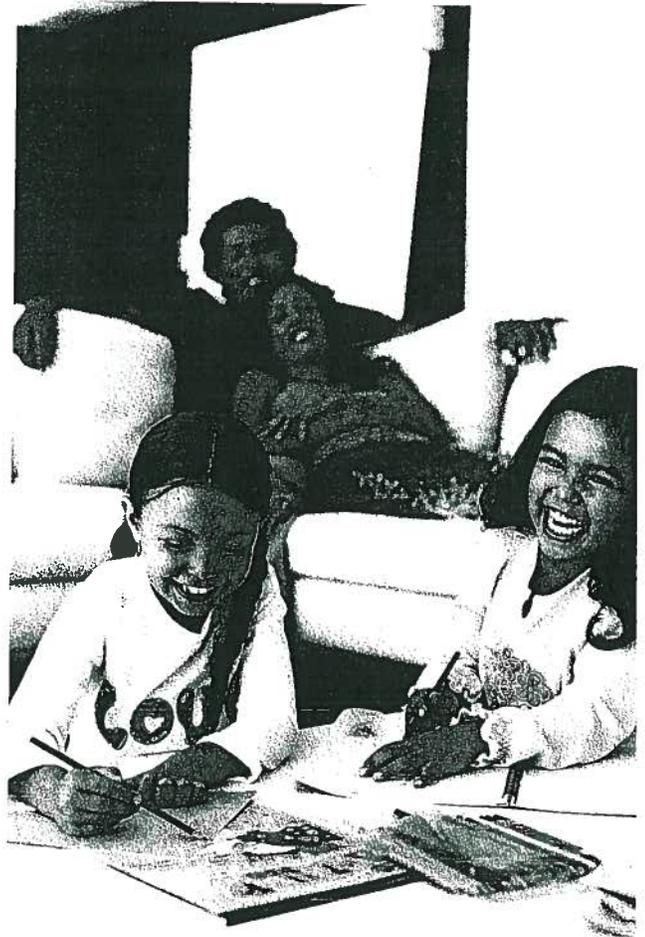
Smoke alarms are essential in every home, but they can only detect a fire. To be effective, residents must be willing and able to respond quickly to the alarm. Only fire sprinklers can detect the fire and automatically control or extinguish it, paving the way for residents to make a safe escape – and also protecting property and valuables. The best protection from fire is having both smoke alarms and a fire sprinkler system.

Are fire sprinklers difficult to maintain?

No. Home maintenance is simple. Regular flow tests should be conducted and homeowners can do these simple tests themselves or have the sprinkler contractor do it every year or so.

FREE RESOURCES FOR HOMEOWNERS

The Home Fire Sprinkler Coalition (HFSC) is a national, nonprofit organization dedicated to educating the public about the value and availability of fire sprinkler protection for homes. HFSC is non-commercial, and works with fire departments, local officials, sprinkler contractors and others to help increase awareness of home fire safety.





Home Fire Sprinkler Coalition
Protect What You Value Most

Click here for the Prince George's County 15-Year History

Fire sprinklers save lives, reduce property loss and help cut insurance premiums.

CONSUMERS BUILDERS FIRE SERVICES REAL ESTATE AGENTS INSURANCE AGENTS LOCAL OFFICIALS



CONSUMERS

Fire sprinklers are economical, reliable and proven to be the best way to protect your family and home from the dangers of fire. If you are considering fire sprinklers for your home, [start here](#). If your home already has sprinklers [start here](#).



BUILDERS

Through the use of trade-ups, developers and builders can achieve reduced construction costs while providing higher value homes for their customers. The **BUILT FOR LIFE** program will help you learn more about fire sprinklers, educate your sales force and assist in marketing fire sprinklers to customers. [Click here to find out more.](#)

For your customers who have fire sprinklers, there's our *Living with Sprinklers* program. [Click here to find out more.](#)



FIRE SERVICE

HFSC has developed a library of information and resources you can use to educate consumers, elected officials, developers and builders about the benefits of fire sprinklers in homes, including our new Public Educator's Kit. We have also developed the *Living with Sprinklers* program for consumers who already have sprinklers. [Click here to find resources.](#)

YOU CAN LEARN MORE ABOUT HOME FIRE SPRINKLER SYSTEMS ON THE NONPROFIT HOME FIRE SPRINKLER COALITION WEB SITE: **HomeFireSprinkler.org**, INCLUDING:

- ANIMATED FIRE SPRINKLER SYSTEM FEATURES
- COMPARISONS OF HOME FIRES WITH SPRINKLER SYSTEMS AND WITHOUT
- CHECKLIST FOR INSTALLING SPRINKLERS IN YOUR HOME
- HOW TO TALK TO YOUR BUILDER ABOUT INSTALLING A FIRE SPRINKLER SYSTEM
- HOW TO CHOOSE A QUALIFIED SPRINKLER CONTRACTOR

THERE IS NO COST TO DOWNLOAD THE MATERIALS FROM HFSC'S WEB SITE.

FOR ADDITIONAL INFORMATION, CONTACT YOUR LOCAL FIRE DEPARTMENT'S PUBLIC EDUCATOR.

NEW ENVIRONMENTAL IMPACT OF AUTOMATIC FIRE SPRINKLERS

WATCH A SHORT VIDEO ABOUT OUR BUILT FOR LIFE FIRE DEPARTMENT PROGRAM

FIND OUT MORE ABOUT OUR BUILT FOR LIFE FIRE DEPARTMENT PROGRAM

Incentives for the Use of Residential Fire Sprinkler Systems in U.S. Communities

Final Report

Prepared by:

Newport Partners LLC



THE
FIRE PROTECTION
RESEARCH FOUNDATION
Research in support of the NFPA mission

FIRE RESEARCH

The Fire Protection Research Foundation
One Batterymarch Park
Quincy, MA, USA 02169-7471
Email: foundation@nfpa.org
<http://www.nfpa.org/foundation>

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October 2010
Rev. 1 – includes revised information from Orange County

FOREWORD

The use of residential fire sprinkler systems in new U.S. homes is becoming increasingly common due to building codes and ordinances, as well as recognition of the life safety benefits which these systems provide. As a mechanism to expand the installation of fire sprinkler systems in homes, the presence of “incentives” in a jurisdiction can potentially have a considerable impact on the building market and the overall cost of a sprinkler system.

To evaluate the nature and impact of incentives, this research identified, characterized, and estimated the approximate value of sprinkler system incentives found in communities across the U.S. In-depth interviews were conducted with 16 communities that each offered one or more incentives to encourage the use of sprinkler systems in new single-family homes. Incentives were categorized as Financial Tradeoffs, On-Site Design Flexibility, and On-Site Design Flexibility, while the beneficiaries of different incentives were the homeowner, builder, or developer. Overall, this research demonstrates that incentives have good potential to increase the use of residential sprinkler systems. The communities included in this study and their collective incentives help to establish a “toolkit” which other jurisdictions can draw from, as they consider strategies to encourage the use of residential sprinklers to improve life safety systems in new homes.

The Research Foundation expresses gratitude to the National Fire Protection Association for its sponsorship of the project, and to the project technical panelists listed on the following page.

The content, opinions and conclusions contained in this report are solely those of the author.

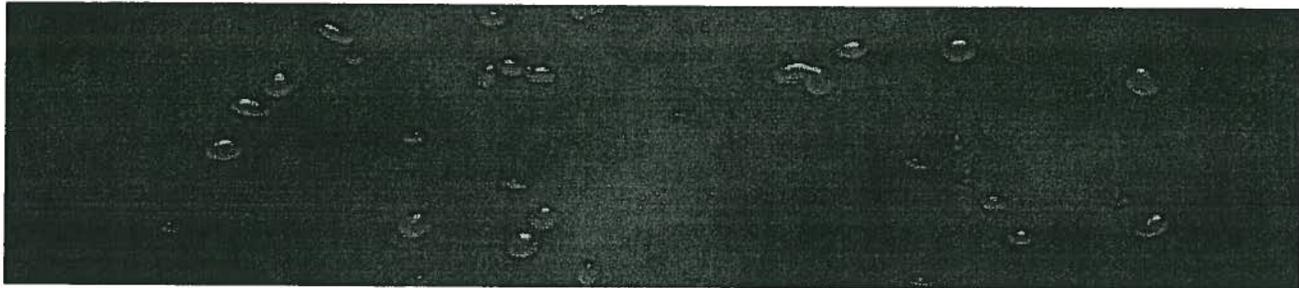
Incentives for the Use of Residential Fire Sprinkler Systems in U.S. Communities

Technical Panel

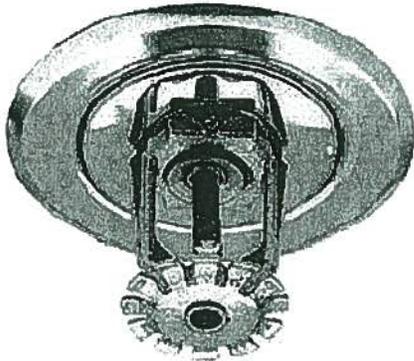
David Butry, National Institute of Standards and Technology
Mike Chapman, Chapman Homes
Keith Covington, Third Coast Design Studio
Paul Emrath, National Association of Home Builders
Jeff Feid, State Farm Insurance
Tony Fleming, Metropolitan Fire Protection
Stephen Forster, Tualatin Valley Fire and Rescue
Dennis Gentzel, U.S. Fire Administration
Tonya Hoover, California State Fire Marshal's Office
Michael Kebles, Las Vegas Valley Water District
James Tidwell, International Code Council
Paul Valentine, Nexus Engineering
Pat Walker, Langley, British Columbia Fire Department
Kenneth Zaccard, Hanover Park Fire Dept, Representing IAFC

Principal Sponsor

National Fire Protection Association



Incentives for the Use of Residential Fire Sprinkler Systems in U.S. Communities



October 2010

Prepared by:
Newport Partners
Davidsonville, MD

Incentives for the Use of Residential Fire Sprinkler Systems in U.S. Communities

October 2010

Prepared for the
Fire Protection Research Foundation

by

Newport Partners LLC



**THE
FIRE PROTECTION
RESEARCH FOUNDATION**
Research in support of the NFPA mission

NP

Newport Partners LLC

Acknowledgements

This research project was performed for the Fire Protection Research Foundation (FPRF) under the direction of Kathleen Almand, by Newport Partners LLC of Davidsonville, MD. The research team also gratefully acknowledges the cooperation of numerous staff from fire departments, building departments, and various government agencies in the 16 jurisdictions covered in the study. The individuals from these organizations offered their knowledge and expertise to help create a unique set of findings on residential fire sprinkler incentives.

This project was also guided by the FPRF's Project Technical Panel, which provided valuable direction and feedback throughout the course of the project. The project authors recognize this group and thank them for their participation and input:

David Butry, National Institute of Standards and Technology

Mike Chapman, Chapman Homes

Keith Covington, Third Coast Design Studio

Paul Emrath, National Association of Home Builders

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Kenneth Zaccard, Hanover Park Fire Dept, Representing IAFC

EXECUTIVE SUMMARY

Many states in the U.S. are currently in the process of adopting model building codes which would require residential fire sprinklers in new townhomes and one- and two-family dwellings. In other states and jurisdictions, codes with mandatory sprinkler provisions may not be adopted, or sprinkler provisions may only apply to larger homes or townhomes, or homes located a substantial distance from water sources considered adequate and reliable by the local fire department. In these areas where sprinkler systems for all new homes may not be required by code or a local ordinance, incentives to encourage the use of residential fire sprinklers have the potential to impact the building market. While the life safety benefits of residential sprinklers are well documented, the ability to offset some of the costs for sprinkler systems can be a key tool in increasing their use in new homes.

The objective of this research study was to identify, characterize, and estimate the approximate value of sprinkler system incentives which are in place in various communities in the United States. A wide variety of incentives, such as builder credits, reduced property taxes, and the ability to use narrower roads, were identified in 16 communities. These communities were selected based on the research team's knowledge of the housing industry, and are not intended to be all-inclusive of jurisdictions with incentives. The incentives within these communities varied in their focus, the magnitude of their financial impact, and in terms of which stakeholder group directly benefited (developer, builder, or homeowner). Incentives are generally categorized as Financial Tradeoffs (e.g., reduced impact fee, reduced property taxes), On-Site Design Flexibility (e.g., reduced fire ratings for building assemblies), and Off-Site Design Flexibility (e.g., spacing fire hydrants further apart, allowing longer dead-end streets).

The financial value of different incentives to developers, builders, and homeowners varied, and some communities offered incentives only targeting one group, like builders, but not the others. Based on the estimated value of individual incentives which were found across the 16 communities, reasonable expectations of what a representative or "typical" incentive value would be in a community which offers an array of incentives were developed. These estimated values, broken out by the group directly receiving the benefit, are presented below.

**Table: Estimated Value of Incentives, assuming a Community offers
"Typical" Incentives Identified in the Study**

Estimated Incentives Value	Estimated \$ Value per Building Lot
Homeowner-Oriented Incentives	\$145*
Builder-Oriented Incentives	\$1,949
Developer-Oriented Incentives	\$1,271**

*Homeowner incentives are annually recurring (e.g. reduced property taxes). This figure is the average value in Year 1.

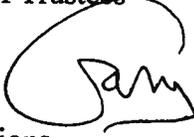
**Does not include value of reduced cul-de-sac widths (\$10,752 per cul-de-sac) or increased dead-end street length.

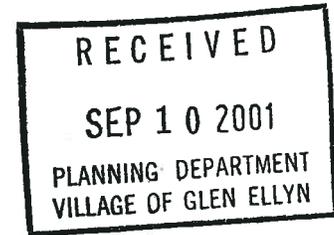
These estimates for the homeowner-oriented and builder-oriented categories are generally averages of a few types of incentives which were identified across different communities, which all benefit the same stakeholder group. In the case of the builder-oriented incentives, three different types of financial incentives which were found in different communities were averaged together, since it would be unlikely to find more than one of these trade-offs offered in a single jurisdiction. A value for a different type of incentive – reduced fire ratings for building assemblies – was then added to this average value because a jurisdiction could reasonably offer this type of incentive along with a financial incentive. In order to keep the estimates of incentive value straightforward, no attempt was made to translate the value of an incentive to an indirect beneficiary.

When comparing the estimated value of builder-oriented incentives to a typical cost of a fire sprinkler system for a new single-family home, the value of the incentives (\$1,949) which a community might reasonably offer offset about one-third of the system cost (\$5,888). This comparison is intended to provide a context for the value of incentives when they are offered in a jurisdiction. It is based upon averages of incentive values where they were identified, and the circumstances in any given community will be unique. It is also possible that builders would derive an indirect benefit from other categories of incentives which could further offset the cost of sprinklers. For instance, a builder may derive some financial benefit from a developer-oriented incentive passed down to the builder, or a homeowner-oriented incentive used as a marketing tool to help sell the home. However, the estimation of such indirect benefits is beyond the scope of this study and not included in the \$1,949 figure or the 33% cost offset.

Collectively, the incentives studied in the 16 communities provide a diverse set of options which can be considered by other jurisdictions that seek to encourage the use of residential sprinklers. Incentives can target development practices, opportunities to alter the construction of the home, or modify fees or taxes in ways which will benefit developers, builders, and/or homeowners. Future research should identify the most influential types of incentives as well as the most impactful stakeholder group to target with incentives. As the body of knowledge and implementation of sprinkler incentives grows, they can become an increasingly effective mechanism to improve life safety in homes.

MEMORANDUM

DATE: September 7, 2001
TO: Honorable President and Board of Trustees
FROM: Gary Webster, Village Manager 
SUBJECT: Fire Sprinklers for New Subdivisions



On August 27, the Village Board approved a series of ordinances which all result in the construction of nine new single-family homes in the new Buena Vista Subdivision. One of the conditions in the approved annexation agreement requires the installation of partial fire sprinklers in each home if the Village Board adopts a policy that future subdivisions require a complete fire sprinkler protection system as a condition of the annexation agreement.

In conjunction with approving the 190 townhomes on Baker Hill in 1996, the Village Board amended our Building Code to expand the requirement of fire sprinkler protection systems to all newly-constructed commercial buildings or multi-family housing units, except for single-family homes. Because of the size and dramatic cost of new single-family houses in Glen Ellyn, the Glen Ellyn Volunteer Fire Company and Village staff strongly recommend actions to expand the requirement for fire sprinkler protection systems into single-family homes. Some of the basic assumptions and reasons for this recommendation include:

1. Fire sprinklers save lives and absolutely minimize property damage in the event of a fire;
2. New residential fire sprinklers are extremely reliable, nearly invisible, and are now easily built with plastic pipe;
3. With the values of new houses in Glen Ellyn, the cost of fire sprinklers even at \$2 per square foot now represents 1% or less of the total purchase cost;
4. Fire sprinklers are an excellent way to protect and support the volunteers in our Fire Company.

Attached are two documents as additional information:

- ◆ Copy of a previous memo to the Village Board dated February 2, 2001;
- ◆ Memo from Village Fire Inspector Chris Clark dated today with some new and excellent information about residential fire sprinklers.

Recommendation – as the next step in our journey towards increased safety for homeowners and our Volunteer Fire Company, it is recommended that the Village Board approve a policy of requiring complete fire protection sprinkler systems in all new single-family houses constructed in new subdivisions under the terms of an annexation agreement.

GW:cja

cc: Scott Raffensparger, Fire Chief, Glen Ellyn Volunteer Fire Company
Richard Dunn, Planning and Development Director
Dale Wilson, Building and Zoning Official

Memorandum

To: Gary Webster, Village Manager

From: Chris Clark

Date: 09/07/01

Re: Residential Fire Sprinklers

Village staff and the Volunteer Fire Company support requirements for installation of fire sprinklers in new homes. The best reason for sprinklers is to insure the safety of the building occupants and emergency responders. Nationally, over 4000 people die in fires each year. Over 80% of these deaths occur in homes. Fire sprinklers truly save lives. They not only alert building occupants of the fire, they control or extinguish the fire. No occupant action is required.

Fire sprinklers are a very simple concept. The system consists of a network of piping connecting a water supply to sprinkler heads covering all areas of the building. Each sprinkler head employs a mechanical heat-sensing element to control water flow. When this element reaches a pre-determined temperature, typically 165 degrees, water begins to flow and will flow until the supply is shut off. Each sprinkler head activates independently based on the temperature at its location. Using this design, the sprinkler closest to the fire will activate and apply water directly to the fire. If the fire continues to grow, additional heads may operate to suppress the fire. The majority of fires (90%) are controlled or extinguished by one sprinkler head and almost all (97%) by two or fewer. For this reason, it is imperative that sprinkler coverage be included in all areas where fires could start.

NEWS WORTHY: Fire sprinklers have been used with great success for over one hundred years. Many buildings in Glen Ellyn are equipped with fire sprinklers and some have experienced fires. These fires were not in the media, because, thanks to sprinklers, they were not newsworthy. These following sprinkler success stories are common, but not well publicized.

Family Shelter Service (baby crib): A fire in an unoccupied baby crib was extinguished by one sprinkler. No injuries, damage was limited to bedding.

College of DuPage (food service): Dishwasher malfunction caused a fire in food service equipment. The fire was extinguished by one sprinkler.

College of DuPage (bookstore): Faulty electrical fixture started a fire in the clothing section. Fire was extinguished by two sprinklers. Sprinkler system prevented further damage to large building.

College of DuPage (office): fire was extinguished by one sprinkler before a security guard's arrival.

College of DuPage (computer lab): The fire was extinguished by two sprinklers.

September 7, 2001

Ramble Tree Apartments (storage room): Fire in a tenant storage room was extinguished by sprinklers.

River Glen Condominiums (stove top fire): Occupant left the apartment with food cooking on the stove. The fire was extinguished by one sprinkler head. Several caged pets were saved from injury.

Willow Lakes Apartments (living room fire): Fire originated in a couch and was extinguished by one sprinkler head.

Willow Lakes Apartments (balcony fire): Fire originated on the 2nd floor outside balcony and traveled up to the 3rd floor and attic. Interior fire was controlled by one sprinkler in the attic. Exterior fire was manually extinguished by firefighters.

M&R Printing (janitor's closet): Flammable liquid fire in janitor's closet. Worker was using a flammable cleaner when vapors reached a water heater pilot. A fire started which melted a light bulb and scorched the ceiling. The fire was extinguished by one sprinkler head and the worker was not injured.

MISCONCEPTIONS: The public has very little knowledge of sprinkler systems. There are many popular myths about sprinkler systems.

Myth #1: Sprinkler systems are accidentally activated by smoke. Fact: Each sprinkler head has its own heat-sensing element. When the element reaches a predetermined temperature (typically 165 degrees), it activates, allowing water to flow.

Myth #2: All sprinklers in the building will activate simultaneously Fact: Only sprinklers exposed to heat will activate. Fact: 97% of fires are controlled by one or two sprinklers.

Myth #3: Sprinklers cause more damage from water than a fire would. Fact: By controlling the fire in an early stage, fire damage is greatly reduced. Water damage from sprinklers is also reduced. Each sprinkler head flows as little as 7-10 gallons per minute compared to 150-200 gallons per minute for each fire hose.

Myth # 4: Sprinklers frequently activate by accident causing needless water damage. Fact: Sprinkler heads meet strict manufacturing standards and the probability of accidental discharge is 1 in 14 million. Sprinkler piping is not likely to leak anymore than the domestic plumbing system in a building.

Myth #5: Sprinklers are expensive. Fact: Sprinkler systems are affordable protection. Sprinkler systems typically add 1%-2% to the cost of building a new home. Ten Glen Ellyn homes were examined and cost estimates were produced. For these homes averaging 3000 square feet of living space, a sprinkler system could have been installed for an average of \$5990.

Myth #6: Smoke detectors provide sufficient protection. Fact: Smoke detectors do nothing to stop fires. They have the ability to alert occupants, but human intervention is required to escape. Fire sprinklers and smoke detectors increase the chances of surviving a fire by 80%.

Myth #7: Fires rarely occur in new homes. Fact: Fire occurrence statistics show no correlation between numbers of fire and age of structures. Most fires are the result of the building contents and occupants' actions. In fact, many features of new homes such as improved insulating actually contribute to more rapid heat and fire build-up.

September 7, 2001

IMPROVEMENTS: Since 1996, village building codes require all new buildings except detached single family homes to be equipped throughout with fire sprinkler protection. Since that time, over 250 sprinkler systems have been installed. The result is an increase in community tax base without a corresponding increase in fire hazard.

The next logical step is to require that single family homes be as fire safe as commercial and multifamily buildings are now. Statistics show that the majority of fire incidents and fire casualties occur in single family homes. In order to improve the level of fire safety, single family homes must be addressed. To date, our community has over 400 residential units equipped with fire sprinkler protection. Baker Hill town homes make up 190 of these units. The developer of Baker Hill used the required sprinkler system as a selling point. Since its construction, only two service calls consisting of minor leak repairs were required at Baker Hill.

Residential sprinkler systems are proven to save lives and reduce public costs for fire protection. They also save property and irreplaceable possessions. This proposal is not unique to Glen Ellyn. Seven other communities in our area have instituted requirements for fire sprinklers in single family homes. These include Long Grove, Barrington, Lake Barrington, Park Ridge, Wheeling, Clarendon Hills, West Dundee. Glen Ellyn is among six communities considering such legislation.

Cc: Richard Dunn
Dale Wilson
Scott Raffensparger

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524 Pennsylvania Avenue
P.O. Box 460
Glen Ellyn, Illinois 60138-0460

Scott Raffensparger, Chief

(630) 469-5265
FAX (630) 469-1762

www.GlenEllynFire.com

August 22, 2008

President Vicki Hase and Honorable Board of Trustees
Village of Glen Ellyn
535 Duane St.
Glen Ellyn, IL 60137

Dear President Hase,

The Glen Ellyn Volunteer Fire Company enthusiastically renews its support for the residential fire sprinkler ordinance passed by the Village of Glen Ellyn in 2002. The Volunteer Fire Company is composed of sixty one members who reside within one mile of our fire protection area. They responded to 1,523 calls for service in 2007. Volunteers are committed to this service and are frequently called upon to take significant risks to their own personal safety for the benefit of the community. Since 1907, our primary goal has been to protect the village and its residents from fire. The Village's support through the residential fire sprinkler ordinance is an integral part of helping us achieve this goal, both now, and in the future.

Fires result in injuries and deaths to more than 20,000 people each year in the United States. More than 80% of fire deaths occur in residences. Additionally, more than 100 firefighters are killed each year despite advancement in technology and safety practices. These cases have the potential of enormous costs to communities.

Glen Ellyn officials had the foresight to safeguard our community by requiring all new homes to be equipped with fire sprinklers since 2002. At that time, only nine other Suburban Chicago communities had such a requirement. Since then, 37 other communities have followed suit bringing the total to 48.

Fire sprinklers are a significant benefit to the Volunteer Fire Company, because they help us achieve our goal of protecting the Village from fire. They control fires before heat and smoke conditions become deadly. They also help reduce the risk to residents and our firefighters by preventing rapid fire growth and flashover. Tenable conditions are maintained to allow residents to successfully escape relieving firefighters of the dangerous task of rescue.

Celebrating 100 Years¹ - October 11, 2007

The Village of Glen Ellyn has never experienced a significant fire in a building with sprinkler protection. There have been a number of fires that were controlled by sprinklers that had the potential of being significant. For example, there was a residential garage fire in the Baker Hill subdivision which was extinguished by a single sprinkler head. Without sprinkler protection, this fire could have significantly damaged this four unit townhouse. An overnight fire in a closet occurred at Binney's Beverage Depot, but was extinguished by a single sprinkler head. This fire had the potential of significant impact to the community through loss of revenue and jobs.

Glen Ellyn residents enjoy significantly lower fire protection costs than other area residents due to the commitment of our dedicated volunteers. Fire sprinklers are an essential element of cost effective public fire protection in Glen Ellyn now and in the future. Many communities have succeeded in providing less costly public fire protection through the use of residential sprinklers, notably Scottsdale Arizona.

In closing we express our gratitude to the Village of Glen Ellyn for its commitment to fire safety through residential sprinklers. We believe that the ordinance is a great benefit to the community and will help keep our residents and firefighters safer for many years to come.

Respectfully,



Scott Raffensparger
Fire Chief

Board Workshop
1/17/11
5

MEMORANDUM

DATE: January 13, 2011

TO: Terry Burghard, Interim Village Manager

FROM: Larry Noller, Interim Finance Director 

SUBJECT: General Fund Budget Update

Preliminary General Fund Budget Reviews

Over the course of the past two weeks we have been meeting with the various departments to review preliminary budget requests for FY11/12. The meetings to date have focused on the General Fund which is the primary operating fund of the Village. While the General Fund is only one of our 14 funds, it does provide most of the basic public services associated with traditional municipal government operations (e.g. police, fire, public works, planning, and fiscal and administrative services). The purpose of this memo is to provide a brief recap of the General Fund budget status based on our preliminary reviews.

For the current FY10/11 fiscal year the General Fund is very close to our adopted budget projections on both the revenue and expenditure sides. Revenues are currently estimated to be about \$150,000 lower than budgeted. Fortunately, expenditures are tracking about 3% below budget and based on the FY10/11 estimates from the departments, should be enough to offset the revenue shortfall.

For FY11/12, I am currently estimating a 3% increase in General Fund revenues. Following our initial budget meetings, General Fund expenditures for FY11/12 are projected to rise about 7%, with the current shortfall approximately \$900,000. This is slightly lower than the initial projected shortfall at the start of the FY10/11 budget process and significantly lower than the \$2.6 million gap we had to close for the FY09/10 budget. As always, our target remains to finish with a balanced budget.

Unfortunately, to close our current budget gap we will once again be looking at eliminating many much needed projects as well as deferring any funding to our Facilities Maintenance Reserve Fund. We will be working through these difficult decisions over the next several weeks as we continue our budget meetings.

Merging the Special Programs Fund into the General Fund

Another item that has been discussed in depth as part of our General Fund budget meetings has been the merging of our Special Programs Fund into the General Fund. The Finance Commission provided this recommendation following a review of the Special Programs Fund budget process last year. The intent of merging the two funds is to eliminate inefficiencies

within the budget process and allow the Village Board to focus additional time on the rest of the Village budget.

This year, we will review the General Fund budget at our first budget workshop in March and review the remaining funds at the following workshop with the possibility of an additional workshop if needed. We are eliminating the workshop at which community groups would come to request funding from the Village Board as part of the budget process. Instead, Village Management will recommend an amount of funding to set aside for community grants for approval by the Village Board as part of the budget. At that point, a grant application process will begin in early May, with funds awarded later in the summer. I have attached a draft outline of the process as prepared by the Village Manager's office earlier this year. We plan to communicate this process to the various groups soon.

All of the revenues and expenditures presently within the Special Programs Fund will now be included within the General Fund budget. The FY11/12 General Fund budget will be increased by approximately \$800,000 on both the revenue and the expenditure sides. For this transition year, we are ensuring that all the newly incorporated expenditures are balanced with the additional revenue that was formerly dedicated to the Special Programs Fund. The General Fund budget increases I noted early in this memo do not include the former Special Programs Fund revenues or expenditures. We will be including calculations as part of the budget schedules which will allow for an "apples to apples" comparison of the General Fund with previous fiscal years by removing the effect of the new Special Programs Fund revenues and expenditures.

Next Steps

I have attached a copy of the current budget schedule. We will be continuing our budget meetings over the next few weeks with a final draft budget due for distribution at the end of February. We will also have a review of the third quarter financial report at the February 21 Village Board workshop.

GLEN ELLYN COMMUNITY GRANT PROGRAM

The Village of Glen Ellyn seeks to enhance the quality of life of its residents by providing funding opportunities for selected not-for-profit grant requests. Grants may support a range of programs related to education, social services, physical and mental health, safe and positive living environments, environmental and natural resources, community events or the arts.

Eligibility

To be eligible, an organization must provide direct services to residents of the Village of Glen Ellyn. Grants will only be awarded to tax-exempt organizations classified as 501 (c) (3) charities by the Internal Revenue Service (IRS).

Grant Application Process

The Village adopts its budget annually in the month of April. During the budget approval process the Village Board approves the maximum dollar amount to be allocated for distribution in the form of grant funds.

Following budget adoption the Village will announce the amount of funding available and invite grant submittals. The deadline for receipt of requests is May 31. Grant awards will be announced prior to July 31.

Requests shall be submitted by the deadline date to:

Office of the Village Manager
535 Duane Street
Glen Ellyn, IL 60137

All grant applications will be reviewed by a committee appointed by the Village Manager. The review committee shall make a funding recommendation to the Village Board to identify those organizations eligible to receive funding.

Format of Funding Requests

Applicants shall provide the following information with the request for funding:

Summary of Request. Provide a brief summary of the grant request that includes a general overview of the request; the name, address, telephone number and email address of the requesting organization; the person to contact regarding the proposals; and the dollar amount requested. This summary may be in the form of a cover letter.

Goals and Objective. State the goals and objectives of the request for funding. Identify the problems or needs that will be addressed if funding is received. Identify the population that will benefit from this project or program.

Implementation. Summarize the plans and period for implementation if this project or program was funded.

Evaluation. Identify the organization's internal criteria used to evaluate the success of the proposed project or program.

Financial Information. Provide a copy of the following financial information:

- a. Organization's most recent budget including revenues and expenses.
- b. Organization's most recent audit. If audited financial statements are not available, the unaudited income and expense statement and balance sheets must be provided.
- c. Copy of the applicant's tax exemption letter from the IRS.

Grant Review Criteria

The Village of Glen Ellyn will place priority consideration upon proposals that:

- Meet a significant community need.
- Offer a definable solution to a known community need.
- Represent an unduplicated opportunity.

- Advance innovative, proven and replicable solutions to issues facing Glen Ellyn.
- Propose to generate matching funds in order to leverage additional financial support.

VILLAGE OF GLEN ELLYN
FY11/12 BUDGET PREPARATION CALENDAR

November 19, 2010	Preliminary revenue projections to Village Manager (General Fund).
November 30, 2010	Distribution of preliminary budget information and document templates to department managers.
December 30, 2010	Departmental budget requests due to Finance (<u>with support and footnotes</u>).
January 3 thru January 21, 2011	Preliminary Departmental / Manager budget review meetings.
January 17, 2011	Village Board Workshop -General Fund Update
January 24 thru February 11, 2011	Additional Departmental meetings as needed
January 24, 2011	Departmental narratives due.
February 21, 2011	Village Board Workshop - Review Third Quarter Financial Report.
February 25, 2011 (Friday)	Distribution of draft budget
March 7, 2011 (1st Monday)	Special Village Board Workshop at 6:00 p.m. - General Fund Review
March 21, 2011 (3rd Monday)	Early Village Board Workshop at 6:00 p.m. - All Other Funds Review
March 28, 2011 (4th Monday)	Final Budget Review Workshop (only if needed).
April 11, 2011 (2nd Monday)	Village Board Meeting - Public hearing on proposed FY11/12 Budget. with subsequent budget adoption.
April 25, 2011 (4th Monday)	Alternate Date for budget adoption (if needed).
May 1, 2011	Fiscal Year 2011/12 begins.