



# Understanding Installation and Costs of the Residential Fire Sprinkler Market

# Background and Objectives



The need for fire sprinkler systems in residential construction has been under discussion for some time. A key element of the discussion involves an analysis of the actual impact that fire sprinklers have on the construction process.

The purpose of this study was to obtain data directly from home builders concerning the installation of residential fire sprinkler systems. Some topics of interest included:

- Installation and design characteristics
- Permitting
- Costs
- Indirect impacts on the construction process

# Data Collection

Data was collected via an online survey of builders. An email invitation was sent to both NAHB members as well as the NAHB Research Center's Online Builder Panel in April of 2007.

The NAHB Research Center maintains its builder panel solely for the purpose of market research. The panel contains about 4,000 participants and is representative of the U.S. population of builders.

Participation criteria required respondents to have installed at least 1 residential fire sprinkler system in the past 3 years. Given the small percentage of homes with sprinkler systems, a relatively small group of builders is experienced in sprinkler installation. 126 builders took the survey, and of those builders 102 had definitive knowledge of sprinkler pricing—the data from those builders is used in this report.



## Data Collection (continued)

Survey results were weighted to more accurately reflect market conditions. Weighting was based on number of homes built by each respondent. In other words, responses from builders are reflected in proportion to the number of units they construct-- responses from larger builders are more heavily reflected than responses from smaller builders.



# Detailed Findings



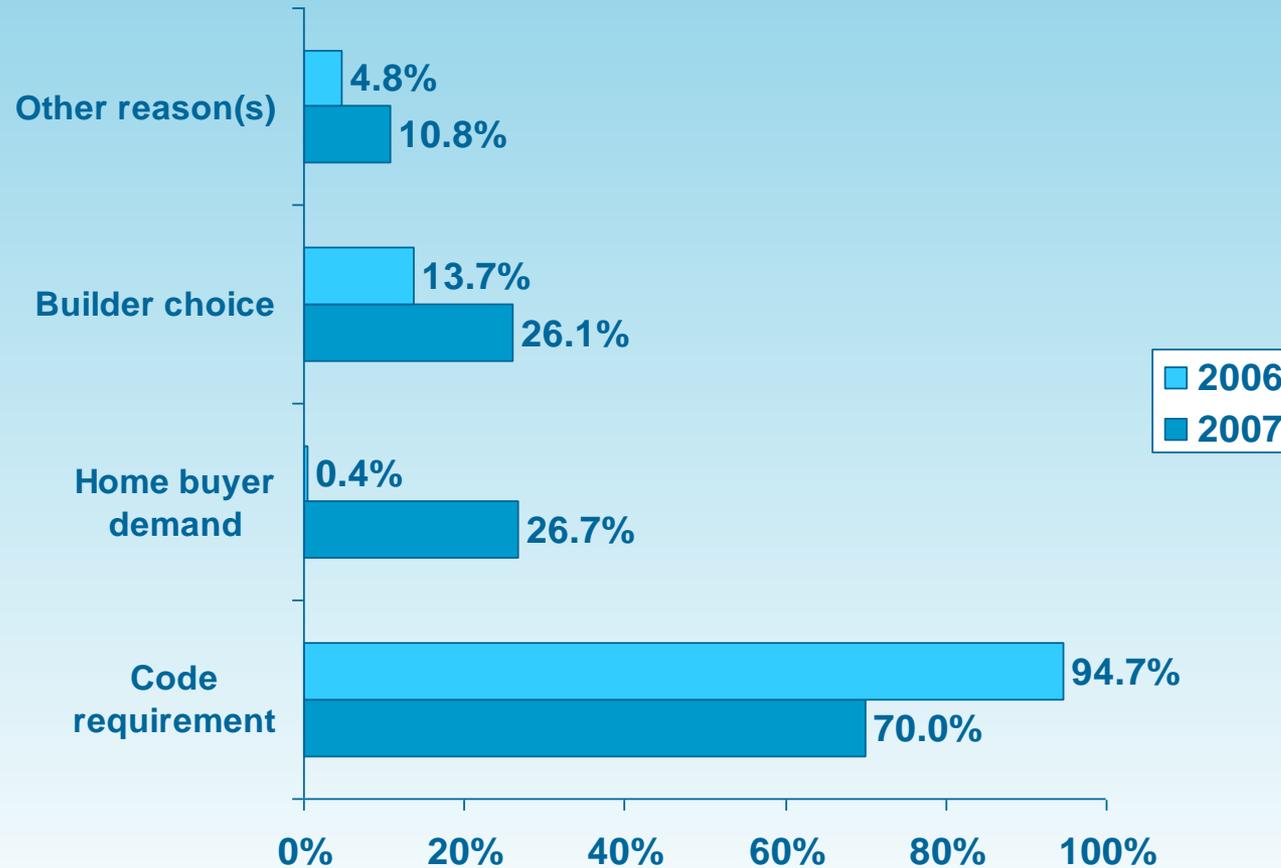
*The results of the 2007 survey were obtained primarily from the NAHB Research Center Builder Panel. These results are compared with similar data obtained last year (2006) based on builder responses from a general survey conducted of builders in areas of the country where some form of a fire sprinkler mandate has been implemented.*

*The questions indicated on the following slides paraphrase the actual question posed to the respondent.*

*Dedicated to improving home building since 1964.*

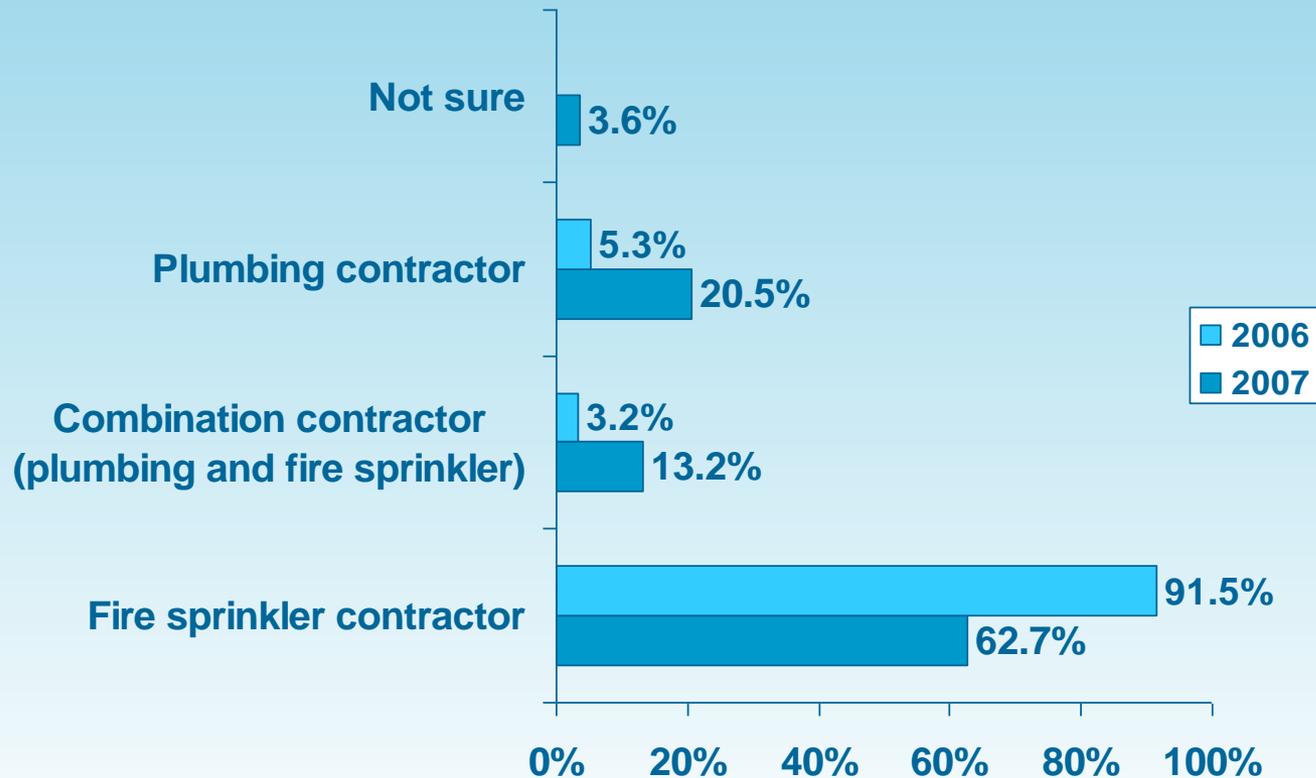
# Why did your company install fire sprinkler systems in its new homes?

## Reasons for Installation



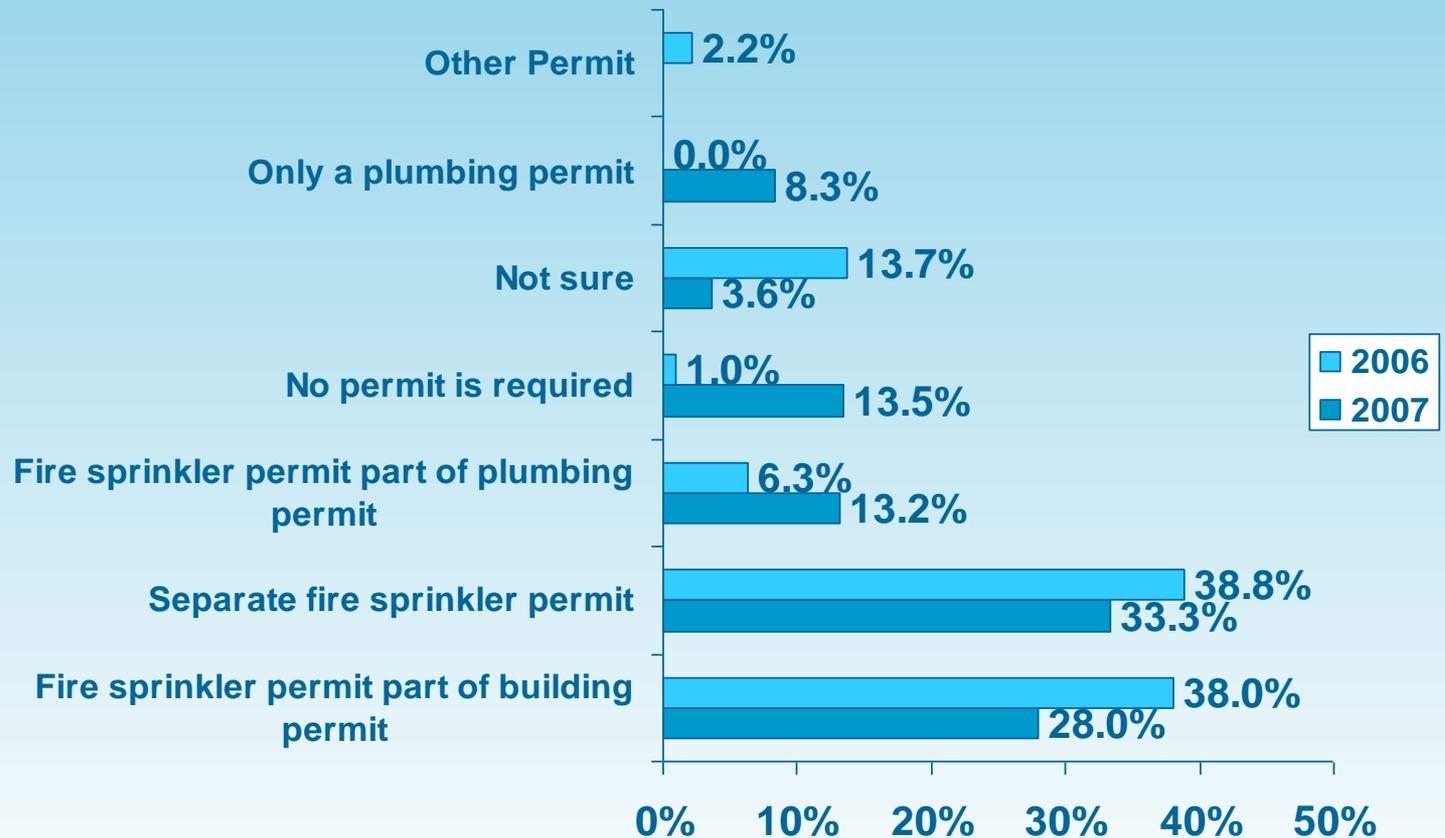
Of the homes your company built what percent of fire sprinkler systems were installed by the following?

## System Installer



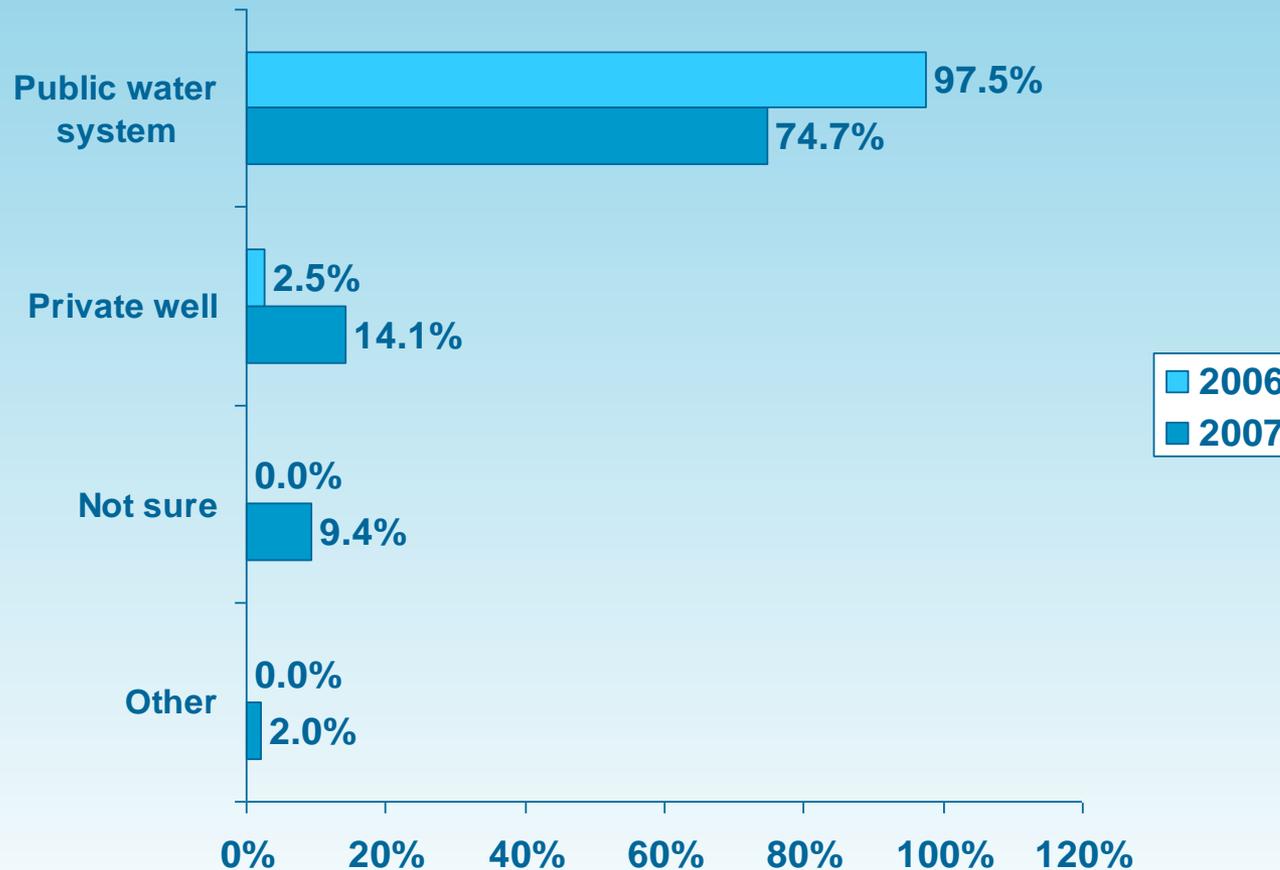
What type of fire sprinkler permit is typically required when installing fire sprinkler systems in your new homes?

## Type of Fire Sprinkler Permit



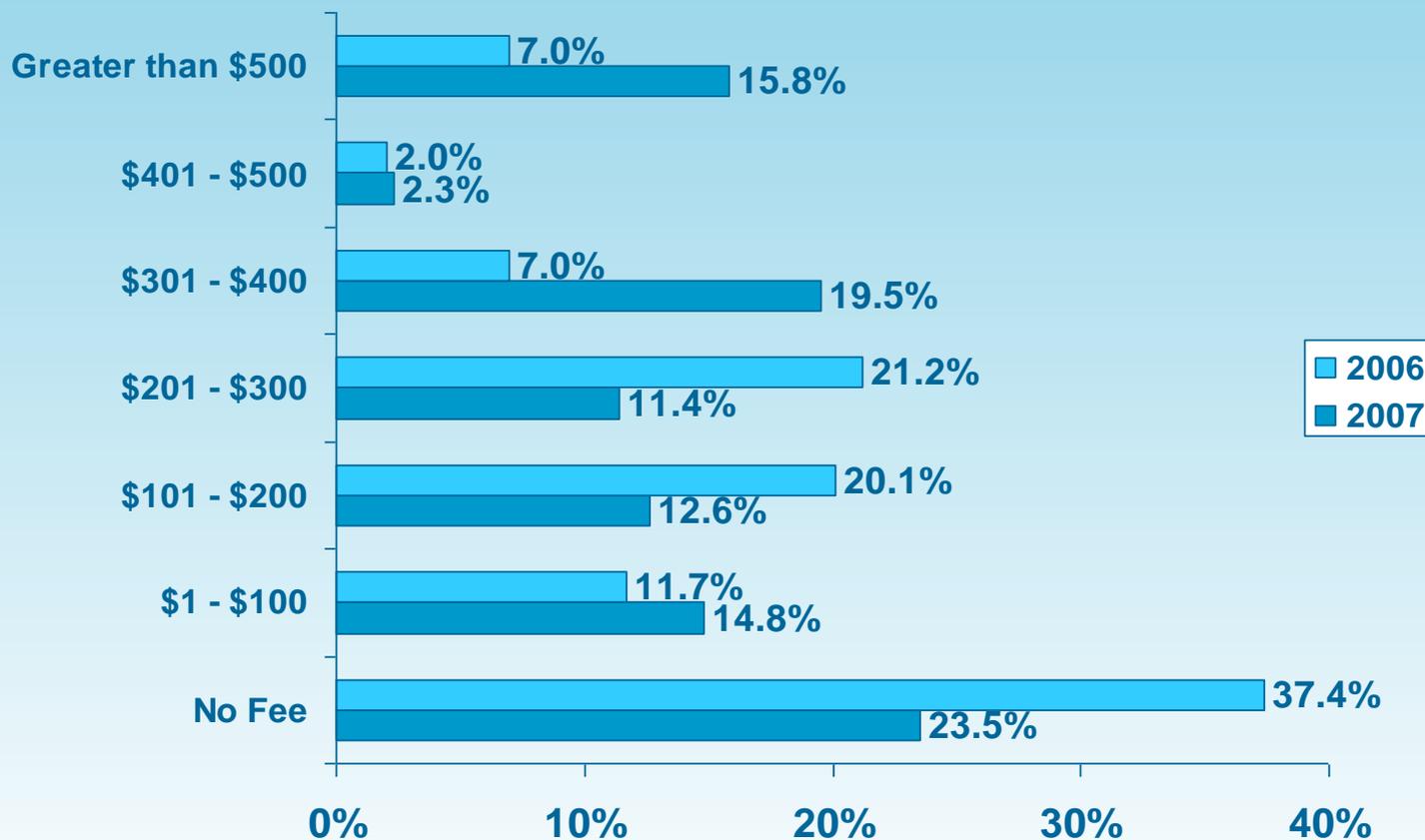
What percent of the homes your company built with fire sprinkler systems used the following as their water supply?

## Water Supply



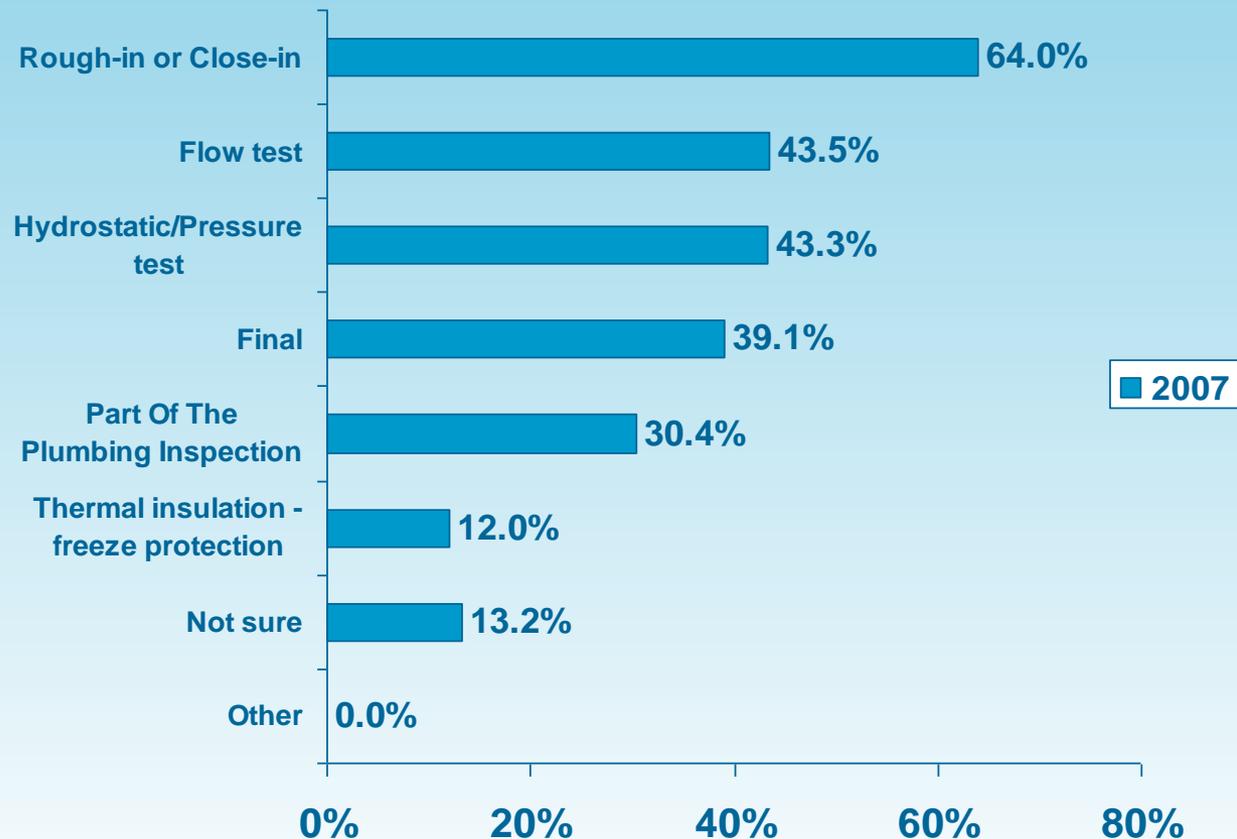
Typically, how much is a fire sprinkler permit fee

## Fire Sprinkler Permit Fee



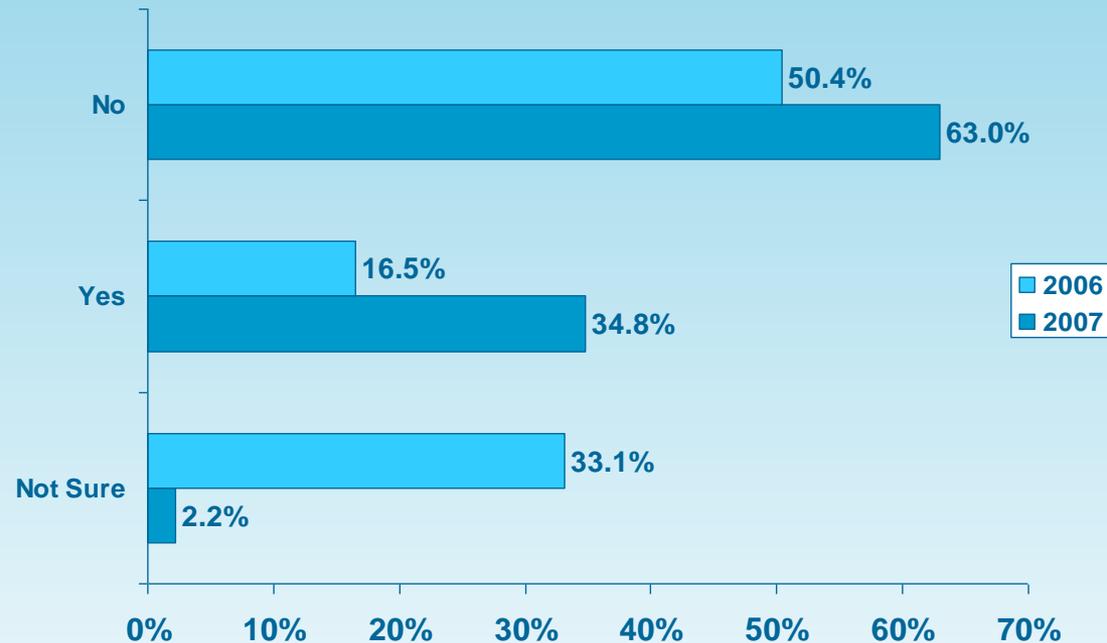
In jurisdictions where you build most of your homes with fire sprinkler systems, what type of fire sprinkler inspections are required?

## Fire Sprinkler Inspections



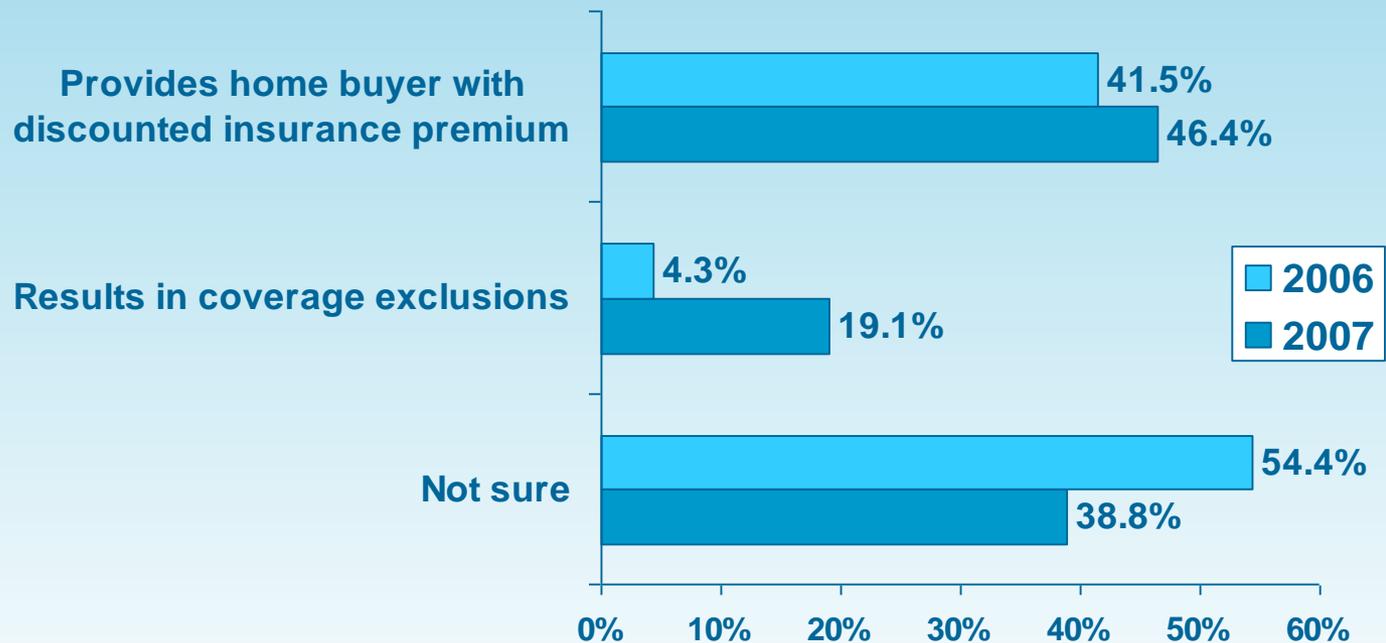
Have you ever installed a freeze protected (glycol) fire sprinkler system?

## Installed Freeze Protected (Glycol) Fire Sprinkler System



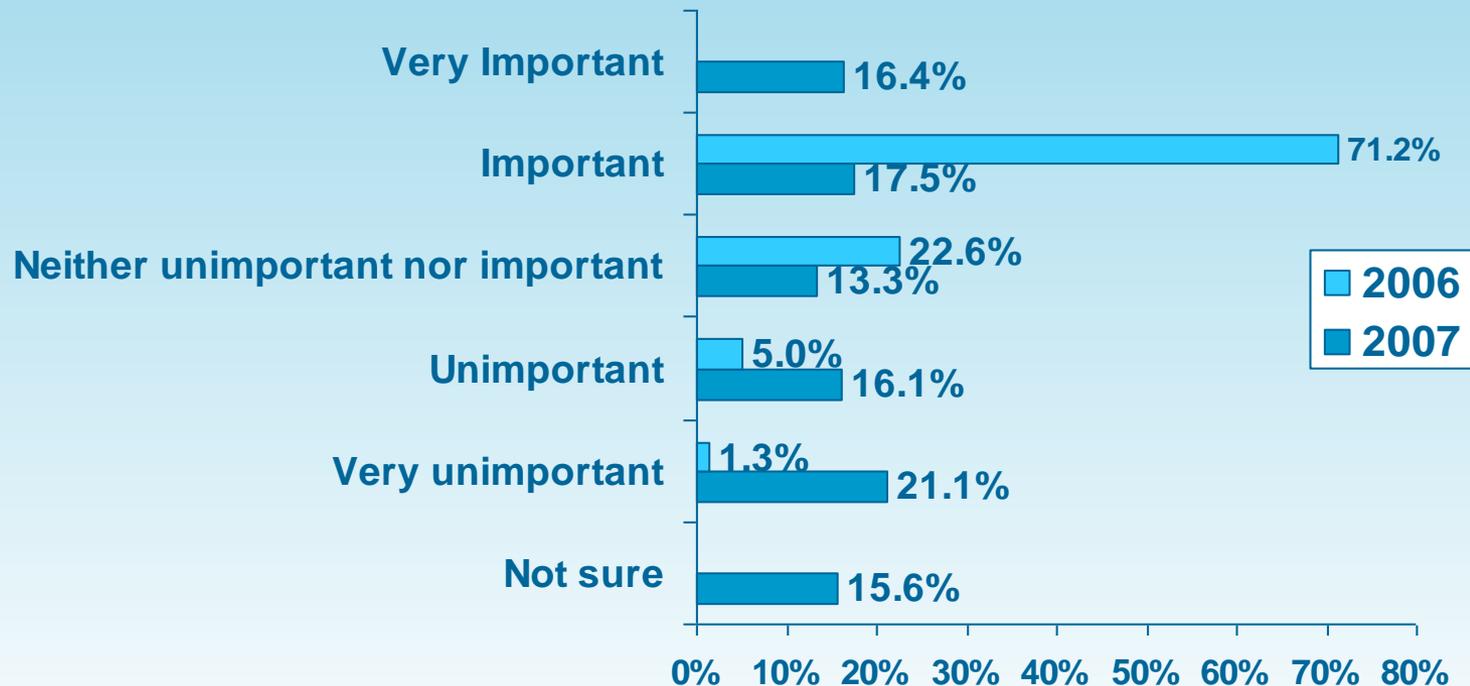
What effect does the installation of fire sprinkler systems in your new homes typically have on the homebuyers homeowner insurance

## Homeowner Insurance Impact



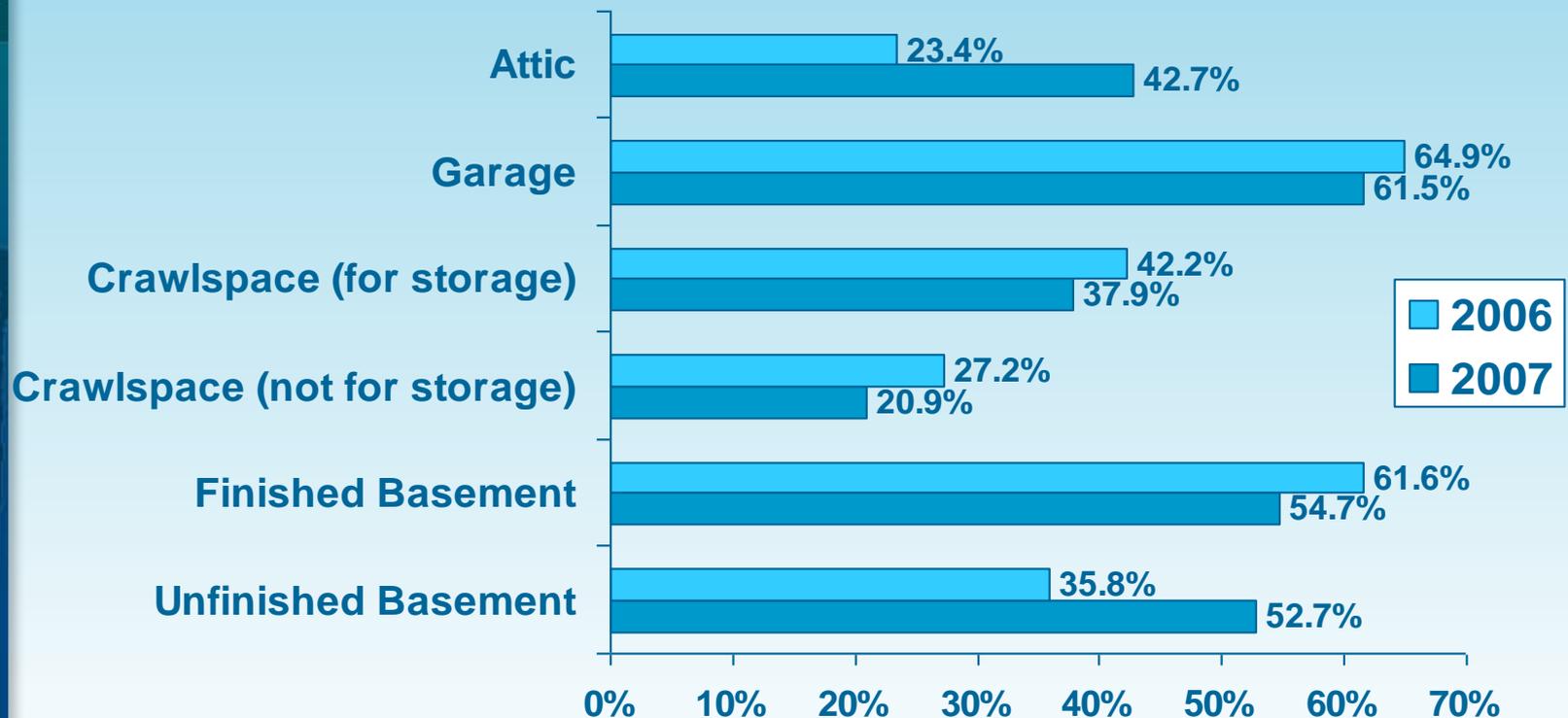
In your opinion, how important is the discounted insurance premium to the home buyer

## Importance of Discounted Insurance Premium to Home Buyer



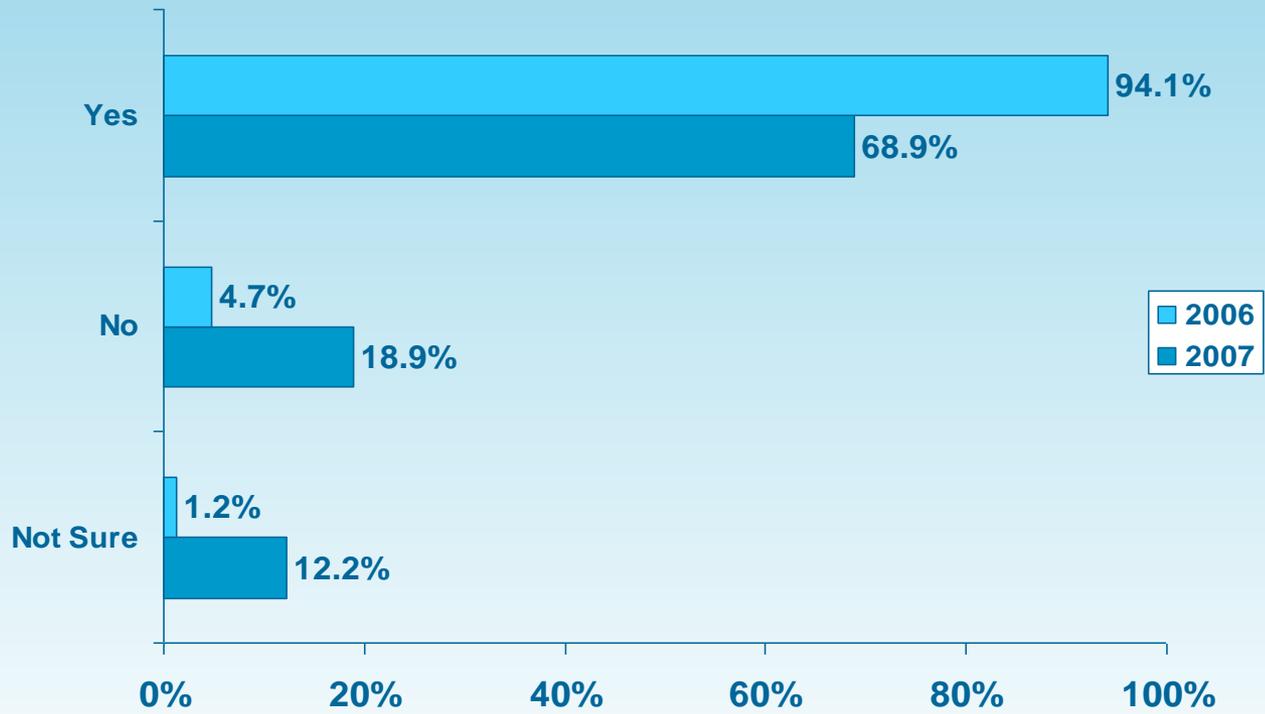
Of the homes you build with fire sprinkler systems, are sprinklers typically installed in the following locations

## Sprinkler Location



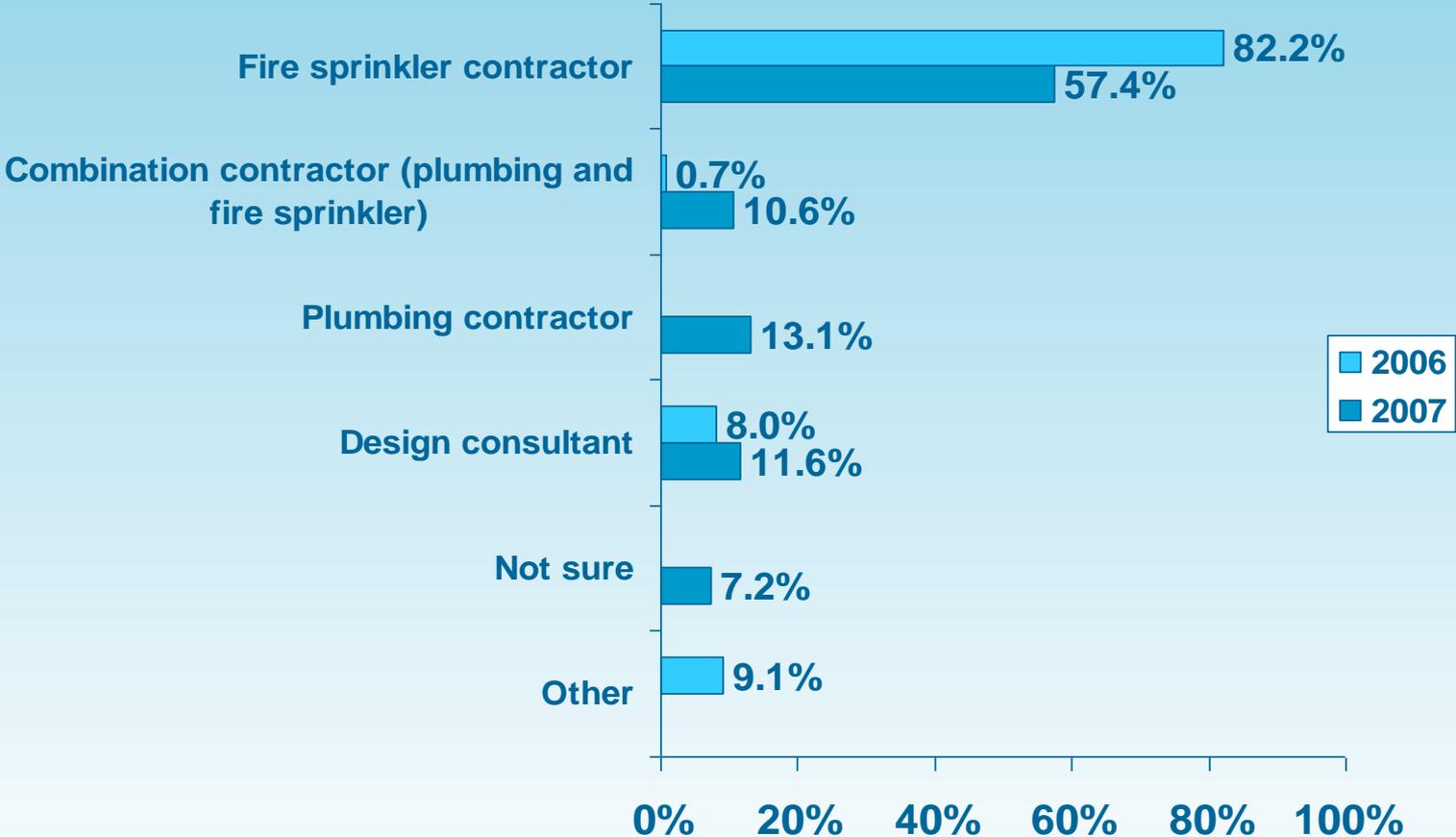
In the jurisdiction where you build most of your homes with fire sprinkler systems, is a fire sprinkler system design and/or plan required?

## Fire Sprinkler System Design/Plan



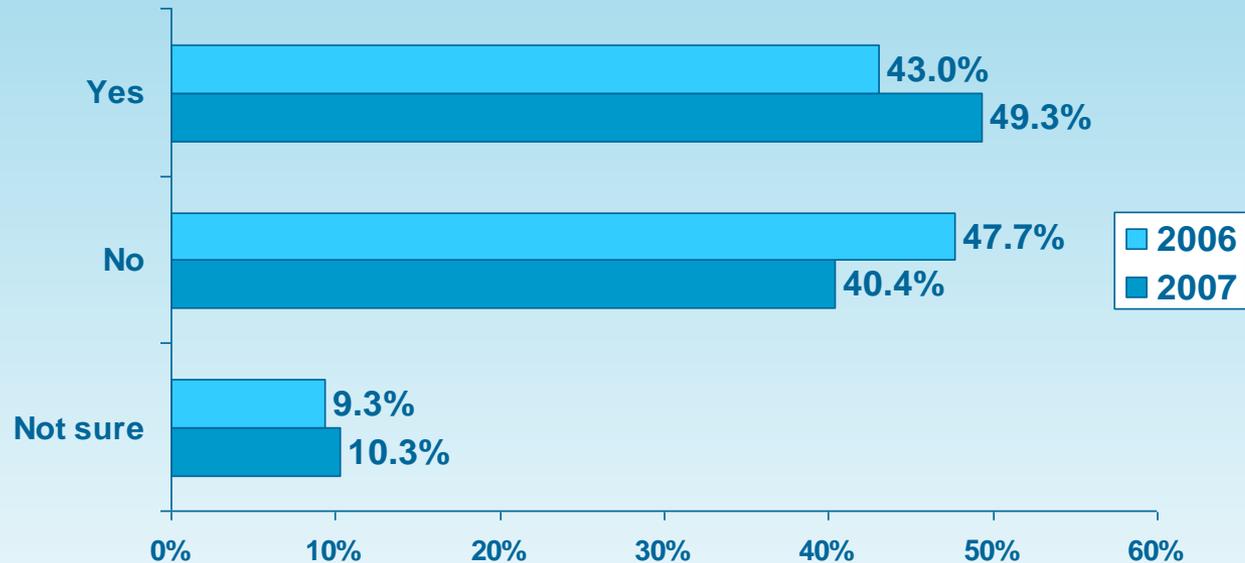
What percent of your fire sprinkler systems were designed by the following

## Fire Sprinkler System Designed By



Is there a separate design fee for the fire sprinkler system

## Fire Sprinkler System Design Fee

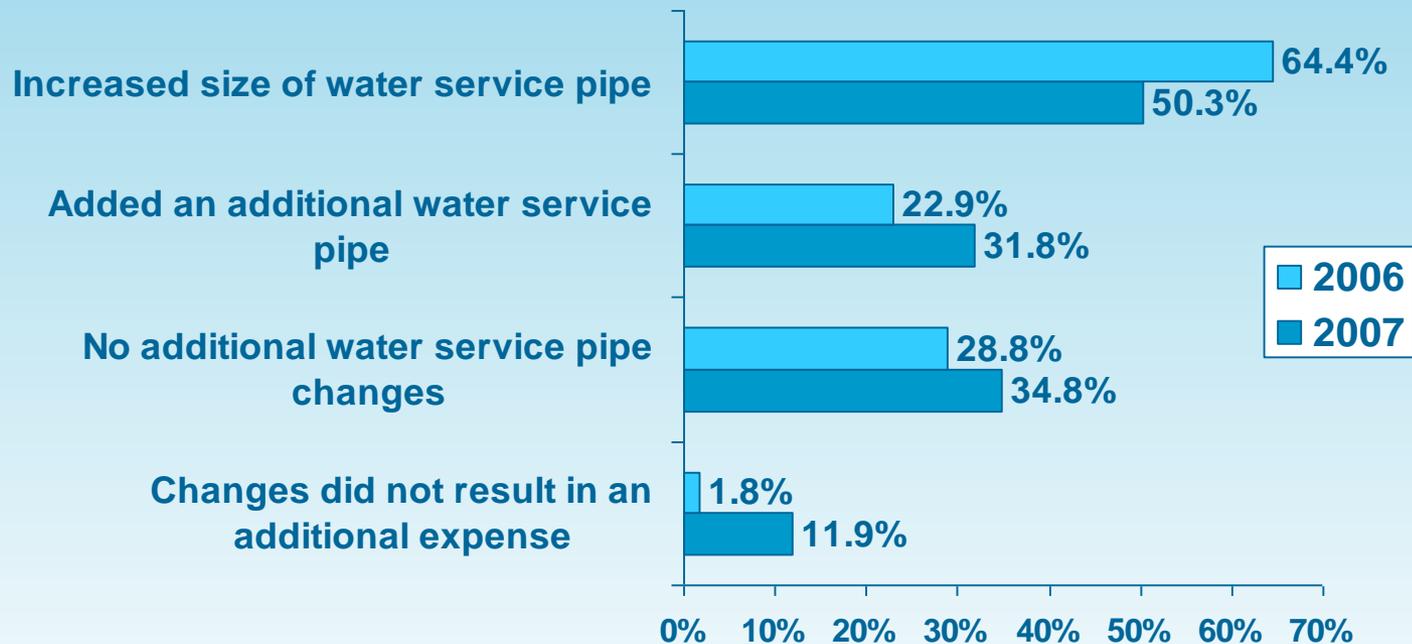


# Fire Sprinkler System Design Fee



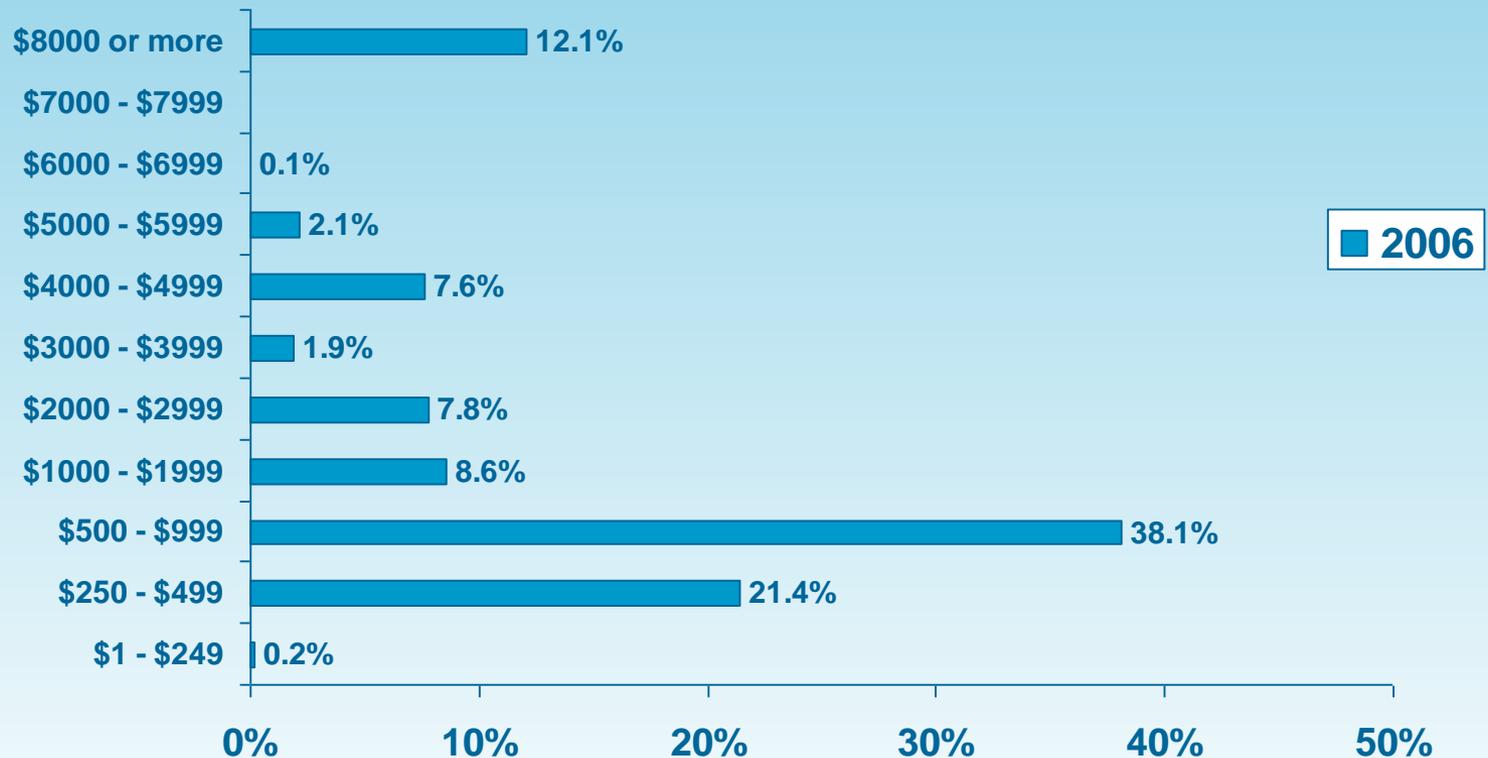
Of the homes you built with fire sprinkler systems, which of the following water service pipe changes resulted in an additional expense

## Water Service Pipe Change Expense



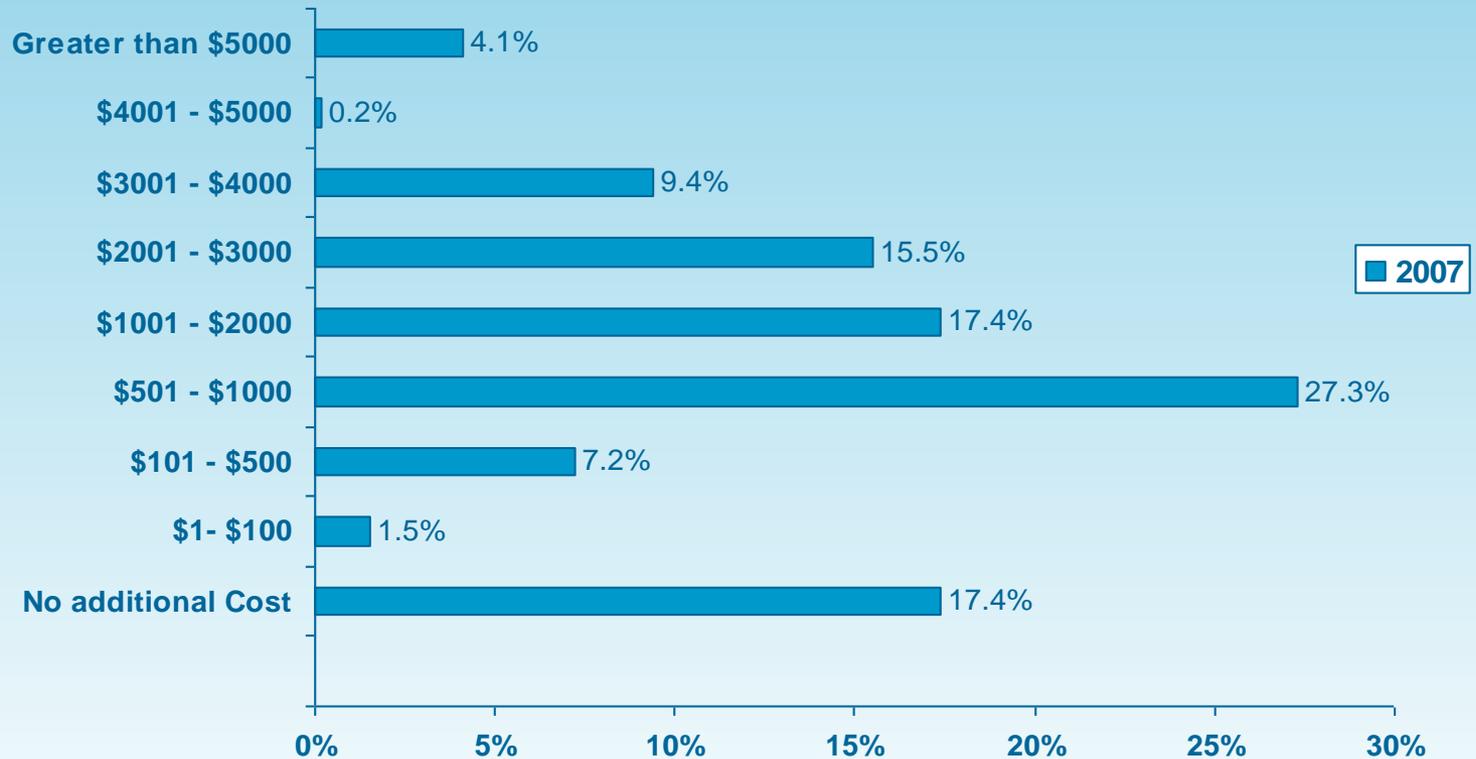
How much is the additional expense for the water service pipe changes

## Water Service Pipe Change Expense



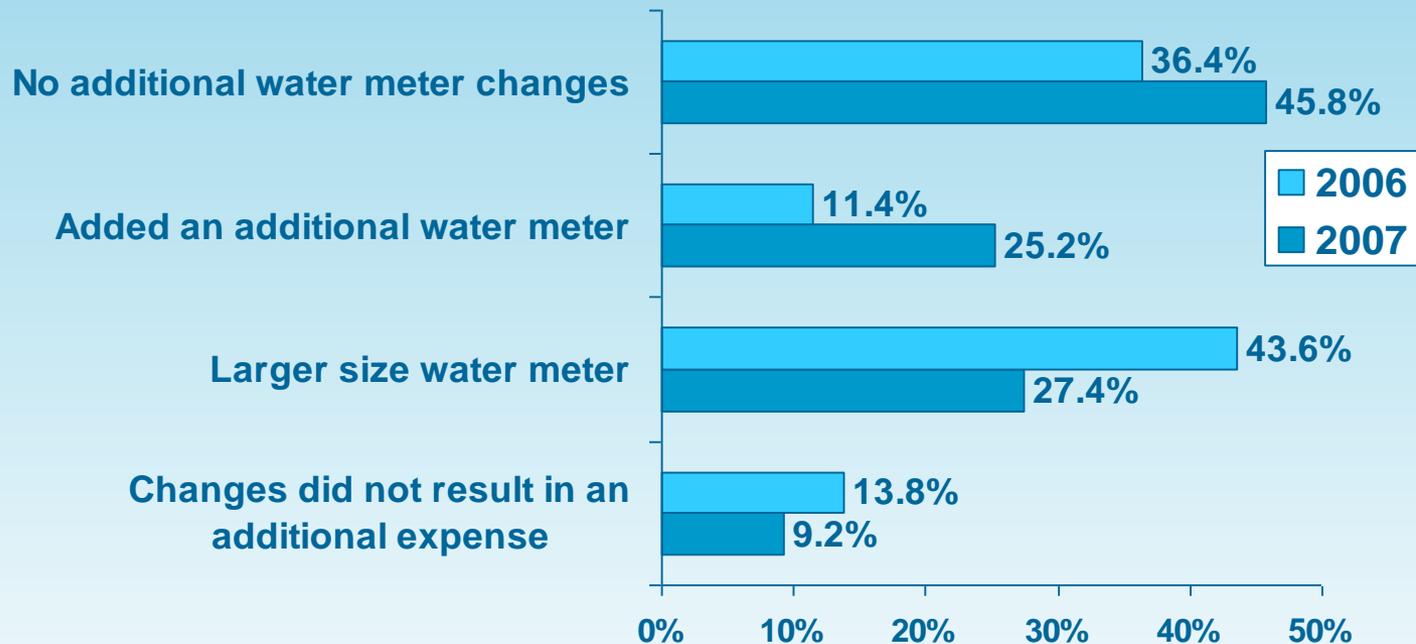
# How much is the additional expense for the water service pipe changes

## Water Service Pipe Change Expense



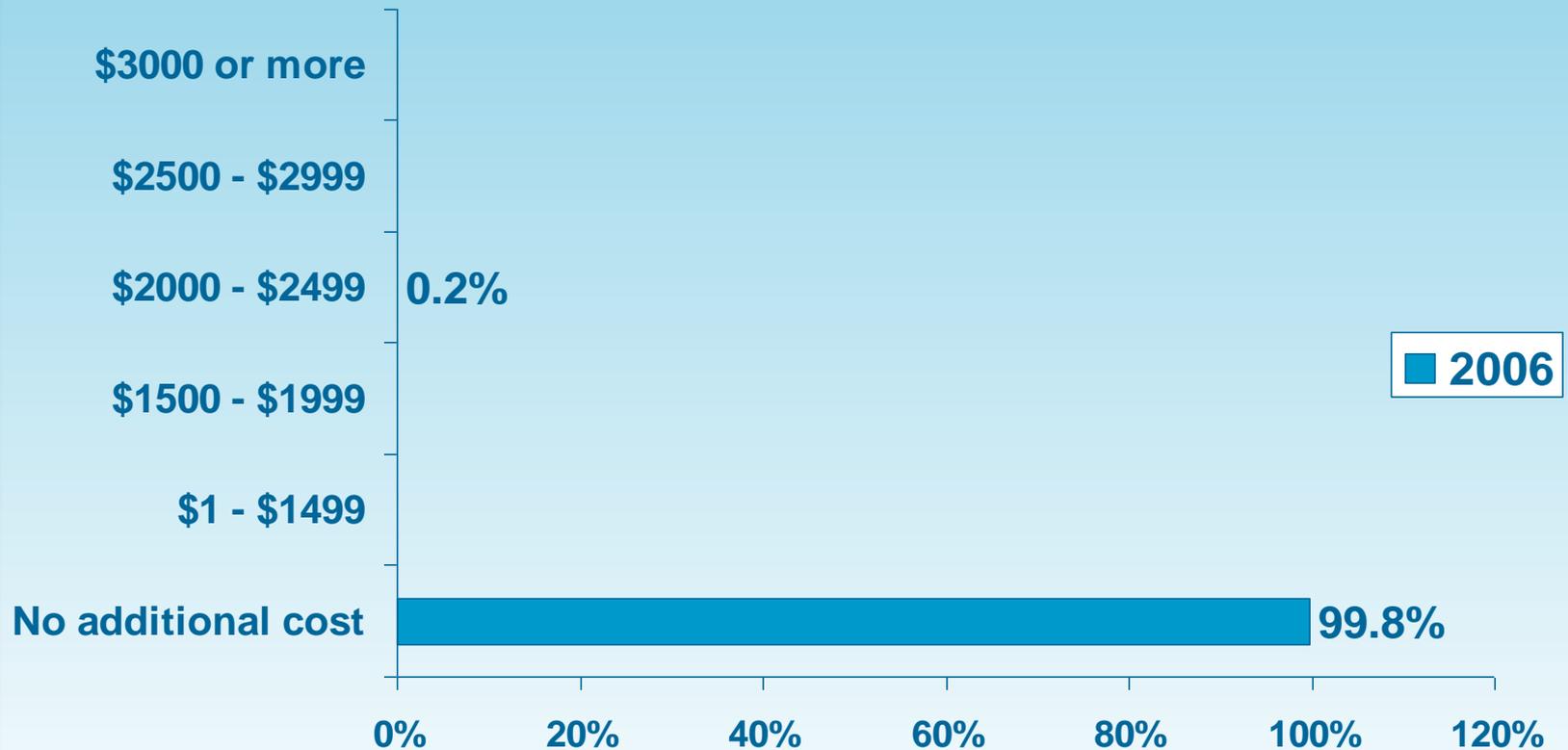
Of the homes you built with fire sprinkler systems, which of the following water meter changes resulted in an additional cost

## Water Meter Additional Expense

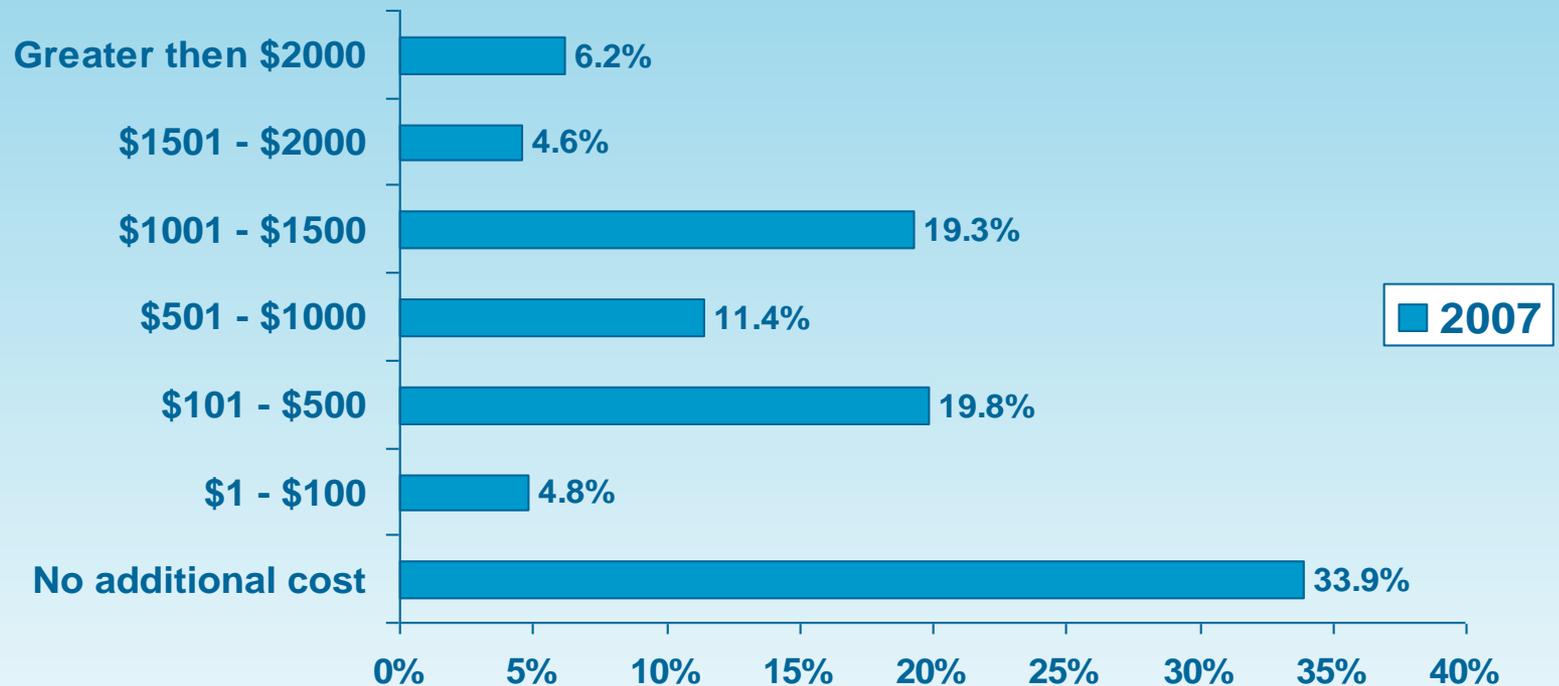


How much is the additional expense for the water meter?

## Water Meter Additional Expense



## Water Meter Additional Expense



When installing sprinklers, which of the following resulted in additional time or money to the construction process

## Added Time or Money to the Construction Process

Processes resulting in additional cost	
Coordinating inspections between fire officials and building officials	55.1%
Coordinating fire sprinkler contractor with other trades	52.7%
Fire sprinkler system testing prior to inspection	50.5%
Fire sprinkler system design and permit	49.4%
Fire department/inspector delays	48.0%
Site supervisor time	45.6%
Protection of system during construction	38.0%
Additional framing modifications due to pipe location	37.0%
Repairing leaks	22.5%
Installing underground fire lines when developing the subdivision	17.0%
Other(s)	9.8%

## Finished Square Footage of Living Space

Of the homes you built with fire sprinkler systems that used \_\_\_\_\_ as their water source, what was the typical total finished square footage of living space

<i>Total Finished Square Footage</i>	<i>Public Water Source 2007</i>	<i>Private Water Source 2007</i>
Unknown	0%	0%
Less than 500 sq ft	0	0
500 – 999	2.6	0
1000 - 1499 sq ft	5.0	0
1500 - 1999 sq ft	32.0	0
2000 - 2499 sq ft	20.1	10.1
2500 - 2999 sq ft	9.3	2.9
3000 - 3499 sq ft	6.3	19.6
3500 - 3999 sq ft	8.0	22.9
4000 - 4499 sq ft	5.6	22.3
4500 - 4999 sq ft	.8	0
5000 - 5499 sq ft	5.7	21.2
5500 - 5999 sq ft	.2	0
6000 sq ft and over	4.4	1.1
Respondents	83	19

# Installation Cost

Of the homes you built with fire sprinkler systems that used \_\_\_\_\_ as their water source, what was the typical cost of fire sprinkler system installation

<i>Cost of Fire Sprinkler System Installation</i>	<i>Public Water Source</i>	<i>Private Water Source</i>
	<i>2007</i>	<i>2007</i>
Unknown	0.0%	0.0%
Less Than \$2500	20.6	10.2
\$2500 - \$3499	27.5	.1
\$3500 - \$4999	14.9	24.9
\$5000 - \$5999	8.0	5.5
\$6000 - \$6999	14.2	21.2
\$7000 - \$7999	.5	9.8
\$8000 - \$8999	.8	.8
\$9000 - \$9999	7.0	0
\$10000 - \$10999	.2	22.1
\$11000 - \$11999	.5	2.2
\$12000 - \$12999	.6	0
\$13000 - \$13999	.4	0
\$14000 - \$14999	.4	1.9
\$15000 or More	4.3	1.3
Respondents	68	19

# Additional Cost

Of the homes you built with fire sprinkler systems that used \_\_\_\_\_ as their water source, what was the typical additional fire sprinkler system costs

<i>Additional Fire Sprinkler System Cost</i>	<i>Public Water Source</i>	<i>Private Water Source</i>
	<i>2007</i>	<i>2007</i>
Unknown	0%	0%
Less Than \$2500	82.7	93.1
\$2500 - \$3499	9.4	.1
\$3500 - \$4999	1.1	5.5
\$5000 - \$5999	0	.9
\$6000 - \$6999	.1	.3
\$7000 - \$7999	.1	0
\$8000 - \$8999	0	0
\$9000 - \$9999	6.6	0
\$10000 - \$10999	0	0
\$11000 - \$11999	0	0
\$12000 - \$12999	0	0
\$13000 - \$13999	0	0
\$14000 - \$14999	0	0
\$15000 or More	0	0
Respondents	68	19

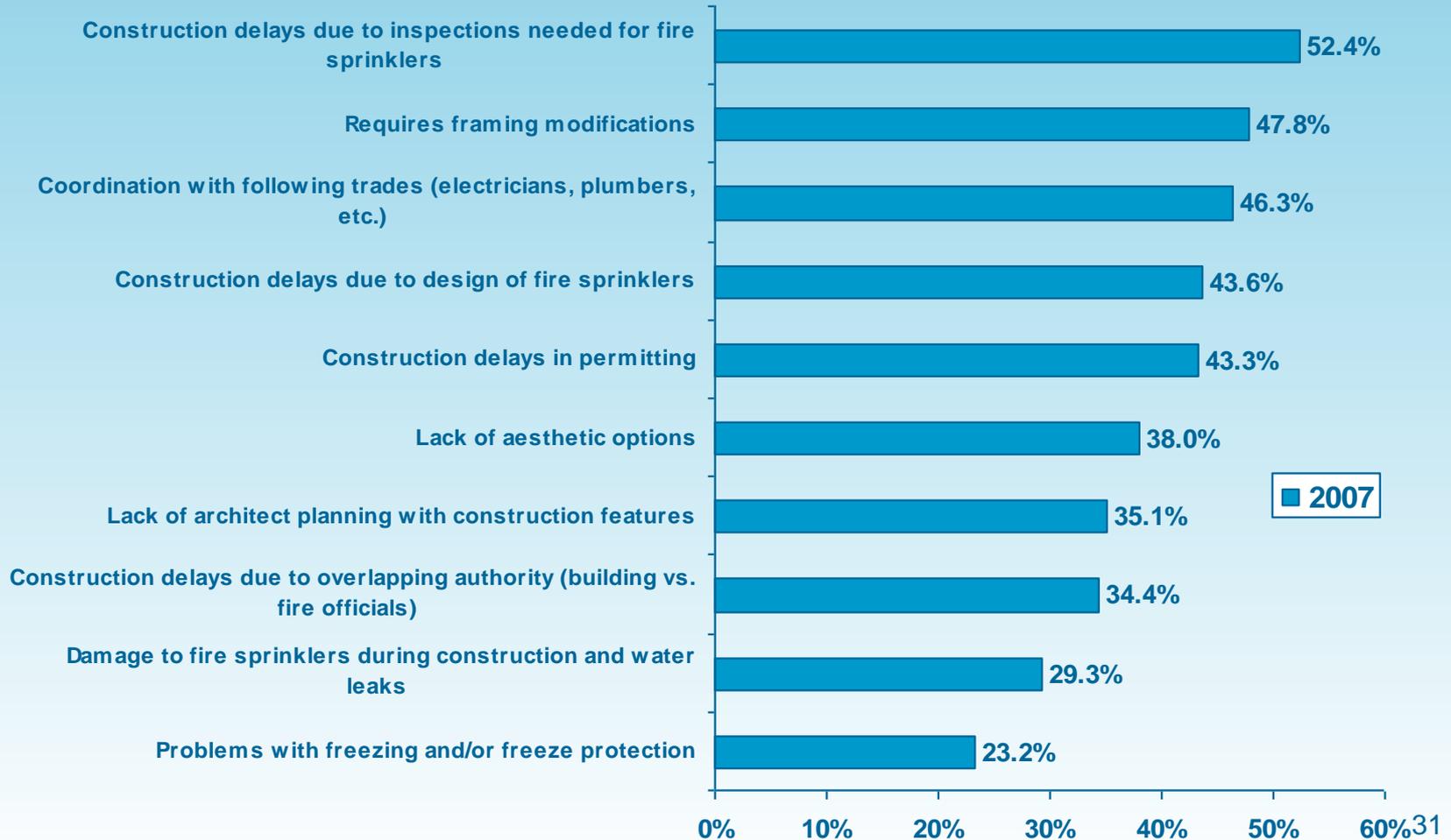
# Total Cost

Of the homes you built with fire sprinkler systems that used \_\_\_\_\_ as their water source, what was the total fire sprinkler system cost

<i>Total Fire Sprinkler System Cost</i>	<i>Public Water Source 2007</i>	<i>Private Water Source 2007</i>
Unknown	0.0%	0.0%
Less Than \$2500	11.9	10.2
\$2500 - \$3499	16.8	.1
\$3500 - \$4999	30.3	24.9
\$5000 - \$5999	1.0	0
\$6000 - \$6999	11.9	0
\$7000 - \$7999	1.4	9.4
\$8000 - \$8999	5.0	22.3
\$9000 - \$9999	.6	0
\$10000 - \$10999	.5	5.6
\$11000 - \$11999	5.1	24.3
\$12000 - \$12999	6.1	0
\$13000 - \$13999	.6	0
\$14000 - \$14999	1.3	0
\$15000 or More	7.3	3.2
Respondents	83	27

# Additional Problems

For the homes you built with fire sprinkler systems, which of the following problems or issues have occurred related to the plan, design, installation or sale of the home



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