AGENDA

LOVELAND CITY COUNCIL
SPECIAL MEETING & STUDY SESSION
TUESDAY, OCTOBER 8, 2013
CITY COUNCIL CHAMBERS
500 EAST THIRD STREET
LOVELAND, COLORADO

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5:00 P.M. SPECIAL MEETING - CITY COUNCIL CHAMBERS

SPECIAL MEETING AGENDA

CALL TO ORDER

ROLL CALL

1. HUMAN RESOURCES (presenter: Julia Holland)
Executive Session to Evaluate Performance of Council Appointed Staff

ADJOURN

6:30 P.M. STUDY SESSION- CITY COUNCIL CHAMBERS

STUDY SESSION AGENDA

1. LOVELAND RESCUE FIRE AUTHORITY (presenter: Randy Mirowski, 60 min)
Information on Residential Fire Sprinklers
This is an information only presentation to City Council addressing the issue of residential fire sprinklers and the future implications of including them as part of the adopted residential code to enhance community and citizen safety.

ADJOURN

CITY OF LOVELAND
FIRE & RESCUE DEPARTMENT
Administration Offices • 410 East Fifth Street • Loveland, Colorado 80537
(970) 962-2471 • FAX (970) 962-2922 • TDD (970) 962-2620

AGENDA ITEM: **1**
MEETING DATE: 10/8/2013
TO: City Council
FROM: Loveland Fire Rescue Authority (LFRA)
PRESENTER: Randy Mirowski, Fire Chief

TITLE:
Residential Fire Sprinklers for the City of Loveland

RECOMMENDED CITY COUNCIL ACTION:
Future direction from Council is requested as part of this presentation.

SUMMARY:
This is an information only presentation to City Council addressing the issue of residential fire sprinklers and the future implications of including them as part of the adopted residential code to enhance community and citizen safety.

BACKGROUND:
Automatic fire sprinklers have been in existence since the late 1800's; residential fire sprinklers have been installed for home fire and life safety since the early 1970's. The need for residential fire sprinklers has grown commensurate with the fire problem of residential home fires. Fires burn differently today. The advent of plastics, synthetics and light-weight engineered construction has changed the environment for residential structure fires. Fires today burn 3-4 times hotter and reach the deadly phenomenon of flashover 8-10 times faster than they did 30-40 years ago. Residential fire sprinklers now have a real and proven track record of success (over thirty years in communities like Scottsdale, AZ), and have been required as part of the Residential Fire Code since 2006; three code editions ago, (2006 the requirement was part of the appendix; in 2009 and 2012, the requirement is included in the main body of the Code). This presentation will focus on the History of Residential Fire Sprinklers, Today's Fire Problem and, Future Directions and Options to Consider. The LFRA staff is supporting a long-term strategy for the implementation of residential fire sprinklers for the Loveland community. There are three parts to this strategy; One, **Education** of the community and stakeholders; Two, **Incentivizing** a residential fire sprinkler program to encourage builders, developers and homeowners to install them; Three, **Adoption** of the Residential Code with the inclusion of residential fire sprinklers (we have amended this portion of the Code out of our adoption process for the last two editions-2009 and 2012).

HISTORY:
Automatic fire sprinklers have been in existence since the late 1800's; residential fire sprinklers have been installed for home fire and life safety since the early 1970's. These residential systems have a high reliability rate for protecting both property and human lives, and currently have more than a thirty-year track record with sufficient data to prove their value. In many communities, residential fire sprinklers have been accepted by the building community as an essential design feature (see Scottsdale, AZ). The Residential Building Code has included residential fire sprinklers as a required part of the Code since 2006; thus, many more communities are adopting the Code in its entirety and including residential fire sprinklers on all new construction for one and two-family dwellings.

The cost for installation of residential fire sprinklers has always been one of the major points of contention for those who would oppose this initiative and the residential code. Inaccurate information and over-exaggerated claims of costs have done much to cloud the issue for mandating the installation of residential fire sprinklers. The actual cost of installing home fire sprinklers averages $1.35 per sprinklered square foot for new construction, according to a Home Fire Sprinkler Cost Assessment report from the Fire Protection Research Foundation. That cost is down from $1.61 per sprinklered square foot that was announced in a 2008 report from the Research Foundation. If the average home had 1500 square feet of sprinklered space, the total costs for installation would be just over $2,000, based on these figures.

Other misleading information related to the installation of residential fire sprinklers include such things as: incurring higher insurance costs, more water damage from sprinklers when they activate, and the need to carry flood insurance when a home has residential fire sprinklers. All of these assertions are false. Insurance costs generally are reduced from 15-25% when a home has residential fire sprinklers. These sprinklers also do far less damage (particularly water damage) than conventional firefighting means. Only one or two heads usually activate in a fire, producing between 12-20 gallons per minute as compared to a normal firefighting attack line at 150 gallons per minute. Finally, there is no mandate to have flood insurance along with residential fire sprinklers.

Residential fire sprinklers have a proven track record for saving lives, property and reducing the costs for cities and developers for fire protection. Residential fire sprinklers are an environment friendly alternative to traditional firefighting operations, and they are a part of the Residential Building Code requirement. All of the research factors point to this initiative, as a good public policy and the best way to ensure long-term community fire life safety for our citizens.

Many communities across the nation are re-looking at this initiative and reconsidering their position on the adoption of mandatory residential fire sprinklers. Several communities in Colorado, such as Golden and Westminster have already adopted the residential code including the provision for residential fire sprinklers; Fort Collins is also pursuing this initiative. The LFRA staff is advocating for the implementation of a long-term strategy for the adoption of this intuitive and this part of the Residential Building Code. That proposal includes three main points:

- Education of community stakeholders (citizens, developers and builders)

- Incentivizing the installation of residential fire sprinklers
- Adoption of the residential building code in the future (targeting the 2018 Code)

It is believed by our staff that this type of a plan would be much better suited to the Loveland community and would improve the overall acceptance of residential fire sprinklers as the excellent instrument they are to improve community fire life safety.

CONCLUSION:
The initiative for mandatory installation of residential fire sprinklers will most likely occur in the Loveland community sometime in the future. We have before us an opportunity to take a solid public policy stance on community life safety, while following a prudent path that honors our developers and home builders through a long-term strategy for implementation. There is no question about the value of residential fire sprinklers for improving the life safety of our citizens, and in their value in saving property; research and more than thirty years of experience have proven this out. LFRA has had a long standing goal *of "taking our organization from good to great, and building it to last*." The outcome of this goal is improved citizen service and enhanced firefighter safety. The initiative to mandate residential fire sprinklers is the next logical step in our goals and outcomes. We welcome City Council's input and direction on this issue.

REVIEWED BY CITY MANAGER:

William D. Cahill

LIST OF ATTACHMENTS:
1. Article: "Home Sprinkler Cost Assessment - 2013"
2. Article: "The Debate about Residential Fire Sprinklers"
3. Residential Fire Sprinklers: Questions and Answers
4. Presentation

HOME FIRE SPRINKLER COST ASSESSMENT

Home Fire Sprinkler Cost Assessment - 2013
Newport Partners, September 2013

This report updates the report, Home Fire Sprinkler Cost Assessment (Fire Protection Research Foundation 2008). The primary purpose of this study is to review current home fire sprinkler system costs against the 2008 benchmark study to gain a better understanding of how increasingly widespread adoption of sprinkler ordinances impacts system cost. Using a larger sample size, the current study attempts to gain a better understanding of the impact of sprinkler ordinances on home fire sprinkler system cost and other factors that affect system cost. The current study examines 51 homes in 17 communities; the 2008 study examined 30 homes in 10 communities. In the 2013 update, the average cost per sprinklered square foot was $1.35. In the 2008 report, the average cost per sprinklered square foot was $1.61.

Residential sprinkler system costs, 2008-2013

	2008 Cost		2013 Cost	
	$/Sprinklered ft²[4]	Total Cost[5]	$/Sprinklered ft²	Total Cost
Mean	$1.61	$6,316	$1.35	$6,026
Median	$1.42	$5,843	$1.22	$5,000
Minimum	$0.38	$2,386	$0.81	$1,695
Maximum	$3.66	$16,061	$2.47	$21,000

Home Fire Sprinkler Cost Assessment Final Report
Newport Partners, September 2008

Residential fire sprinkler ordinances have been adopted by several hundred U.S. communities for use in single-family dwellings. Such systems have been shown to provide significant life safety benefits, however the installed cost of these systems remains as a point of uncertainty and a potential barrier to broader adoption. Informal estimates of typical installation costs can vary widely, and influence decision makers' views on the viability of sprinkler systems in new homes.

In order to provide information on this topic, and to understand the factors that may influence the costs and hence impede the widespread use of residential fire sprinklers, the Foundation undertook this study to provide a national perspective on the cost of home fire sprinklers by developing data on installation costs and cost savings for ten communities distributed throughout the United States. The study also explores the range of insurance premium discounts which are available to home owners with sprinkler systems in their houses. In this 2008 report, the average cost of sprinkler systems to the homebuilder, in dollars per sprinklered square foot, was $1.61.

Full report

"Home Fire Sprinkler Cost Assessment - 2013" (PDF, 1 MB)

2008 report
"Home Fire Sprinkler Cost Assessment Final Report" (PDF, 634 KB)

All Fire Protection Research Foundation reports can be downloaded for free. Printed copies are $50, except where otherwise noted. If all reports in a subject category are requested, a 20% discount applies.

Please pre-pay by check or money order to the The Fire Protection Research Foundation. You may also pay using VISA, Mastercard or American Express. E-mail the Foundation or call +1 617 984-7443.

ICMA Publications / PM Magazine / Archives
AUGUST 2011 · VOLUME 93 · NUMBER 7

COVER STORY

The Debate about Residential Fire Sprinklers

by Thomas Wieczorek and Alan Perdue

As the decision whether to require residential fire sprinklers reaches state and local governments, passionate arguments are being made by proponents and opponents alike. Encompassed in this emotional debate are data and research—some more reliable than others—along with myths and unsupported assumptions.

The challenge for managers and elected officials is determining the acceptable level of fire risk and making the best decision for their communities.

Several states have prevented local governments from adopting new sprinkler protection standards. Most recently Pennsylvania's governor signed a bill postponing sprinkler provisions required in the most recent version of the model residential code. For local governments, installation of sprinklers offers a number of quality-of-life benefits, as demonstrated in recent studies.

Research in the United Kingdom resulted in a comprehensive adjustment to deployment strategy with a focus on prevention. The results were significant improvements in safety and corresponding decreases in losses from fire. Fires in single-family residences account for the majority of injuries and fatalities to the public and emergency responders.

If the magnitude of these fires could be reduced substantially, would it impact your response capabilities to other incidents in the future? If sprinklers improve the safety of residents as well as responders, could your community risk reduction plans and resource needs change if the number and magnitude of fires were drastically reduced or even eliminated?

HISTORY

Automatic fire sprinklers have been around since the late 1800s, when they were first installed to protect factories and textile mills. The excellent performance of fire sprinklers in limiting property loss in these buildings led to requirements in modern building and fire codes to protect most commercial buildings with automatic fire sprinkler systems.

These systems have a high reliability rate for protecting both property and human lives and have been accepted by the building community as an essential building design feature for commercial occupancies. Automatic fire sprinklers are also used to protect such high-rise residential buildings as hotels and apartment buildings, and they have proven effective for preserving property and reducing fire-related death and injury.

It wasn't until the early 1970s that sprinklers were first considered for protecting other residential occupancies that include low-rise apartment buildings, townhouses, and one- and two-family dwellings. On May 4, 1973, the report *America Burning* provided a detailed analysis of the problem of fire in the United States.[1]

This report, compiled by the National Commission on Fire Prevention and Control, which had been authorized by President Richard Nixon, placed the annual national cost of fires at $11 billion, with more than 12,000 civilian fire deaths and tens of thousands of injuries, most occurring in residential occupancies. The report contained significant recommendations for reducing the nation's fire problem through improved building codes and standards, fire prevention, public education, research, and improved firefighting equipment and training.

Many of the recommendations were implemented, but others were not, as noted in two follow-up reports about the nation's fire problem: *America Burning Revisited* (1987) and *America Burning Recommissioned* (1999).

One recommendation from the original *America Burning* report that was implemented in the 1970s was smoke alarms. Research and development programs provided a cost-effective product that could be installed in every home to provide an early warning to occupants of deadly smoke and fire. As requirements for smoke alarms were being introduced into model codes of the time, strong opposition was coming from the same opponents of today's residential fire sprinkler requirements.

Public Safety Management Experience

ICMA's Center for Public Safety Management staff members have worked with a number of communities that are researching current and future sprinkler deployment decisions. Addison, Texas, presented ICMA with one of the best views of what a community can look like if it is entirely sprinkler protected.

Addison has had a sprinkler ordinance for many years, and it has now reached a point of near build out. As older properties are demolished and new projects constructed, sprinklers have been installed. Builders have been required to install sprinklers in commercial properties that underwent renovation and upgrades.

The result has been fewer and fewer fire calls to the Addison Fire Department. Although the lack of calls poses additional challenges for the department (it must maintain competencies when there are few fire calls to which personnel must respond), the community has benefited by lower required investment needs for fire protection.

The Center coordinated a training program and a webinar in conjunction with the ICMA University earlier in 2011 that further outlined the sprinkler issues and the experiences in Addison.

As time passed, smoke alarms became widely accepted, and their lifesaving accomplishment can be measured in the reduction in annual civilian fire deaths. The initial America Burning report indicated that in the early 1970s the annual residential life loss was approximately 10,000; recent statistics indicate that number has been reduced to 3,000.

BIRTH OF RESIDENTIAL FIRE SPRINKLERS

Much as research in the 1970s helped produce cost-effective smoke alarms, continued technical improvements were also important to the development of cost-effective residential sprinklers. Automatic fire sprinklers for commercial buildings were designed for reducing property loss.

For residential fire sprinklers to be effective in saving lives, new types of sprinklers were necessary in order to react more quickly to home fires, use less water, and be aesthetically acceptable. It would also be critical for the fire sprinkler to rapidly respond to a typical residential fire and prevent room flashover, or the point when conditions (heat and smoke) are considered too severe for survival.

As technology for residential fire sprinklers started evolving, two new standards for residential fire sprinklers were being developed by the National Fire Protection Association (www.nfpa.org): NFPA 13R (for multifamily residential buildings) and NFPA 13D (for one- and two-family dwellings).

These standards have gone through several revision cycles to get to their current requirements for design, installation, and maintenance. Both of these standards are referenced in the International Residential Code (IRC), a model building code produced by the International Code Council (ICC; www.iccsafe.org).

During the development process, concerns about sprinkler purpose (life safety versus property protection), design criteria (in which rooms sprinklers will be installed), cost of installation (based on materials, water supply, and so forth), technical issues (effects of freezing temperatures, for example), limited water supply (rural areas, private wells), and prevention of accidental water damage were all addressed.

The standard for one- and two-family dwellings ultimately reduced many of the requirements used in commercial settings while providing a reliable and affordable life-safety sprinkler system. This was accomplished, in part, by only

requiring protection of occupied spaces and reducing the water supply needed to allow occupants time to escape the building.

WHAT ARE THE COSTS?

A report on the average installation cost for a fire sprinkler system in a newly constructed single-family home was prepared by the NFPA Research Foundation. It puts the average U.S. cost at a $1.61 per square foot.[2]

Local conditions may influence actual installation costs, however, and several communities have set up residential sprinkler system programs successfully. Scottsdale, Arizona, a newly planned community in the early 1980s, passed an ordinance requiring that all homes be constructed with residential fire sprinkler systems.

The benefits were profound and included no fire deaths and greatly reduced fire-related property damage. What's more, the installation costs were actually reduced from $1.14 per square foot to $0.59 per square foot, presumably through economies of scale and competition.

Scottsdale has proven to be a leader in reducing its fire-related community risk through a comprehensive risk reduction program that included residential fire sprinklers from its inception.[3]

Local governments can also offer homebuilders financial incentives that offset the cost of installation of residential sprinklers. These incentives are outlined in an NFPA report, *Incentives for the Use of Residential Fire Sprinkler Systems in U.S. Communities.*[4]

MODEL CODES AND THE INCORPORATION OF RESIDENTIAL SPRINKLERS

The predominant model building code for residential construction is the IRC, produced by the ICC, a not-for-profit membership organization that also produces the international building code (IBC).

The IRC has been adopted at the state or local level in 48 states plus Washington, D.C.; U.S. Virgin Islands; and Puerto Rico. The 2009 edition of the IRC was the first edition to include mandatory requirements for the installation of residential sprinklers in townhouses and one- and two-family dwellings.

The concept of requiring residential fire sprinklers in IRC was not new to the 2009 code development cycle. During the previous cycle, the 2006 IRC included an option for jurisdictions wanting to include residential fire sprinklers as a fire risk reduction option though an adoptable appendix.

Prior code cycles considered the requirement, but the governmental members felt that technology and installation concerns had not yet been fully addressed. That position changed with the passage of the residential sprinkler requirement during final action hearings for the 2009 IRC.

DISPELLING THE MYTHS

Myths and misconceptions are widespread about potential water damage caused by sprinkler systems in large part to their inaccurate portrayal in movies and television shows. The fact: fire sprinklers in both residential and commercial buildings discharge water only when individually triggered by the heat from a fire.

Also, only the closest sprinkler to the actual fire will activate. This is a far cry from movies that portray someone smoking a cigarette that causes every sprinkler in the building to spray water! It may appear humorous in the movies, but it's totally misleading and pure fiction.

Concerns about accidental discharge from a broken pipe or sprinkler are also based on fiction. Insurance claims for broken washing machines cause more water damage than other plumbing fixtures, including sprinklers.

Information Sources

These websites provide additional information on residential sprinklers:

Home Fire Sprinkler Coalition

www.homefiresprinkler.org

Residential Fire Safety Institute

www.firesafehome.org

Misunderstandings also exist about the percentage of damage caused by water and by fire in a sprinklered home compared with a non-sprinklered home. Although water damage occurs from a fire in a sprinklered home, the alternative would be for a fire to continue to burn uncontrolled for approximately 10 minutes or more while a fire department is dispatched, en route, and setting up firefighting operations.

During that response and set up time period, heat and smoke continue to grow in size often destroying most of the home's contents and more importantly endangering the occupants who are unable to safely escape. The arrival of the fire department to an uncontrolled fire results in using hundreds or possibly thousands of gallons of water that can cause additional damage. In contrast, an average home sprinkler discharges approximately 12 to 15 gallons per minute, and water damage is often contained in the room where the fire originated.

This reduction in property damage that fire sprinklers provide is often recognized by home insurance companies that provide a discount on the overall homeowner's policy. The Insurance Services Office (ISO) also recognizes the value of adoption of the latest model codes, without amendment, as a measurable way to reduce community risk.

ARE FIRE SPRINKLERS GREEN?

As communities face important decisions about going green and implementing programs that support environmental sustainability, there is evidence to support the fact that fire sprinklers enhance green initiatives in several aspects. Uncontrolled structure fires produce large amounts of toxic and greenhouse gases.

Upon arrival of the fire department, fires in unsprinklered buildings require significant amounts of water to extinguish, causing toxic runoff of contaminated water. Fire-damaged materials from the structure end up in a landfill, and new natural resources will have to be harvested to replace and rebuild what the fire has destroyed. All of these components have negative effects on the environment.

In comparison, a fire that is controlled through an automatic fire sprinkler system reduces many of these negative environmental impacts. A research report produced by FM Global provides a scientific analysis of sprinklers in reducing the negative environmental impacts and costs of structure fires.[5]

Economic costs are also associated with rebuilding structures damaged or lost to fire. NFPA estimates this cost at $18.6 billion annually. The FM Global report also found that using sprinkler systems in residential structures reduces the amount of water needed to control or extinguish a fire in a building by 50 percent.

RESOURCE DOCUMENTS AND WEBSITES

Two important programs are under development that will help local governments implement voluntary or mandatory residential fire sprinkler programs. The first is an initiative by the National Association of State Fire Marshals (www.firemarshals.org) to develop a training and education toolkit; this program is funded by a U.S. Department of Homeland Security fire prevention grant.

The second is a residential fire sprinkler contractor accreditation program being developed by the Center for Public Safety Excellence (www.publicsafetyexcellence.org). The underlying purpose of both programs is to help ensure that any residential sprinkler system is installed properly, by a competent contractor, and at the best price for the homeowner.

ENDNOTES

[1] "National Commission on Fire Prevention and Control and the America Burning Report," Learning Resource Center, Federal Emergency Management Agency, www.lrc.fema.gov/path_amerburn.html.
[2] Newport Partners, *Home Fire Sprinkler Cost Assessment* (Quincy, Mass.: Fire Protection Research Foundation, September 2008), www.nfpa.org/assets/files/PDF/Research/FireSprinklerCostAssessment.jpg.
[3] *Saving Lives, Saving Money: Automatic Sprinklers: A 10-Year Study* (Scottsdale, Ariz.: City of Scottsdale, Rural/Metro Fire Department, Home Fire Sprinkler Coalition, 1997).
[4] Newport Partners, *Incentives for the Use of Residential Fire Sprinkler Systems in U.S. Communities* (Quincy, Mass.: Fire Protection Research Foundation, 2010).
[5] Christopher J. Wieczorek, Benjamin Ditch, and Robert G. Bill Jr., *Environmental Impact of Automatic Fire Sprinklers* (Norwood, Mass.: FM Global Research Division, 2000), www.homefiresprinkler.org/images/FM-Global-Environmental-Study.pdf.

Thomas Wieczorek is director, ICMA Center for Public Safety Management, Washington, D.C. (twieczorek@icma.org), and Alan Perdue is director of emergency services, Guilford County, North Carolina (Alan.Perdue@guilford-es.com).

International City/County Management Association
777 North Capitol Street NE, Suite 500
Washington, DC 20002-4201
800-745-8780/202-962-3680 | fax 202-962-3500

Q & A Session with CAB and FRAC Presentation on 09-13-13

On September 11, 2013, a presentation was made to a combined meeting of the Construction Advisory Board (CAB) and the Fire rescue Advisory Commission (FRAC), on the subject of residential fire sprinklers and the adoption of the International Residential Building Code. The following questions and answers were gleaned from that presentation.

1. Do fire deaths in the home include firefighters or is it just civilian?
Carie will research but stated majority of FF deaths are in home fires.

2. Is scope only new construction?
Randy: Yes. It will be a long time before sprinklered homes significantly impact our community. 194 square miles, 35 is City.

3. Where is PFA? Greeley? Longmont?
RM: Talking with DeMint and Poncelow, more aggressive, possibly 2015 IRC. CBO Gebo is championing it, different tactic. CBO Hawkinson here is in support. Larimer County commissioners are not in support but we hope they change if Loveland and FC adopt. Greeley approved it then deleted it and now is in retreat mode. Longmont has not adopted.

4. Which code takes precedence?
Carie: Different scope/application for IRC, IBC, IFC. ICC family of codes that support and complement each other.

5. Why is it amended out?
RM: Perceived costs. Tom Hawkinson said it coincided with economic downturn. Myths. questions of who will install.

6. PPT focuses on the rewards. What is the risk of a fire? Put it in context.
RM: New firefighter, I lived through early smoke detectors in homes, same reasoning, too expensive, people will move elsewhere, builders can't afford it.

7. What if you're on vacation and water flows?
CD: Exterior H/S, monitoring, life safety.

8. How many FFs have sprinklers in their homes? Would influence community buy-in.
RM: Not many. How many of us wore seatbelts before they were required?
CD: CSD LT is doing it.
Ned: Most of us buy used homes, not new. If FFs are building a home, many would do sprinklers.

9. Is here anyone who voluntarily did it?
CD: Finaled one in town.

10. Water flow issue (again). Jason Baker, I'm called in for restorations, toilets, I don't think it would be as often as that. I've never seen a home with sprinklers.
There are sensors that shut off extended water flow,

11. What about remodeling or adding on?
TH: New single family existing structures exempt. (We need to state this.)

12. Bob Dehn, flow switch, H/S in 45 seconds. FFs will need to get a key to shut off water valve. I've done a dozen homes in county in two years who did it voluntarily.
* Mentioned IRC R501.3. Had 20 minutes discussion on this.

13. You should try a pilot program in a small area. Water source, infrastructure.

14. Inspections?
RM: we don't want to be in the business of home inspections.
Bob: Tank and pump, H/S straightforward. We never really do home inspections.

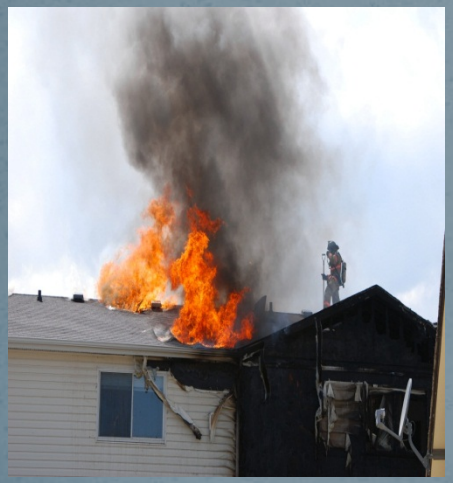
15. Cost. Bob: City, $2-2.25 SF, county need tank/pump and that increases cost.
Your approach is excellent, knowledge for the community. If they can see the benefits, I'm all for it. $300-600K homes, they don't worry about $6K for sprinklers. Most homes are not custom, $200-275K. Incentives, help community, be practical, education. 1/1,000 commercial buildings have sprinkler problems.

16. Freezing.
Joe Schweitzer. Vaulted ceilings, use anti-freeze now, used to be we could insulate.

Residential Fire Sprinklers

An informational presentation to City Council and the Boards and Commissions

Summer/ Fall, 2013



Commitment, Compassion & Courage

Introduction and Goals- *(we have just 2)*

Welcome…

- Our goal this evening is to share <u>information</u> with you about **Residential Fire Sprinklers** and to get your <u>direction</u> for moving forward in the future…

Commitment, Compassion & Courage

Introduction and Goals-

- Residential Fire Sprinklers have been a part of some community fire protection plans for nearly 30 years

- They have been required in the last three Residential Codes (2006, 2009, 2012)

- The seminal question for us tonight is:
  What direction will we, as a community, take for the future???

Commitment, Compassion & Courage

Introduction-

Our Roadmap for This Evening…

We have 4 main parts for this presentation:

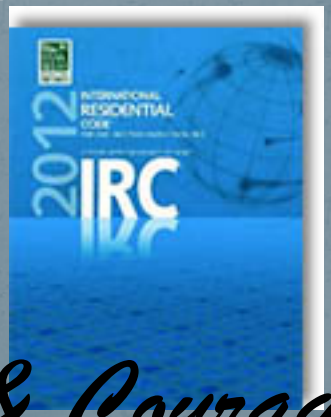
- History of Residential Sprinklers *(Carie)*
- Today's Fire Problem and the Impact of Residential Sprinklers *(Ned)*
- Future Direction & Options for Consideration *(Randy)*

- ***Your Questions, Input and Direction……***

Commitment, Compassion & Courage

History of Residential Sprinklers- (Carie)

- 1874 – First automatic fire sprinklers, in commercial buildings and textile mills. Later, high-rise apartments.
- Late 1970s – First Residential sprinklers for one- and two-family dwellings.
- IRC – 2006 Appendix, 2009 and 2012 in the code itself. Most jurisdictions amended out the requirement.
- 20+ years – Loveland Fire and other Larimer County jurisdictions have accepted sprinklers when there is no vehicle access or firefighting water supply, in order for homes to be permitted to be built.



Commitment, Compassion & Courage

History of Residential Sprinklers-

- Federal report *America Burning* (1973) – 12,000 home fire deaths. Thanks to smoke detectors and improved safety codes, home fire deaths have decreased to 3,000 annually. However, that's still 1 per week per state.
- 83% of fire deaths occur *in the home.*
- Residential fire sprinklers reduce fire death rate by 82% and property damage by 68%

Chance of surviving a fire in your home with working smoke detectors and sprinklers: 98%

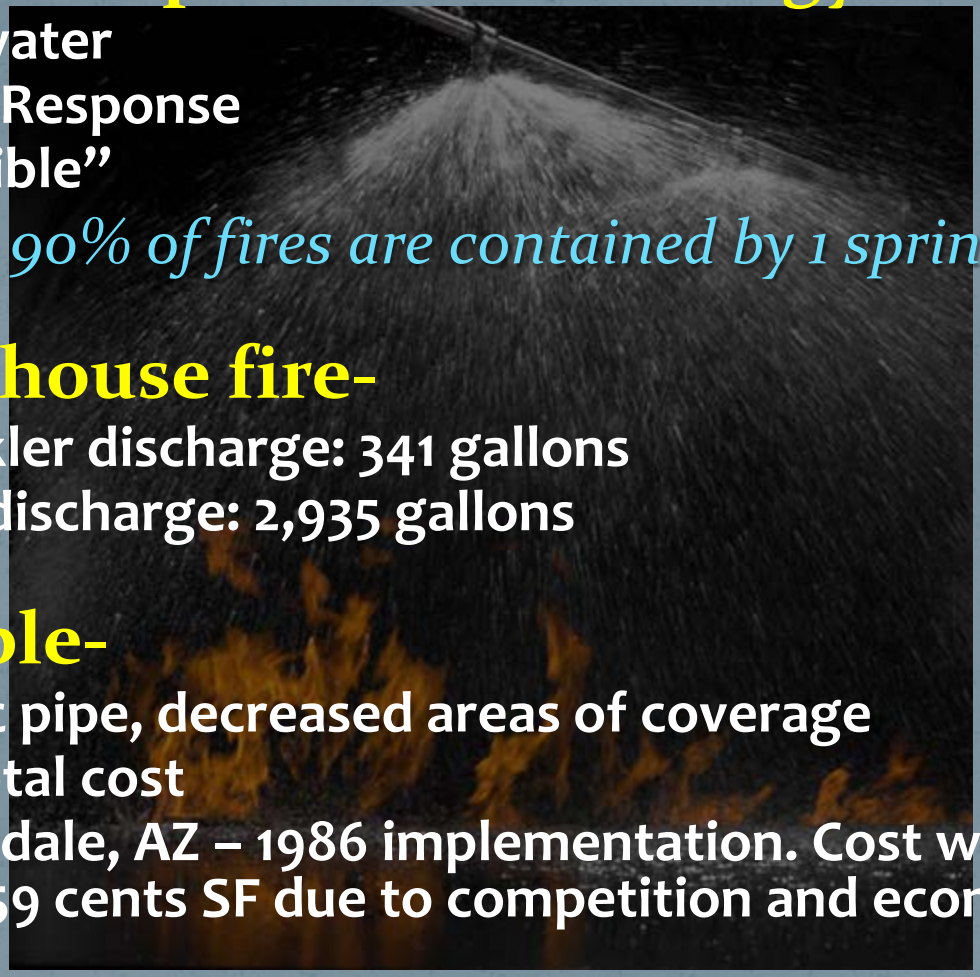
Commitment, Compassion & Courage

History of Residential Sprinklers- *(3 points here)*

Residential sprinkler technology-

- Less water
- Quick Response
- "Invisible"

12-20 gpm. 90% of fires are contained by 1 sprinkler



Average house fire-

- Sprinkler discharge: 341 gallons
- Hose discharge: 2,935 gallons

Affordable-

- Plastic pipe, decreased areas of coverage
- 1-2% total cost
- Scottsdale, AZ – 1986 implementation. Cost went from $1.14 SF to 59 cents SF due to competition and economies of scale.

Commitment, Compassion & Courage

History of Residential Sprinklers-

Sprinkler Myths:

- **They're ugly**
  Recessed and factory painted to match ceilings
- **They all activate**
  1-2 heads closest to the fire
- **Smoke sets them off**
  Activated by heat (155 degrees)
- **There's a high risk of accidental discharge**
  Broken washing machines cause more damage than other plumbing fixtures, including sprinklers
- **They require you to buy flood insurance**
  Fire-sprinklered homes reduce premiums by 5-15 percent
- **Sprinklers can flow for hours without anyone knowing**
  Water flow activates exterior/interior horns and strobes within 45 seconds, flow sensors are available

Sources: National Fire Protection Association (NFPA), National Association of State Fire Marshals, International City/County Management Association (ICMA), Scottsdale (AZ) 15-year Study, International Code Council (ICC)

Today's Fire Problem & Residential Sprinklers- *(Ned)*

Today's fires are very different than the past…

- Home furnishings are burning hotter and faster due to the type of material used in manufacturing.
- Time to the flashover of room contents has decreased significantly over the past 30+ years
- Due to the rapid flashover time, Firefighters are arriving at the fire scene often just as flashover is taking place (or shortly thereafter), placing citizens and firefighters at a severe, life threatening risk!

Let's look at a video that will illustrate this for us…

Legacy Flashover Video – 3:40 "now"; 29:25 "then"

Video begin at; 1:30-3-:30; 29:00-end

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Today's Fire Problem & Residential Sprinklers-

Here are some important statistics…

- Per NFPA, the time for occupants to escape from the building has reduced from, 17 minutes in 1975, is down to 3 minutes in 2008.
- 37% of fire deaths are in homes ***with*** functioning smoke detectors.
- The highest risk is children <10, and adults >70
- In Loveland: 13 fatalities have occurred since 2000

  2000 = 4; 2001 = 3; 2004 = 1;
  2006 = 1; 2010 = 3; 2011 = 1

How many of these could have been saved with residential sprinklers???

Today's Fire Problem & Residential Sprinklers-

Here are some important statistics (cont.)…

- 83% of all fires are in the home
- Fire Sprinklers work rapidly and effectively to put out the fire
- Risk to occupants and firefighters is dramatically reduced
- Property loss is significantly reduced.
- Without fire sprinklers, the same fire occurring in Loveland as indicated in the "Legacy Video", would require a minimum number of resources including:
  - 3 Engine Companies
  - 2 Truck Companies
  - 1 Battalion Chief

This is nearly all of our shift staffing…

And would require a shift recall and mutual aid-

Today's Fire Problem & Residential Sprinklers-

Let's look at one more video…

"Marble Mountain" Residential Fire Sprinkler video-

Video begin at 2:13 end at 3:55

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Today's Fire Problem & Residential Sprinklers-

- With rapid intervention of the Fire Sprinkler the fire will be knocked down well before flashover

- Reducing the life threatening risk to the occupants and to our firefighters

- Water damage to the building is inevitable, but the damage will be ***FAR*** less than the damage caused by fire *(things dry out, they don't "un-burn"...)*
  - Average fire loss in sprinklered building: $ 1,707
  - Average fire loss in unsprinklered building: $17,067

  (90% less loss in a home protected by fire sprinklers...)

  - *Scottsdale report; 15 year study*

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Residential Sprinklers; Summary and Closing- *(Randy)*

- Residential fire sprinklers have a proven effectiveness in saving lives and property
- They are an effective way to address today's fire problem: *rapid fire growth extreme fire behavior and early "flashover"*
- They can positively impact citizen insurance rates and community PPC* *(ISO is re-evaluating their system)*
- Costs for installation average $1.61 sq. foot
- They are/ ***can be*** an important part of the community's public safety plan
- ***They also prevent firefighter injuries and death***

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Residential Sprinklers; Summary and Closing-

Where do we go from here???

There are 3 options that we can pursue…

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Residential Sprinklers; Summary and Closing-

Options for Community Fire Safety:

- Do nothing- continue to amend out residential fire sprinklers from our code
- Take a more aggressive approach and adopt the Residential Code with the requirements for residential fire sprinklers
- Develop a long-range plan that would include education, incentivizing residential sprinklers and *then* code adoption

How could this work?

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Residential Sprinklers; Summary and Closing-

Our recommendations:

- Establish a coalition of stakeholders in the community- a steering committee- to help develop our community plan…

- Develop a five year plan that would include:
  1. Community Education (1- 1 1/2 years)
  2. Create meaningful incentives to encourage installation of residential sprinklers (2-3 years)
  3. Adopt residential sprinkler code (2018)

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Residential Sprinklers; *Wrap-Up-*

- ***In Tonight's Presentation we have:***

- Looked at the history of residential fire sprinklers

- Discussed today's fire problem and rapid fire spread

- Looked at options for the future and provided a recommendation for action

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Residential Fire Sprinklers-

Endorsements for LFRA's Residential Sprinkler Initiative…

- Construction Advisory Board- CAB*
- Fire Rescue Advisory Commission- FRAC*
- Loveland Chief Building Official Tom Hawkinson
- LFRA Fire Chief Randy Mirowski
- Jeff Swanty- LFRA Board Chairman
- Paul Pfeiffer – FRAC Member and State Inspector
- Northern Colorado Fire Marshal's Association
- Poudre Fire Authority

* *This presentation was given to a combined CAB FRAC meeting on 09-11-13*

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Residential Fire Sprinklers -
The Future for The Loveland Community

Thanks for allowing us to present this information to you…

We would like your input and direction…

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Residential Fire Sprinklers-

Questions, Comments and Input…