Meeting Agenda

Land Use & Environment Committee

City Hall
601 4th Avenue E
Olympia, WA 98501

Information: 360.753.8244

Thursday, February 13, 2020 **5:00 PM** **Council Chambers**

Special Meeting

1. CALL TO ORDER

2. ROLL CALL

3. APPROVAL OF AGENDA

4. PUBLIC COMMENT

(Estimated Time: 0-15 Minutes)
During this portion of the meeting, citizens may address the Committee for up to three (3) minutes regarding the Committee's business meeting topics.

5. APPROVAL OF MINUTES

5.A 20-0149 Approval of January 16, 2020 Land Use & Environment Committee Meeting Minutes

Attachments: Minutes

6. COMMITTEE BUSINESS

6.A 20-0131 Homeless Response Plan Implementation

Attachments: City-Led Actions
Olympia & County Plan Crosswalk
Strategies and Potential Approaches

6.B 20-0115 Annual Code Enforcement Programs Status Report

6.C 20-0122 Residential Fire Sprinkler Update

Attachments: Fire Sprinkler Fact Sheet

6.D 20-0142 Building Codes Update Process

Attachments: State Adopted 2018 Codes

7. REPORTS AND UPDATES

8. ADJOURNMENT

The City of Olympia is committed to the non-discriminatory treatment of all persons in employment and the delivery of services and resources. If you require accommodation for your attendance at the City Council Committee meeting, please contact the Council's Executive Assistant at 360.753.8244 at least 48 hours in advance of the meeting. For hearing impaired, please contact us by dialing the Washington State Relay Service at 7-1-1 or 1.800.833.6384.

City Hall
601 4th Avenue E.
Olympia, WA 98501
360-753-8244

Land Use & Environment Committee

Approval of January 16, 2020 Land Use & Environment Committee Meeting Minutes

Agenda Date: 2/13/2020
Agenda Item Number: 5.A
File Number:20-0149

Type: minutes **Version:** 1 **Status:** In Committee

Title
Approval of January 16, 2020 Land Use & Environment Committee Meeting Minutes

Meeting Minutes - Draft

Land Use & Environment Committee

City Hall
601 4th Avenue E
Olympia, WA 98501

Information: 360.753.8244

Thursday, January 16, 2020 **5:30 PM** **Council Chambers**

1. CALL TO ORDER

Chair Gilman called the meeting to order at 5:31 p.m.

2. ROLL CALL

Present: 3 - Chair Clark Gilman, Committee member Dani Madrone and Committee member Jessica Bateman

2.A OTHERS PRESENT

3. APPROVAL OF AGENDA

The agenda was approved.

4. PUBLIC COMMENT - None

5. APPROVAL OF MINUTES

5.A 20-0057 Approval of December 19, 2019 Land Use & Environment Committee Meeting Minutes

The minutes were approved.

6. COMMITTEE BUSINESS

6.A 20-0034 Scope of Review of City Regulations and Fees to Reduce Effects on Housing Costs

Mr. Bauer presented a PowerPoint presentation with staff recommended scope of city regulations and fees that could be reviewed for impacts on housing projects.

The staff was directed to proceed with the review.

The discussion was completed.

6.B 20-0033 Consideration of the 2020 Land Use and Environment Committee (LUEC) Work Program

Mr. Bauer presented the 2020 work session to the committee.

The committee directed to reschedule the LUEC meeting from February 20, 2020 to February 13, 2020 and March 19, 2020 to March 26, 2020; to reschedule the work session on tenant-landlord issues from February to March; move the old fire station briefing to earlier in the year.

7. REPORTS AND UPDATES

Ms. Eide reported on EDDS schedule. Mr. Bauer distributed information on 2019 building permits and CP&D planning work program.

8. ADJOURNMENT

The meeting adjourned at 7:29 p.m.

City Hall
601 4th Avenue E.
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Land Use & Environment Committee

Homeless Response Plan Implementation

Agenda Date: 2/13/2020
Agenda Item Number: 6.A
File Number:20-0131

Type: report **Version:** 1 **Status:** In Committee

Title
Homeless Response Plan Implementation

Recommended Action
Committee Recommendation:
Not referred to a committee.

City Manager Recommendation:
Receive a briefing on City-led actions toward implementing Olympia's Homeless Response Plan. Briefing only; No action requested.

Report
Issue:
Whether to receive a briefing on City-led actions to implement Olympia's Homeless Response Plan and coordination with the Thurston County Homeless Crisis Response Plan

Staff Contact:
Amy Buckler, Strategic Projects Manager, Community Planning & Development, 360.570.5847

Presenter(s):
Amy Buckler, Strategic Projects Manager
Keylee Marineau, Thurston County Homeless Prevention and Affordable Housing Coordinator

Background and Analysis:
During 2019, the City of Olympia carried out a public process to develop a Homeless Response Plan (HRP) to include long-term strategies, actions, measures and partners to respond to the homelessness crisis. This included planning for the needs of residents, visitors, businesses and individuals experiencing homelessness. Twenty workshops, listening sessions and focus groups as well as two online surveys were held and hundreds of community members with a wide range of perspectives participated.

The process was shaped and shepherded by a Community Work Group made up of 11 community volunteers. The Work Group's role was to identify the strategic direction and potential implementation approaches based on the input from the community. The Work Group formally handed off their work (See attached) to the City Council at a study session on February 11, 2020.

The next step is for staff to identify the actions the City of Olympia will take to implement the Plan. See draft actions (attached). At the briefing, staff will provide an overview of these actions, how Olympia's plan and actions work in coordination with the regional Homeless Crisis Response Plan and where the regional plan is in its implementation. A crosswalk outlining the strategic alignment between the two plans is attached. Many of Olympia's actions bolster the regional homeless crisis response system.

Olympia's Homeless Response Plan is not intended to be carried out by the City of Olympia alone. An effective homeless response requires partnerships, with participation by other regional jurisdictions, and help from the State and Federal government. The City will continually develop its plan by working with key stakeholders and possible partner organizations to identify partner-led actions and timelines. Priorities include temporary emergency housing hosts, supportive and affordable housing developers and outreach and service programs that reduce individuals' barriers to housing and/or increase opportunities for long-term stability.

Olympia's Homeless Response Plan will include metrics to help us track and report on our progress over time. The plan including metrics will be released to the public in April.

Neighborhood/Community Interests (if known):
The public has a high degree of interest in the City's response to homelessness. An overview of the process, and summaries of community input received throughout the process are available on EngageOlympia.com.

Options:
No action requested; briefing only

Financial Impact:
The City is investing close to $4 million annually for projects related to housing and homelessness; and $2.8 million for outreach and public safety programs, including the Walking Patrol, Crisis Response Unit, Familiar Faces peer Navigators, Neighborhood Police Program, and Downtown Ambassadors.

Attachments:
City-led Actions
Crosswalk with County Plan
Strategies and Potential Approaches

WORKSHEET: City-led Actions in Olympia Homeless Response Plan

Draft: 2/02/20

FOCUS AREA #1: Streamline and enhance rapid-response and wrap-around services			
STRATEGY **1.1 - Coordinate with peer jurisdictions to implement Thurston County's Homeless Crisis Response Plan.**			
ACTION		**Lead/Partners**	**Timeline**
A	**Join an Interlocal Agreement to formalize a Regional Housing Council (RHC)** that includes elected officials from the County, urban cities and possibly others. Interlocal agreement is under discussion; possible RHC roles include implementing the Homeless Crisis Response Plan, increasing shelter and affordable housing, sharing policies consistently across jurisdictions, seeking additional public/private money, and community engagement/communications.	**County** Cities of Olympia, Lacey, Tumwater; TBD	2020 & Ongoing
B	**City staff support and coordinate with various work groups and efforts convened by the County and Thurston Thrives** to implement the Homeless Crisis Response Plan, including: • **Funders Workgroup** to maximize available funds and identify new funding sources for outreach, prevention, diversion, shelter and mitigation, and supported or affordable housing • **Housing Action Team (HAT)** to develop strategies and recommendations to expand access to affordable housing, especially for the homeless and severely cost burdened • **Homeless Housing Hub (HHH)** to communicate, coordinate and share best practices • **Greater Regional Outreach Workers League (GROWL)** to discuss best practices and coordinate efforts • **Support for an Annual Summit and other engagement** to provide trainings, educational opportunities for the community about housing and homelessness issues • **Olympia's Home Fund Advisory Board** will also monitor alignment of Home Fund investments through goal of funding construction of 300 units of supportive housing in the next 5 years	**County** Various	2020 & Ongoing
C	*Many of the actions that follow directly implement strategies and objectives of the HCRP*		

WORKSHEET: City-led Actions in Olympia Homeless Response Plan

Draft: 2/02/20

STRATEGY **1.2 - Simplify and increase use of the coordinated entry system to improve our ability to track, identify solutions and ensure successful outcomes.**			
ACTION		**Lead/Partners**	**Timeline**
A	**Require City-contracted providers** to use Coordinated Entry Require City-contracted providers to report shelter and other service outcomes in Homeless Management Information System (HMIS)	**CPD**	2021 & Ongoing

STRATEGY **1.3 - Expand temporary shelter or other supported site capacity to transition people out of encampments.**			
ACTION		**Lead/Partners**	**Timeline**
A	**Expand shelter or other supported site capacity through funding, land acquisition, planning and/or project management**. This could be new or expanded shelter or a second mitigation site in conjunction with regional partners; looking for creative ideas and partners.	**CPD, Executive Office**; various providers	2020
B	**Continue Downtown Mitigation Site**: Implement a new management structure with more wrap-around services and engagement; improve data collection and reporting. *If WASPC grant received a peer navigator will be assigned to the site. Also seeking housing case management funding through Medicaid Foundational Community Supports program*	**CPD,** Catholic Community Services; Union Gospel Mission; various providers	2020
C	**Continue Plum Street Village**: Improve data collection and reporting; reduce 2019 contract costs	**CPD,** Low Income Housing Institute; Various other providers	2020
D	**Continue financial support for Hope Village at Westminster Presbyterian:** Provide hygiene and case worker support to residents of 8 tiny houses; part of faith and city pilot partnership	**Westminster** CPD	2020
E	**Provide financial support for New Hope Community at First Christian Church:** Provide funds for set up and hygiene services to support residents of 11 tiny houses; part of faith and city pilot partnership	**First Christian** CPD	2020

WORKSHEET: City-led Actions in Olympia Homeless Response Plan

Draft: 2/02/20

F	**Continue funding for and seek additional faith community partners** to host temporary emergency housing, shelter or other homeless related services	CPD	2020 & Ongoing
G	**Continue financial support for Community Youth Services shelter** so they can be open 24/7 providing a safe place for youth during the day	CPD	2020-2021
H	**Provide financial support for Interfaith Works shelter maintenance** to ensure that ongoing plumbing, sewer and other health and safety matters can be addressed to keep the shelter operational	CPD	2020
I	**Lobby the State Legislature** for more resources to address homelessness, including support for use of state property for people experiencing homelessness	City of Olympia	2020

STRATEGY

1.4 - Provide interim oversight and support for existing encampments.

ACTION		Lead/Partners	Timeline
A	**Review stewardship and support for the Nickerson Encampment:** engage camp residents, outreach organizations who support the camp and neighbors to determine what is working/not working and consider adjustments; clarify for the public our approach to this encampment on City-owned property; ensure all camp residents are entered into Coordinated Entry and work to support development of housing plans for all residents	CPD, Parks, OPD, Fire Concerned Clergy, Just Housing	2020
B	**Work with Thurston County to provide garbage dumpsters at the Jungle encampment;** monitor site to ensure burn pits that have been filled are not re-established	CPD, Fire, County	2020
C	**Continue Secure Storage** sited at Union Gospel Mission, which provides a safe place for people to store their belongings	CPD Union Gospel Mission	2020
D	**Work with Thurston County and Greater Regional Outreach Workers League (GROWL) to expand resources for outreach to monitor and actively build relationships with people in encampments** to connect them to safer shelter options and other services	CPD, GROWL	2020 & Ongoing

WORKSHEET: City-led Actions in Olympia Homeless Response Plan

Draft: 2/02/20

STRATEGY **1.5 - Follow a fair and orderly process for removing encampments.**			
ACTION		**Lead/Partners**	**Timeline**
A	**Make camp removal policies and procedures available** to the public on the City's website	CPD	2020
B	**Assess the City's RV parking policy and procedures:** expand the ability of outreach workers to engage with RV parkers; streamline enforcement policies and procedures and communicate these with the public.	Exec Office, CPD, OPD, Legal, Thurston County	2020
C	**Provide Trauma Informed Care Training** to all city staff involved in camp closures	CPD, OPD, PWD, Fire, Parks	2020 & Ongoing

STRATEGY **1.6 - Increase access to substance abuse and mental illness treatment facilities and services locally.**			
ACTION		**Lead/Partners**	**Timeline**
A	**Support planning and siting of existing and future behavioral health facilities** including current search for new space for the Olympia Bupe Clinic (Buprenorphine, medical assisted opioid treatment)	OPD, Capital Recovery, various partners	2020 & Ongoing
B	**Lobby State legislature** for more resources to address mental health and chemical dependency services	City of Olympia	2020
C	**City staff coordinate with multiple organizations** to share information and provide a continuum of care (e.g., Thurston County Crisis Services Workgroup, Community Care Center Advisory Board, Law Enforcement and Medical Centers group, Vulnerability Index workgroup)	OPD, CPD	2020 & Ongoing

WORKSHEET: City-led Actions in Olympia Homeless Response Plan

Draft: 2/02/20

STRATEGY **1.7 - Prioritize pathways to economic opportunity that help people find longer-term security.**			
ACTION		**Lead/Partners**	**Timeline**
A	**Ensure access to Medicaid Foundational Community Supports for Employment** at City supported sites (i.e., chronically homeless who have Medicaid can receive job coaching, help finding and keeping a job)	CPD	2021 & Ongoing
B	**Issue an RFP to provide a workforce development, skill building and/or financial literacy program for low to moderate income individuals** (direct $50k of the Community Development Block Grant to this project.)	CPD TBD	2020
C	**Utilize Pacific Mountain Workforce Development GADGET program** to hire five interns. GADGET provided employment readiness training and paid internships for youth and young adults impacted by the effects of opioid use (directly or indirectly) and homelessness.	HR, PW, Admin Services PacMt Workforce Development	2020

STRATEGY **1.8 – Identify and promote opportunities for organizations and individuals to contribute to priority homeless response needs or projects**			
ACTION		**Lead/Partners**	**Timeline**
A	**The City is actively seeking partners** to host temporary emergency housing, develop supportive and affordable housing and run programs that help individuals' reduce barriers to housing and/or find longer-term security (see 1.3A, 1.3F, 1.7B, 2.1B, 2.1C and 2.1E)	CPD	2020 & Ongoing

WORKSHEET: City-led Actions in Olympia Homeless Response Plan

Draft: 2/02/20

FOCUS AREA #2: Expand affordable housing options and homelessness prevention			
STRATEGIES *(actions that implement 2.1 and 2.2 are closely related so we've combined these sections)* **2.1 - Build a continuum of housing to meet diverse needs and income levels.** **2.2 - Increase partnerships and diversify funding to support construction of new affordable housing.**			
ACTION		**Lead/Partners**	**Timeline**
A	**Complete Regional Housing Inventory and Olympia Housing Action Plan:** Thru a grant from the WA Dept of Commerce, the Cities of Olympia, Lacey and Tumwater will contract with Thurston Regional Planning Council to conduct public outreach, data analysis and other tasks to complete a regional housing needs assessment. The assessment will result in a projection of housing needs by various income levels, an income forecast compared to housing affordability and a menu of actions to increase the regional supply and variety of housing accordingly. Olympia will form its housing action plan from this menu of strategies.	CPD TRPC, Lacey, Tumwater	2020-21
B	**Issue a Request for Proposals for Boulevard Road Site**: find a development partner to build affordable housing at the City-owned 10-acre site located at 3900 Boulevard Road.	CPD	2020
C	**Issue a Request for Proposals for Fertile Grounds Site:** find a development partner to build a single-room occupancy project aimed at residents with low income at the City's 3-acre site located at 911 Adams St SE.	CPD	2020-21
D	**Continue implementation of 2828 Martin Way project:** City purchased land and directed $1.2m of the Home Fund to help build 60 new permanent supportive housing units and a new facility for the Interfaith Works shelter with close to 60 beds. Project partners are securing remaining construction funds, plan to apply for permits in 2020, and complete construction in 2021.	**Low Income Housing Institute, Interfaith Works** CPD	2020-2021
E	**Identify a 2nd Supportive Housing (Home Fund) project and partners:** The City will direct Home Fund dollars to facilitate a second permanent supportive housing project this year and will coordinate with the Thurston County Pipeline to support future supportive housing construction to meet Home Fund's goal of 300 supportive housing units in five years.	CPD	2020 & Ongoing
F	**Update boundary of the Multi-family Tax Exemption** to incent affordable housing	CPD	2020

WORKSHEET: City-led Actions in Olympia Homeless Response Plan

Draft: 2/02/20

G	**Complete Housing Code Amendments** to implement options identified by the State Legislature in the 2019 Growth Management Act amendments. The City Council directed the Olympia Planning Commission to draft an ordinance to implement two or three of these identified options: • Allow duplexes on each corner lot in all zoning districts that permit single family residences • Allow ADU's in association with single-family residence, with some specific provisions • Allow a duplex, triplex, or courtyard apartment on each parcel in one or more zoning districts that permit single-family residences unless there is a specific physical constraint	CPD	2020
H	**Take additional action to remove impediments/disincentives to affordable housing, including:** • Make special effort on accessory dwelling units (ADU's) and single-room occupancy (micro-units) • Adopt pre-approved plans for ADU's • Create greater flexibility in the permitting process for housing projects, within guideposts (e.g., examine lower thresholds for frontage improvements, street connection requirements, street classification standards, definitions of change of use and density, SEPA categorial exemptions, parking requirements and stormwater approaches) • Increase information, guidance on permitting process, and the available incentives for housing • Pursue additional tools to support production of housing for low to moderate incomes	CPD, PW	2020-21
I	**Broaden scope of Home Fund Advisory Board** to advise City Council on all housing related activities; include people with lived experience with being homeless or at risk of homelessness on the board.	CPD	2020
J	**Lobby the State Legislature** for more affordable housing resources, including support for legislation that increases statewide housing supply	City of Olympia	2020
K	**Update Comprehensive Plan Housing Element** and synchronize into a new chapter. Following the housing needs assessment and housing action plan (action A), review Olympia's Comprehensive Plan housing element for potential updates. Refer also to Olympia's Homeless Response Plan.	CPD	2022-2023
L	**On an annual basis, award Home Fund dollars to help build permanent supportive housing:** The City's target is to build 300 new units of supported and affordable housing within the next 5 years (2020-24).	CPD	Ongoing
M	**On an annual basis, use Community Development Block Grant and Home Funds to purchase property** for homeless and affordable housing projects in order to continually increase the countywide affordable housing pipeline	CPD	Ongoing

WORKSHEET: City-led Actions in Olympia Homeless Response Plan

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STRATEGY **2.3 - Implement policies that help people locate housing and remain housed.**			
ACTION		**Lead/Partners**	**Timeline**
A	**Convene public process and recommend policy changes** to make accessing and maintaining rental housing easier (e.g., landlord registration or first and deposit paid over three months)	CPD Land Use Committee	2020-2021
B	**Explore relocation assistance** for tenants at risk of losing housing	General Gov Committee	2020
C	**Lobby the State Legislature** for more resources to address homelessness and affordable housing, including asking for leadership and support for renter/tenant protections	City of Olympia	2020
STRATEGY **2.4 - Increase education, training and resources that help people avoid or recover from homelessness.**			
ACTION		**Lead/Partners**	**Timeline**
A	**Explore tenant/landlord conflict resolution** that will reduce conflict and improve housing security through partnerships with providers including the Housing Advisory Team's Rental Housing Work Group	CPD	2021 and Ongoing
STRATEGY **2.5 - Develop an economic development strategy that addresses all income levels.**			
ACTION		**Lead/Partners**	**Timeline**
A	**Develop an Economic Development Strategy** that addresses all income levels; examine data	CPD Econ Devo	2020-21
B	**Update the Economic Development Chapter of the Comprehensive Plan**	CPD	2022-23

WORKSHEET: City-led Actions in Olympia Homeless Response Plan

Draft: 2/02/20

FOCUS AREA #3: Increase public health and safety			
STRATEGY **3.1 - Increase trauma-informed outreach workers.**			
ACTION		**Lead/Partners**	**Timeline**
A	**Apply for Washington Association of Sheriffs and Police Chiefs (WASPC) Law Enforcement Assisted Diversion (LEAD) grant**: if received would provide $.5m in funding for 4 new peer navigators, a mental health professional and program manager for 18 months.	OPD Catholic Community Services	2020
B	**Continue Familiar Faces (FF) Peer Navigator Program**	OPD Catholic Community Services	Ongoing
C	**Continue Crisis Response Unit (CRU)**	OPD	Ongoing
D	**Continue Downtown Ambassadors**	CPD	Ongoing
E	**Continue Park Ranger Program**	Parks	Ongoing
F	**Continually provide trauma informed care training** to City staff that engage with vulnerable populations. Provide training to all Olympia police officers in 2021.	Various departments	Ongoing
G	**Continue to look for resources** and opportunities to expand OPD programs (CRU, FF, WP), particularly in downtown	OPD	Ongoing
I	**City staff coordinate with multiple organizations** to share information and provide a continuum of care (e.g., Thurston County Crisis Services Workgroup, Community Care Center Advisory Board, Law Enforcement and Medical Centers group, Vulnerability Index workgroup)	OPD, CPD	2020 & Ongoing

WORKSHEET: City-led Actions in Olympia Homeless Response Plan

Draft: 2/02/20

STRATEGY **3.2 - Enforce laws that are designed to protect our community and all community members.**			
ACTION		**Lead/Partners**	**Timeline**
A	**Continue Downtown Walking Patrol**; adjust hours based on call data starting in January 2020	OPD	Ongoing
B	**Continue Neighborhood Officers**; if WASPC grant received (#3.1.a) one peer navigator would be assigned to work with the neighborhood officers	OPD	Ongoing
C	**Place more emphasis on enforcing low level crime** while also continuing to address higher level crimes	OPD	2020 and Ongoing
STRATEGY **3.3 - Expand therapeutic court system to help rehabilitate low-level offenders while holding them accountable.**			
ACTION		Lead/Partners	Timeline
A	**Develop a Homeless Court Branch of Community Court**	Court Services; Prosecutor's Office, OPD	2020
B	**Explore a change to City policy to give officers the authority to direct file citations** for community/homeless court eligible cases	Prosecutor's Office OPD	2020-2021
C	**Increase consultation and collaboration between Police Department and Community Court**	OPD; Court Services	2020 and Ongoing

WORKSHEET: City-led Actions in Olympia Homeless Response Plan

Draft: 2/02/20

STRATEGY **3.4 - Prevent and remove new encampments before they establish.**			
ACTION		**Lead/Partners**	**Timeline**
A	**Monitor and prevent camps from establishing** on city owned property.	Park Rangers, CPD Rapid Response, OPD	Ongoing
B	**Provide technical assistance** to private property owners with encampment activity on their property.	CPD Code Enforcement OPD Neighborhood Officers	Ongoing
STRATEGY **3.5 - Provide support to businesses and property owners to help address the impacts of adverse behaviors.**			
ACTION		**Lead/Partners**	**Timeline**
A	**Increase visibility of Downtown Walking Patrol in the downtown core:** increase number of business check-ins	OPD	2020 and Ongoing
B	**Provide de-escalation training to businesses**, best practices for limiting adverse behaviors, and who to call for help	CPD - Ambassadors	Ongoing
C	**Provide coaching and advice to downtown business and property owners** about physical changes they can make in keeping with Crime Prevention thru Environmental Design (CPTED) principles.	CPD - Ambassadors	Ongoing
D	**Continue lighting safety program: fund lighting upgrades** to increase sense of safety and deter negative behaviors within downtown.	CPD	2020 and Ongoing
E	**Update Downtown Design Guidelines** to include CPTED requirements for new construction or significant rehabs.	CPD	2020

F	**Work with the faith community** to support feeding programs while reducing the impacts (see City of Austin model)	City of Olympia, faith partners	2021-22
STRATEGY **3.6 - Establish an inclusive, common set of agreed upon standards for respecting one another downtown.**			
ACTION		**Lead/Partners**	**Timeline**
A	**Facilitate a stakeholder process to identify an inclusive, common set of agreed upon standards** for respecting one another downtown. Scope the process and possible partners in 2020.	CPD	2020-2021
B	**Find creative ways to promote the standards** and feature artistic renditions throughout downtown	TBD	2020-2021
STRATEGY **3.7 - Provide ongoing opportunities for community engagement and education related to homelessness.**			
Action		**Lead/Partners**	**Timeline**
A	**Develop homeless/housing communication strategy** for ongoing messaging to public about City's goals, actions and outcomes	Communications Dept. CPD, OPD	2020
B	**Participate with Thurston County in planning and implementation of an Annual Summit and other engagement opportunities** for the regional community about housing and homelessness issues, including trainings and educational opportunities	CPD	2020

Olympia Homeless Response Plan
Alignment with Thurston County Homeless Crisis Response Plan

This document outlines where there is strategic alignment between the two plans.

FOCUS AREA #1: Streamline and enhance rapid-response and wrap-around services	
HRP STRATEGY	**COUNTY STRATEGY**
1.1 - Coordinate with peer jurisdictions to implement Thurston County's Homeless Crisis Response Plan (HCRP).	• Objective 4: Project the impact of a fully implemented plan on the number of households housed and number left unsheltered, assuming existing resources and state policies • 3.7: Develop a coordinated and systematic approach for funders at all levels to maximize the fiscal capacity of the Homeless Crisis Response System (HCRS) • 3.8: Continue to advocate for Legislation to increase/ diversify funding for HCRS • 3.9: Explore feasibility of County-wide revenue opportunities (e.g., regional home fund levy) • 3.10: Identify diverse funding opportunities to hire and train outreach workers • 3.14: Identify diverse funding sources for supportive services in order to increase capacity for permanent supportive housing projects • *Regional partnership will be needed to implement many of the strategies below*
1.2 - Simplify and increase use of the coordinated entry system to improve our ability to track, identify solutions and ensure successful outcomes.	• 1.1: Ensure compliance with Coordinated Entry (CE) data collection requirements (increase data quality through targeted trainings) • 1.2: Continue to maintain active lists of all individuals experiencing homelessness and improve data sharing for all sub-populations • 2.1: Complete an annual evaluation of the CE system
1.3 - Expand temporary shelter or other supported site capacity to transition people out of encampments.	• 3:18: Maintain and expand operations of the Hazardous Weather Task Force • 3:19: Research and develop best practices for crisis sheltering efforts • 3:20: Increase temporary crisis sheltering projects for all populations countywide • 3.21: Preserve existing and develop new emergency shelter • 3.22: Develop 24/7 strategies for all homeless sub-populations, including Hazard Weather shelter response

Olympia Homeless Response Plan
Alignment with Thurston County Homeless Crisis Response Plan

HRP STRATEGY	COUNTY STRATEGY
1.4 - Provide interim oversight and support for existing encampments.	• 3.17: Create a regional Crisis Response Unit to offer support to managed and unmanaged encampments and unsheltered individuals throughout the County • Objective 1: Quickly identify and engage all people experiencing homelessness … through outreach and coordination between every system that encounters people experiencing homelessness. Develop specific strategies/best practices to: ○ Improve outreach to individuals and families living in their vehicles or RV's, families, youth and young adults, chronically homeless, veterans, older adults/seniors ○ Improve racial equity in/and outreach to indigenous populations, people of color and immigrants ○ Engage emergency services, hospitals/treatment centers, correctional facilities, higher education, law enforcement, neighborhoods
1.5 - Follow a fair and orderly process for removing encampments.	*No correlating strategies*
1.6 - Increase access to substance abuse and mental illness treatment facilities and services locally.	• 3.16: Increase access to mental health and substance use outreach, outpatient and inpatient treatment • *See Thurston County Opioid Response Plan*
1.7 - Prioritize pathways to economic opportunity that help people find longer-term security.	• 3.34: Develop a clear pathway to employment by developing strategies and partnering with existing workforce development programs • 3.35: Increase implementation and use of peer workers in the HCRS service delivery • Various trainings objectives identified under Objectives 1,2,3,5
1.8 - Identify and promote opportunities for organizations and individuals to contribute to priority homeless response needs or projects	• 3.1: Engage all subpopulations with lived experience of homelessness on a bi-annual basis • 3.2: Engage communities impacted by the HCRS on a bi-annual basis • 3.4: Offer annual community homelessness summit (trainings and educational opportunities on issues related to homelessness and affordable housing)

Olympia Homeless Response Plan
Alignment with Thurston County Homeless Crisis Response Plan

FOCUS AREA #2: Expand affordable housing options and homelessness prevention	
HRP STRATEGY	**COUNTY STRATEGY**
2.1 - Build a continuum of housing to meet diverse needs and income levels.	• 3.24: Increase permanent supportive housing units for all sub-populations • 3.26: Increase affordable housing inventory regionally
2.2 - Increase partnerships and diversify funding to support construction of new affordable housing.	• 3.27: Strengthen and extend multi-family tax exemption • 3.28: Explore ways to increase housing density via zoning and other policy tools in regional urban hubs • 3.29: Implement HB 1406 programs related to 1406 revenue (local state-shared sales tax)
2.3 - Implement policies that help people locate housing and remain housed.	• 3.11: Expand targeted prevention programs for all sub-populations • 3.12: Increase diversion activities for all sub-populations • 3.13: Increase diversion or family reunification for youth • 3.14: Identify diverse funding sources for supportive services in order to increase capacity for permanent supportive housing projects • 3:15: Regionalize Foundational Community Supports (FSC) programming to ensure households that wish to remain in their home communities can be supported through FCS activities • 3.23: Increase rapid re-housing placements for all subpopulations • 3.25: Improve housing placement stability • 3.31: Enact and implement tenant protection laws and fund enforcement • 3:32: Ensure that when tenants are asked to relocate they are supported in that transition in order to prevent the household falling into homelessness • 3.33: Keep currently housed individuals and families in their housing by addressing housing quality issues as they rise • 2.2: Evaluate vulnerability prioritization • Objective 5: Address racial disparities among people experiencing homelessness

Olympia Homeless Response Plan
Alignment with Thurston County Homeless Crisis Response Plan

HRP STRATEGY	COUNTY STRATEGY
2.4 - Increase education, training and resources that help people avoid or recover from homelessness.	• 3.11: Expand targeted, prevention programs for all sub-populations of people experiencing homelessness • 3.12: Increase diversion activities for all sub populations of people experiencing homelessness • 3.13: Increase diversion or family reunification for youth • 3.31: Enact and implement tenant protection laws and fund enforcement • 3:32: Ensure that when tenants are asked to relocate they are supported in that transition in order to prevent the household falling into homelessness • 3.34: Develop a clear pathway to employment by developing strategies and partnering with existing workforce development programs • 3.35: Increase the implementation and use of peer workers in the HCRS service delivery
2.5 - Develop an economic development strategy that addresses all income levels.	*Above strategies are related*
FOCUS AREA #3: Increase public health and safety	
HRP STRATEGY	**COUNTY STRATEGY**
3.1 - Increase trauma-informed outreach workers.	• 3.10: Identify funding for outreach programs (to hire and train outreach workers) • 1.3: Identify and develop best practice trainings for outreach staff within HCRS, with specific emphasis on special populations • Objective 1: Quickly identify and engage all people experiencing homelessness • 3.17: Create a regional Crisis Response Unit to offer support to managed and unmanaged encampments and unsheltered individuals throughout the County

Olympia Homeless Response Plan
Alignment with Thurston County Homeless Crisis Response Plan

HRP STRATEGY	COUNTY STRATEGY
3.2 - Enforce laws that are designed to protect our community and all community members.	*No correlating strategies*
3.3 - Expand therapeutic court system to help rehabilitate low-level offenders while holding them accountable.	*No correlating strategies in the Homeless Crisis Response Plan; however, the Thurston County court system includes therapeutic courts, such as Drug Court and Veterans' Court*
3.4 - Prevent and remove new encampments before they establish.	*No correlating strategies*
3.5 - Provide support to businesses and property owners to help address the impacts of adverse behaviors.	• 3.2: Engage communities impacted by the HCRS on a bi-annual basis • 3.4: Offer annual community homelessness summit • 3.6: Develop Good Neighbor Plans with neighbors of housing and homeless facilities that align with best practices and the HCRS
3.6 - Establish an inclusive, common set of agreed upon standards for respecting one another downtown.	*No correlating strategies*

Olympia Homeless Response Plan
Alignment with Thurston County Homeless Crisis Response Plan

HRP STRATEGY	COUNTY STRATEGY
3.7 - Provide ongoing opportunities for community engagement and education related to homelessness.	• 3.1: Engage all subpopulations with lived experience of homelessness on a bi-annual basis • 3.2: Engage communities impacted by the HCRS on a bi-annual basis • 3.3: Create universal set of definitions and terms • 3.4: Offer annual community homelessness summit (trainings and educational opportunities on issues related to homelessness and affordable housing) • 3.5: Establish a quarterly data work group through the housing action team • 3.6: Develop Good Neighbor Plans with neighbors of housing and homeless facilities that align with best practices and the HCRS

Homeless Response Plan | Strategies and Potential Implementation Approaches

Focus Area #1: Streamline and enhance rapid-response and wrap-around services			Actions, Lead/Partners	Timeline		
STRATEGY #	**STRATEGY**	**POTENTIAL IMPLEMENTATION APPROACHES**	**Lead/Partners**	**2020-21**	**22-24**	**2025+**
1.1	Coordinate with peer jurisdictions to implement Thurston County's Homeless Crisis Response Plan.	• Leverage resources and assign clear implementation responsibilities. • Identify performance measures and communicate progress to the community. • Identify appropriate, region-wide locations for services outside downtown. • Continue to support emergency response services and mitigation sites. • Align funding sources and jointly lobby for more state and federal assistance.				
1.2	Simplify and increase use of the coordinated entry system to improve our ability to track, identify solutions and ensure successful outcomes.	• Ensure partners are accurately submitting data in coordinated-entry. • Provide coordinated-entry training for agencies and distribute analysis results. • Increase resources to expedite and expand coordinated entry enrollments. • Improve data collection, analysis, management and reporting.				
1.3	Expand temporary shelter or other supported site capacity to transition people out of encampments.	• Locate additional emergency and temporary shelter sites outside downtown. • Increase wrap-around services at mitigation and other supported sites. • Develop a 24/7 navigation center with onsite support to facilitate individual solutions and access to temporary shelter or permanent housing options per guidelines in Strategy 1.1. • Establish a respite center for the ill or those unable to care for themselves. • Work regionally to establish clear zoning code pathways (and remove other barriers) to allow for siting and establishing temporary shelter. • Increase access to hygiene services (bathrooms, shower, laundry, etc.)				

STRATEGY #	STRATEGY	POTENTIAL IMPLEMENTATION APPROACHES	Lead/Partners	2020-21	22-24	2025+
1.4	Provide interim oversight and support for existing encampments.	• Expand the ability of outreach workers to monitor and actively build relationships with people in encampments to connect them to safer shelter options and other services. • Prohibit and respond to predatory behavior, open fires, environmental pollution, structural damage, and waste accumulation on public and private property. • Identify appropriate campsite support and/or steward options. • Establish expectations/consequences for temporary encampments. • Consider a permit pathway for private property owners to temporarily allow people to shelter on their land.				
1.5	Follow a fair and orderly process for removing encampments.	• Develop, adhere to and communicate transparent criteria for determining if and when camps must be removed, and consistent step-by-step procedures for removing encampments. • Minimize re-traumatization during camp removal. • Ensure people in encampments are engaged by organizations that provide shelters, transitional and rapid rehousing options. • Provide ample advance warning, and consistent communication and procedures so people have an opportunity to relocate their belongings. • Provide additional secure storage space so people can protect belongings. • Enforce the City's RV camping management policy. • Coordinate with State to facilitate management, clean-up, property clearing.				
1.6	Increase access to substance abuse and mental illness treatment facilities and services locally.	• Seek opportunities to establish treatment centers in all major Thurston cities. • Seek state and federal assistance to develop treatment centers. • Pursue public-private partnerships to increase treatment facilities. • Create dedicated place(s) where emergency responders can bring people to safely detox or de-escalate from a mental health crisis. • Provide ongoing support for graduates of treatment programs to reduce relapse rates.				

		• Align treatment programs and procedures with State and local Opioid Response Plans.				
STRATEGY #	STRATEGY	**POTENTIAL IMPLEMENTATION APPROACHES**	**Lead/Partners**	**2020-21**	**22-24**	**2025+**
1.7	Prioritize pathways to economic opportunity that help people find longer-term security.	• Provide case management to help people overcome barriers to employment – e.g. securing an ID card, addressing outstanding warrants or fines, obtaining a high school diploma or GED. • Coordinate with Workforce Council, Chambers, Colleges and other partners that can help connect people to training and/or employment. • Leverage abilities and insights of social service agencies to develop pathway programs and identify appropriate strategies for connecting target audiences. • Ensure programs are inclusive and appropriate for diverse populations, ages. • Reduce panhandling by creating low-barrier, creative employment opportunities that helps people earn income without impacting other community members.				
1.8	Identify and promote opportunities for organizations and individuals to contribute to priority homeless response needs or projects	• Develop a central web portal that links potential donors and volunteers with local organizations. • Identify programs that provide basic needs that are priorities for public giving. • Provide skill-building, de-escalation and other related training to the community.				

Focus Area #2: Expand affordable housing options and homelessness prevention			*Lead/Partners	Timeline		
STRATEGY #	**STRATEGY**	**POTENTIAL IMPLEMENTATION APPROACHES**	**Lead/Partners**	**2020-21**	**22-24**	**2025+**
2.1	Build a continuum of housing to meet diverse needs and income levels.	• Develop a community-wide affordable housing action plan. • Leveraging the City's Home Fund, build 300 new units of supported and affordable housing within the next 5 years (2020-24). • Over the next five years, create more permanent supportive housing. • Reduce costs and other barriers to building more housing stock of all types. • Incorporate creative housing options (e.g. ADU, shared-housing, boarding, etc.). • Focus on rehabilitation of existing buildings as well as new construction. • Expand housing options that support sobriety (recovery housing). • Expand ADA-accessible housing stock.				
2.2	Increase partnerships and diversify funding to support construction of new affordable housing.	• Engage peer cities and key agencies in housing funding and location strategies. • Seek State and Federal assistance to increase supply of low-income housing. • Adjust policies and codes to facilitate affordable housing construction. • Develop private sector partnerships to leverage additional affordable housing opportunities. • Host or invite the private sector to innovate (i.e., Issue an affordable housing RFP to solicit creative ideas).				
2.3	Implement policies that help people locate housing and remain housed.	• Increase diversion funding to more quickly house those who are able to sustain their housing independently. • Consider rent subsidies, first-month/last-month bridge loans, etc. • Facilitate access to housing for at-risk and marginalized populations. • Develop emergency assistance resources for people at-risk of losing housing.				

		• Increase funding for family reunification to relocate people with home and family. • Work with the Housing Authority to develop strategic housing solutions.				
STRATEGY #	**STRATEGY**	**POTENTIAL IMPLEMENTATION APPROACHES**	**Lead/Partners**	**2020-21**	**22-24**	**2025+**
2.4	Increase education, training and resources that help people avoid or recover from homelessness.	• Remove barriers to transportation and provide transportation where essential. • Increase financial literacy. • Expand access to personal counseling services. • Enhance career pathway education beginning in middle and high school years. • Promote the availability of increased access to college education and technical certification training programs that lead to higher-wage occupations. • Provide landlords and tenants rights information.				
2.5	Develop an economic development strategy that addresses all income levels.	• Expand mentorship programs for youth. • Provide broader awareness about the longer-term costs associated with leaving poverty unaddressed. • Develop and promote employment opportunities for youth. • Consider entrepreneurial programs like “Piece by Piece” operating in Los Angeles. • Support findings and strategies recommended by community partners focused on developing education and training pathways to career development and financial stability for students				

Focus Area #3: Increase public health and safety			*Lead/Partners	Timeline		
STRATEGY #	**STRATEGY**	**POTENTIAL IMPLEMENTATION APPROACHES**	**Lead/Partners**	**2020-21**	**22-24**	**2025+**
3.1	Increase trauma-informed outreach workers.	• Focus police on reduction and resolution of violent, property and narcotics crime. • Expand crisis response, peer navigator and outreach – e.g. Mobile Crisis Response Unit, Familiar Faces, Ambassadors et al. • Train peer navigators and volunteers to assist with non-emergency mental health and medical response (including de-escalation). • Ensure coordination and consistency among outreach workers from various organizations.				
3.2	Enforce laws that are designed to protect our community and all community members.	• Within authority, enforce person and property crimes through arrest/citation. • Enforce laws within our authority related to illegal substances. • Identify strategies to prevent activities that are or might cause environmental contamination. • Increase police / safety patrols downtown and other impacted neighborhoods. • Ensure coordination and consistency among police and private security.				
3.3	Expand therapeutic court system to help rehabilitate low-level offenders while holding them accountable.	• Develop a Homeless Court, within the Community Court structure, to offer defendants charged with low-level offenses an opportunity to have case dismissed if they link to services and follow individualized plan approved by judge. • Provide court dates at time of infraction to improve accountability, increase opportunities for offenders to connect to services in lieu of jail and reduce warrants that create barriers to housing. • Expand options for immediate drug treatment and detox to increase success of therapeutic courts in dealing with drug related offenses. • Establish mediation for homeless individuals to address minor disagreements.				
STRATEGY #	STRATEGY	**POTENTIAL IMPLEMENTATION APPROACHES**	**Lead/Partners**	**2020-21**	**22-24**	**2025+**

3.4	Prevent and remove new encampments before they establish.	• Monitor and prevent camps from establishing on city owned property, unless site is specifically sanctioned and supported (e.g., a mitigation site). • Provide technical assistance to private property owners with encampment activity on their property. • Coordinate with public agencies to develop management plans for properties. • Share information and procedures with peer jurisdictions to help create consistent approaches.				
3.5	Provide support to businesses and property owners to help address the impacts of adverse behaviors.	• Create a funding program to mitigate impacts of vandalism that is easy and quick to access. • Work with the faith community to support feeding programs while reducing the impacts (e.g., loss of visitor parking, garbage) in downtown. • Use environmental design to facilitate safety (needle disposal, alley lighting). • Provide training in de-escalation training, best practices for limiting adverse behaviors, who to call for help, and trauma-informed care. • Develop tailored good neighbor policies for all facilities that provide homeless services. • Provide opportunities for business/property owners to interact with police, crisis response and outreach workers to build trust and identify solutions.				
3.6	Establish an inclusive, common set of agreed upon standards for respecting one another downtown.	• Include people experiencing homelessness, downtown visitors, property owners, businesses, workers, people uncomfortable coming downtown, law enforcement, service providers, artists, etc. in the process to develop the standards. • Find creative ways to promote the standards and feature artistic renditions throughout downtown.				
STRATEGY #	STRATEGY	**POTENTIAL IMPLEMENTATION APPROACHES**	**Lead/Partners**	**2020-21**	**22-24**	**2025+**

3.7	Provide ongoing opportunities for community engagement and education related to homelessness.	• Report regularly to the community about what is being done and progress being made (i.e., radio, social media, annual events). • Educate on the causes of homelessness and ensure people understand homelessness and adverse behaviors are often separate issues. • Increase government and social service interaction with neighborhoods to share information, build trust, identify solutions and leverage resources. • Provide opportunities for housed and unhoused community members to talk to and learn from each other. • Identify / promote ways public and private sector can address homelessness.				

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Land Use & Environment Committee

Annual Code Enforcement Programs Status Report

Agenda Date: 2/13/2020
Agenda Item Number: 6.B
File Number:20-0115

Type: report **Version:** 1 **Status:** In Committee

Title
Annual Code Enforcement Programs Status Report

Recommended Action
Committee Recommendation:
Not referred to a committee.

City Manager Recommendation:
Receive the annual report on Code Enforcement programs. Briefing only; No action requested.

Report
Issue:
Whether to receive the annual report on Code Enforcement programs.

Staff Contact:
John Mahone, Lead Code Enforcement Officer, Community Planning & Development, 360.753.8393

Presenter(s):
John Mahone, Lead Code Enforcement Officer, Community Planning & Development

Background and Analysis:
Olympia Building-Safety and Code Enforcement programs are part of the Community Planning and Development Department (CP&D). This report will update the Committee on the activities related to these programs.

Code Enforcement programs play an important role in the health, safety and welfare of the City of Olympia. Each year, the CP&D Code Enforcement programs address many issues related to health, safety, and welfare, as well as property violations.

Options:
N/A

Financial Impact:
None. Costs of code enforcement activities are covered with existing city budget.

Type: report **Version:** 1 **Status:** In Committee

Attachments:
None

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Land Use & Environment Committee

Residential Fire Sprinkler Update

Agenda Date: 2/13/2020
Agenda Item Number: 6.C
File Number:20-0122

Type: report **Version:** 1 **Status:** In Committee

Title
Residential Fire Sprinkler Update

Recommended Action
Committee Recommendation:
Not referred to a committee.

City Manager Recommendation:
Receive a briefing on residential sprinkler ordinance and recent administrative decisions to minimize cost(s) for construction of housing. Briefing only. No action requested

Report
Issue:
Whether to receive a briefing on residential sprinkler ordinance and recent administrative decisions to minimize cost(s) for construction of housing.

Staff Contact:
Kevin Bossard, Assistant Chief / Fire Marshal, Olympia Fire Department, 360-688-8222

Presenter(s):
Kevin Bossard, Assistant Chief / Fire Marshal, Olympia Fire Department

Background and Analysis:
Olympia's residential sprinkler ordinance was enacted July 1, 2014. There have been approximately 650 residential sprinkler systems installed since then. The current average cost for a residential sprinkler system is approximately $250.00 per sprinkler head ***or*** $3.50 per square foot. Recent administrative decisions have reduced cost of installation. These include:

1) Removal of a requirement for an item that in effect reduced the cost of a sprinkler system by approximately $1,000.00.
2) Approval of an alternative method (instead of installing sprinklers) for conversion of a finished basement to an accessory dwelling unit or conversion of a pre-existing garage to ADU.

Neighborhood/Community Interests (if known):
The entire community is interested in life safety and property protection. Some members of the

community have raised concerns regarding the cost and function of residential fire sprinkler requirements, particularly related to ADU development costs.

Options:

1. Discuss information presented and take no action.
2. Discuss information presented and direct to staff to further research additional issues.

Financial Impact:

Cost to administer the residential fire sprinkler ordinance is covered by the City's adopted budget, primarily through permit and inspection fees. The overall financial impact to the City for fire protection services is significantly reduced by having sprinklers in residential buildings.

Attachments:

Sprinkler Fact Sheet

RESEARCH

U.S. Experience with Sprinklers

July 2017

Marty Ahrens

Abstract

Sprinklers are a highly effective and reliable part of a building's fire protection system. National estimates of reported fires derived from the U.S. Fire Administration's National Fire Incident Reporting System (NFIRS) and NFPA's annual fire department experience survey show that in 2010-2014 sprinklers were present in 10% of reported U.S. fires. The death rate per 1,000 reported fires was 87% lower in properties with sprinklers than in properties with no automatic extinguishing systems (AES). The civilian injury rate was 27% lower and the firefighter fireground injury rate per 1,000 fires was 67% lower in sprinklered properties than in fires in properties without AES.

In fires considered large enough to activate the sprinkler, sprinklers operated 92% of the time. Sprinklers were effective in controlling the fire in 96% of the fires in which they operated. Taken together, sprinklers both operated and were effective in 88% of the fires large enough to operate them. In three-fifths of the fires in which the sprinkler failed to operate, the system had been shut off.

This report provides information about the performance of sprinklers in general as well as wet pipe and dry pipe sprinklers. Estimates are provided of sprinkler performance in all fires, with additional details provided about fires in all homes. Properties under construction are excluded from these estimates.

Keywords: Fire suppression, sprinklers, fire statistics, sprinkler performance, home fires

Acknowledgements

The National Fire Protection Association thanks all the fire departments and state fire authorities who participate in the National Fire Incident Reporting System (NFIRS) and the annual NFPA fire experience survey. These firefighters are the original sources of the detailed data that make this analysis possible. Their contributions allow us to estimate the size of the fire problem.

We are also grateful to the U.S. Fire Administration for its work in developing, coordinating, and maintaining NFIRS.

To learn more about research at NFPA visit www.nfpa.org/research.

Copies of this report are available from:
NFPA Research, Data and Analytics Division
1 Batterymarch Park
Quincy, MA 02169-7471
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E-mail: research@nfpa.org
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NFPA No. USS14

FACT SHEET » RESEARCH

Sprinklers in Reported U.S. Fires during 2010 to 2014

Fire sprinklers can control a fire while the fire is still small. Some type of sprinkler was present in an estimated average of 49,840 (10%) reported structure fires during 2010 to 2014. Automatic extinguishing systems (AES) are designed to control fires until the fire department arrives. Sprinklers are a type of AES that uses water to control fires. Other types of AES use something other than water.

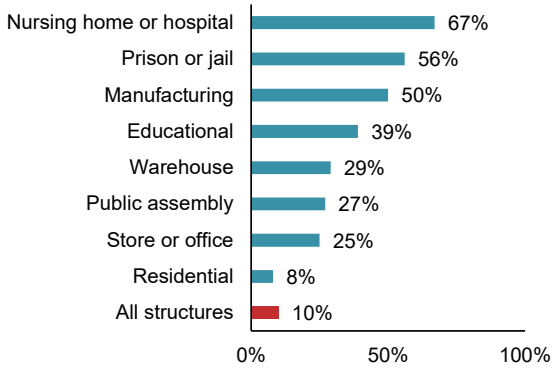
Sprinkler Presence

Sprinklers were most likely to be found in institutional occupancies such as nursing homes, hospitals, and prisons or jails.

Most structure fires and fire deaths occurred in residential properties, particularly homes, but only 8% of the reported residential fires were in properties with sprinklers.

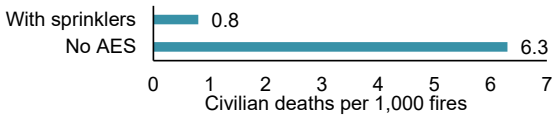
Wet pipe sprinklers accounted for 87% of the sprinklers in reported structure fires, dry pipe systems accounted for 10%, and other types of sprinklers accounted for 3%.

Presence of sprinklers in reported fires by occupancy



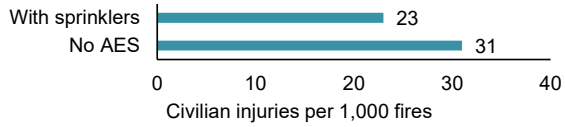
Impact of Sprinklers

Civilian death rates per 1,000 fires in properties with sprinklers and with no AES



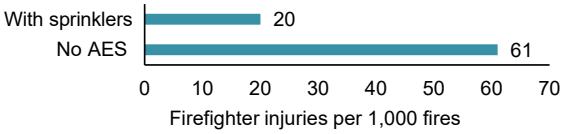
The civilian fire death rate of 0.8 per 1,000 reported fires was 87% lower in properties with sprinklers than in properties with no AES.

Civilian injury rates per 1,000 fires in properties with sprinklers and with no AES



The civilian injury rate of 23 per 1,000 reported fires was 27% lower in properties with sprinklers than in properties with no AES. Many injuries occurred in fires that were too small to activate the sprinkler or in the first moments of a fire before the sprinkler operated.

Firefighter injury rates per 1,000 fires in properties with sprinklers and with no AES



The average firefighter fireground injury rate of 20 per 1,000 reported fires was 67% lower where sprinklers were present than in fires with no AES.

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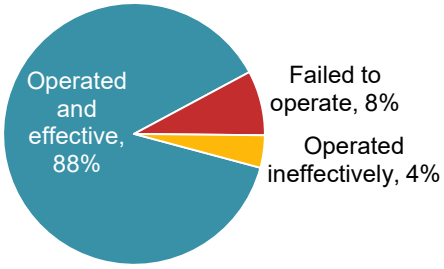
FACT SHEET » RESEARCH *(continued)*

Sprinkler Operation and Effectiveness

Sprinkler operation and effectiveness

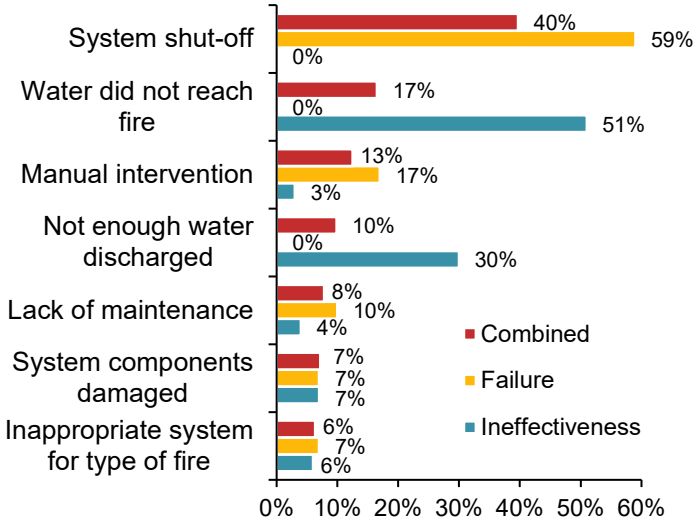


Sprinklers operated in 92% of the fires in which sprinklers were present and the fire was large enough to activate them.

- Sprinklers were effective at controlling the fire in 96% of fires in which they operated.
- Sprinklers operated effectively in 88% of the fires large enough to activate them.

Only one sprinkler head operated in four out of five (79%) fires in which sprinklers operated. In 97% of fires with operating sprinklers, five or fewer heads operated.

Reasons for combined sprinkler failure and ineffectiveness



Source: *U.S. Experience with Sprinklers,* National Fire Protection Association report, 2017.

Reported sprinkler failures (660 per year) were twice as common as reported fires in which sprinklers were ineffective and did not control the fire.

- 40% of the combined sprinkler problems were due to system shut-offs.
- In three of every five (59%) incidents in which sprinklers failed to operate, the system had been shut off.
- In half (51%) of the fires in which sprinklers were ineffective, the water did not reach the fire.

Source: NFPA Research: www.nfpa.org/research
Contact information: 617-984-7451 or research@nfpa.org

FACT SHEET » RESEARCH

Sprinklers in Reported U.S. Home Fires During 2010 to 2014

Some type of sprinkler was present in an estimated total of 24,440 (7%) reported home structure fires during 2010 to 2014. These fires caused an average of 35 (1%) civilian deaths, 616 (5%) civilian injuries, and $198 million (3%) in direct property damage per year. Homes include one- or two-family homes and apartments or other multi-family homes. Properties under construction were excluded from the analysis.

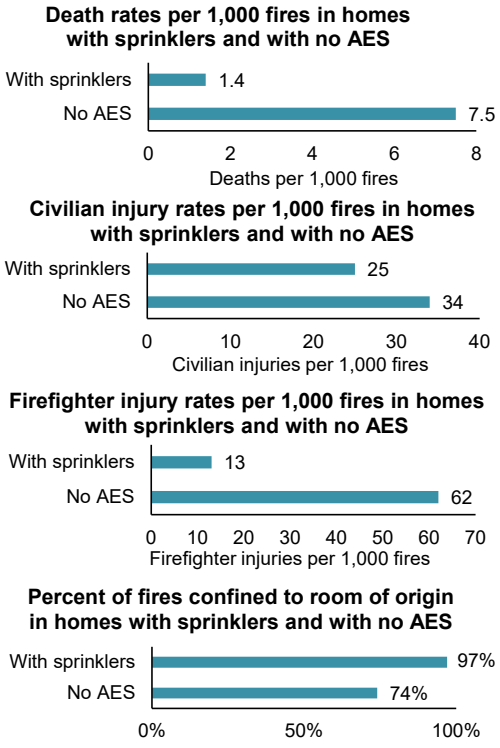
Sprinkler Presence

Automatic extinguishing systems (AES) are designed to control fires until the fire department arrives. Sprinklers are a type of AES that uses water to control fires. Other types of AES use something other than water.

According to the 2011 American Housing Survey, 5% of all occupied housing units had sprinklers. Buildings with more housing units were more likely to have sprinklers. Almost one-third (31%) of units in buildings with 50 or more units were sprinklered.

Wet pipe sprinklers accounted for 89% of the sprinklers in reported home fires, dry pipe systems accounted for 9%, and other types of sprinklers accounted for 2%.

Impact of Sprinklers



The civilian death rate of 1.4 per 1,000 reported fires was 81% lower in homes with sprinklers than in homes with no AES.

The civilian injury rate of 25 per 1,000 reported fires was 31% lower in homes with sprinklers than in homes with no AES. Many of the injuries occurred in fires that were too small to activate the sprinkler or in the first moments of a fire before the sprinkler operated.

The average firefighter injury rate of 13 per 1,000 reported home fires was 79% lower where sprinklers were present than in fires with no AES.

Where sprinklers were present, flame damage was confined to the room of origin in 97% of fires compared to 74% of fires without AES.

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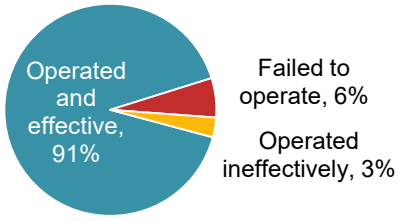
FACT SHEET » RESEARCH *(continued)*

Sprinkler Operation and Effectiveness

Sprinkler operation and effectiveness in home fires



Sprinklers operated in 94% of home fires in which sprinklers were present and the fire was considered large enough to activate them.

- They were effective at controlling the fire in 96% of fires in which they operated.
- Sprinklers operated effectively in 91% of the fires large enough to activate them.

Only one sprinkler head operated in 88% of home fires with operating sprinklers. In 98% of fires with operating sprinklers, five or fewer sprinkler heads operated.

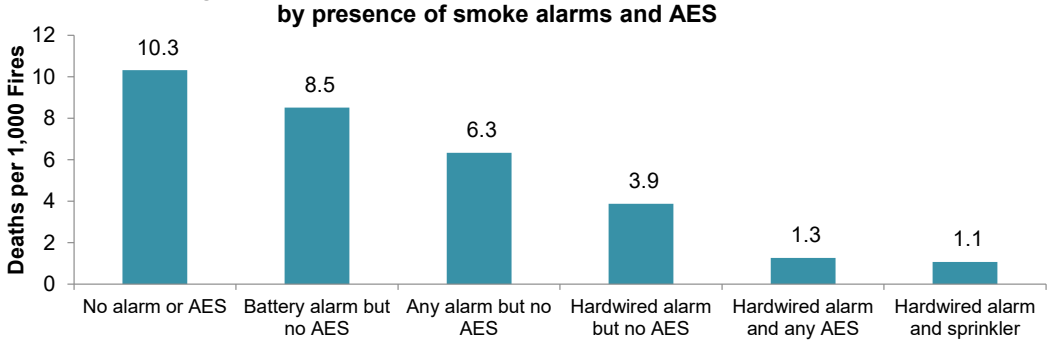
In three out of five (62%) of fires in which sprinklers failed to operate, the system was shut off.

Combined Impact of Smoke Alarms and Sprinklers

The lowest home fire death rate per 1,000 reported fires is found in homes with sprinkler systems and hardwired smoke alarms. Compared to reported home fires with no smoke alarms or AES, the death rate per 1,000 reported fires was as follows:

- 18% lower where battery-powered smoke alarms were present but AES were not
- 39% lower where smoke alarms with any power source were present but AES were not
- 62% lower where hardwired smoke alarms were present but AES were not
- 88% lower where hardwired smoke alarms and any AES were present
- 90% lower where sprinklers and hardwired smoke alarms were present

Average fire death rates per 1,000 reported home structure fires by presence of smoke alarms and AES



Source: *U.S. Experience with Sprinklers,* National Fire Protection Association report, 2017.

Source: NFPA Research: www.nfpa.org/research
Contact information: 617-984-7451 or research@nfpa.org

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U.S. Experience with Sprinklers

INTRODUCTION

Sprinklers play a critical role in fire protection. Information about sprinkler presence and performance in reported fires is essential to understanding the prevalence, impact, reliability and effectiveness of these systems, as well as avenues for performance improvement. This report provides a statistical overview of sprinkler presence and performance in reported fires. Because the majority of deaths are caused by home fires, additional details are provided on sprinklers in fires in homes.

METHODOLOGY

Estimates were derived from the details collected by the U.S. Fire Administration's (USFA's) National Fire Incident Reporting System (NFIRS) and NFPA's annual fire department experience survey. NFIRS collects detailed incident-based information about causes and circumstances of fires from local fire departments. The coding structure is documented in the *National Fire Incident Reporting System Complete Reference Guide* [1]. Participation in NFIRS is voluntary at the federal level. Some states require fire departments to report all incidents or all fires, some have a loss threshold, and in other states, reporting is completely voluntary.

NFPA's annual Fire Experience Survey (FES) collects summary data from a sample of fire departments to calculate estimates of fires and associated losses by broad category. More details can be found in NFPA's report, *U.S. Fire Loss during 2015* and other reports in the series. [2]

To compensate for fires reported to local fire departments but not captured by NFIRS, fire and loss estimates from the FES are divided by comparable totals in NFIRS to develop multipliers. NFIRS data are scaled up by these multipliers. In most cases, unknown data are allocated proportionally. The basic approach was documented in a 1989 *Fire Technology* article by John Hall and Beatrice Harwood. [3]

Fires with one of the six NFIRS confined fire incident types are included in estimates of sprinkler presence, fire spread, and heads operating, but not of operation in general. NFIRS 5.0 includes six types of structure fires collectively referred to as "confined fires," identified by incident type codes 113-118. These include confined cooking fires, confined chimney or flue fires, confined trash fires, confined fuel burner or boiler fires, confined commercial compactor fires, and confined incinerator fires. Losses are generally minimal in these fires, which by definition, are assumed to have been limited to the object of origin. Although NFIRS rules do not require data about automatic extinguishing systems for these fires, local departments do sometimes provide it.

All estimates in this report exclude fires in properties under construction. Fires in which partial systems were present and fires in which sprinklers were present but failed to operate because they were not in the fire area were excluded from estimates related to presence and operation.

Casualty and loss estimates can be heavily influenced by the inclusion or exclusion of one unusually serious fire. Property damage has not been adjusted for inflation. In most cases, fires are rounded to the nearest ten, civilian deaths and injuries are generally rounded to the nearest one, and direct property damage is rounded to the nearest million dollars. Less rounding is used when the numbers are smaller.

Appendix A has more details on how national estimates are calculated and Appendix B contains specific information about the NFIRS data elements.

Sprinklers in All Occupancies

SPRINKLER PRESENCE AND TYPE

Some type of sprinkler was present in an estimated average of 49,840 (10%) of reported structure fires during 2010-2014. Sprinkler presence varies widely by occupancy. Figure 1 shows the percentage of fires by occupancy in which any type of sprinkler was present. Sprinklers were most likely to be found in institutional occupancies, such as nursing homes, hospitals, and prisons or jails. Although the majority of structure fires, civilian fire deaths and injuries, and property damage occurred in residential properties, particularly homes, only 8% of the reported residential fires were in properties with sprinklers. Sprinklers in home fires are discussed in greater detail later in the report. High-rise buildings were much more likely to have sprinklers than were shorter structures. [4]

Figure 1. Presence of sprinklers in U.S. structure fires, by occupancy: 2010-2014

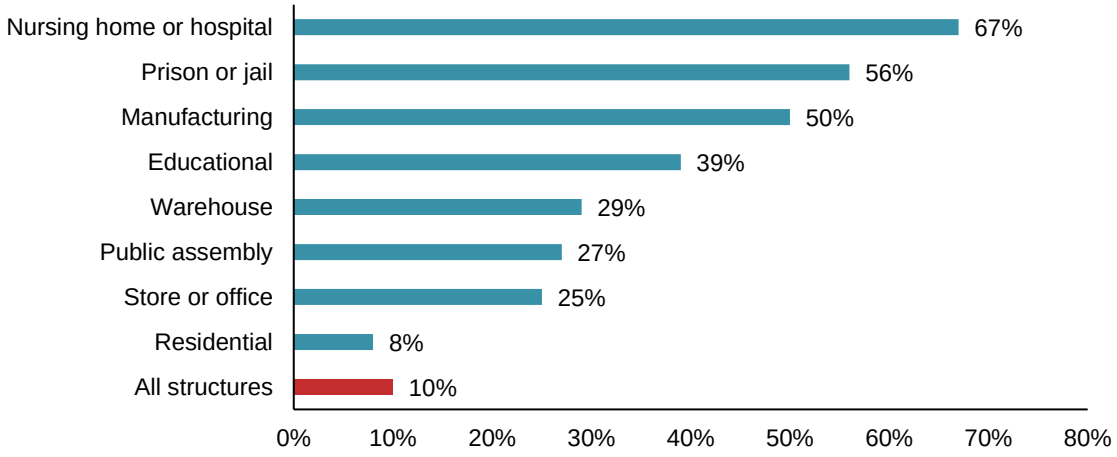


Table 1 provides information about more occupancies and shows estimates of automatic extinguishing system (AES) presence in 1980-1984 and 1994-1998 for historical context.[1] Table A summarizes information about AES in all reported structure fires *except those under construction*.

Table A.
Summary of AES presence and type in reported structure fires
2010-2014 annual averages

AES Presence of Type	Fires		Civilian Deaths		Civilian Injuries		Direct Property Damage (in Millions)	
AES present	**57,430**	**(12%)**	**45**	**(2%)**	**1,259**	**(9%)**	**$793**	**(8%)**
Sprinkler present	49,840	(10%)	42	(2%)	1,148	(8%)	$709	(7%)
Wet	*43,540*	*(9%)*	*39*	*(1%)*	*1,058*	*(7%)*	*$579*	*(6%)*
Dry	*4,770*	*(1%)*	*2*	*(0%)*	*69*	*(0%)*	*$120*	*(1%)*
Other	*1,530*	*(0%)*	*1*	*(0%)*	*21*	*(0%)*	*$10*	*(0%)*
Non-sprinkler AES present	7,590	(2%)	4	(0%)	110	(1%)	$84	(1%)
Partial system AES of any type	2,190	(0%)	5	(0%)	56	(0%)	$66	(1%)
AES of any type not in fire area and did not operate	1,630	(0%)	2	(0%)	47	(0%)	$75	(1%)
No AES present	**422,180**	**(87%)**	**2,659**	**(98%)**	**13,241**	**(91%)**	**$8,609**	**(90%)**
Total	**483,430**	**(100%)**	**2,711**	**(100%)**	**14,602**	**(100%)**	**$9,544**	**(100%)**

[1] Data about specific types of AES was first collected in NFIRS 5.0, introduced in 1999.

Wet pipe sprinklers accounted for 87% of the sprinklers in reported structure fires, dry pipe systems were in 10%, and other types of sprinklers were in 3%. See Figure 2.

Figure 2. Types of sprinklers found in U.S. structure fires: 2010-2014

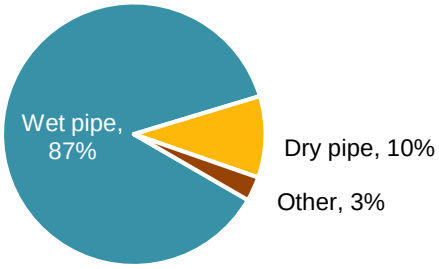
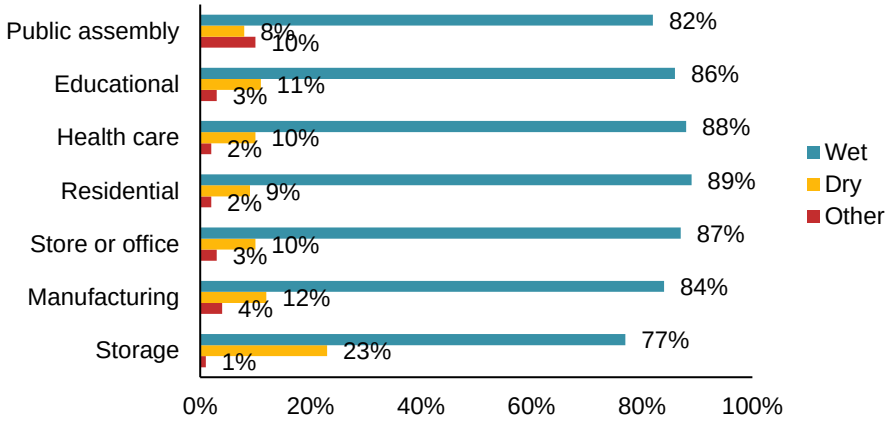


Figure 3 and Table 2 show that dry pipe sprinklers were more common in storage occupancies. "Other" sprinklers were seen most frequently in eating and drinking establishments. It is possible that some of these other sprinklers were actually miscodes of systems designed specifically for cooking equipment.

Figure 3. Sprinkler type by occupancy: 2010-2014

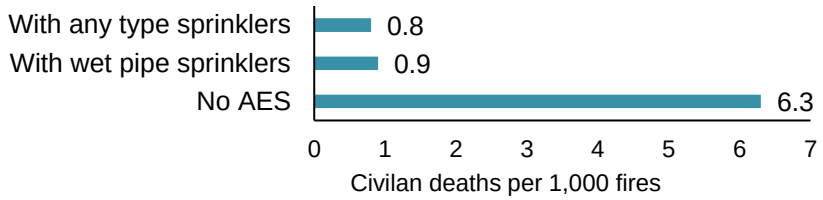


FIRES IN PROPERTIES WITH SPRINKLERS VS. NO AES

The death rate per 1,000 reported fires was 87% lower in properties with sprinklers than in properties with no AES. These rates are based strictly on reported presence or absence. Operation is not considered. Figure 4 shows that in reported structure fires with no automatic extinguishing systems (AES), the civilian death rate was 6.3 per 1,000 fires. When any type of sprinklers were present, the death rate was 0.8 per 1,000 fires. When wet pipe sprinklers were present, the death rate of 0.9 deaths per 1,000 fires was 86% lower than in home fires without AES. Table 3 shows these rates for all sprinklers and wet pipe sprinklers by occupancy. The smallest reduction (33%) was seen in manufacturing properties. Civilian deaths in sprinklered properties are discussed in greater detail later in this report.

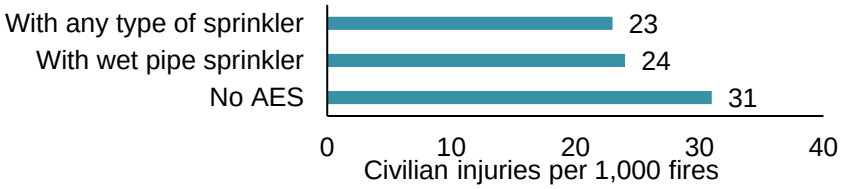
While the reduction in deaths was greater in some occupancies with wet pipe sprinklers than total sprinklers, the differences were small. With so few deaths in sprinklered properties, the differences are not meaningful.

Figure 4. Civilian death rates per 1,000 fires in properties with sprinklers and with no AES: 2010-2014



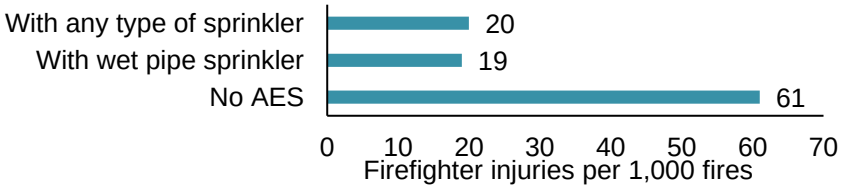
The civilian injury rate per 1,000 reported fires was 27% lower in properties with sprinklers than in properties with no AES. Figure 5 shows that when sprinklers of any type were present, reported civilian injuries averaged 23 per year, compared to 31 per year in which no AES was present. The injury rate in fires with wet pipe sprinklers was 24 per 1,000 fires or 22% lower than in fires with no AES. In more than half of these cases, the fire was too small to trigger the sprinkler. In others, someone was injured while trying to fight a fire in the initial moments before a sprinkler operated.

Figure 5. Civilian injury rates per 1,000 fires in properties with sprinklers and with no AES: 2010-2014



The average firefighter fireground injury rate per 1,000 reported fires was 67% lower when sprinklers were present than in fires with no AES. Figure 6 shows that when sprinklers of any type were present, 20 firefighters were injured per 1,000 fires, compared to 61 firefighter injuries per 1,000 fires in properties without AES protection. The 19 firefighter injuries per 1,000 fires in properties with wet pipe sprinklers was 68% lower than the rate in fires without AES.

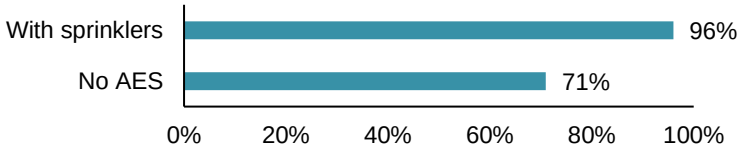
Figure 6. Firefighter injury rates per 1,000 fires in properties with sprinklers and with no AES 2010-2014



Reductions in average dollar loss per fire varied greatly by occupancy. Table 4 shows that compared to properties with no AES, the average overall loss was 30% lower when sprinklers of any type were present and 35% lower when wet pipe sprinklers were present. The average loss was actually higher in sprinklered warehouses than in those with no AES. The reduction in property loss in manufacturing properties ranged from 23% to 34%. Average losses were higher in warehouses and manufacturing than in other properties. A very small fire can damage expensive equipment. Warehouse contents may be rendered valueless by smoke. The reduction in average losses for public assembly and various residential occupancies ranged from 55% to 86%.

When sprinklers were present, fire spread was confined to the room of origin in 96% of fires compared to 71% of fires without AES. See Figure 7. Table 5 shows these percentages in different occupancies. In a change from previous editions of this report, fires with NFIRS incident types indicating confined structure fires (NFIRS incident type codes 113-118) were all considered to have been confined to the room of origin.

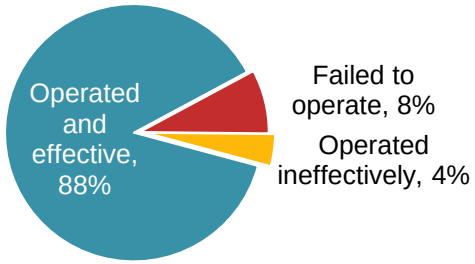
Figure 7. Percent of fires confined to room of origin in properties with sprinklers and with no AES 2010-2014



SPRINKLER OPERATION, EFFECTIVENESS AND PROBLEMS

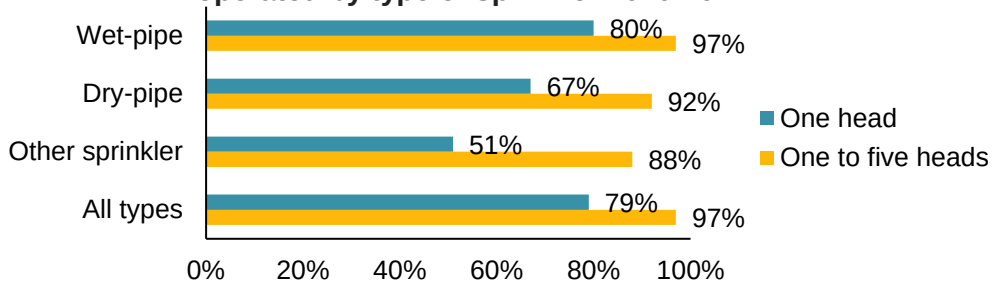
Sprinklers operated in 92% of the fires in which sprinklers were present and the fire was considered large enough to activate them.[2] They were effective at controlling the fire in 96% of fires in which they operated. Figure 8 shows that sprinklers operated effectively in 88% of the fires large enough to trigger them. Table 6 provides details on sprinkler operation and effectiveness in different occupancies and for different types of sprinklers.

Figure 8. Sprinkler operation and effectiveness: 2010-2014



Only one sprinkler activated in four out of five fires in which sprinklers of any type (79%) or wet pipe sprinklers (80%) operated. Figure 9 shows that in 97% of fires with operating sprinklers, five or fewer heads operated. The percentages were smaller for dry pipe and other sprinklers. Table 7 provides more details on number of sprinklers. The percentage of fires in which only one head operated is higher in this report than in previous editions because fires sprinklers operating in fires with the NFIRS confined fire incident types were included in the calculations.

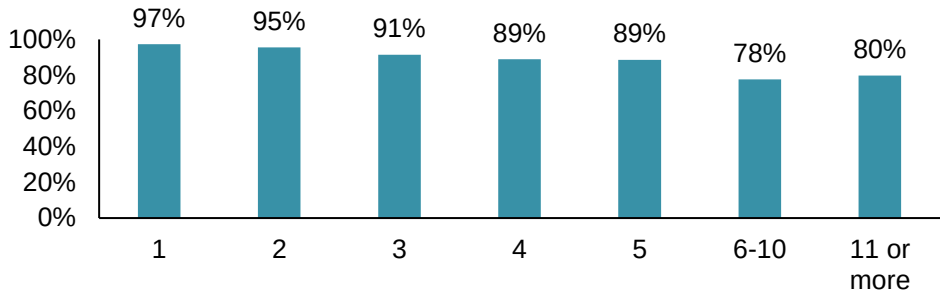
Figure 9. When sprinklers operated, percentage of fires in which one or one to five heads operated by type of sprinkler 2010-2014



In 97% of the fires in which one sprinkler operated, it was effective. Figure 10 shows that sprinklers were somewhat less likely to have operated effectively when more heads operated.

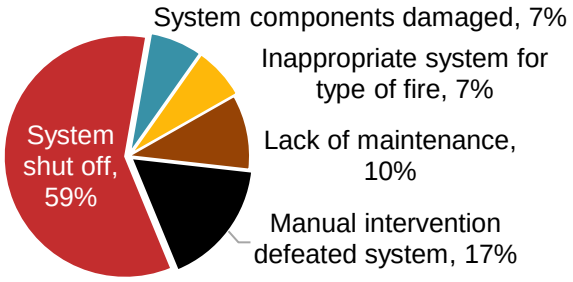
[2] These calculations exclude fires with confined structure fire incident types (NFIRS incident types 113-118). Among confined fires with sprinklers present, the fire was too small to operate 76% of the time, sprinklers operated and were effective 19% of the time and failed to operate 4% of the time. Since these fires are, by definition, confined, it is likely that a substantial share of fires in which the sprinklers were said to fail, were, in fact, too small to cause the sprinkler to operate. The 44% of non-confined (NFIRS incident types 110-123, excluding 113-118) that were too small to activate the sprinkler and 1% of non-confined structure fires with unclassified operation were also excluded.

Figure 10. Percentage of fires in which sprinklers were effective by number operating 2010-2014



In three of every five (59%) incidents in which sprinklers failed to operate, the system had been shut off. Figure 11 shows that manual intervention defeated the system in 17% of the incidents. In some cases, someone turned off the system prematurely.

Figure 11. Reasons for sprinkler failures: 2010-2014.

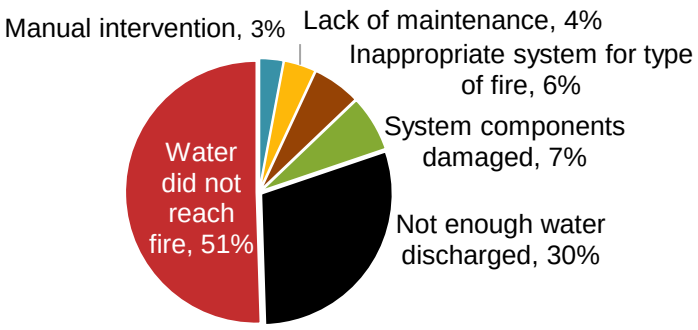


The system was inappropriate for the type of fire in 7% of the incidents in which sprinklers failed to operate. Throughout a building's life cycle, the use and occupancy type may change. A system that was designed for the original purpose may not be sufficient to meet the requirements of the changed building use. In another 7% of sprinkler failures, system components were damaged.

Table 8 shows the failure reasons for different occupancies and different types of sprinklers. In all cases, system shut-off was the leading reason.

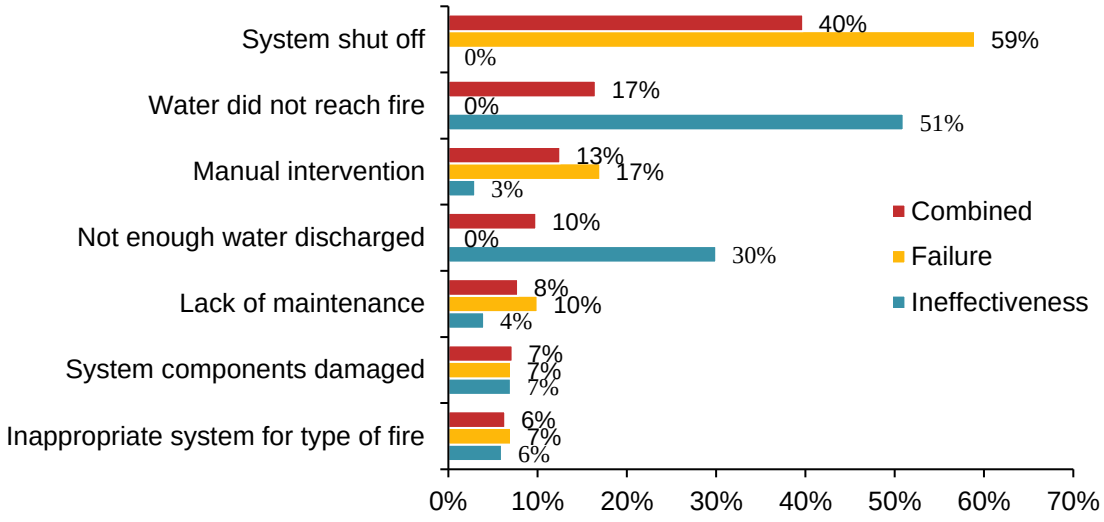
In half (51%) of the fires in which sprinklers were ineffective. the water did not reach the fire. Figure 12 shows that in 30% of the incidents, not enough water was discharged. In 7%, system components were damaged. The system was inappropriate for the type of fire in 6%. Lack of maintenance was identified as a factor in 4% of the incidents. Manual intervention was the cause of 3% of ineffective systems. Table 9 provides more details by occupancy and by type of sprinkler.

Figure 12. Reasons for sprinkler ineffectiveness: 2010-2014



In 2010-2014, reported sprinkler failures (660 per year) were twice as common as reported fires in which sprinklers were ineffective (320 per year). Figure 13 shows that 40% of the combined sprinkler problems were due to system shut-offs. In 17% of these incidents, water did not reach the fire. In 13%, manual intervention defeated the system. In 10%, not enough water was discharged. Lack of maintenance was a factor in 8%, system components were damaged in 7%, and in 6%, the system was inappropriate for the type of fire.

Figure 13. Reasons for combined sprinkler failure and ineffectiveness: 2010-2014

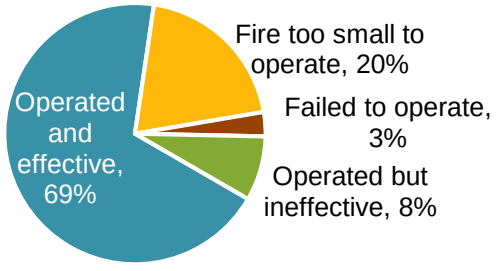


CIVILIAN DEATHS IN SPRINKLERED PROPERTIES

While sprinklers were present in 10% of all properties, only 2% of all fire deaths occurred in these properties. Fires in sprinklered properties killed an average of 42 people per year in 2010-02014. During the same period, fires in properties with no automatic extinguishing systems caused an average of 2,660 civilian deaths per year.

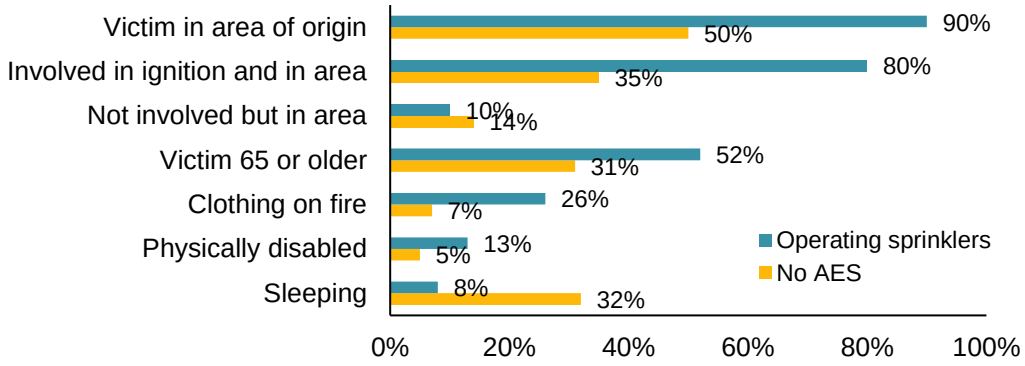
Figure 14 shows that 69% of the deaths in properties with sprinklers were caused by fires in which the sprinklers operated and were effective in controlling the fire. In some of these cases, the sprinklers actually extinguished the fire. The victims were typically fatally injured before the sprinklers activated. In one of every five (20%) such deaths, the fire never became large enough to activate the sprinkler. The sprinklers failed to operate in fires causing 3% of the deaths in sprinklered properties, and operated or were ineffective in controlling fires that caused 8% of the fatalities.

Figure 14. Civilian fire deaths by sprinkler performance: 2010-2014



Compared to victims of fires with no AES, people who died in fires in which sprinklers operated effectively were less likely to have been sleeping and more likely to have been in the area of origin, even more likely to have been involved in the ignition and in the area, to have been at least 65 or older, to have clothing on fire, or to have been physically disabled. Figure 15 shows this contrast; more details are provided in Table 10. Note that many of these differences are also seen in victims of fires with and without working smoke alarms. [5] There are limits to even the best fire protection. When someone is directly involved in the ignition or their clothing is burning, they may be fatally injured before the fire protection operates. If someone is physically incapable of getting themselves to safety, even a fire controlled by sprinklers may still cause harm.

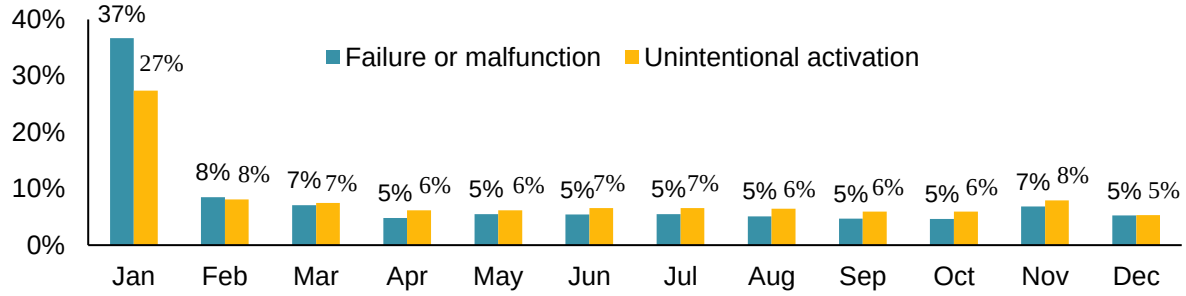
Figure 15. Victim characteristics in fires with effectively operating sprinklers and with no AES 2010-2014



UNWANTED ACTIVATIONS

Fire departments responded to an estimated 29,800 sprinkler activations caused by a system failure or malfunction and 33,600 unintentional sprinkler activations in 2014. According to the *NFIRS 5.0 Complete Reference Guide* [7], false alarms due to sprinkler failures or malfunctions include "any failure of sprinkler equipment that leads to sprinkler activation with no fire present." It "excludes unintentional operating caused by damage to the sprinkler system." Unintentional activations also include "testing the sprinkler system without fire department notification." Figure 16 shows that more than one-third (37%) of the system failures or malfunctions occurred in January, as did one-quarter (27%) of the unintentional activations. This suggests that cold weather may have played a role.

Figure 16. Unwanted sprinkler activations by type and month in 2014



Not all activations result in water flow outside the system. For example, water may flow in the pipes of a dry-pipe system. This could alert a monitoring company and trigger a fire department response.

Sprinklers in Home Fires

SPRINKLER PRESENCE AND TYPE

During 2010-2014, some type of fire sprinkler was present in an average 24,440 reported home structure fires per year. These fires caused an average of 35 civilian deaths, 616 civilian injuries, and $198 million in direct property damage per year. Properties under construction were excluded from these calculations.

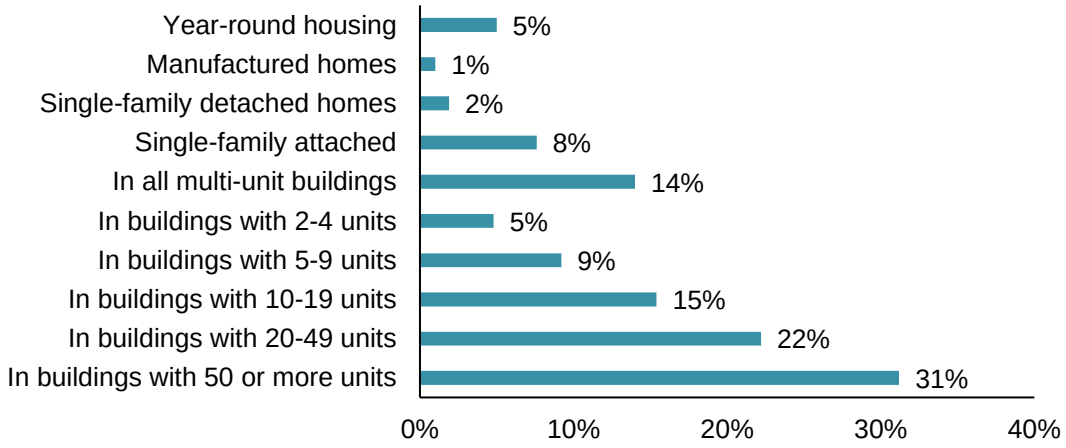
Table B summarizes information about AES in all reported home structure fires except those under construction.

Table B.
Summary of AES presence and type in reported home structure fires
2010-2014 annual averages

AES Presence of Type	Fires		Civilian Deaths		Civilian Injuries		Direct Property Damage (in Millions)	
AES present	**25,700**	**(7%)**	**36**	**(1%)**	**650**	**(5%)**	**$203**	**(3%)**
Sprinklers present	24,440	(7%)	35	(1%)	616	(5%)	$198	(3%)
Wet	*21,760*	*(6%)*	*34*	*(1%)*	*581*	*(5%)*	*$184*	*(3%)*
Dry	*2,140*	*(1%)*	*0*	*(0%)*	*26*	*(0%)*	*$10*	*(0%)*
Other	*540*	*(0%)*	*1*	*(0%)*	*9*	*(0%)*	*$4*	*(0%)*
Non-sprinkler AES present	1,260	(0%)	1	(0%)	34	(0%)	$5	(0%)
Partial system AES	970	(0%)	5	(0%)	31	(0%)	$17	(0%)
AES Not in fire area and did not operate	600	(0%)	2	(0%)	24	(0%)	$19	(0%)
None present	**329,460**	**(92%)**	**2,471**	**(98%)**	**11,979**	**(94%)**	**$6,359**	**(96%)**
Total	**356,740**	**(100%)**	**2,514**	**(100%)**	**12,684**	**(100%)**	**$6,599**	**(100%)**

According to the 2011 American Housing Survey, buildings with more housing units were more likely to have sprinklers. Figure 17 shows that 5% of occupied year-round housing units had sprinklers, ranging from a low of 1% in manufactured homes to a high of 31% in buildings with at least 50 units. [7]

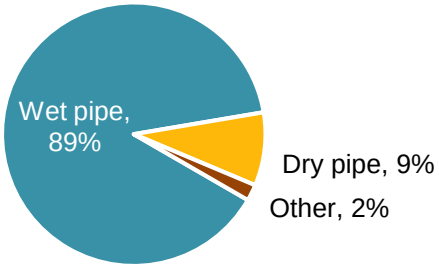
Figure 17. Percentage of occupied units with sprinklers in 2011 American Housing Survey



Source: American Housing Survey

Wet pipe sprinklers accounted for 89% of the sprinklers in reported home fires, dry pipe systems were in 9%, and other types of sprinklers were in 2%. See Figure 18.

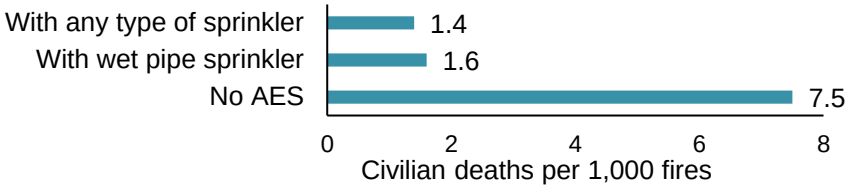
Figure 18. Types of sprinklers found in home structure fires: 2010-2014



FIRES IN HOMES WITH SPRINKLERS VS. NO AES

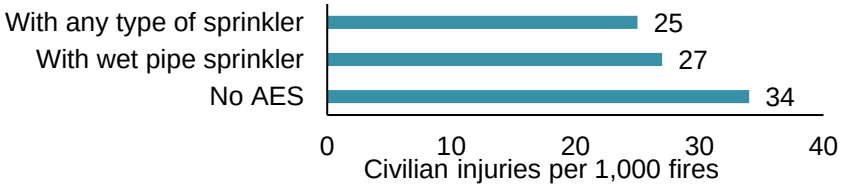
The death rate per 1,000 reported fires was 81% lower in homes with sprinklers than in homes with no AES. These rates are based strictly on reported presence or absence. Operation is not considered. Figure 19 shows that in reported structure fires with no automatic extinguishing systems (AES) present, the death rate was 7.5 per 1,000 fires. When any type of sprinkler was present, the death rate was 1.4 per 1,000 fires, a reduction of 81%. When wet pipe sprinklers were present, the death rate of 1.4 deaths was 79% lower. With so few deaths in sprinklered properties, the differences are not meaningful.

Figure 19. Civilian death rates per 1,000 fires in homes with sprinklers and with no AES 2010-2014



The civilian injury rate per 1,000 reported fires was 31% lower in homes with sprinklers than in homes with no AES. Figure 20 shows that when any type of sprinklers were present, reported civilian injuries averaged 25 per year, compared to 34 per year in which no AES was present. The injury rate for wet pipe sprinklers of 27 per 1,000 fires was 27% lower than in fires with no AES. In many cases, the fire was too small to operate. In others, someone was injured while trying to fight a fire in the initial moments before a sprinkler operated.

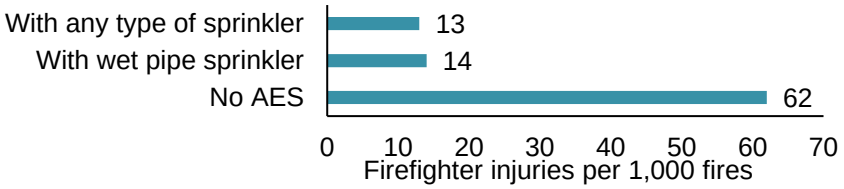
Figure 20. Civilian injury rates per 1,000 fires in homes with sprinklers and with no AES 2010-2014



2012 Fire Protection Research Foundation study found that sprinkler presence was associated with a 53% reduction in the medical cost of civilian injuries per 100 home fires. In addition, larger percentages of injuries in sprinklered homes resulted from fires that were limited to the object or room of origin than in home fires without sprinklers. [8]

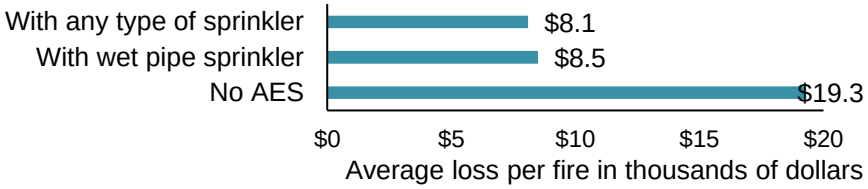
The average firefighter fireground injury rate per 1000 reported home fires was 79% lower when sprinklers were present than in fires with no AES. Figure 21 shows that when sprinklers were present, 13 firefighters were injured per 1000 fires, compared to 62 firefighter injuries per 1,000 fires in properties without AES protection.

Figure 21. Firefighter injury rates per 1,000 fires in homes with sprinklers and with no AES 2010-2014



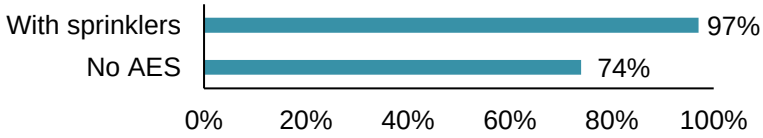
When sprinklers were present in reported home fires, the average property loss per fire was less than half the average in homes with no AES. Figure 22 shows that when any type of fire sprinkler was present in reported fires, the average loss was $8,100 per fire. This was 58% lower than the $19,300 average in home fires in which no AES was present. When wet pipe sprinklers were present, the average loss of $8,500 was 56% lower than in homes with no AES.

Figure 22. Average loss per fire in homes with sprinklers and with no AES 2010-2014



When sprinklers were present, flame damage was confined to the room of origin in 97% of fires compared to 74% of fires without AES. See Figure 23. In a change from previous editions of this report, fires with NFIRS incident types indicating confined structure fires (NFIRS incident type codes 113-118) were all considered to have been confined to the room of origin.

Figure 23. Percent of fires confined to room of origin in homes with sprinklers and with no AES 2010-2014

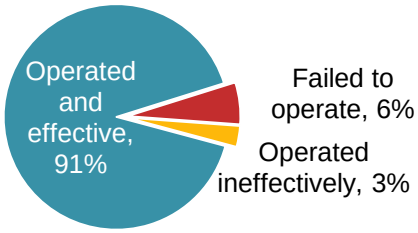


SPRINKLER OPERATION, EFFECTIVENESS AND PROBLEMS IN HOME FIRES

Sprinklers operated in 94% of home fires in which sprinklers were present and fires were considered large enough to activate them.[3] They were effective at controlling the fire in 96% of fires in which they operated. Figure 24 shows that, taken together, sprinklers operated effectively in 91% of the fires large enough to trigger them.

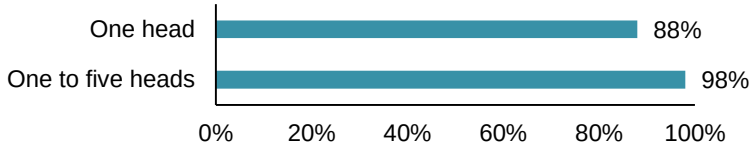
[3] These calculation exclude fires with confined structure fire incident types (NFIRS incident types 113-118). Among confined fires with sprinklers present, the fire was too small to operate 74% of the time, sprinklers operated and were effective 22% of the time and failed to operate 4% of the time. Since these fires are, by definition, confined, it is likely that a substantial share of fires in which the sprinklers were said to fail, were, in fact, too small to cause the sprinkler to operate. The 34% of non-confined (NFIRS incident types 110-123, excluding 113-118) that were too small to activate the sprinkler and 1% of non-confined structure fires with unclassified operation were also excluded.

Figure 24. Sprinkler operation and effectiveness in home fires: 2010-2014



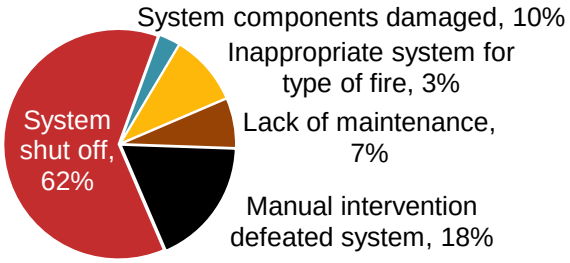
In 98% of home fires with operating sprinklers, five or fewer heads operated. Figure 25 shows that only one sprinkler operated in 88% of fires with operating sprinklers of all types. The percentage of fires in which only one head operated is higher in this report than in previous editions because fires sprinklers operating in fires with the NFIRS confined fire incident types were included in the calculations.

Figure 25. When sprinklers operated, percentage of home fires in which one or one to five heads operated 2010-2014



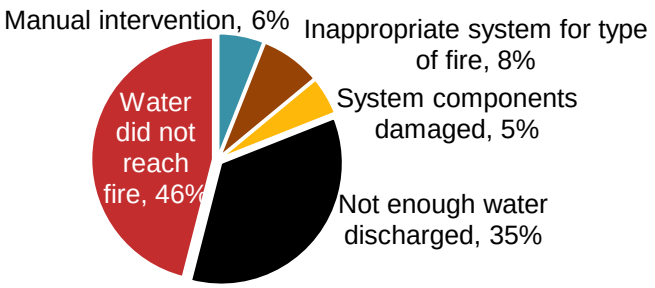
In three of every five (62%) home fires in which sprinklers failed to operate, the system had been shut off. Figure 26 shows that manual intervention defeated the system in 18% of the incidents. System components were damaged in 10% of these fires, lack of maintenance caused 7% of the failures, and 3% occurred because the system was inappropriate for the type of fire that occurred.

Figure 26. Reasons for sprinkler failures in home fires: 2010-2014



In almost half (46%) of home fires in which sprinklers were ineffective, the water did not reach the fire. Figure 27 shows that in one-third (35%) of the incidents, not enough water was discharged. The system was inappropriate for the type of fire in 8% of the incidents. In 5%, system components were damaged. Manual intervention was the cause of 6% of ineffective systems. Table 8 provides more details by occupancy and by type of sprinkler.

Figure 27. Reasons for sprinkler ineffectiveness in home fires: 2010-2014

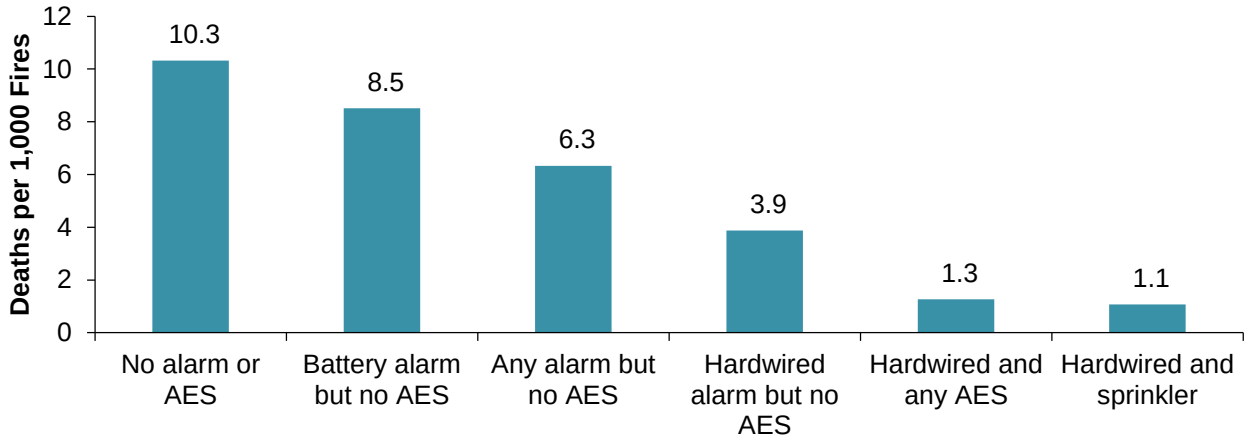


IMPACT OF SMOKE ALARMS AND SPRINKLERS IN DEATHS PER 1,000 HOME FIRES

The lowest home fire death rate per 1,000 reported fires is found in homes with sprinkler systems and hardwired smoke alarms. Figure 28 shows that compared to reported home fires (excluding manufactured home fires) with no smoke alarms or automatic extinguishing systems/equipment (AES) at all, the death rate per 1,000 reported fires was:

- 18% lower when battery-powered smoke alarms were present but AES were not;
- 39% lower when smoke alarms with any power source were present but AES were not;
- 62% lower when hardwired smoke alarms were present but AES were not;
- 88% lower when hardwired smoke alarms and any AES were present; and
- 90% lower when sprinklers and hard-wired smoke alarms were present.

Figure 28. Average Fire Death Rate per 1,000 Reported Home Structure Fires by Presence of Smoke Alarms and AES 2010-2014



UNWANTED ACTIVATIONS

Fire departments responded to an estimated 5,600 non-fire activations of home fire sprinklers caused by a system failure or malfunction and 6,800 unintentional sprinkler activations in 2014. Note that activations in manufactured homes could not be identified or screened out. According to the NFIRS Complete Reference Guide**,** [9] sprinkler failures or malfunctions include "any failure of sprinkler equipment that leads to sprinkler activation with no fire present." It. "excludes unintentional operating caused by damage to the sprinkler system." The latter should be considered unintentional activations. Unintentional activations also include "testing the sprinkler system without fire department notification.

20 Years of Home fire Sprinklers in Scottsdale, Arizona

Survey in Scottsdale, Arizona found that home fire sprinklers were still operational after 20 years. In his 2008 Executive Fire Officer Program Applied Research Project, Residential fire sprinkler reliability in homes older than 20 years old in Scottsdale, AZ, Richard Upham described the results of a survey he conducted of owners of single-family homes built in 1986-1988 after requirements for residential sprinklers systems took effect. [10] Respondents could check yes, no or unsure to four questions. They could also request a free inspection of their system.

Excluding blanks and responses of unsure, all of the respondents answered "Yes" when asked "To the best of your knowledge, is your fire sprinkler system still in operation?"

With the same exclusions, 89% said "No" when asked "Has your sprinkler system ever had a leak or maintenance problem?" The author noted that leaks or maintenance issues on Scottsdale were usually due to either relief valves that had developed a leak or sprinkler heads that were unintentionally damaged. He also noted that more than 300,000 Omega sprinkler heads manufactured between 1983 and 1998 were replaced in Scottsdale after a recall. Some of these may have been considered maintenance issues.

Again, with the same exclusions, slightly more than half (54%) said "Yes" to "Has your fire sprinkler system ever been inspected?" Two (1%) of the respondents said "Yes" to "Has your fire sprinkler system ever been activated as a result of fire?"

Two-thirds provided contact information to request a free fire department inspection of their sprinkler system. No issues were found that would have prevented the systems from working in the 60 inspections completed when his paper was written.

Conclusions and Further Reading

Sprinklers are a very reliable and effective part of fire protection. Their impact is seen most strongly in the reduction of civilian fire deaths per 1,000 reported fires when sprinklers are present compared to fires without AES. Notable reductions are also seen in injury rates, and in most occupancies, average loss per fire. Increasing the usage of sprinklers will the reduce loss of life and property from fire.

NFPA standards provide essential guidance in installation, inspection, testing, maintenance, integration of sprinklers with other systems, and in evaluating needs when an occupancy changes use or contents. See

- NFPA 13: *Standard for the Installation of Sprinkler Systems*,
- NFPA, 13D, *Standard for the Installation of Sprinkler Systems in One- and Two-Family Dwellings and Manufactured Homes*,
- NFPA 13R, *Standard for the Installation of Sprinkler Systems in Low-Rise Residential Occupancies*,
- *NFPA 25:, Standard for the Inspection, Testing, and Maintenance of Water-Based Fire Protection Systems*, 2017 edition, Quincy, MA, U.S.: NFPA, 2016. See NFPA 25 for minimum inspection, testing, and maintenance requirements for sprinkler systems.
- NFPA 4: *Standard for the Integrated Fire Protection and Life Safety Systems Testing*, 2015 Edition, Quincy, MA, U.S.: NFPA, 2014. See NFPA 4 for test protocols to ensure that the fire protection and life safety systems will function correctly together.
- NFPA 1, *Fire Code*, 2015 Edition, Quincy, MA, U.S.: NFPA, 2014. NFPA 1 has evaluation requirements to assess the adequacy of existing sprinkler systems if the use or contents in the space have changed.

Because sprinklers control fires in the early stages, far less water is needed than if the fire extinguished by traditional methods. See FM Global's 2010 report, *The Environmental Impact of Automatic Fire Sprinklers*.

See www.firesprinklerinitiave.org for resources to help increase the number of new one- and two-family homes built protected by sprinklers and to reduce this death toll. Three out of every five fire deaths were caused by fires in one- or two-family homes, excluding manufactured housing. Sprinklers were present in only 1.5% of the fires in these properties.

The Fire Protection Research Foundation has produced a number of reports to inform home fire sprinkler codes and standards. See:

- Stakeholder Perceptions of Home Fire Sprinklers (2016)
- Home Fire Sprinkler Cost Assessment (2013)
- Sprinkler Impact on Fire Injury (2012)
- Residential Fire Sprinklers - Water Usage and Water Meter Performance Study (2011)
- Sprinkler Insulation: A Literature Review (2011)
- Incentives for the Use of Residential Fire Sprinkler Systems in U.S. Communities (2010)
- Analysis of the Performance of Residential Sprinkler Systems with Sloped or Sloped and Beamed Ceilings (2010)
- Antifreeze Solutions in Home Fire Sprinkler Systems - Phase II Interim Report (2010)
- Antifreeze Solutions in Home Fire Sprinkler Systems - Literature Review and Research Plan

Table 1.
Presence of Sprinklers in Structure Fires by Property Use, Excluding Properties under Construction

Property Use	Number of Structure Fires With Equipment Present and Percentage of Total Structure Fires in Property Use							
	Any Automatic Extinguishing Equipment						Any Sprinkler	
	1980-1984		1994-1998		2010-2014		2010-2014	
All public assembly	4,280	(13%)	4,380	(26%)	6,610	(47%)	3,760	(27%)
Variable-use amusement place	120	(8%)	140	(16%)	240	(21%)	190	(17%)
Religious property	50	(2%)	90	(5%)	230	(14%)	180	(10%)
Library or museum	80	(14%)	110	(28%)	260	(44%)	230	(39%)
Eating or drinking establishment	3,310	(16%)	3,240	(29%)	4,360	(59%)	1,860	(25%)
Passenger terminal	70	(20%)	60	(35%)	400	(54%)	390	(53%)
Educational property	1,620	(13%)	1,820	(24%)	2,130	(43%)	1,950	(39%)
Health care property*	6,920	(47%)	4,400	(68%)	3,350	(53%)	3,100	(49%)
Nursing home	2,250	(61%)	2,060	(76%)	1,870	(70%)	1,780	(67%)
Hospital	3,370	(47%)	1,650	(74%)	900	(79%)	770	(67%)
Prison or jail	370	(10%)	430	(19%)	260	(59%)	250	(56%)
All residential	7,090	(1%)	11,110	(3%)	33,880	(9%)	31,500	(8%)
Home (including apartment)	5,120	(1%)	8,440	(2%)	26,390	(7%)	24,440	(7%)
Hotel or motel	1,590	(15%)	1,690	(35%)	2,130	(58%)	2,020	(55%)
Dormitory or barracks	430	(16%)	620	(29%)	2,210	(56%)	2,100	(53%)
Rooming or boarding home	70	(4%)	230	(17%)	1,120	(40%)	1,100	(39%)
Residential board and care home or assisted living	Not available		Not available		990	(52%)	950	(50%)
Store or office	5,510	(13%)	5,230	(21%)	5,380	(32%)	4,270	(25%)
Grocery or convenience store	1,160	(15%)	1,190	(27%)	1,820	(47%)	1,000	(26%)
Laundry or dry cleaning or other professional service	330	(8%)	310	(13%)	320	(21%)	310	(20%)
Department store	1,340	(44%)	1,100	(52%)	460	(46%)	440	(44%)
Office	1,240	(12%)	1,470	(25%)	1,150	(37%)	1,100	(36%)
Manufacturing facility	11,910	(44%)	6,400	(50%)	2,660	(55%)	2,390	(50%)
All storage	1,430	(2%)	1,090	(3%)	680	(3%)	660	(3%)
Warehouse excluding cold storage*	1,060	(13%)	740	(22%)	370	(30%)	360	(29%)
All structures	38,620	(4%)	37,100	(7%)	57,430	(12%)	49,840	(10%)

* "Health care property" includes other facilities not listed separately. In 1980-84 and 1994-98, this category excludes doctors' offices and care of aged facilities without nursing staff (which are assumed to be residential board and care facilities).

Notes: These are structure fires reported to U.S. municipal fire departments and so exclude fires reported only to federal or state agencies or industrial fire brigades. Post-1998 estimates are based only on fires reported in Version 5.0 of NFIRS and include fires reported as confined fires. After 1998, buildings under construction are excluded. Sprinkler statistics exclude partial systems and installations with no sprinklers in fire area.

Table 2.
Type of Sprinkler Reported in Structure Fires
Where Equipment Was Present in Fire Area, Excluding Properties under Construction
by Property Use: 2010-2014 Annual Averages

Property Use	Fires per year with any type of sprinkler	Wet pipe sprinklers		Dry pipe sprinklers		Other sprinklers*	
All public assembly	3,760	3,080	(82%)	300	(8%)	380	(10%)
Variable-use amusement place	190	170	(91%)	20	(8%)	0	(1%)
Religious property	180	160	(88%)	10	(3%)	10	(6%)
Library or museum	230	210	(91%)	20	(9%)	0	(1%)
Eating or drinking establishment	1,860	1,450	(78%)	130	(7%)	280	(15%)
Passenger terminal	390	280	(73%)	50	(13%)	50	(13%)
Educational property	1,950	1,670	(86%)	220	(11%)	60	(3%)
Health care property**	3,100	2,740	(88%)	300	(10%)	60	(2%)
Nursing home	1,780	1,550	(87%)	180	(10%)	40	(2%)
Hospital	770	690	(89%)	80	(10%)	0	(0%)
Prison or jail	250	210	(85%)	30	(11%)	10	(4%)
All residential	31,500	28,050	(89%)	2,700	(9%)	660	(2%)
Home (including apartment)	24,440	21,760	(89%)	2,140	(9%)	540	(2%)
Dormitory or barracks	2,100	1,910	(91%)	160	(8%)	20	(1%)
Hotel or motel	2,020	1,850	(92%)	130	(7%)	40	(2%)
Rooming or boarding house	1,100	970	(88%)	130	(12%)	0	(0%)
Residential board and care or assisted living	950	840	(89%)	90	(9%)	20	(2%)
Store or office	4,270	3,710	(87%)	430	(10%)	140	(3%)
Grocery or convenience store	1,000	830	(83%)	90	(9%)	80	(8%)
Laundry or dry cleaning or other professional service	310	270	(87%)	40	(13%)	0	(1%)
Department store	440	380	(86%)	60	(13%)	10	(1%)
Office	1,100	980	(89%)	100	(9%)	20	(2%)
Manufacturing facility	2,390	2,010	(84%)	290	(12%)	90	(4%)
All storage	660	510	(77%)	150	(23%)	0	(1%)
Warehouse excluding cold storage	360	300	(82%)	60	(17%)	0	(1%)
All structures ***	49,840	43,540	(87%)	4,770	(10%)	1,530	(3%)

* Includes deluge and pre-action sprinkler systems and may include sprinklers of unknown or unreported type.
** Nursing home, hospital, clinic, doctor's office, or development disability facility
*** Includes some property uses that are not shown separately.

Note: These are based on structure fires reported to U.S. municipal fire departments in NFIRS Version 5.0 and so exclude fires reported only to federal or state agencies or industrial fire brigades. Row totals are shown in the leftmost column of percentages, and sums may not equal totals because of rounding error. In Version 5.0 of NFIRS, if multiple systems are present, the system coded is supposed to be the one system designed to protect the hazard where the fire started. This field is not required if the fire did not begin within the designed range of the system. Buildings under construction and partial systems are excluded.
Source: NFIRS and NFPA fire experience survey.

Table 3.
Estimated Reduction in Civilian Deaths per Thousand Fires
Associated With All Types of Sprinklers,
by Property Use (Excluding Properties under Construction): 2010-2014 Annual Averages

Property Use	Without AES	With sprinklers of any type	Percent reduction from no AES	With wet pipe sprinklers	Percent reduction from no AES
All public assembly	0.7	0.0	100%	0.0	100%
Health care	0.9	0.3	71%	0.1	83%
Residential	7.5	1.1	85%	1.2	84%
Home (including apartment)	7.5	1.4	81%	1.6	79%
Dormitory or barracks	0.4	0.0	100%	0.0	100%
Hotel or motel	7.0	0.3	95%	0.0	100%
Rooming or boarding house	8.4	0.3	96%	0.4	96%
Residential board and care or assisted living	7.2	1.3	82%	1.5	80%
Store or office	0.9	0.3	68%	0.3	63%
Manufacturing facility	1.6	1.0	33%	1.2	21%
Warehouse excluding cold storage	2.7	0.6	79%	0.7	74%
All structures	6.3	0.8	87%	0.9	86%

Note: These are national estimates of structure fires reported to U.S. municipal fire departments, based on fires reported in NFIRS Version 5.0, and so exclude fires reported only to federal or state agencies or industrial fire brigades.

Source: NFIRS and NFPA fire experience survey.

Table 4.
Estimated Reduction in Average Direct Property Loss per Fire
Associated With All Types of Sprinklers
by Property Use (Excluding Properties under Construction): 2010-2014 Annual Averages

Property Use	Loss without AES	Loss with sprinklers of any type	Percent reduction	Loss with wet pipe sprinklers	Percent reduction from no AES
All public assembly	$37,900	$9,100	76%	$8,900	77%
Health care*	$14,900	$4,000	73%	$3,700	75%
Residential	$19,200	$7,100	63%	$7,300	62%
Home (including apartment)	$19,300	$8,100	58%	$8,500	56%
Dormitory or barracks	$3,900	$1,300	67%	$1,400	65%
Hotel or motel	$35,200	$10,900	69%	$10,700	70%
Rooming or boarding house	$12,200	$1,700	86%	$1,800	85%
Residential board and care or assisted living	$5,500	$2,300	58%	$2,400	55%
Store or office	$52,400	$26,100	50%	$26,300	50%
Manufacturing facility	$107,200	$82,500	23%	$70,900	34%
Warehouse excluding cold storage	$90,700	$138,300	no reduction	$120,800	no reduction
All structures	$20,400	$14,200	30%	$13,300	35%

*Nursing home, hospital, clinic, doctor's office, or other medical facility.

Note: These are national estimates of structure fires reported to U.S. municipal fire departments, based on fires reported in NFIRS Version 5.0, and so exclude fires reported only to federal or state agencies or industrial fire brigades.

Source: NFIRS and NFPA fire experience survey.

Table 5.
Percentage of Fires with Fire Spread Confined to Room of Origin in Fires with Sprinklers Present vs. No Automatic Extinguishing System
2010-2014 Annual Averages

Property Use	Percentage of fires confined to room of origin excluding structures under construction and sprinklers not in fire area		
	With no AES	With sprinklers of any type	Difference (in percentage points)
Public assembly	75%	93%	18%
Religious property	72%	90%	18%
Library or museum	83%	97%	14%
Eating or drinking establishment	70%	92%	22%
Educational	88%	97%	9%
Health care property*	92%	98%	6%
Residential	73%	97%	24%
Home (including apartment)	74%	97%	23%
Dormitory or barracks	96%	99%	3%
Hotel or motel	82%	97%	15%
Store or office	65%	92%	26%
Grocery or convenience store	69%	93%	24%
Department store	65%	72%	7%
Office building	72%	94%	22%
Manufacturing facility	62%	85%	22%
Storage	26%	87%	61%
Warehouse excluding cold storage	53%	77%	24%
All structures**	71%	96%	25%

* Nursing home, hospital, clinic, doctor's office, or other medical facility.

** Includes some properties not listed separately above.

Note: Percentages are based on structure fires reported in NFIRS Version 5.0 to U.S. municipal fire departments and so exclude fires reported only to federal or state agencies or industrial fire brigades. All fires with one of the six NFIRS confined structure fire incident types were considered confined to the object of origin by definition. Fires that were confined to the room of origin include fires confined to the object of origin. In NFIRS, if multiple systems are present, the system coded is supposed to be the one system designed to protect the hazard where the fire started. This field is not required if the fire did not begin within the designed range of the system.

Source: NFIRS and NFPA fire experience survey.

Table 6.
Sprinkler Reliability and Effectiveness When Fire Was Coded as Not Confined and Large Enough to Activate Sprinkler and Sprinkler Was Present in Area of Fire, by Property Use: 2010-2014 Annual Averages

A. All Sprinklers

Property Use	Number of fires per year where sprinklers were present	Non-confined fires too small to activate or unclassified operation	Fires coded as confined fires	Number of qualifying fires per year	Percent where equipment operated (A)	Percent effective of those that operated (B)	Percent where equipment operated effectively (A x B)
All public assembly	3,760	590	2,540	640	90%	94%	85%
Eating or drinking establishment	1,860	300	1,150	410	90%	92%	83%
Educational property	1,950	420	1,360	180	87%	96%	84%
Health care property*	3,100	600	2,200	310	85%	97%	82%
All residential	31,500	2,490	24,870	4,140	93%	96%	89%
Home (including apartment	24,440	1,900	18,970	3,570	94%	96%	91%
Hotel or motel	2,020	350	1,340	330	90%	98%	89%
Store or office	4,270	1,030	2,200	1,040	91%	96%	87%
Grocery or convenience store	1,000	240	570	190	89%	93%	83%
Department store	440	160	170	120	90%	98%	88%
Office	1,100	230	700	180	91%	96%	87%
Manufacturing facility	2,390	610	760	1,030	91%	94%	85%
All storage	660	140	220	300	86%	96%	82%
Warehouse excluding cold storage	360	80	90	180	84%	97%	81%
All structures**	49,840	6,350	35,460	8,040	92%	96%	88%

* Nursing home, hospital, clinic, doctor's office, or other medical facility.
** Includes some properties not listed separately above.

Note: These are percentages of fires reported to U.S. municipal fire departments and so exclude fires reported only to federal or state agencies or industrial fire brigades. In Version 5.0 of NFIRS, if multiple systems are present, the system coded is supposed to be the one system designed to protect the hazard where the fire started. This field is not required if the fire did not begin within the designed range of the system. Buildings under construction are excluded. Percentages are based on estimated total fires reported in NFIRS Version 5.0 with the indicated type of automatic extinguishing system and system performance not coded as fire too small to activate systems. Fires are excluded if the reason for failure or ineffectiveness is "system not present in area of fire." Fires are recoded from "operated but ineffective" to "failed to operate" if the reason for failure or ineffectiveness was "system shut off." Fires are recoded from "failed to operate" to "operated but ineffective" if the reason for failure or ineffectiveness was "not enough agent" or "agent did not reach fire."

Source: NFIRS and NFPA fire experience survey.

Table 6. (Continued)
Sprinkler Reliability and Effectiveness When Fire Was Coded as Not Confined and Large Enough to Activate Sprinkler and Sprinkler Was Present in Area of Fire, by Property Use: 2010-2014 Annual Averages

B. Wet Pipe Sprinklers Only

Property Use	Number of fires per year where sprinklers were present	Non-confined fires too small to activate or unclassified operation	Fires coded as confined fires	Number of qualifying fires per year	Percent where equipment operated (A)	Percent effective of those that operated (B)	Percent where equipment operated effectively (A x B)
All public assembly	3,080	490	2,030	560	90%	96%	86%
Eating or drinking establishment	1,450	250	860	340	93%	95%	89%
Educational property	1,670	370	1,140	160	90%	96%	86%
Health care property*	2,740	530	1,940	270	88%	97%	85%
All residential	28,050	2,320	21,970	3,770	96%	96%	93%
Home (including apartment)	21,760	1,680	16,730	3,350	95%	96%	91.2%
Hotel or motel	1,850	320	1,240	300	91%	99%	89.8%
Store or office	3,710	890	1,860	950	90%	96%	87%
Grocery or convenience store	830	210	460	170	89%	95%	85%
Department store	380	140	140	110	89%	99%	88%
Office	980	200	620	160	91%	98%	89%
Manufacturing facility	2,010	520	650	850	91%	94%	86%
All storage	510	100	150	250	82%	96%	79%
Warehouse excluding cold storage	290	60	80	160	84%	97%	82%
All Structures**	43,540	5,540	30,790	7,210	89%	96%	86%

* Nursing home, hospital, clinic, doctor's office, or other medical facility.
** Includes some properties not listed separately above.

Note: These are percentages of fires reported to U.S. municipal fire departments and so exclude fires reported only to federal or state agencies or industrial fire brigades. In Version 5.0 of NFIRS, if multiple systems are present, the system coded is supposed to be the one system designed to protect the hazard where the fire started. This field is not required if the fire did not begin within the designed range of the system. Buildings under construction are excluded. Percentages are based on estimated total fires reported in NFIRS Version 5.0 with the indicated type of automatic extinguishing system and system performance not coded as fire too small to activate systems. Fires are excluded if the reason for failure or ineffectiveness is "system not present in area of fire." Fires are recoded from "operated but ineffective" to "failed to operate" if the reason for failure or ineffectiveness was "system shut off." Fires are recoded from "failed to operate" to "operated but ineffective" if the reason for failure or ineffectiveness was "not enough agent" or "agent did not reach fire."

Source: NFIRS and NFPA fire experience survey.

Table 6. (Continued)
Sprinkler Reliability and Effectiveness When Fire Was Coded as Not Confined and Large Enough to Activate Sprinkler and Sprinkler Was Present in Area of Fire, by Property Use: 2010-2014 Annual Averages

C. Dry Pipe Sprinklers Only

Property Use	Number of fires per year where sprinklers were present	Non-confined fires too small to activate or unclassified operation	Fires coded as confined fires	Number of qualifying fires per year	Percent where equipment operated (A)	Percent effective of those that operated (B)	Percent where equipment operated effectively (A x B)
All residential	2,700	240	2,230	230	79%	95%	76%
Homes	2,140	180	1,800	160	91%	95%	88%
Store or office	450	110	260	80	77%	89%	68%
Manufacturing facility	290	70	80	150	82%	93%	77%
All storage	150	40	70	50	73%	93%	68%
All structures*	4,770	660	3,480	630	79%	94%	74%

* Includes some properties not listed separately above.

Note: These are percentages of fires reported to U.S. municipal fire departments and so exclude fires reported only to federal or state agencies or industrial fire brigades. In Version 5.0 of NFIRS, if multiple systems are present, the system coded is supposed to be the one system designed to protect the hazard where the fire started. This field is not required if the fire did not begin within the designed range of the system. Buildings under construction are excluded. Percentages are based on estimated total fires reported in NFIRS Version 5.0 with the indicated type of automatic extinguishing system and system performance not coded as fire too small to activate systems. Fires are excluded if the reason for failure or ineffectiveness is "system not present in area of fire." Fires are recoded from "operated but ineffective" to "failed to operate" if the reason for failure or ineffectiveness was "system shut off." Fires are recoded from "failed to operate" to "operated but ineffective" if the reason for failure or ineffectiveness was "not enough agent" or "agent did not reach fire."

Source: NFIRS and NFPA fire experience survey.

Table 7.
Number of Sprinklers Operating, by Type of Sprinkler
2010-2014 Structure Fires Excluding Properties under Construction

Number of Sprinklers Operating	Percentage of structure fires where that many sprinklers operated			
	Wet pipe	Dry pipe	Other type sprinkler	All sprinklers
1	80%	67%	51%	79%
1 or 2	93%	82%	66%	91%
1 to 3	95%	87%	77%	94%
1 to 4	97%	89%	86%	96%
1 to 5	97%	92%	88%	97%
1 to 10	99%	97%	99%	99%

Note: Percentages are based on structure fires reported in NFIRS Version 5.0 to U.S. municipal fire departments and so exclude fires reported only to federal or state agencies or industrial fire brigades. Percentages are based on fires where sprinklers were reported present and operating and there was reported information on number of sprinklers operating. Figures reflect recodings explained in Introduction: Fires are excluded if the reason for failure or ineffectiveness is "system not present in area of fire." Fires are recoded from "operated but ineffective" to "failed to operate" if the reason for failure or ineffectiveness was "system shut off." Fires are recoded from "failed to operate" to "operated but ineffective" if the reason for failure or ineffectiveness was "not enough agent" or "agent did not reach fire." In NFIRS, if multiple systems are present, the system coded is supposed to be the one system designed to protect the hazard where the fire started. Buildings under construction are excluded, as are partial systems and fires reported as confined fires.

Source: NFIRS and NFPA fire experience survey.

Table 8.
Reasons for Failure to Operate in Fires with Non-Confined Structure Fire Incident Types Large Enough to Activate Sprinkler that Was Present in Area of Fire, by Property Use Based on Estimated Number of 2010-2014 Structure Fires per Year

A. All Sprinklers

Property Use	System shut off	Manual intervention defeated system	System component damaged	Lack of maintenance	Inappropriate system for type of fire	Total fires per year
All public assembly	45%	17%	4%	22%	12%	63
Eating or drinking establishment	43%	12%	3%	27%	15%	39
All residential	59%	21%	9%	7%	4%	257
Home (including apartment)	62%	18%	10%	7%	3%	203
Store or office	62%	16%	7%	5%	9%	97
Manufacturing facility	59%	14%	5%	12%	9%	89
All structures*	59%	17%	7%	10%	7%	657

* Includes some properties not listed separately above.

Note: Percentages are based on structure fires reported in NFIRS Version 5.0 to U.S. municipal fire departments and so exclude fires reported only to federal or state agencies or industrial fire brigades. Percentages are based on fires where sprinklers were reported present and operating and there was reported information on number of sprinklers operating. Figures reflect recodings explained in Introduction: Fires are excluded if the reason for failure or ineffectiveness is "system not present in area of fire." Fires are recoded from "operated but ineffective" to "failed to operate" if the reason for failure or ineffectiveness was "system shut off." Fires are recoded from "failed to operate" to "operated but ineffective" if the reason for failure or ineffectiveness was "not enough agent" or "agent did not reach fire." In NFIRS, if multiple systems are present, the system coded is supposed to be the one system designed to protect the hazard where the fire started. Buildings under construction are excluded, as are partial systems and fires reported as confined fires. Fires reported with unclassified reason for failure are treated as cases of unknown reasons for failure.

Source: NFIRS and NFPA fire experience survey.

Table 8. (Continued)
Reasons for Failure to Operate in Fires with Non-Confined Structure Fire Incident Types Large Enough to Activate Sprinkler that Was Present in Area of Fire, by Property Use Based on Estimated Number of 2010-2014 Structure Fires per Year

B. Wet Pipe Sprinklers Only

Property Use	System shut off	Manual intervention defeated system	System component damaged	Lack of maintenance	Inappropriate system for type of fire	Total fires per year
All public assembly	50%	24%	3%	13%	10%	44.00
Eating or drinking establishment	47%	16%	5%	21%	11%	25.00
All residential	60%	21%	9%	6%	4%	225.00
Home (including apartment)	63%	19%	9%	6%	3%	181.00
Store or office	60%	19%	8%	4%	10%	81.00
Manufacturing facility	58%	18%	2%	8%	14%	64.00
All structures*	59%	20%	7%	7%	7%	530.00

C. Dry Pipe Sprinklers Only

Property Use	System shut off	Manual intervention defeated system	System component damaged	Lack of maintenance	Inappropriate system for type of fire	Total fires per year
All structures	61%	9%	8%	16%	5%	98.00

* Includes some properties not listed separately above.

Note: Percentages are based on structure fires reported in NFIRS Version 5.0 to U.S. municipal fire departments and so exclude fires reported only to federal or state agencies or industrial fire brigades. Percentages are based on fires where sprinklers were reported present and operating and there was reported information on number of sprinklers operating. Figures reflect recodings explained in Introduction: Fires are excluded if the reason for failure or ineffectiveness is "system not present in area of fire." Fires are recoded from "operated but ineffective" to "failed to operate" if the reason for failure or ineffectiveness was "system shut off." Fires are recoded from "failed to operate" to "operated but ineffective" if the reason for failure or ineffectiveness was "not enough agent" or "agent did not reach fire." In NFIRS, if multiple systems are present, the system coded is supposed to be the one system designed to protect the hazard where the fire started. Buildings under construction are excluded, as are partial systems and fires reported as confined fires. Fires reported with unclassified reason for failure are treated as cases of unknown reasons for failure.

Source: NFIRS and NFPA fire experience survey.

Table 9.
Reasons for Ineffectiveness in Fires with Non-Confined Structure Fire Incident Types Large Enough to Activate Sprinkler that Was Present in Area of Fire, by Property Use Based on Estimated Number of 2010-2014 Structure Fires per Year

A. All Sprinklers

Property Use	Water did not reach fire	Not enough water released	System Component damaged	Manual intervention defeated system	Lack of maintenance	Inappropriate system for type of fire	Fires per year
All public assembly	69%	21%	0%	0%	5%	5%	41
Eating or drinking establishment	69%	25%	0%	0%	6%	0%	33
All residential	39%	40%	7%	3%	5%	7%	119
Home (including apartment)	40%	35%	8%	3%	6%	9%	102
Store or office	39%	32%	8%	13%	4%	4%	34
Manufacturing facility	39%	26%	9%	9%	13%	6%	62
All structures*	44%	30%	8%	7%	7%	5%	300

* Includes some properties not listed separately above.

Note: Percentages are based on structure fires reported in NFIRS Version 5.0 to U.S. municipal fire departments and so exclude fires reported only to federal or state agencies or industrial fire brigades. Percentages are based on fires where sprinklers were reported present and operating and there was reported information on number of sprinklers operating. Figures reflect recodings explained in Introduction: Fires are excluded if the reason for failure or ineffectiveness is "system not present in area of fire." Fires are recoded from "operated but ineffective" to "failed to operate" if the reason for failure or ineffectiveness was "system shut off." Fires are recoded from "failed to operate" to "operated but ineffective" if the reason for failure or ineffectiveness was "not enough agent" or "agent did not reach fire." In NFIRS, if multiple systems are present, the system coded is supposed to be the one system designed to protect the hazard where the fire started. Buildings under construction are excluded, as are partial systems and fires reported as confined fires. Fires reported with unclassified reason for failure are treated as cases of unknown reasons for failure.

Source: NFIRS and NFPA fire experience survey.

Table 9. (Continued)
Reasons for Ineffectiveness When Fire Was Coded as Not Confined and Large Enough to Activate Sprinkler and Equipment that Was Present in Area of Fire, by Property Use
Based on Estimated Number of 2010-2014 Structure Fires per Year

B. Wet Pipe Sprinklers Only

Property Use	Water did not reach fire	Not enough water released	System component damaged	Manual intervention defeated system	Lack of maintenance	Inappropriate system for type of fire	Total fires per year
All public assembly	66%	26%	0%	0%	0%	8%	25
Eating or drinking establishment	66%	34%	0%	0%	0%	0%	17
All residential	42%	37%	8%	3%	3%	6%	108
Home (including apartment)	43%	33%	10%	4%	3%	7%	93
Store or office	34%	35%	6%	19%	0%	5%	29
Manufacturing facility	36%	31%	3%	12%	12%	6%	46
All structures*	43%	32%	6%	10%	5%	5%	240

C. Dry Pipe Sprinklers Only

Property Use	Water did not reach fire	Not enough water released	System component damaged	Manual intervention defeated system	Lack of maintenance	Inappropriate system for type of fire	Total fires per year
All structures	**42%**	**27%**	**11%**	**0%**	**12%**	**8%**	**33**

* Includes some properties not listed above.

Note: Percentages are based on structure fires reported in NFIRS Version 5.0 to U.S. municipal fire departments and so exclude fires reported only to federal or state agencies or industrial fire brigades. Percentages are based on fires where sprinklers were reported present and operating and there was reported information on number of sprinklers operating. Figures reflect recodings explained in Introduction: Fires are excluded if the reason for failure or ineffectiveness is "system not present in area of fire." Fires are recoded from "operated but ineffective" to "failed to operate" if the reason for failure or ineffectiveness was "system shut off." Fires are recoded from "failed to operate" to "operated but ineffective" if the reason for failure or ineffectiveness was "not enough agent" or "agent did not reach fire." In NFIRS, if multiple systems are present, the system coded is supposed to be the one system designed to protect the hazard where the fire started. Buildings under construction are excluded, as are partial systems and fires reported as confined fires. Fires reported with unclassified reason for failure are treated as cases of unknown reasons for failure.

Source: NFIRS and NFPA fire experience survey.

Table 10.
Characteristics of Fatal Victims
In Fires with Sprinklers vs. No Automatic Extinguishing Equipment
2010-2014 Annual Averages

A. Fire or Victims by Sprinkler Presence and Performance

Sprinkler/AES Status	Deaths when sprinklers present		Deaths when no AES present	
Total civilian deaths	42	(100%)	2,659	(100%)
Operated and effective	*29*	*(69%)*		
Fire too small to operate	*8*	*(20%)*		
Failed to operate	*1*	*(3%)*		
Operated but ineffective	*3*	*(8%)*		

B. Characteristics in Fires with Operating Sprinklers vs. No AES

Fire or Victim Characteristic	Deaths when sprinklers present		Deaths when no AES present	
With operating Sprinklers	29	(100%)	2,659	(100%)
Victim in area of origin	26	(90%)	1,319	(50%)
Involved in ignition	*23*	*(80%)*	*940*	*(35%)*
Not involved in ignition	*3*	*(10%)*	*379*	*(14%)*
Victim 65 or older	15	(52%)	833	(31%)
Clothing on fire	7	(26%)	192	(7%)
Physically disabled	4	(13%)	139	(5%)
Victim returned to fire, unable to act, or acted irrationally	7	(25%)	535	(20%)
Intentional fire	5	(16%)	368	(14%)
Sleeping	8	(8%)	854	(32%)

Note: Statistics are based on structure fires reported in NFIRS by U.S. municipal fire departments and so exclude fire reported only to federal or state agencies or industrial fire brigades. In NFIRS, if multiple systems are present, the system coded is supposed to be the one system designed to protect the hazard where the fire started. This field is not required if the fire did not begin within the designed range of the system. Buildings under construction are excluded.

Here is an example of how to read this table: Nearly all (90%) the people who died in fires despite the presence of operating sprinklers were located in the area of fire origin, hence closer to the fire and probably less able to escape than victims located farther from the fire, compared to only 50% of fatal victims in fires with no automatic extinguishing equipment present who were located in the area of fire origin.

Source: NFIRS and NFPA fire experience survey.

Appendix A.
How National Estimates Are Calculated

The statistics in this analysis are estimates derived from the U.S. Fire Administration's (USFA's) National Fire Incident Reporting System (NFIRS) and the National Fire Protection Association's (NFPA's) annual survey of U.S. fire departments. NFIRS is a voluntary system by which participating fire departments report detailed factors about the fires to which they respond. Roughly two-thirds of U.S. fire departments participate, although not all of these departments provide data every year. Fires reported to federal or state fire departments or industrial fire brigades are not included in these estimates.

NFIRS provides the most detailed incident information of any national database not limited to large fires. NFIRS is the only database capable of addressing national patterns for fires of all sizes by specific property use and specific fire cause. NFIRS also captures information on the extent of flame spread, and automatic detection and suppression equipment. For more information about NFIRS visit http://www.nfirs.fema.gov/. Copies of the paper forms may be downloaded from http://www.nfirs.fema.gov/documentation/design/NFIRS_Paper_Forms_2008.pdf.

NFIRS has a wide variety of data elements and code choices. The NFIRS database contains coded information. Many code choices describe several conditions. These cannot be broken down further. For example, area of origin code 83 captures fires starting in vehicle engine areas, running gear areas or wheel areas. It is impossible to tell the portion of each from the coded data.

Methodology may change slightly from year to year.
NFPA is continually examining its methodology to provide the best possible answers to specific questions, methodological and definitional changes can occur. *Earlier editions of the same report may have used different methodologies to produce the same analysis, meaning that the estimates are not directly comparable from year to year.*

NFPA's fire department experience survey provides estimates of the big picture.
Each year, NFPA conducts an annual survey of fire departments which enables us to capture a summary of fire department experience on a larger scale. Surveys are currently sent to all municipal departments protecting populations of 5,000 or more and a random sample, stratified by community size, of the smaller departments. Typically, a total of roughly 3,000 surveys are returned, representing about one of every ten U.S. municipal fire departments and about one third of the U.S. population.

The survey is stratified by size of population protected to reduce the uncertainty of the final estimate. Small rural communities have fewer people protected per department and are less likely to respond to the survey. A larger number must be surveyed to obtain an adequate sample of those departments. (NFPA also makes follow-up calls to a sample of the smaller fire departments that do not respond, to confirm that those that did respond are truly representative of fire departments their size.) On the other hand, large city departments are so few in number and protect such a large proportion of the total U.S. population that it makes sense to survey all of them. Most respond, resulting in excellent precision for their part of the final estimate.

The survey includes the following information: (1) the total number of fire incidents, civilian deaths, and civilian injuries, and the total estimated property damage (in dollars), for each of the major property use classes defined in NFIRS; (2) the number of on-duty firefighter injuries, by type of duty and nature of illness; 3) the number and nature of non-fire incidents; and (4) information on the type of community protected (e.g., county versus township versus city) and the size of the population protected, which is used in the statistical formula for projecting national totals from sample results. The results of the survey are published in the annual report *Fire Loss in the United States*. To download a free copy of the report, visit http://www.nfpa.org/assets/files/PDF/OS.fireloss.pdf.

Projecting NFIRS to National Estimates

As noted, NFIRS is a voluntary system. Different states and jurisdictions have different reporting requirements and practices. Participation rates in NFIRS are not necessarily uniform across regions and community sizes, both factors correlated with frequency and severity of fires. This means NFIRS may be susceptible to systematic biases. No one at present can quantify the size of these deviations from the ideal, representative sample, so no one can say with confidence that they are or are not serious problems. But there is enough reason for concern so that a second database -- the NFPA survey -- is needed to project NFIRS to national estimates and to project different parts of NFIRS separately. This multiple calibration approach makes use of the annual NFPA survey where its statistical design advantages are strongest.

Scaling ratios are obtained by comparing NFPA's projected totals of residential structure fires, non-residential structure fires, vehicle fires, and outside and other fires, and associated civilian deaths, civilian injuries, and direct property damage with comparable totals in NFIRS. Estimates of specific fire problems and circumstances are obtained by multiplying the NFIRS data by the scaling ratios. Reports for incidents in which mutual aid was given are excluded from NFPA's analyses.

Analysts at the NFPA, the USFA and the Consumer Product Safety Commission developed the specific basic analytical rules used for this procedure. "The National Estimates Approach to U.S. Fire Statistics," by John R. Hall, Jr. and Beatrice Harwood, provides a more detailed explanation of national estimates.

Version 5.0 of NFIRS, first introduced in 1999, used a different coding structure for many data elements, added some property use codes, and dropped others. The essentials of the approach described by Hall and Harwood are still used, but some modifications have been necessary to accommodate the changes in NFIRS 5.0.

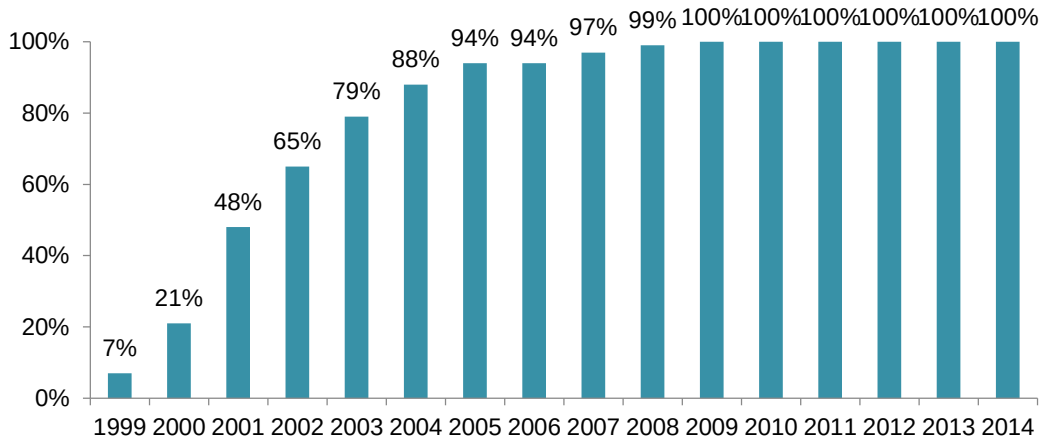
Figure A.1 shows the percentage of fires originally collected in the NFIRS 5.0 system. Each year's release version of NFIRS data also includes data collected in older versions of NFIRS that were converted to NFIRS 5.0 codes.

From 1999 data on, analyses are based on scaling ratios using only data originally collected in NFIRS 5.0:

NFPA survey projections
NFIRS totals (Version 5.0)

For 1999 to 2001, the same rules may be applied, but estimates for these years in this form will be less reliable due to the smaller amount of data originally collected in NFIRS 5.0; they should be viewed with extreme caution.

Figure A.1. Fires Originally Collected in NFIRS 5.0 by Year



NFIRS 5.0 introduced six categories of confined structure fires, including:

- cooking fires confined to the cooking vessel,
- confined chimney or flue fires,
- confined incinerator fire,
- confined fuel burner or boiler fire or delayed ignition,
- confined commercial compactor fire, and
- trash or rubbish fires in a structure with no flame damage to the structure or its contents.

Although causal and other detailed information is typically not required for these incidents, it is provided in some cases. Some analyses, particularly those that examine cooking equipment, heating equipment, fires caused by smoking materials, and fires started by playing with fire, may examine the confined fires in greater detail. Because the confined fire incident types describe certain scenarios, the distribution of unknown data differs from that of all fires. Consequently, allocation of unknowns must be done separately.

For most fields other than Property Use and Incident Type, NFPA allocates unknown data proportionally among known data. This approach assumes that if the missing data were known, it would be distributed in the same manner as the known data. NFPA makes additional adjustments to several fields. *Casualty and loss projections can be heavily influenced by the inclusion or exclusion of unusually serious fire.*

Rounding and percentages. The data shown are estimates and generally rounded. An entry of zero may be a true zero or it may mean that the value rounds to zero. Percentages are calculated from unrounded values. It is quite possible to have a percentage entry of up to 100% even if the rounded number entry is zero. The same rounded value may account for a slightly different percentage share. Because percentages are expressed in integers and not carried out to several decimal places, percentages that appear identical may be associated with slightly different values.

Appendix B
Data Elements in NFIRS 5.0 Related to Automatic Extinguishing Systems

M1. Presence of Automatic Extinguishment System (AES)
This is to be coded based on whether a system was or was not present in the area of fire and is designed to extinguish the fire that developed. (The latter condition might exclude, for example, a range hood dry chemical extinguishing system from being considered if the fire began in a toaster.)

Codes:

N	None Present
1	Present
2	Partial system present (Added in 2005 for use beginning in 2006)
8	NFPA recode when M1AES Presence was coded as 1- Present, M3 AES Operation was coded as 4- Failed to operate and M5 AES Failure Reason was coded as 5- Fire not in area protected
U	Undetermined (restored to coding in 2003 for use beginning in 2004)

M2. Type of Automatic Extinguishment System
If multiple systems are present, this is to be coded in terms of the (presumably) one system designed to protect the hazard where the fire started. This is a required field if the fire began within the designed range of the system. It is not clear whether questions might arise over a system that is not located in the area of fire origin but has the area of fire origin within its designed range; this has to do with the interpretation of the "area" of fire origin.

Codes:

1	Wet pipe sprinkler
2	Dry pipe sprinkler
3	Other sprinkler system
4	Dry chemical system
5	Foam system
6	Halogen type system
7	Carbon dioxide system
0	Other special hazard system
U	Undetermined

M3. Automatic Extinguishment System Operation
This is designed to capture the "operation and effectiveness" of the system relative to area of fire origin. It is also said to provide information on the "reliability" of the system. The instructions say that "effective" does not necessarily mean complete extinguishment but does mean containment and control until the fire department can complete extinguishment.

Codes:

1	System operated and was effective
2	System operated and was not effective
3	Fire too small to activate the system
4	Failed to operate
0	Other
U	Undetermined

M4. Number of Sprinklers Operating
The instructions say this is not an indication of the effectiveness of the sprinkler system. The instructions do not explicitly indicate whether this data element is relevant if the automatic extinguishment system is not a sprinkler system (as indicated in M2). The actual number is recorded in the blank provided; there are no codes.

M5. Automatic Extinguishment System Failure Reason

This is designed to capture the (one) reason why the system "failed to operate or did not operate properly." The instructions also say that this data element provides information on the "effectiveness" of the equipment. It is not clear whether this is to be completed if the system operated properly but was not effective.

Text shown in brackets is text shown in the instructions but not on the form. Note that for code 4, the phrase "wrong" is replaced by "inappropriate" in the instructions; the latter term is more precise and appropriate, although it is possible for the type of fire to be unexpected in a given occupancy.

Codes:

1	System shut off
2	Not enough agent discharged [to control the fire]
3	Agent discharged but did not reach [the] fire
4	Wrong type of system [Inappropriate system for the type of fire]
5	Fire not in area protected [by the system]
6	System components damaged
7	Lack of maintenance [including corrosion or heads painted]
8	Manual intervention [defeated the system]
0	Other _____ [Other reason system not effective]
U	Undetermined

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Land Use & Environment Committee

Building Codes Update Process

Agenda Date: 2/13/2020
Agenda Item Number: 6.D
File Number:20-0142

Type: report **Version:** 1 **Status:** In Committee

Title
Building Codes Update Process

Recommended Action
Committee Recommendation:
Not referred to a committee.

City Manager Recommendation:
Receive a briefing on the City's process for updating building codes. Briefing only; no action requested.

Report
Issue:
Whether to review the process for the City of Olympia's adoption of the 2018 Washington State Building Codes and consideration of local amendments.

Staff Contact:
Larry Merrell, Building Official, Department of Community Planning and Development, 360.753.8487

Presenter(s):
Larry Merrell, Building Official, Department of Community Planning and Development,

Background and Analysis:
Every three years, the construction code writing organizations update their respective technical and administrative codes. Revised Code of Washington (RCW) Section 19.27 requires that jurisdictions within the State of Washington adopt certain Building, Plumbing, Mechanical, Fire, Energy and Electrical Codes as required by the Washington State Building Codes Council (SBCC). The 2018 State Referenced Codes have been published and are scheduled for implementation on July 1, 2020. Adoption of these codes will include Olympia Municipal Code Chapters 16.04, 16.32, 16.36, 16.40 and 16.44

The building codes are for the purpose of establishing rules and regulations for the protection of life, environment and property through the construction, alteration, removal, demolition, use and occupancy, location and maintenance of buildings and structures.

These codes also cover the installation, repair, replacement or alteration of electrical, mechanical, and plumbing systems along with their associated equipment, appliances, fixtures, fittings and appurtenances.

Within the codes are the process and authority for issuance of permits, collection of fees and inspection of site to ascertain compliance.

Proposed Local Amendments for Consideration

In addition to adoption of the 2018 State Referenced Codes, the City Olympia may also consider proposing local amendments to the International Codes. Proposed local amendments do not directly amend the International Residential Code (IRC); the State Building Code Council (SBCC) is required by RCW 19.27.074 to approve or deny all county or city local amendments that **impact single family or multifamily residential buildings** before they can be enforced. The jurisdiction is required to submit residential amendments in writing after the amendment/ordinance has been adopted by the city/county legislative body.

Staff recommends several proposed local amendments:

1) Adopt IRC, Appendix "Q" "Tiny Homes" to allow for modified construction practices related to small tiny homes not greater than 400 square feet.

2) Keep Fire Sprinkler requirements in place.

   - Would retain the requirement that all new single-family homes install residential sprinkler systems at time of new construction.
   - The state building code council has determined that a local ordinance requiring fire sprinklers in accordance with Fire Sprinklers, Appendix S of the residential code may be adopted/retained by any local government upon notification of the council.

3) Adopt the latest revision to the International Property Maintenance Code. Current OMC edition is 2015; we are updating to the 2018 IPMC.

4) Implement WAC 51-51-60106, Solar Ready and Electric Vehicle Charging Infrastructure Readiness. Discussion with neighboring jurisdictions is on-going to work toward consistency within the region.

5) Add provisions to OMC General Requirements for all Referenced Codes related to permit expirations and extensions (OMC 16.04.030.B.2). Under this existing code section, all permits

expire after eighteen months from the date of issue unless a permit extension is granted.

- Add a requirement that all expired permits recorded to any property be brought into "finaled" and/or "closed out" status before any new permits will be issued to that property for new work.
- Allow exception for any emergency repair/replacement permit necessary to maintain minimum property maintenance requirements.

Staff will meet with the various stakeholder groups during the month of May to present the new code versions and to field questions regarding those changes.

We are targeting the end of May to bring before the Council an ordinance adopting by reference the various International Codes as adopted by Washington State.

Neighborhood/Community Interests (if known):
As part of the of code adoption process; various construction community groups such as the Olympia Master Builders and the Building Industry Association Washington, which include a number of local contracting members, have expressed interest in the upcoming codes. Staff is working with these organizations and design professionals to ensure there is an understanding of the upcoming revisions to the codes as they are adopted. Staff has addressed these interests by ensuring the City of Olympia engages in outreach and invitation to these groups to attend the same training our staff attends; we have in turn been invited to their training. Additionally, the City's website will be updated to ensure there is information available pertaining to these newly adopted codes.

Options:
1) Receive briefing and direct staff to proceed with State Building Codes update process to bring adopting ordinance to City Council before July1, 2020.
2) Receive briefing and continue discussion to a future meeting.

Financial Impact:
The associated fiscal impact is included in department budget for 2020.

Attachments:
State Adopted 2018 Codes

State Adopted Codes

- 2018 International Building Code with statewide amendments
- ICC/ANSI A117.1-09, Accessible and Usable Buildings and Facilities, with statewide amendments
- 2018 International Residential Code with statewide amendments
- 2018 International Mechanical Code with statewide amendments
- 2018 International Fuel Gas Code with statewide amendments (part of the IMC adoption)
- 2020 Liquefied Petroleum Gas Code (NFPA 58)
- 2018 National Fuel Gas Code (NFPA 54) (for LP Gas installation only)
- 2018 International Fire Code with statewide amendments
- 2018 Uniform Plumbing Code with statewide amendments
- 2015 International Energy Conservation Code/Washington State Energy Code
- 2018 International Existing Building Code with statewide amendments found in the IBC
- 2018 International Swimming Pool and Spa code