National Emergency Training Center
16825 S. Seton Avenue
Emmitsburg, MD 21727-8998

FEMA

R0614

Dear National Fire Academy Student:

We are looking forward to your arrival at the National Fire Academy (NFA), as well as your participation in the *Wildland Urban Interface: Fire Adapted Communities* (WUIFAC) course.

Note that there is a pre-course assignment for this course. Please read and be familiar with this information before coming to class.

- Locate and peruse the content of the fireadapted.org website. Doing so will provide a comprehensive overview of what a Fire Adapted Community is and what it takes to achieve such a goal. The website address is http://www.fireadapted.org/. Information from this site will be referenced and used extensively in the NFA course.
- Read the spring 2010 edition of The Disaster Safety Review published by the Institute for Business & Home Safety. The document is attached.
- Locate and peruse the content of the Living with Fire website provided courtesy of the University of Reno. The website can be found at http://www.livingwithfire.info/. The content of this site focuses on neighborhood-based actions and provides information in a lean, simple and easily accessible format. It represents an excellent medium of how to create Fire Adapted Communities in the wildland urban interface. The defensible space and built environment tabs deal with Firewise, creating defensible space, access points and evacuations.
- Locate and peruse the content of the Ready, Set, Go! website provided courtesy of the International Association of Fire Chiefs (IAFC). The website can be found at http://www.wildlandfirersg.org/. The Ready, Set, Go! program, managed by the IAFC, was initiated to develop and improve the dialogue between fire departments and the residents they serve. Launched nationally in March 2011, the program helps fire departments to teach individuals who live in high-risk wildfire areas — and the wildland urban interface — how to best prepare themselves and their properties against fire threats.

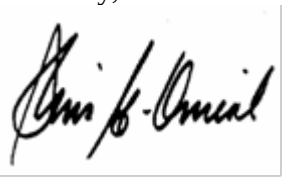
It is important to note that this is a 6-day class, and the first day of class will begin on Sunday at approximately 8 a.m. Subsequent classes will meet daily from 8 a.m. to 5 p.m. with graduation occurring on Friday at 4 p.m. Because of this schedule, you will be provided lodging for Friday night. Evening classes may be required.

End-of-class graduation ceremonies are an important part of the course, and you are expected to attend. Please do not make any travel arrangements to leave campus until after you and your classmates graduate.

Increasing numbers of students and instructors are bringing laptop computers or other electronic devices to campus. You alone are responsible for the security and maintenance of your equipment. The Academy cannot provide you with computer software, hardware, or technical support to include disks, printers, scanners, etc. There are a limited number of 120 volt AC outlets in the classrooms. For this course please bring a new “clean” USB flash (thumb) drive to be used in the classroom. Thumb drives or external hard drives used to bring course materials to class cannot be connected to FEMA property without being scanned for viruses. Due to time limitations for scanning, these devices cannot be larger than 8 GB. Anything over this amount will not be scanned and cannot be used. A Student Computer Lab is located in Building D and is available for all students to use. It is open daily with technical support provided in the evenings. This lab uses Windows 7 and Office 2010 as the software standard.

Should you need additional information related to course content or requirements, please feel free to contact Mr. Woody Stratton, Training Specialist, at (301) 447-1380 or email at woodrow.stratton@fema.dhs.gov.

Sincerely,



Dr. Denis Onieal, Superintendent
National Fire Academy
U.S. Fire Administration

IBHS Analysis Sheds New Light on Property Risks in Wildfire-prone Regions PAGE 8

THE INSTITUTE FOR BUSINESS & HOME SAFETY'S

DisasterSafetyReview

Volume 8 - Spring 2010

Why We Need Fire Resistant Communities

Institute for Business & Home Safety®

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This issue of the *Disaster Safety Review* (DSR) focuses on wildfire: an increasingly important topic as residential and commercial property development continues to spread across the Wildland Urban Interface (WUI).

Today, approximately one out of every three housing units in the contiguous U.S. is located in the WUI, with wildfire risk present in 38 states. When we ask leaders of national fire service organizations what keeps them up at night, it is not California that leaps to mind; it is the Southeastern U.S., where building codes and other loss mitigation tools designed to protect populated areas are deficient given the very high risk of wildfire.

Also, even with significant increases in wildfire-caused property loss over the last decade, much about residential and commercial structures' interaction with wildfire remains unknown. This dearth of knowledge results from several things, including: incomplete, inaccurate, or non-existent data about wildfire ignition sources at the local, state and national levels; lack of structure-related training and resources for professional and volunteer fire departments who battle wildfires; and, jurisdictional complexities, as fires jump man-made geographic boundaries between municipalities, counties, and from public to private or tribal lands.

This edition of *DSR* includes articles by several nationally respected experts, each of whom helps explore and explain a different aspect of wildfire. National Fire Protection Association (NFPA) President Jim Shannon looks at the importance of residential sprinklers as passive life and property safety systems. These systems are valuable in all types of settings, but particularly so when fire services are some distance away, as is often the case in the WUI. Dr. Steve Quarles is with the University of California Cooperative Extension; he also is a consultant to IBHS for wildfire-related research and consumer-focused products. Dr. Quarles, who served on the California Wildfire Protection Building Construction Task Force, has written an article that focuses on changes to Chapter 7A of the California Building Code, which is geared toward wildfire property protection. These changes were recommended by the task force and will take effect next year.

Former California State Fire Marshal Kate Dargan addresses the need for a cohesive definition of "firesafe" land use planning and the role insurers can play in supporting that effort. Chief Dargan has spent a good deal of time in recent years working to revive and improve the historic relationship between the fire services and the property insurance industry. At IBHS, we believe that the value of a close working relationship between the insurance and fire services communities cannot be overstated. We are very proud of the relationships that IBHS staff – in close cooperation with our member companies – have built and strengthened with key fire services organizations during the past two years. These fire service organizations include the International Association of Fire Chiefs (IAFC), the NFPA (including Firewise), the National Association of Fire Marshals, the U.S. Forest Service, the U.S. Department of the Interior Office of Wildland Fire Coordination, and Fire Safe Councils. Our collaboration is generating a variety of important joint projects in the areas of public education, research and public policy.

"When we ask leaders of national fire service organizations what keeps them up at night, it is not California that leaps to mind; it is the Southeastern U.S., where building codes and other loss mitigation tools designed to protect populated areas are deficient given the very high risk of wildfire."

In addition to the articles described above, in this *DSR*, Ventura County Fire Chief Bob Roper provides an introduction to the new ***Ready, Set, Go!*** program developed by the IAFC. This program is designed to create truly fire-adaptive communities across our nation, by ensuring that structures are well-armed to stand alone if need be after people have evacuated in the face of an advancing fire, or if the fire services are occupied elsewhere. ***Ready, Set, Go!*** will be unveiled nationally just days after this *DSR* goes to press, and IBHS will be among the organizations proudly standing with the IAFC as they roll out this promising initiative. The Ready, Set, Go program is part of a national pre-wildfire strategy for creating fire-adaptive communities that is discussed in an article by Pam Leschak, Wildland Urban Interface Program Manager and National Firewise Coordinator for the USDA Forest Service.

Finally, Dr. Tim Reinhold, IBHS Chief Engineer and Senior Vice President of Research, uses this latest issue of *DSR* to offer a preview of the Institute's unique wildfire capabilities going forward. While IBHS has conducted very well-received field and closed claims research in the past, creation of our new IBHS Research Center in Chester County, S.C., add tremendous new capabilities.

The American property insurance industry grew out of a critical need to better physically and financially protect people and property from interior- and exterior-sourced fires. Sadly, year after year, fire continues to be a major – and often leading – cause of insured loss in our nation. Fortunately, fires in urban areas and fires in more isolated settings (such as the WUI) both have been focal points of impressive insurance industry life and property protection campaigns.

While this issue of *DSR* spotlights wildfire, it should be noted that IBHS and our members continue to aggressively pursue a much broader fire-related agenda. If you have questions about IBHS loss prevention/reduction initiatives surrounding fire risks (or any other peril), please let us know. We love to talk about what we do, and what our member companies are doing, to make this world a safer place.

Julie Rochman
President and
Chief Executive Officer
Institute for Business &
Home Safety

Strong Partnerships and the Right Tools:

The Pre-wildfire Strategy of Fire Adapted Communities

BY PAM LESCHAK
WILDLAND URBAN INTERFACE PROGRAM MANAGER, USDA FOREST SERVICE

Wildfires that threaten communities cost the nation millions of dollars every year through suppression costs and structural losses, and put property owners and firefighters in danger. There are no indications that development in the Wildland Urban Interface (WUI) will abate; in fact, trends indicate that retiring baby boomers may increase development in high wildfire risk areas.

Fire authorities are faced with growing development and the ever-increasing cost of protecting structures in the WUI. This risk greatly decreases if communities are prepared or adapted to accept fire as a natural part of the larger environmental landscape.

The Fire Adapted Communities effort combines tools available to address WUI fire issues with strong multi-jurisdictional collaborative partnerships before a fire starts. The tools make the partnerships stronger and the partnerships make the tools more effective.

The process is a proactive approach that concentrates on pre-fire strategy and action to reduce risks, and thus costs, rather than relying on suppression activities alone to protect communities after a wildfire starts.

Think of Fire Adapted Communities as an umbrella under which exist the goals, the elements, the programs and tools, the partnerships and the processes needed to enable communities to reduce risk from wildfire.

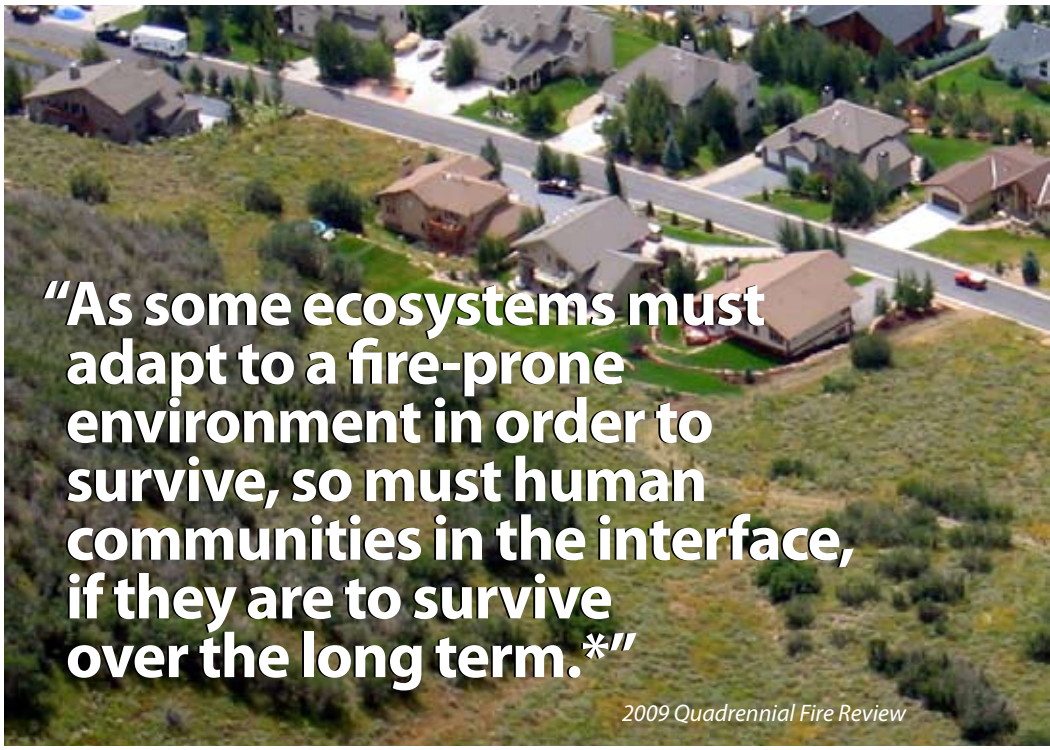
Let's discuss each of the concepts collected under this umbrella to illustrate how they can become stronger by working together rather than standing alone.

The Goals:

Reduce risk from wildfire in at-risk communities in the WUI, reduce damage due to wildfire and reduce fire suppression and structural protection costs without compromising firefighter or civilian safety.

The Elements:

- Residents possess the knowledge, skills, and willingness to properly prepare their homes before a wildfire threatens, prepare to evacuate and safely evacuate when necessary.
- Local fire suppression forces have the needed skills, equipment and capacity.
- Residents and the local fire agencies have met and understand the local fire suppression capability and related response expectations.
- Land owners are aware of fuel threats on their property and have taken action to mitigate the danger.
- Structures are designed, constructed, retrofitted, and maintained in a manner that is ignition resistant.
- The community has embraced the need for defensible space by creating fuel reduction zones and internal safety zones, where treatments have been properly spaced, sequenced, and maintained over the long term.
- Local government has implemented effective land use planning and regulation, including building codes and local ordinances.
- Property owners have an understanding of their responsibilities before, during, and after a fire. This is where educational programs like ***Firewise*** and ***Ready, Set, Go!*** play a role. These programs provide valuable information that helps people prepare their homes and families for the threat of wildfire and learn to evacuate, so they can safely escape the fire.
- Public expectations are realistic and are not based on reliance of government to provide all of the answers.
  * Individuals accept personal responsibility for their property.
  * The public understands that fire authorities cannot provide protection for every structure affected during a wildfire; and understands that it is dangerous for firefighters to attempt to protect a structure where owners have not taken the appropriate measures to make it defensible.



The Tools:

Include, but are not limited to: ***Firewise***, or similar programs; community wildfire protection plans; ***Ready, Set, Go!***; external fuels buffers; internal safety zones; fire departments with the capacity to mitigate, educate, and protect a community at risk; codes and ordinances that address wildfire threats; prevention and education programs; appropriate forest management and fuels mitigation efforts; and

cooperative fire agreements.

The Partners:

All state, federal, and local government agencies and non-government groups with a stake in protecting communities from wildfire. Partners such as the National Fire Protection Association, the USDA Forest Service, U.S. Department of Interior agencies, National Association of State Foresters, Institute for Business & Home Safety, International Association of Fire Chiefs, U.S. Fire Administration, and many, many more. Local partners like Rotary Clubs, neighborhood associations, conservation groups, and schools are equally valuable in this effort.

Wildfire knows no boundaries and neither does the response to wildfire. The successful Fire Adapted Communities process depends on strong and collaborative partnerships between state, federal, and local authorities. Those partnerships aren't limited to government entities, but extend to a wide variety of community groups that have a stake in the safety of their communities.

Arizona State Forester, Vicki Christiansen, speaking to the U.S. House Appropriations Subcommittee on Interior, Environment and Related Agencies on behalf of the National Association of State Foresters put it best: "Our work builds on the vision that effective partnerships, with shared responsibility held by all stakeholders of the wildland fire problem, will create well-prepared, fire adapted communities and healthy, resilient landscapes." USDA Forest Service Deputy Chief for State and Private Forestry Jim Hubbard echoed that commitment to collaboration saying, "A commitment by governments, community organizations, and citizens to work together is necessary to address wildland fire. Everyone has a stake in this issue."

The Process:

A community is fire adapted if it has taken action to reduce risk; the more actions the community has taken, the more fire adapted it becomes.

HOME-TO-HOME IGNITION, AS A RESULT OF BURNING EMBERS, CONTRIBUTED TO THE DEVASTATION IN THIS SAN DIEGO, CALIF., NEIGHBORHOOD AS A RESULT OF THE WITCH CREEK WILDFIRE IN OCTOBER 2007.

The Fire Adapted Communities process or track involves making a commitment to reducing risk. Many communities are already on track because they have taken local responsibility to reduce their risk. Each step along the way leads WUI communities to reduced risk. Each partner in the process has to fulfill its role to move the community closer to becoming fully fire adapted.

A community steps onto the Fire Adapted Communities track when they do any of the following:

- Perform pre-fire mitigation through fuels treatments in the WUI, create a fuels buffer or halo around communities, and create safety zones inside communities at risk;
- Create defensible space using ***Firewise***, ***Take Responsibility***, ***Living With Fire***, ***Fire-Safe*** or similar programs;
- Support regulations to guide development, building materials and location, and landscaping to mitigate fire damage;
- Educate the community using programs like ***Ready, Set, Go!***, prevention teams, ***Firewise*** Modules, and the ***Smokey Bear Wildfire Prevention Campaign***; or
- Assist in building and maintaining local capacity through training, cooperative agreements, the Federal Excess Property Program, and Community Wildfire Protection Plans (CWPPs).

These tools are most beneficial if implemented as a shared strategy that involves all jurisdictions and partners in the WUI. Conversely, fuels treatments on public property around at-risk communities will be of little value if private property owners do not address their fuels issues in their communities.

The Fire Adapted Communities concept is still an evolving process and it will take the collaboration of all stakeholders to achieve the needed comprehensive effort to reduce risk, and ultimately to save resources, lives and properties. DSR

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* The ***Quadrennial Fire Review*** is a strategic assessment of fire agency policies and programs designed to anticipate future needs. The review is a joint effort of the five federal natural resource management agencies and their state, local and tribal partners in the wildland fire community. See: http://www.nifc.gov/QFR/QFR2009Final.pdf

For more information on defensible space go to www.Firewise.org, www.takeresponsibility.cafirealliance.com or www.livingwithfire.info.

Pam Leschak is the wildland urban interface program manager and the national Firewise coordinator with the USDA Forest Service, Fire and Aviation Management Division, at the National Interagency Fire Center in Boise, Idaho.

Ready, Set, Go!

A simple program for wildfire preparedness

BY CHIEF BOB ROPER
INTERNATIONAL ASSOCIATION OF FIRE CHIEFS WILDLAND FIRE POLICY COMMITTEE

The images on the nightly news are becoming all too familiar: neighborhoods on fire, frightened homeowners trying to pack their belongings amid swirling embers, and firefighters pulling hoselines as residents try to back their cars out of driveways. Wildfires are having an increasing impact on homes and property in areas where development meets natural vegetation, what firefighters call the Wildland Urban Interface (WUI). Fire losses in the WUI have reached an unacceptable threshold. Fire service leaders realized a change was needed and that change has come in the form of the ***Ready, Set, Go!*** (RSG) program. This new program, if followed correctly, will reduce property loss, save lives and protect firefighters.

RSG has its origins in the "prepare, leave early or stay and defend" policies currently being re-evaluated in Australia. There are, however, important differences. RSG stresses personal responsibility on the part of homeowners, but its main focus is on prevention, preparation and evacuation.

The concept is simple. The first phase – ***Ready*** – teaches homeowners to prepare their property well in advance of a fire. In fact, the suggestions made in this phase would–if widely adopted–be an excellent start to establishing a fire-adaptive community capable of withstanding a wildfire with little or no assistance from firefighters.

The ***Ready*** component covers defensible space, including the removal of ladder fuels and the use of fire-resistant landscaping and the implementation of fire-safe construction and retrofit practices. Special attention is paid to construction features that make a home vulnerable to ember intrusion – which is a leading cause of property losses due to wildfire. These vulnerable areas include attic vents, eaves, decks, roofs and windows.

One unique goal of RSG is to promote a better understanding of the risks to homes located in the "Ember Zone" during a wildfire, which may be a good distance away from the actual flames associated with the fire. This is an important first step toward preventing property losses.

Many homes at risk from ember intrusion are not typically considered to be within the WUI. A study by the Institute for Business & Home Safety (IBHS) of the 2007 Witch Creek Wildfire in San Diego County, Calif., found that 11.4 percent of insurance claims paid to homeowners with wildfire-related damage involved homes well outside the burn perimeter. This finding is supported by more and more studies, which are finding that houses far from the main fire lines are being destroyed by fires sparked by ember intrusion. RSG addresses this threat by considering homes located within a mile of the flaming front of a wildfire to be in danger of being ignited by wind-blown embers and, therefore inside the "Ember Zone."

RSG covers prevention measures for potential ember "landing zones," such as stacks of firewood, leaf litter or pine needles in roof valleys, patio furniture and ornamental features like wooden fences or bark used in landscaping.

Homeowners in the "Ember Zone" may or may not be subject to mandatory evacuation orders during a wildfire, but given the potential for risk there is a clear need for preparedness that could prevent house-to-house conflagrations and save entire neighborhoods. The Witch Creek IBHS study found that homes located 15 feet apart or closer are at a heightened risk for this type of house-to-house ignition.

The ***Set*** part of RSG stresses emergency preparedness and situational awareness. Once the home itself and the surrounding property have been prepared, homeowners must prepare their families. This means creating a family disaster plan that includes meeting locations, communication plans and evacuation routes. The program also advocates learning how to use a fire extinguisher, how to shut off gas, electric and water services, and how to assemble an emergency supply kit.

When a wildfire starts, the ***Set*** guidelines instruct homeowners to closely follow the progress of the fire while assembling their belongings for an evacuation. Easy to follow checklists for both the interior and exterior of the home simplify the process so residents can make final preparations ahead of an evacuation.

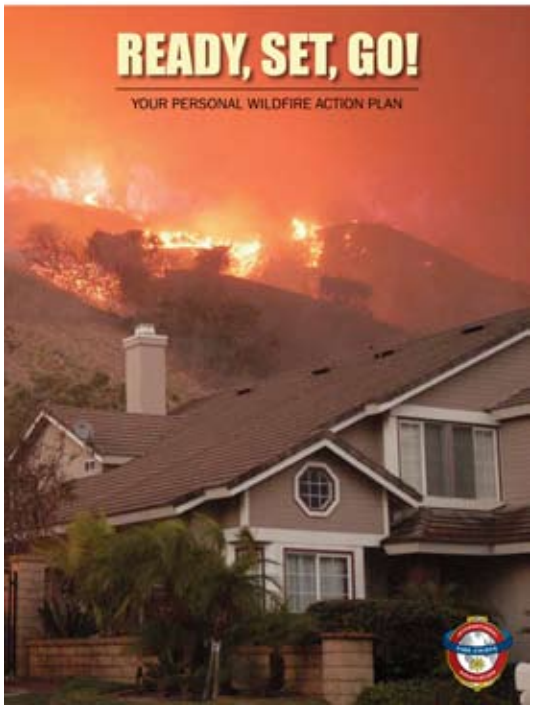
Go! is the final (and simplest) phase of the program. If homeowners have followed the program to this point, their homes and families are prepared; they've done everything they can reasonably do to ensure the safety of both, so why wait to evacuate? Early evacuation is a key component of RSG.

By leaving early, even before evacuation orders are given, residents ensure their safety and give firefighters the freedom to operate in neighborhoods that have been well-prepared to defend against a wildfire. Once residents leave, they eliminate the life-safety risk firefighters must consider when entering a neighborhood. This allows firefighters to immediately concentrate on suppression and structural protection.

RSG also instructs residents on what to do if they become trapped by a WUI fire, such as when a wildfire ignites very close to a neighborhood, eliminating any preparation time for homeowners; however, the main emphasis of the program is good preparation and early evacuation.

RSG was rolled out as a full-scale pilot program by the Ventura County Fire Department and the Orange County Fire Authority for the 2009 fire season in Southern California; other departments, such as Los Angeles County, Los Angeles City, San Bernardino County, Riverside County, Santa Barbara County, CALFIRE and many smaller agencies, also have adopted the basic program.

The program received its first test in Ventura County during late September when the Guiberson Fire broke out between the communities of Fillmore and Moorpark. The fire began on Sept. 22, 2009, and over the next six days, consumed 17,500 acres and injured 10 firefighters.



At the peak of the fire, more than 2,700 personnel were on scene, as well as 214 fire engines, 63 fire crews, 32 bulldozers, 21 helicopters and eight airtankers.

Of greatest concern, though, were the 1,000 homes and 20 commercial properties that were threatened by the fire; however, not a single one of those properties was destroyed by the fire. This is due in large part to the herculean efforts of the firefighters, but there's no doubt that they were aided by some of the key principles of the RSG program.

Defensible space, fire-safe construction and fire-resistant landscaping gave firefighters an edge against the advancing flames, and a well-informed and prepared public helped make evacuations orderly and uneventful.

Enough interest in RSG has been expressed by agencies in other parts of the country that a national version of the program will be introduced for trial by fire agencies across the country in late March 2010 at the International Association of Fire Chiefs Wildland Urban Interface Conference. The IAFC, National Association of State Foresters and its federal partners intend to develop program material and a curriculum for use by any size fire department. After widespread testing in 2010, the program will be officially launched nationwide with a public awareness campaign in March 2011.

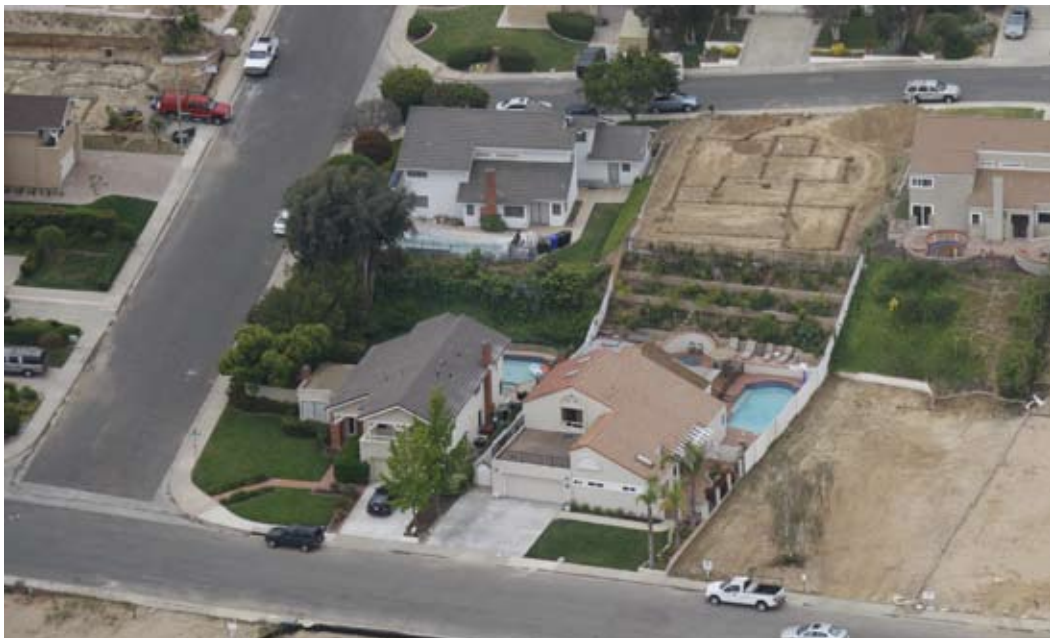
It's important to note that RSG is not a temporary or one-time program. It's intended to guide both individuals and communities to affect permanent change. It requires an ongoing educational effort and a long-term commitment on the part of both the fire service and the public. If successful, it will make people and communities safer, and it will make the job of defending property safer and simpler.

The attention of the national fire service is now focused on the fire and fuel problems found in the WUI, as well as creating fire-adaptive communities. By itself, RSG isn't the answer to all of these challenges, but it can be a significant factor in reducing fire losses and saving lives, and that's an excellent starting point. DSR

Bob Roper is the fire chief for the County of Ventura in Southern California and the chair of the IAFC's Wildland Fire Policy Committee.

IBHS Analysis Sheds New Light on Property Risks in Wildfire-prone Regions

BY HANK POGORZELSKI
APPLIED STATISTICIAN
INSTITUTE FOR BUSINESS & HOME SAFETY



In October 2007, the Witch Creek and Poomacha wildfires decimated large parts of San Diego County, Calif. By the time these fires were fully contained, they had burned an estimated 148,000 acres and damaged or destroyed more than 1,200 homes and 500 outbuildings. The Witch Creek Wildfire alone is estimated to have caused more than $1 billion in insured damage. Following the fire, the Institute for Business & Home Safety (IBHS) collected insurance claims data from many of its member insurance companies with exposures in the affected areas, for the purposes of investigating factors that contributed to the frequency and severity of property damage. The names of the individual data contributing companies remain confidential; all results presented below are based on aggregated data from all contributing companies.

Data points included address, the year the home was built, and roof type for all exposures threatened by the fire. Each property was geocoded to determine its location with respect to the perimeter of the wildfire to help gauge exposures to flames and embers. Claim severity was normalized by dividing the total claim payment by the Coverage A limit (Coverage A refers to coverage for the main structure as opposed to appurtenant structures or contents). In this way, the severity would not be exaggerated by high value exposures when comparisons were made between groups of homes.

IBHS also conducted field work in the areas of San Diego, Poway, Escondido and many unincorporated areas within San Diego County, including Rancho Santa Fe. The findings from the field investigations, which included analysis of high-resolution photographs, property inspections and resident interviews, were published in the IBHS report *Megafires: The Case for Mitigation*, which is available at www.DisasterSafety.org/megafire. The combination of insurance claims analysis, (publicly released for the first time in this article) and the field report has resulted in a broader and deeper understanding of property performance in wildfire situations and options for reducing the risks to homes and businesses in wildfire-prone areas. These findings and other risks posed by wildfires will be further explored at the IBHS Research Center, which will open later this year in Chester County, S.C.

The fire perimeter represents the furthest conterminous extent of the wildfire. Analysis of the insurance claims data shows that homes within the fire perimeter clearly were at greater risk than homes in communities adjacent to the fire. Of paid claims dollars in the IBHS study, 88.6 percent involved exposures located within the fire perimeter. The average paid claim was $203,840 within the perimeter, representing on average 49 percent of the Coverage A limit, compared to $32,879 or nine percent of the Coverage A limit for homes outside, but within a quarter mile of, the fire perimeter. Equally important to note, is the study's finding that nearly one-third of properties in the sample within the fire perimeter did not have an insurance claim, suggesting there are things homeowners can do to reduce their risk of wildfire damage.

The analysis of claims data also shows that insurance losses did not stop at the fire perimeter. Exposures outside of the fire perimeter accounted for 11.4 percent of the total dollar value of paid claims in the IBHS study. The type of damage was not generally available, but according to IBHS interviews with homeowners, smoke damage and ash accumulation were found well outside the fire perimeter, including in communities that otherwise performed well due to fire-resistant construction guidelines and consistent maintenance practices. Therefore, it is reasonable to assume that much of the paid claims dollars for homes located outside the fire perimeter involved smoke damage repairs or other cleanup costs.

Importantly, reports by firefighters and IBHS field investigations showed that embers (also referred to as firebrands), not flames, were the greatest threat to properties. Burning embers can travel a mile or more, landing on roofs and being blown or drawn into vents; the result is house fires that erupt long after flames from the initial wildfire threat have been extinguished. Claims data from our study suggest losses outside the fire perimeter were not limited to smoke damage repairs and cleanup costs. For example, the IBHS data set included a $68,686 Coverage A payment for an exposure located more than half a mile from the fire perimeter, as well as a $60,489 Coverage A payment for an exposure located nearly a mile from the perimeter.

Roof Performance and Building Codes

Homes in the IBHS sample with tile roofs had significantly lower severity of claims compared to homes with asphalt shingle roofs. Paid claims for homes with tile roofs located within the fire perimeter averaged 43 percent of the Coverage A limit, compared to 80 percent for homes with asphalt shingle roofs, which were also located within the fire perimeter.

IBHS researchers analyzed the building codes in place in each jurisdiction where houses in the data sample were located and correlated these with the homes' year of construction. The intent was to determine what role building

"IBHS found homes built to wildfire-resistant standards had an 86 percent reduction in claim payouts when compared to traditionally built homes subjected to similar wildfire conditions."

codes may have played in the homes' performance. Of the exposures located within the fire perimeter, 261 were governed by building codes requiring Class A roof assemblies, which is considered the most fire-resistant according to standards developed by Underwriters Laboratories. The severity of damage to homes with asphalt roofs, which were installed according to the Class A requirement, was 24 percent lower than claims involving homes that were not required to have Class A roof assemblies. It is important to note that the actual reduction in the severity of damage attributed to the presence of Class A roof assemblies may be understated in this study. This is due to the fact that it was impossible to determine how many of the houses in the sample had been reroofed and upgraded to Class A roof assemblies, which could have contributed to improved overall roof performance.

Housing Densities as a Damage Factor

The IBHS data sample also provided evidence that certain community characteristics can affect loss. For example, a high-density community straddling the fire perimeter was identified in the Poway area (referred to in the study as CC1). Homes in CC1 were typically spaced 10 feet to 15 feet apart and the majority of homes had tile roofs. The performance of these homes was compared to other homes in the Poway area, taking into account similar terrain and proximity to the fire perimeter. This other group of homes was drawn from communities that varied in density, and while the housing density was not as high as in CC1, this second set of homes was not generally characterized by any other noteworthy wildfire mitigation technique such as those employed in Wildfire Resistant Communities. Within the fire perimeter, the claims rate for the high density CC1 was 82 percent; in contrast to a 71 percent claims rate for the relatively less dense comparison community. The difference in severity, however, was much larger. For homes within the fire perimeter in CC1, claim severity averaged 36 percent of the Coverage A limit, roughly twice that of more typical Poway communities which had an average claim severity equal to 19 percent of the Coverage A limit (this comparison includes only homes with tile roof to control for variation in severity by roof type). This finding is in line with reports from IBHS field investigations which found evidence of cluster burning in within CC1.

THE WITCH CREEK WILDFIRE COST INSURERS $1.1 BILLION IN PROPERTY LOSSES.

Wildfire Resistant Communities

Finally, IBHS compared the performance of homes within three Wildfire Resistant Communities (WRCs) to traditionally constructed homes that were similarly situated with respect to the fire perimeter in the Rancho Santa Fe area. The WRCs share a number of characteristics, such as a minimum 100-foot defensible space surrounding all structures, adequate water supply for firefighting efforts, and vegetation modification zones surrounding the entire community, all designed to reduce the risks posed by the Wildland Urban Interface (WUI).

The comparisons in this study were limited to WRCs and newer homes in the area, which would have been governed by the 2001 California Building Code. In this way, any detected improvement in the performance of homes within WRCs to their comparators would reflect improvements above and beyond construction governed by the 2001 California Building Code. Within the fire perimeter, 54 percent of the homes in the WRCs had claims that on average equaled three percent of their respective Coverage A limits. By comparison, homes in more traditional communities within the fire perimeter had a claims rate of 70 percent, and on average those claims equaled 52 percent of the Coverage A limit. The average claim paid (including all exposures with and without a claim) within the fire perimeter was $32,144 for homes in WRCs, and $237,543 for the set of traditionally constructed homes.

Bottom Line

Results from the closed claim analysis support findings from the *Megafires: The Case for Mitigation* study. While homes located within the WUI are at increased risk, these are not the only homes at risk since wind-blown embers are capable of reaching ignition points a mile or more from the furthest reaches of the wildfire perimeter. Choices regarding building materials and community design can and do impact outcomes for homes under threat of a wildfire, as evidenced by the significant reduction in the frequency and severity of claims for exposures within WRCs. DSR

Making the Case for Firesafe Planning:

A Comprehensive Approach to Determining Risk

BY KATE DARGAN
WWW.FIREPLANNERS.COM

As a longtime California firefighter, one of the most challenging assignments I ever had was being an air attack officer. Basically, the job consisted of flying around at 2,500 feet above an out-of-control wildfire and directing the helicopters and air tankers assigned to fight the fire. I also provided that "big picture" intelligence to the ground troops – for example, where the fire was headed, what was burning, where it was safe, and opportunities for gaining control. Even after I moved up the professional ladder to become the State Fire Marshal for California, that "big picture" perspective never diminished.

Today, I am on the consulting side of the wildfire fight, but the opportunity for places to make a stand is still apparent. One of those places is in land-use planning for wildfires, or we might call it: Firesafe Planning.

To seize this opportunity, fire service professionals, insurers, community leaders, developers and residents must join together to better define the process. Some of the necessary tools are already in place, such as Community Wildfire Protection Plans (CWPPs), while others must still be developed. There is little doubt that we need all resources available to tackle the growing risks of wildfire. Now is the time to take on this issue, as more municipalities face the question of deciding whether or not an area is "too dangerous to live in."

I often advocate a "Shaping the Battlefield" approach to our national wildfire loss issue that consists of five key elements:

1. Firesafe Planning
2. Ember-Resistant Building Codes
3. Fire Fuels Management
4. Community Response Planning
5. First Responder Training

Each of these has a defined set of actions and results, but for now let us focus on the first element, Firesafe Planning, because it can help address the most immediate needs.

One of the key components to successful mitigation of the wildfire hazard is a systematic approach to land use planning that enables appropriate development, while at the same time, ensures that such development improves (rather than compounds) community risk. This issue is becoming increasingly contentious in California as land being considered for development is more and more frequently being questioned as "too dangerous to live in." Even individual land use decisions can have broad implications, yet the qualifications for making these importance decisions are not well-defined.

Fire chiefs around California and the country are being asked to weigh in on land use decision-making in the early stages of map recordings, project design or environmental review, yet they often lack the training for such evaluations. Local land use planners are becoming aware of the need for more thorough project reviews and community input into proposed developments in fire-prone landscapes, yet they too lack the fire-related training or experience that would enable them to lead applicants through a consistent process.

Let's move back to the 2,500-foot level for a moment, and take the air attack perspective – that is, what is really going on in this picture? Communities are growing; the public, policymakers and attorneys are asking if public safety has been adequately addressed with regard to wildfire risk; and land use planners and fire chiefs are trying to figure out the best answer without having received any real guidance or tools to do the job.

Some very good efforts at developing best practices, guidance templates, and common terminology are underway in some locales. Still, widespread adoption of professional firesafe planning remains a long way off.

One major hurdle is the lack of a cohesive definition of "Firesafe Planning." In contrast, there is a widely accepted, rather elegant definition of "transportation planning" – a more established land use discipline. Perhaps this is because formulating how to successfully move people through communities has been a priority since the days of horse and buggy. Ironically, it is only recently that the public is being forced to realize that wildfire does not respect the right-of-way, obey red lights or yield to properties that stand in its way.

Interestingly, there are meaningful overlaps between the conventional planning dimension (transportation) and the newer, more unconventional discipline (wildfire). By scratching out the transportation terms commonly used to define "transportation planning" and substituting fire-appropriate terms in a few spots, a very workable definition of Firesafe Planning emerges: Firesafe Planning is a field involved with the evaluation, assessment, design, and siting of buildings, and improvements in an area subject to wildfire (generally homes, businesses, streets, utilities, and recreational areas).

Firesafe planning historically has followed the rational planning model of defining goals and objectives, identifying problems, generating alternatives, evaluating alternatives, and developing plans. Other models for planning include rational actor, incremental planning, organizational process, and political bargaining. However, planners are increasingly expected to adopt a multi-disciplinary approach, especially due to the rising importance of environmentalism. For example, they use behavioral psychology to persuade homeowners to prepare their own homes rather than assume firefighters can defend them. The role of the firesafe planner is shifting from technical analysis to promoting sustainability through integrated fire policies.

The fact that wildfires are growing larger and more destructive is increasingly being recognized at the federal, state and local levels, and within both the public and private sectors.

Wildfires–more specifically Wildland Urban Interface (WUI) fires–are causing too much needless damage. Wildfires can be broken into two basic types: beneficial fire and damaging fire. The former refers to wildfire that serves a key role in renewing natural ecological cycles without adverse consequence, while the latter is the type of wildfire that is damaging and destructive. Those terms are generally used to describe WUI fires, with the worst of those labeled "MegaFires," about which the Institute for Business & Home Safety (IBHS) has done a ground-breaking study.

Firesafe planning will focus primarily on the WUI fire problem, since that is where the development exists. So the question is, how can we start to systematically build a professional specialty within the land use planning community that understands and applies this key element of "Shaping the Wildfire Battlefield? "

To be effective, Firesafe Planning needs to address both new and existing development.

New development will need to be planned for and mitigated, if necessary, through the use of fire potential analysis, site and building design, infrastructure and public safety improvements, development plans, evacuation planning, and maintenance programs.

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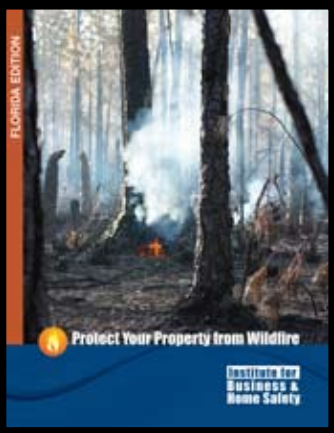
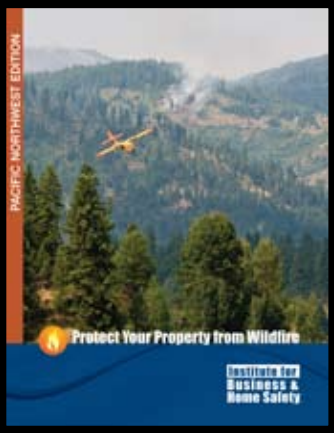
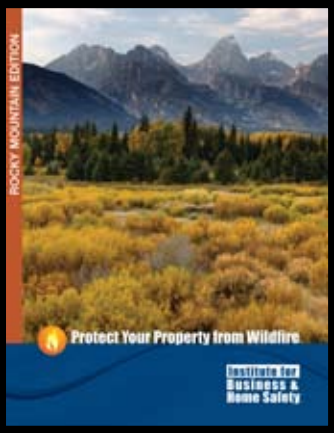
WILDFIRE REACHES EVERY PART OF THE COUNTRY







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Regional Wildfire Guides from the Institute for Business & Home Safety

DisasterSafety.org/wildfire

Changes to the California Building Code Should Streamline Process of Protecting Homes from Wildfire

BY STEPHEN L. QUARLES
UNIVERSITY OF CALIFORNIA
COOPERATIVE EXTENSION

The wildfire provisions in Chapter 7A of the California Building Code are considered among the best in the nation in terms of the capacity to protect homes from being damaged by wildfire, but implementing the strict requirements has been a challenge on several levels. Changes adopted in January, which take effect Jan. 1, 2011, are intended to streamline the process without compromising safety standards.

During 2009, a Wildfire Protection Building Construction Task Force was formed by the Office of the State Fire Marshal in California. The charge to the task force was to recommend changes to the code to make it more easily understood by designers, builders, code officials and product manufacturers, while ensuring that the existing safety standards were not diminished. The task force's recommendations were approved by the California Building Standards Commission, which took nearly three years from when the codes were adopted in September 2005 to fully implement the Chapter 7A requirements. The delay in implementation was to allow manufacturers to test, and, if necessary, modify their products and then to move code-compliant products to the marketplace. The additional time also was needed to update and approve the fire hazard severity maps in the wildfire-prone areas that would be subject to the new code.

Some of the changes to the code include the following:

1. Clarification of the use of surface treatments for fire protection.

Section 703A.5.3 states that "the use of paints, coatings, stains, or other surface treatments are not an approved method of protection…" In the current version, the statement regarding coatings was addressed in the section on decking, indicating applicability to decking, but the wording implied applicability to the entire chapter. The revision clarifies this application to the entire chapter.

2. Clarification of the misguided perception that defensible space equals bare ground.

Chapter 7A now makes an explicit link between a building surviving wildfire by modifying materials and construction methods, and having adequate defensible space in the area around the building. This link is made by referencing Public Resources Code 4291 (for State Responsibility Areas) and California Government Code Section 51182 (for Local Responsibility Areas). The current version of Chapter 7A states that "… the property shall be in compliance with the vegetation clearance requirements prescribed in California Public Resources Code 4291 …" The 2011 version will clarify by stating that "…the property shall be in compliance with the vegetation management requirements …" Clearance to bare ground is not a necessary requirement for buildings to survive a wildfire.

3. Clarification of the pre-test weathering requirement for decking.

It is required for exterior-rated fire retardant treated wood decking, but not for untreated wood decking or wood-plastic composite decking products.

4. Specification of the standard test procedure for an ignition-resistant material.

The standard test procedure, which is the extended 30-minute flame spread test specified in ASTM E-84, that is conducted after the material has been weathered was adopted as an SFM Standard (SFM 12-7A-5). The definition of an ignition-resistant material was not changed.

5. Retention of the vent requirements for all attic and crawl spaces; change in screen mesh sizes.

The 2011 version confirms that materials used in the construction of the vents shall be of noncombustible, corrosion resistant material. Screen mesh sizes between 1/16-inch and 1/8-inch now will be allowed. Vents will not be allowed on the underside of eaves unless, i) the attic space is protected by a code-approved automatic sprinkler system; ii) the exterior wall covering and exposed underside of the eave are constructed with either a noncombustible or ignition resistant material; or iii) the vent has been accepted or approved for use by the enforcing agency as one that resists the intrusion of embers and flame.

6. Clarification of the definition of exterior covering.

A definition has been added that clarifies the meaning of exterior covering as the exposed siding or cladding material applied to i) an exterior wall; ii) roof eave / soffit; iii) floor projection; or iv) exposed underfloor framing.

Other siding and under-eave issues clarified in the revised version include:

a. Exemption of architectural trim and fascia.

These components are not explicitly discussed in the current code, and therefore there was confusion as to whether these components need to comply, and if so, how. The 2011 version will exempt exterior wall architectural trim and fascia.

b. Prescriptive use of open-eave construction.

The revised version will clarify that traditional open-eave construction (i.e., solid wood rafter tails and solid wood blocking using nominal 2-inch lumber) can be used prescriptively.

c. Prescriptive allowance of any siding material over one layer of 5/8-inch Type X gypsum wall board.

The exterior portion of a one-hour, fire-resistive exterior wall assembly will be allowed for use in all exterior wall covering applications (e.g., exterior porch ceilings, under-floor area, and the underside of an appendage).

7. Revision of the definition of heavy timber.

The 2011 version of Chapter 7A will define a consistent minimum nominal dimension of four inches for solid or laminated wood qualifying as "heavy timber."

8. No change to the window requirements.

The new version confirms that an exterior window can comply prescriptively by being constructed of a multi-pane unit with a minimum of one tempered pane. Framing material isn't restricted.

9. Modification of the deck standard.

The new version confirms that the walking surface of decks, porches and balconies is the component that must comply with the requirements of the code. In order to simplify this section, the deck standard, SFM 12-7A-4, was modified by creating a new SFM Standard 12-7A-4A. SFM 12-7A-4A provides the test procedure for the under-deck flame exposure and the heat release rate acceptance criteria. The other acceptance criteria included in SFM 12-7A-4, Part A, have been eliminated from SFM 12-7A-4A to reflect the requirements given in the current version of the Chapter 7A code.

10. Clarification of code compliance.

The current version of the code states that the building official shall provide the owner or applicant a "certification" that the building complies with the code. The revised code clarifies what is meant by "certification" by stating that "issuance of a building permit by the local building official" shall indicate compliance with the provisions of the code. DSR

Steve Quarles, Ph.D., is a wood science expert with 15 years of experience studying building performance in relation to wildfire. Dr. Quarles served as a member of the Wildfire Protection Building Construction Task Force and is an IBHS consultant.

IBHS Research Center

Wildfire Research Capabilities

As wildfires grow larger and more destructive, millions of homes and businesses are in harm's way. The Institute for Business & Home Safety (IBHS) intends to address this problem through its world-class research facility, which opens later this year in Chester County, S.C.

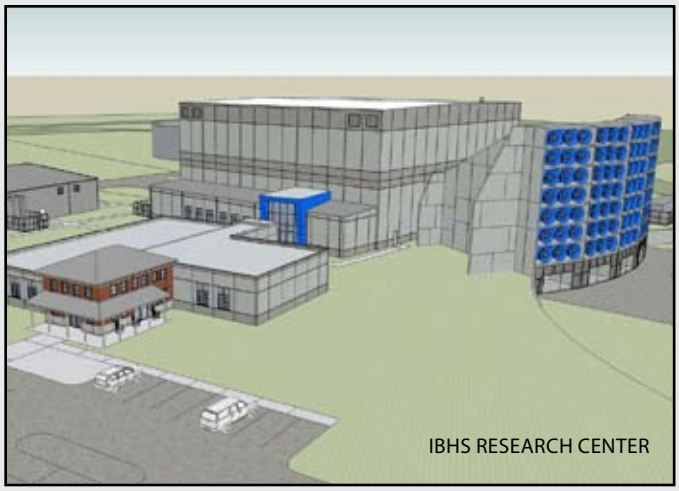
The cutting-edge IBHS lab will have the ability to create realistic, turbulent wind-driven firebrand showers and examine other important characteristics of wildfires as they interact with different types of full-scale residential, commercial and agricultural building specimens.

Among our research objectives are: to effectively reduce structural vulnerability to wildfire ignition; to provide critical data to risk modelers; to test the efficacy of newer, temporary loss mitigation tools (e.g., fire retardant foams, gels and paint applications); and to create compelling visuals that will foster public demand for more wildfire resistant buildings and communities. These are not easy goals to attain, and will take several years to complete. In the meantime, many lives, families, businesses, and whole communities are at stake and in harm's way. That is exactly why we and our allies in the battle to reduce or eliminate losses caused by wildfire are so anxious to get going.

Here is a look at some of the unique capabilities of the lab:

- Ability to simulate ember transport and entry into buildings in a realistic wind field.
- Ability to determine wind induced smoke and ash infiltration.
- Ability to study the effect of wind on building ignition potential as a function of setback requirements.
- Ability to study the effects of wind on building ignition potential from heat and flame impingement. DSR

Timothy Reinhold, Ph.D., Senior Vice President for Research and Chief Engineer, IBHS.



IBHS RESEARCH CENTER

Bringing Safety Home:

NFPA Pushes for More Home Fire Sprinkler Requirements

BY JAMES M. SHANNON
PRESIDENT, NATIONAL FIRE PROTECTION ASSOCIATION

The National Fire Protection Association (NFPA) launched the Fire Sprinkler Initiative (www.firesprinklerinitiative), a nationwide effort to mandate the use of home fire sprinklers in new one – and two – family homes, for one simple reason – sprinklers save lives. The facts are clear.

Home fire is a major problem in the U.S.

Fire in the home poses one of the biggest threats to the people of our communities. Nearly 3,000 people per year die in U.S. home fires. While this number has decreased since the late 1970s as a result of the widespread usage of smoke alarms, codes and standards, and public education, it is still too high and has not moved much in the last decade.

Smoke alarms and sprinklers both save lives from fire

Home fire sprinklers are a proven way to protect lives and property against fires at home. These life-saving systems respond quickly and effectively to the presence of a nearby fire. When sprinklers are present, they save lives. Sprinkler systems provide additional benefits on top of those already provided by smoke alarms. According to NFPA statistics, if you have a reported fire in your home, the risk of dying decreases by about 80 percent when sprinklers are present.

Sprinklers do more than save lives

They also protect property from destruction by fire. In many situations, that means a family that survived a fire will also have a place to live and enough resources to continue living their lives as they did before. "Saving lives" means more than just preventing deaths. Just as there is no other fire safety technology or program that produces as great a reduction in risk of death as sprinklers, there also is no other fire safety technology or program that produces as great a reduction in property loss per fire as sprinklers. People in homes with sprinklers are protected against significant property loss – sprinklers reduce the average property loss by 71 percent per home fire.

The national consensus is in favor of sprinklers

All model safety codes now require the use of home fire sprinklers in new one- and two-family homes. These requirements offer the highest level of safety to protect the people of your community because home sprinkler systems respond quickly to reduce the heat, flames, and smoke from a fire, giving families valuable time to get to safety. Roughly 90 percent of the time, fires are contained by the operation of just one sprinkler. Each individual sprinkler is designed and calibrated to discharge when it senses a significant heat change. And contrary to what you see in movies, only the sprinkler closest to the fire will activate, spraying water directly on the fire.

Opponents of residential fire sprinkler systems like to boast that newer homes are safer homes and that the fire and death problem is limited to older homes. This statistical claim evaporates if you adjust for the higher risk characteristics (e.g., lower income, less education) found on average in the occupants of older homes. But in fact, newer homes are also more likely to include a threat to firefighters in the form of lightweight construction, which is estimated to be used in one-half to two-thirds of all new wood one- and two-family homes. Sprinklers can offset the increased dangers posed by lightweight construction and create a safer fire environment for firefighters to operate.

Additionally, new homes become old homes. So the work we do today will ensure a greater level of fire protection for generations to come.

Home fire sprinklers are cost-effective

The most common myth about sprinklers is that they cost too much. That is not true. A national perspective on the cost of installing residential fire sprinklers is examined in the report, *Home Fire Sprinkler Cost Assessment*, released by the Fire Protection Research Foundation, an affiliate of NFPA. According to the report, the cost of installing sprinkler systems averaged $1.61 per square foot covered by sprinklers. This cost includes all costs to the builder associated with the system including design, installation, and other costs such as permits, additional equipment, increased tap and water meter fees – to the extent that they apply.

Additionally, in a recent study, *Comparative Analysis of Housing Cost and Supply Impacts of Sprinkler Ordinances at the Community Level,* conducted by Newport Partners for NFPA, it is reported that: "…the following analysis did not reveal that the enactment of sprinkler ordinances caused any detrimental effects on housing supply and costs." This report clearly indicates there is no merit to the claim that a residential sprinkler requirement creates an unfair market advantage for an area that does not have a requirement, as claimed by sprinkler opponents.

Sprinklers Are Gaining Momentum

Just within the last year much has happened to move closer to the goal of seeing every new one- and two-family home built with sprinklers. As of the end of February, seven states have taken action to require sprinklers in all newly constructed one- and two-family homes – Pennsylvania, New Hampshire, California, Maryland, New Jersey, Iowa and South Carolina. These are all significant steps forward in our efforts to further reduce the fire death problem in this country. Sprinkler opponents continue to fight such measures but the fire service is aggressively battling their opposition and pushing ahead to help get mandates in place.

Resources Are Available

NFPA's Fire Sprinkler Initiative provides resources for the fire service and other sprinkler advocates who want to demonstrate the need for home fire sprinklers in their community. Tools and field resources are available on the Web site to help advocates talk with local elected officials and others about the life-saving impact of sprinklers. In addition, the site contains information to help home fire sprinkler advocates navigate the legislative process to get sprinkler ordinances introduced and passed in their communities and allow them to come together to share their ideas, successes, and tools with other advocates across the country. DSR

Jim Shannon is president of the National Fire Protection Association. NFPA launched the Fire Sprinkler Initiative in 2009 to increase the number of jurisdictions requiring home fire sprinklers. For more information visit www.firesprinklerinitiative.org.

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The Case for Firesafe Planning *from page 10*

The insurance industry can support the new development approach through focused participation in legislation and policy to create clear standards and goals, supporting grants and capacity-building to create momentum for Firesafe Planning, and educating planners and fire officials about the best ways to apply the basic principles and tools. Additionally, coursework, technical books, and educational certifications need to be built to support this emerging discipline.

Existing development presents different challenges, but none so great as to prohibit them from being incorporated into the Firesafe Planning process. The federal government has been supporting a program for several years to create CWPPs. These plans vary widely among communities and, thus far, have been generally conducted on a small scale so local groups could apply for fuels-management grants. As the need for a broader approach to Firesafe Planning becomes more urgent, there are opportunities to meld the CWPP process together with the new development planning in an effort to integrate these two differing approaches.

The insurance industry can support the CWPP process and encourage its expansion and integration through active participation at the local level, by communicating the need for this type of planning to policyholders and agents, and by offering a broad assessment of the wildfire risks facing residents in the affected areas.

The need for Firesafe Planning is real. Regardless of whether it goes by this or another program name, the concept will eventually grow into a fully recognized specialty within the land use planning community–just as its now-successful counterpart, transportation planning, has done.

The need to be engaged at the local level will be pressing since most of the land use planning is done there. By being an active voice in the local discussion about hazard, mitigation, risk and loss, insurers can communicate this information and help to shape decisions. This will be an important first step toward the implementation of all five elements of "Shaping the Battlefield," which will result in the decline of wildfire loss statistics decade by decade. DSR

Kate Dargan is the former California State Fire Marshal and a career firefighter. She now owns the consulting practice "FirePlanners" and is a frequent contributor to the Disaster Safety Review.

Institute for Business & Home Safety®

IBHS is a non-profit applied research and communications organization dedicated to reducing property losses due to natural and man-made disasters by building stronger, more resilient communities.

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