



# MEGA FIRES: The Case for Mitigation

The Witch Creek Wildfire, October 21 – 31, 2007

DOWNLOAD THE FULL REPORT AT [DISASTERSAFETY.ORG](http://DISASTERSAFETY.ORG)





## Executive Summary

---

Wildfires are called wild for a reason – they are often uncontrollable. What is controllable, however, is the preparation we undertake to protect our homes from damage and loss once wildfires strike. The Institute for Business & Home Safety (IBHS) is an independent, nonprofit, scientific and educational organization supported by property insurers and reinsurers. IBHS has undertaken a major research effort to study wildfires with the goal of reducing the social and economic effects of these disasters. This report documents the findings of that research and provides recommendations for improving construction, maintenance and preparation practices that will reduce wildfire-related losses in residential areas.

Increasingly destructive wildfires are ravaging homes and businesses in more than three-fourths of our states. One of the most devastating fires in recent history was the \$1 billion Witch Creek Wildfire that decimated vast parts of San Diego County, California, in October 2007. By the time it was fully contained, the fire had burned an estimated 198,000 acres and damaged or destroyed more than 1,200 homes and 500 outbuildings.

IBHS recognized that the communities affected by this fire would provide ideal field observations regarding the value and efficacy of property protection measures. Some neighborhoods affected by the fire were built as “Shelter-in-Place” (SIP) communities, while others had no requirements for reducing wildfire risk. This research project compares the damage done by the Witch Creek Wildfire in three SIP communities with three conventional communities.

To be considered Shelter-in-Place, an entire community must be designed to withstand heat and flames from an approaching wildfire. This means that every home must share the same fire-resistive design qualities, including a well-maintained fire district-approved vegetation management plan.

“Shelter-in-Place” is a term used in San Diego County; however, the SIP restrictions and covenants that combine to protect homes community-wide could be referred to as “Wildfire Resistant Communities” for purposes of exporting the standards to other areas.

For this study, IBHS examined construction features, proximity to the fire, wind speed and direction, slope and the amount and type of vegetation. IBHS also commissioned social research to better understand what motivates people living in wildfire-prone areas to take protective actions and what would make the difference for those who do not.

Recognizing that both building and social sciences play a critical role in helping determine how to deal with our country’s growing wildfire threat, IBHS brought together a variety of experts and resources for this project, including leading

academic researchers, federal government fire science authorities, social research professionals and fire safety officials.

Just two weeks prior to the Witch Creek Wildfire, California Insurance Commissioner Steve Poizner and CAL FIRE Director Ruben Grijalva established a partnership to reduce the risk of wildfires. They issued a Memorandum of Understanding October 10, 2007, which cited the following key facts:

- The number and degree of wildfire losses are increasing in California decade by decade.
- Each year, over \$100 million is being spent on suppression efforts and more in the disaster recovery phases of catastrophic, natural and/or human caused hazards, but the losses continue to mount.
- Hundreds of thousands of acres burn within the Wildland Urban Interface (WUI) each year.
- Thousands of homes, businesses and other structures are damaged or destroyed each year by wildfires, resulting on average in more than \$200 million in annual property damage.
- Many of these fires result in injury and/or death to fire department and law enforcement personnel, and members of the public.
- In the 2003-2004 wildfire sieges, CAL FIRE’s fire suppression costs exceeded \$252.3 million; property damage costs exceeded \$974 million; 5,394 structures were destroyed; and more than 23 people lost their lives as a result of California wildfires.
- More than 5 million homes are currently located in California’s WUI. As more homes are built within these areas, the danger to life and property will continue to increase, unless significant action takes place to prevent these fires or mitigate the damage and injury caused by fire.

Commissioner Poizner and Director Grijalva’s primary goals are to reduce the loss of life and large-scale property damage/losses from wildfire, and to increase awareness of fire officials, the insurance industry and the public on methods and ways to prevent and mitigate wildfire losses.

IBHS is deeply concerned about California’s growing wildfire threat, as well as the increasing wildfire threat in dozens of other states. We believe that the research findings in this study and the resulting recommendations will add substantially to the scientific body of knowledge available regarding methods to prevent and mitigate wildfire losses. The goal of this report is to share our research findings as a way to contribute to local and national discussions about ways to reduce vulnerability to wildfires, minimize losses and make our communities safer and more resilient.



## Major Findings And Recommendations

---

### Homes with the highest risk of burning are those adjacent to wildland situated on the perimeter of housing developments.

In this study, properties positioned along the edge of a housing development, which was located on the windward side or along a side that ran parallel to the prevailing direction of the Santa Ana winds, were exposed to a substantially higher risk of being destroyed. While the increased risks varied from community to community, it was generally found that properties along these edges were nearly twice as likely to burn as properties on the first row back from the edge and three to eight times more likely to burn than homes further back in a housing development.

### Interior homes situated less than 15 feet apart are at high risk from wildfire.

While homes adjacent to wildland are most vulnerable to wildfires, homes in the interior areas of housing developments that were located less than 15 feet apart, were much more likely to burn in clusters – in other words, multiple homes right next to each other tended to burn. This finding elevates the importance of a community-wide approach to protecting properties against wildfire where the density of homes is high, and it also emphasizes the potential threat posed by neighboring properties. Cluster-burning was not witnessed in homes located more than 45 feet apart from each other.

### All homes, regardless of their value, can be best protected from wildfire by implementing appropriate loss reduction measures.

The value of a home was not found to be a major factor in the risk that it would burn. In the study communities, there was a relatively even distribution of the percentage of homes that burned across a wide range of home values. This suggests that any home can be protected by taking the proper steps.

### The requirements established in the new 2007 California Building Code will be effective in reducing losses and damage from wildfires.

San Diego County, which adopted progressive codes in 2001 and strengthened those codes in 2004, experienced lower burn rates in homes built to these wildfire property protection standards in unincorporated areas, according to an analysis conducted by the county after the 2007 fires. The 2004 San Diego County standards were reflective of the strict requirements of the new state code.

### The requirements established by Shelter-in-Place (SIP) communities are extremely effective in reducing losses and damage from wildfires.

Development guidelines utilized in SIP communities and periodic inspections backed up by mandatory fuel control and maintenance of surrounding vegetation provided the best survival rates. No homes were burned in the at-risk SIP communities. However, a couple of documented close calls point to the need for constant vigilance even with the best community-wide approaches.

### Wind-blown embers, which can travel one mile or more, were the biggest threat to homes in the Witch Creek Wildfire.

There were few, if any, reports of homes burned as a result of direct contact with flames.



## Policymakers need to take a more proactive, community-based approach to property protection.

Government leaders should critically review the costs associated with the firefighting resources and manpower needed to battle the growing wildfire threat, and implement effective mitigation efforts before wildfires strike.

## Homeowners need to retrofit their homes.

Homeowners must become familiar with the affordable options available to retrofit their existing homes to increase their protection against wildfire, and local and state government leaders should encourage this education.

## New home construction in wildfire-prone areas should be built using the Shelter-in Place standards.

These standards must be accompanied by routine inspections and strict, ongoing enforcement to be successful.

## Financial and real estate markets must acknowledge the value of wildfire-resistant construction and retrofitting.

The financial services industry, along with the real estate industry, must recognize the value of making these improvements to existing homes, and new homes should be marketed for the ability to survive in wildfire-prone areas.

**DOWNLOAD THE FULL REPORT AT [DISASTERSAFETY.ORG](https://disastersafety.org)**

Insurance Institute for Business & Home Safety  
4775 E. Fowler Avenue | Tampa, FL 33617  
E-mail: [info@ibhs.org](mailto:info@ibhs.org) | Voice:(813) 286-3400 | Fax:(813) 286-9960