



# Wildfire Fact Sheet

## IBHS WILDFIRE RESEARCH

The Insurance Institute for Business & Home Safety (IBHS) is studying wildfire effects on structures to highlight actions consumers can take to lower the risk of their home or business igniting during an ember attack. Ember attacks occur when small burning embers or firebrands driven by wind penetrate attic vents, soffits and other openings or collect on complex roof surfaces. These embers can smolder, undetected, and can eventually cause buildings to burn from the inside out.

## IMPORTANCE OF RESEARCH

Most buildings that burn during a wildfire are ignited by spot fires started by embers, not by direct contact with flames associated with the wildfire flame front. The research being conducted at the IBHS Research Center will be the first time that a full-scale ember storm has been created in a controlled environment to test the resilience of various construction techniques, building materials and landscaping materials on a full-size residential specimen.

## PARTNERS

IBHS is partnering with the United States Forest Service (USFS) and the Savannah River National Laboratory (SRNL) to work on wildfire research. Through the Wildfire Ignition Resistant Home Design (WIRHD) project sponsored by the U.S. Department of Homeland Security, IBHS scientists and engineers, Forest Service experts and SRNL scientists and engineers have worked together and developed ember generation capabilities at the IBHS Research Center.

## RESEARCH GOALS

The primary objective of IBHS' wildfire research program is to reduce the risk of fire spread to buildings in Wildland Urban Interface (WUI) communities and enhance the resilience of structures and communities to disastrous fires. Specifically, researchers have developed methodologies to simulate full-scale wind driven ember storms at the IBHS Research Center, and will continue to assess post-event field studies. In addition, researchers will conduct laboratory testing and analysis, and develop and disseminate proposed code and regulatory changes, as well as retrofit guidance for consumers.

## WILDFIRE TESTING CAPABILITIES

Inside the large test chamber at the IBHS Research Center is a long, deep trench that spans the fan inlet area, where mulch burning equipment is housed to create embers typical of a wildfire. These embers are ducted into the wind stream to create realistic, windy conditions surrounding a structure when a wildfire passes through a community.

With this system, IBHS researchers are capable of reproducing ember storms typical of wildfire events, replicating the along-wind and across-wind turbulence characteristics of natural winds occurring during wildfire conditions as well as the embers carried in those winds.

Major differences between the IBHS facility and ember generation capabilities currently used in Japan include the size of the buildings that can be tested, the detailed simulation of flow characteristics possible in the IBHS laboratory, and the duration of the ember attack. These factors will allow IBHS researchers to produce much more accurate simulations of ember attacks on building components, including attic vents and complex roof shapes, and the gusty nature of the wind environment associated with an ember attack during a wind-driven wildfire event.

The ember generation equipment developed for the IBHS Research Center is currently being used in the large test chamber during a series of tests designed to demonstrate differences in ignition potential between various construction techniques, building materials and landscaping materials.

## FUTURE EFFORTS

Future research capabilities for the IBHS Research Center include the development of full-scale wind driven flame to simulate the effects of a tree, shrub, or out building that becomes a "torch" near a building at risk during a wildfire. IBHS scientists and engineers also hope to partner with other research organizations to develop and implement rapid deployment instrumentation in advance of wind-driven wildfire.

Information gathered in post-event field studies and in laboratory testing and analysis will be used to continually evaluate and update the nine geographically specific regional wildfire retrofit guides produced by IBHS. This information also will be used to develop proposed building code and regulatory changes as needed.