Summary of Wildfire Construction Recommendations

State and local codes should include requirements for wildfire mitigation for both new construction and upgrades to existing buildings in wildfire zones. In areas where buildings are particularly vulnerable to the risk of wildfire, implementing measures that exceed the codes can improve the probability that a building will survive a wildfire.

The Unified Hazard Mitigation Assistance Guidance and the Wildfire Mitigation Policy for the Hazard Mitigation Grant Program (HMGP) and Pre-Disaster Mitigation (PDM) Program provide information on which activities are considered eligible for funding by the Federal Emergency Management Agency (FEMA) for wildfire mitigation activities.

This series of Technical Fact Sheets from FEMA provide information about how to minimize the potential for damage to or destruction of buildings in wildfire zones from wildfires. The information pertains to both new and existing buildings.

The Fact Sheets are available on the FEMA website (www.fema.gov) as Adobe Portable Document Format (PDF) files. You must have Adobe Reader to view the PDF files. The latest version of Adobe Reader is recommended and can be downloaded from www.adobe.com.

The following is a summary of the recommendations contained in Fact Sheets #3 through #17.

Fact Sheet #3: Selecting the Construction Site

Topographic features such as slopes and canyons, local vegetation, and weather can greatly influence wildfire behavior. Homebuilders should consider these factors carefully when selecting a construction site.
Fact Sheet #4: Defensible Space

Creating a defensible space, which can often be done by the homeowner, is recommended. A defensible space is an area around a home in which vegetation, debris, and other types of combustible fuels have been treated, cleared, or reduced. Landscape management creates a barrier between a home and a wildfire. Without a defensible space, firefighters may not attempt to protect the home because doing so would be too hazardous.

Fact Sheet #5: Roofs

Of the components of the building envelope, the roof is the most vulnerable in a wildfire because of its size and orientation. The probability that a home will survive a wildfire is greatly influenced by the components of the roof assembly. Class A rated roof assemblies with noncombustible coverings are recommended.

Fact Sheet #6: Eaves, Overhangs, and Soffits

Windborne embers and convective and radiant heat can be trapped near eaves and soffits, which can ignite if not constructed of noncombustible or fire-resistant materials. Eaves with short overhangs and flat soffits with a minimum of a 1-hour fire-resistance rating are recommended.

Fact Sheet #7: Exterior Walls

How well exterior walls are able to resist a wildfire depends largely on the materials used to construct the wall. Exterior wall coverings that are noncombustible or fire-resistant and not susceptible to melting are recommended. A minimum fire-resistance rating of 1 hour for the wall assembly is recommended.
Fact Sheet #8: Vents
Embers and hot gases can be blown or pulled into vent openings and enter attic spaces, crawlspaces, and ductwork, leading to ignition of the interior of the building. Vents that are a minimum of 10 feet from property lines and other buildings, constructed of metal products, and have corrosive-resistant metal mesh screens are recommended.

Fact Sheet #9: Gutters and Downspouts
Combustible debris such as leaves and pine needles can become trapped in gutters. The debris can be ignited by flying embers or firebrands during a wildfire, and the fire can spread to the roof. Noncombustible leaf guards over gutters and gutters constructed of noncombustible materials are recommended.

Fact Sheet #10: Windows and Skylights
Flames, firebrands, radiant heat, and failed frames can cause glazing to break or otherwise fail. Glazing (glass, plastic, or translucent material) that fails allows easy passage of embers and hot gases into the interior of a building. Insulated glazing units are recommended. The fire rating of window assemblies should be commensurate with the fire rating of the wall.

Fact Sheet #11: Exterior Doors
Combustible doors and frames can be ignited in a wildfire, and openings between the door and frame and glass in the door can be penetrated by flames, hot gases, or embers. The fire rating of the door should be commensurate with the fire rating of the wall. Weatherstripping and noncombustible or fire-resistant trim are recommended.
Fact Sheet #12: Foundations
Embers, firebrands, and hot gases can ignite combustible foundation walls and penetrate crawlspace vents and breached basement windows. Walls, vents, and windows in closed foundations should be constructed in accordance with the guidance in these Fact Sheets. In homes with open foundations, protecting the underside of the floor structure with fire-resistant materials is recommended.

Fact Sheet #13: Decks and Other Attached Structures
Embers, firebrands, and hot gases can become trapped under decks and other attached structures. Decks constructed of heavy timber or noncombustible materials are recommended. Isolating the attached structure by surrounding it with noncombustible material such as gravel, brick, and concrete pavers, and enclosing the underside of the deck with fire-resistant skirting are also recommended.

Fact Sheet #14: Landscape Fences and Walls
Once ignited, a fence constructed of combustible materials that is attached to or near a building can ignite the building. Fences and walls constructed of noncombustible materials such as concrete, stone, and masonry are recommended. Attaching a fence or wall to the building should be avoided unless the fence or wall is constructed of noncombustible materials.

Fact Sheet #15: Fire Sprinklers
The interior of a building can ignite from a wildfire even when the exterior does not. Interior and exterior fire sprinklers can prevent substantial damage to the building, protect nearby buildings, and prevent the fire from igniting nearby combustible vegetation.
Fact Sheet #16: Utilities and Exterior Equipment

Most utilities require penetration of the building’s envelope for ducting and conduit. Utility connections should be installed underground, if possible, and gaps and penetrations in exterior walls and roofs should be sealed with fire-resistant products. Fuel should be stored underground or surrounded by a noncombustible barrier.

Fact Sheet #17: Community Infrastructure

Access roads and driveways that are wide and strong enough to accommodate emergency vehicles and provide access for firefighting efforts are necessary. Water resources for wildfire suppression must be accessible. Roads and water sources should be well marked on signs constructed of fire-resistant materials for ease of use by emergency response personnel.