



## Wildfire Mitigation Tested in Orange County, CA

### Full Mitigation Best Practice Story

#### *Orange County, California*



**Orange County, CA** - On the morning of Sunday, March 11, 2007, fire erupted at Windy Ridge along the 241 Toll Road in Orange County. The area, known for its brush covered hills, canyons and deep ravines, was a tinderbox and the fire fanned by the Santa Ana winds spread rapidly.

Initial response was units dispatched from the Orange County Fire Authority (OCFA), City of Anaheim Fire Department and City of Orange Fire Department. A Unified Incident Command was immediately established and provided coordination throughout the response. The strong winds continued to stoke the fire and pushed it toward Anaheim Hills and Orange, destroying two out buildings and forcing the evacuation of 1,200 people. One home received moderate roof damage. The fire was fully contained by noon on Tuesday, March 13 after burning 2,036 acres and threatening hundreds of homes.

This intentionally set fire had the potential to become catastrophic in a very short period of time. Many of the homes are situated in areas difficult to access, the vegetation had extremely low fuel moisture and windy conditions continued. Also threatened were Southern California Edison's main distribution lines to the Western grid. The risk was high – the outcome was a success. Chief Chip Prather, OCFA, states in his Chief's Message of March 23, 2007, ".....for those of us charged with the responsibility of protecting our neighbors, and who very clearly understood the Windy Ridge Fire's 'values at risk,' the outcome was a terrific success by any measure."

Several factors contributed to preventing and avoiding what easily could have been substantial losses. Newer neighborhoods have been built with fire resistant materials, fire resistant landscaping and defensible spaces. Many homes in Anaheim Hills have fire resistant roofs (i.e. Class A tiles) and enclosed eaves. The only home which sustained damages had a wood shake roof. Prevention and mitigation such as fuel modification and hardened structures combined to save the homes as well as aiding the firefighters.

"That's what gave us a chance," said Patrick McIntosh, OCFA assistant chief. "It was very, very aggressive firefighting, on the air and on the ground-and having homes that were actually defensible."

Mitigation measures paid off handsomely for Dave Blunk and his family. Their 8,000 sq ft home is in the Pointe Premier community of Anaheim Hills and valued at five million dollars. Mr. Blunk built his home three years ago and anticipated a fire "burning right up to my house." The concrete and steel home was built to withstand wildfire, 100 MPH winds and earthquake.

"There is no wood in the construction of the house other than the fire treated plywood which was used under the roof tiles," states Mr. Blunk, "the roof tiles are fire resistant and heavy to withstand high winds; eaves are enclosed, the vents covered with 1/8 in mesh; dual pane windows; stamped metal connectors throughout for wind and seismic strengthening and we overbuilt the foundation."

In addition to all of the mitigation measures to the home, the Blunks installed a water line and connectors compatible with standard fire hoses.

Flames from the Windy Ridge fire roared up the hill and grew to forty feet in height. Flame links touched the house, the fire engulfed the house and moved on beyond. At the height of the inferno, firefighters took refuge in an enclosed courtyard. Firefighters used the Blunk's fire-line and water to augment their resources once the fire passed over the home. There was no damage to the house and the only evidence of the fire was scorched plants and ashes in the swimming pool. Dave Blunk estimates the special materials added 25 percent to the total cost of construction, however, it was money well spent to protect the multi-million dollar investment.

The Fire Prevention offices of both the City of Anaheim and the City of Orange have very effective fuel modification programs. The programs are designed to control the types, density and moisture content of plants – or fuel – in the wildland urban interface areas. By modifying the fuel around or close to homes, a defensible space is created which serves as a barrier for wildfire and allows space in which firefighters can work.

Fuel modification creates four zones, each zone has specific requirements for design, installation and maintenance to meet fire safety requirements. The four zones, A through D, are specific in size, irrigation, landscaping or thinning and maintenance. Zone D is closest to the wildland area, zone A is closest to combustible structures. In all, the fuel modification area totals 170 lineal feet between the structures and the wildland area.

The fuel modification program also includes maintenance requirements and enforcement, plan submittal and approval process, guidelines for planting and a listing of undesirable plant species. (Table 1) Builders and developers are required by the Fire Department to submit their plans, complete with proposed fuel modification zones, for review and approval prior to beginning construction. Homeowners' associations or the individual homeowners are responsible for maintaining the zones in accordance to the original approvals.

Training is a major component of effective fire prevention and mitigation. Coincidentally, the Windy Ridge area was recently the site of a training exercise. One of the tools used was a reference and resource guide, "Wildland/Residential Interface Pre-attack Information", a field guide handbook developed specifically for responding fire personnel.

"Our ability to quickly brief firefighters responding from as far away as Monterey was greatly enhanced by the use of this pre-attack information," states Chief Roger Smith, Anaheim Fire Department. The handbook divides the City of Anaheim into pre-designated target areas. Each target area has been studied and the guide includes critical information such as expected fire behavior based on the type of vegetation, wind conditions and topography; an analysis of the type and number of structures, when built, percent with wood shake roofs, street access; an estimate of resources for fire fighting; safety areas for fire personnel, equipment, the public; residential assembly points; water points and supply, evacuation routes and a communications plan.

The Windy Ridge fire put the Orange County Fire Prevention programs to the test. An example is the Serrano Heights development in the City of Orange. The developer was required to hire a fuel modification specialist to follow the guidelines used by OCFA. Wildfire flames rapidly approached the homes and were stopped by the cleared areas. Firefighters were able to take a stance and fight the fire; controlling the spread of embers and quickly containing the area.

"The median price of these homes is \$700,000 and there are ten homes in each parcel," stated City of Orange Division Chief Tom Groseclose, "a loss of many millions of dollars was avoided."

#### Activity/Project Location

Geographical Area: **Single County (County-wide)**

FEMA Region: **Region IX**

State: **California**

County: **Orange County**

#### Key Activity/Project Information

Sector: **Public**

Hazard Type: **Wildfire**

Activity/Project Type: **Education/Outreach/Public Awareness; Retrofitting, Structural; Vegetation Management**

Activity/Project Start Date: **03/2007**

Activity/Project End Date: **Ongoing**

Funding Source: **Local Sources**

Funding Recipient Name: **Orange County Fire Authority (OCFA)**

### Activity/Project Economic Analysis

Cost: **Amount Not Available**

Non FEMA Cost: **0**

### Activity/Project Disaster Information

Mitigation Resulted From Federal  
Disaster? **No**

Value Tested By Disaster? **Unknown**

Repetitive Loss Property? **No**

### Reference URLs

Reference URL 1: <http://www.ocfa.org/>

Reference URL 2: <http://www.fema.gov/hazard/wildfire/index.shtm>

### Main Points

- The Fire Prevention offices of both the City of Anaheim and the City of Orange have very effective fuel modification programs.
- The programs are designed to control the types, density and moisture content of plants – or fuel – in the wildland urban interface areas.
- The fuel modification program also includes maintenance requirements and enforcement, plan submittal and approval process, guidelines for planting and a listing of undesirable plant species.



Burnt Car



Scorched Trees and Flame Path



Anaheim Fire Department



Fire System



Fuel Modification Area