



Emerging Issues in Wildland Fire Protection

When Wildfire Threatens: Should Residents Stay or Evacuate?

Wildland Fire Management Section

of the

National Fire Protection Association

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October 2004

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Helping residents in wildland/urban interface (WUI) areas become Firewise continues to be the focus of many federal, state, and local projects. Applying the Firewise concept is the first step in preparing structures to survive a wildfire. With noncombustible roofs and at least 30 feet of Firewise landscaping, the chances of structure survival is better than 90%.² But who prepares the residents for a wildfire? Should homeowners be prepared to take shelter or to take flight when a wildfire approaches their home in the wildland/urban interface?

In 2002, the National Wildland/Urban Interface Fire Program published its recommendations for residents facing an imminent WUI fire³. The recommendations included the following paragraph:

Be prepared to evacuate all residents if necessary. In some cases, a homeowner may choose to remain with the home to help provide protection. The information below are some guidelines for evacuating or for choosing to remain at the home. Remember, however, that no property is worth losing a life... The decision to remain with your property is a personal choice which should be made only if conditions allow for your personal safety.

For many years, evacuation has been the favored action of choice in trying to protect public safety in the face of an advancing wildfire. Firefighters still often tell those individuals who choose to stay with their homes, “All I need is your name and the name of your dentist.” However, as more individuals learn about and implement Firewise practices in and around their homes and property, there has been a shift in thinking that, if the home and property have been made defensible according to Firewise guidelines, people may actually be safer when they stay put.

In Australia, last minute evacuations under stressful conditions (e.g., reduced visibility from smoke, last minute instructions, flames along the side of the road) has caused panic in some incidents and fleeing residents have lost lives. Facing narrow roads and increasing populations in bush areas, authorities for several years have stressed early evacuation or stay with your home. In some instances, residents hear the fire reports, prepare their homes as best they can, and retreat to the beach with their family for a day or two. Allowing the fire authorities to manage the wildfire without the added concerns of trapped residents.

The debate in the United States continues.

Fire, by its nature, is unpredictable in many aspects. Even so, determining whether to evacuate or take shelter can be guided by evaluating a number of critical factors, including weather conditions; topography of the area; the nature of the fire, its fuels, and location; the condition of escape routes (e.g. wide enough? protected or shielded from radiant heat?); the mobility of those

¹ Following is an overview of the factors to be considered when deciding whether to evacuate or to “shelter in place.” The information was derived from presentations at the 2004 NFPA World Fire Safety Congress and Exposition in Salt Lake City UT.. Thanks to Keith Worley, Jim Langhorne, and Jim Hubbard for providing their personal perspectives, and to those others who shared their experience and viewpoints regarding the use of these options in response to an approaching wildfire.

² Foote, Ethan I.D.; Robert E. Martin; and Keith Gillless. “The Defensible Space Factor Study: A Survey Instrument for Post-Fire Structure Loss Analysis.” Paper presented at the 11th Conference on Fire and Forest Meteorology, Missoula, Mont., April 1991.

³ *Firewise Community Action Program*, 2002, available from www.firewise.org

being moved; the existence of an evacuation plan; and a means for communicating with the public being evacuated.

The key components of an efficient evacuation are:

- ✓ Good multi-agency pre-planning, including the establishment of safety zones within the community;
- ✓ Public education focused on fire hazards and personal responsibility beforehand, and clear communication during the event, including whether the evacuation is mandatory or voluntary;
- ✓ Well-informed media and politicians; and
- ✓ Ample passage along escape routes.

In instances where there are individuals who it would be difficult or unsafe to move – for example, residents of nursing homes, hospital patients, or school-aged children – safety zones should be established in advance. In the event that leaving would place people in greater danger than staying, these safety zones – which often include community buildings such as rest homes, hospitals, and schools – serve as temporary shelter that also can be utilized by the public and firefighters. Other groups and individuals are expressing similar concerns about evacuation of residents.

The US Fire Administration/FEMA recommends developing emergency response systems and procedures inclusive of pertinent evacuation instruction for people with disabilities.⁴ In the proceedings of the symposium, the US Fire Administration recommended that emergency dispatch centers be enabled to routinely obtain information critical to specific needs of people with disabilities. “The Emergency Response System should include specialized communication equipment in the emergency response center that is compatible with the communication equipment utilized by those with disabilities.” In addition, the report indicated a concern for those living in residential group settings with others. Group living and working situations may increase vulnerability for the reasons that “prompt evacuation of residential facilities or sheltered workshops can be hampered due to the number of residents and their particular disabilities.”

Some potential impediments to evacuation were also noted by presenters and participants. These were:

- ✓ A fire that prevents safe passage along planned escape/evacuation routes;
- ✓ Attempting to move individuals who are unfit to be moved;
- ✓ Inefficient pre-planning and poorly informed public; and
- ✓ Panic.

By and large, conference presenters and participants acknowledged that many more deaths occur during evacuations – notably in Australia but also in the US in the Oakland CA fire (1991) in which 11 deaths occurred on one road during a frantic evacuation. Most participants, in fact, indicated that they would opt to “shelter in place,” with the right conditions. Such conditions would include:

⁴ Findings from *Beyond Solutions 2000*, a second symposium that examined issues related to egress capability, early warning, and fire sprinkler protection for those who may not be able to take life-saving action in a timely manner in the event of a fire, specifically young children, older adults, and people with disabilities, January 2002, US Fire Administration/FEMA/DHS

- ✓ Efficient and thorough public education focused on potential hazards, appropriate actions in given situations, and the need for personal responsibility;
- ✓ Having a unified community effort that stresses pre-planning and that employs a Fire Department auxiliary and a Community Emergency Response Team; and
- ✓ Homeowners who create a defensible space by “Firewising” their homes and properties, and who are physically and mentally up to the challenges of staying in their homes should they decide to stay put.

In a presentation to the 2004 Natural Hazards Conference, Tom Cova, University of Utah, presented his research findings that address the question of mandatory evacuation versus sheltering in place. Cova's presented animated maps of the Old/Grand Prix fires and Cedar/Paradise fires showing the progression of the fires and of evacuation orders. Cova looked at variables related to evacuation such as type of evacuation order and distance from fire when issued. No one who stayed in their house died. He expects use of shelter in place to increase, especially in areas with good defensible space and/or limited egress. These are similar conditions of structures survived the Paint Fire (Santa Barbara CA 1990) and general characteristics of a Firewise Community or home.

The Firewise conditions under which residents might be allowed to remain should feature:

- ✓ Fire-resistant structures;
- ✓ Fire-tolerant landscapes;
- ✓ Neighborhood fuel treatments that include escape routes and safety zones;
- ✓ Community-wide fuel treatments that allow for the ecosystem to tolerate fire;
- ✓ Watershed scale fuel treatments; and
- ✓ Landscape scale fuel treatments.

In addition, training, inspections, and annual certifications would ensure that homeowners are appropriately informed and prepared. This would, in turn, free up limited resources to fight fire or groups of structures, rather than protecting an individual home.

Overall, the pros of adopting “shelter in place” are:

- ✓ Involving homeowners in their own defense, with a clear understanding of what their personal responsibility is;
- ✓ Reducing the clogging of roadways by evacuees;
- ✓ Establishing “safe houses” or buildings (e.g., community center) within communities for residents and firefighters;
- ✓ Maintaining control by emergency services while reducing the risk of fire fighters and others with “John Wayne” attitudes who go beyond personal responsibility, endangering themselves and others;
- ✓ Freeing up resources to fight fires instead of protecting homes; and
- ✓ Possibly aiding communities that have limited ingress/egress.

That said, there still might be instances when an approaching wildfire dictates that moving out is the safest option. By educating homeowners and community leaders about the nature of fire in the wildland/urban interface and the responsible actions they can take, they will have the tools for making better decisions regarding taking flight or taking shelter. The bottom line will be

creating communities where wildfire events can be managed better, while making the best use of available resources.

Both firefighters and homeowners need to recognize that each fire is different. By having communities constructed with a mind to defensible space and establishing clear pre-planning for both evacuation and “shelter in place,” communities can be prepared to take whichever action maintains the safety of its residents and firefighters.

Recommendations:

The NFPA Wildland Fire Management Section recognizes the polemic nature of the traditional arguments and the local personal nature of the stay or go decision. As a result, the Section advocates neither of the positions or accompanying decisions. By analogy, the Section would not endorse an individual constructing his or her own railroad, but, if one chooses to do so, the Section would recommend that the proper tools be available to the individual. In other words, in the case of wildland/urban interface fire, those necessary tools should be a long term education program based on the physical realities of interface fire behavior, the mental and emotional preparation of residents and the objectivity of fire agencies, and the degree of Firewise mitigation around individual homes and the aggregate mitigation measures present in the residential subdivision.

To that end, the Section offers the following recommendations for consideration by federal, state, local fire agencies and residents in interface areas:

1. The Section invites the NWCG Wildland/Urban Interface Fire Working Team to join in the dialogue and bring to bear its knowledge and resources to establish the criteria for both shelter-in-place and evacuation tactics and the myriad of decisions
2. The Section calls for a national forum on this issue. The growing structure densities (typically in clusters) in interface areas and increasing numbers of disabled Americans along with aging roads and other infrastructure presents a potential for disaster.
3. To properly define the scope of the issue and guide the development of meaningful tools (education programs and policies), the dialogue needs to engage the viewpoints and tap the knowledge of human behavior specialists and social scientists.
4. Extensive research and development of targeted education programs forms the basis of sound decisions for survival
5. An extensive literature search will help surface the different issues and points of view necessary to extend the dialogue and the Section supports such an effort.
6. Public education programs need to be developed to address the preparation of residents for staying in their homes. Personal decisions must be based on facts and preparation. The Section recommends the development of a targeted program to raise the awareness of residents on what might happen and their role following a fire and recommended measures and considerations for safe and timely evacuations.

The NFPA Wildland Fire Management Section encourages and welcomes your input and comments on this subject. Please forward them to Executive Secretary, Wildland Fire Management Section, NFPA, 1 Batterymarch Park, Quincy MA 02169, fax 617-984-7056 or email: jsmalley@nfpa.org