

Chapter IX. Community Programs, Fire-Safe Councils, and Choices for Action

Among the 10 standard firefighting orders, one finds the command, “initiate all action based on current and expected fire behavior.” Effective fire management depends on how well strategy and tactics conform to the specific situation of weather, topography, and fuels. The wise fire manager gets to know fire very well. Large wildland fires cannot be overpowered. They are contained only by knowing how they will behave, and how their behavior can be turned to the firefighters’ advantage.

Human behavior is as complex and variable as fire behavior. Fortunately, at least in the applied behavioral science—areas such as social marketing, public communication campaigns, and innovation diffusion—we know about as much of human behavior as we do of fire behavior. We can predict the spread of new ideas and practices (like defensible space) through social systems (such as communities in the I-Zone) and we can prescribe actions to accelerate or reduce the rate of spread of the idea, or alter the effects of adoption of the idea on the community.

Fire management is done best when strategy and tactics are based on known and predicted fire behavior, given the principles of fire behavior and the particulars of the situation. In the same way, the marketing of wildfire defenses is best done when the strategy and tactics are adapted to the special nature of the target communities, and based on sound principles of human behavior.

In this chapter, some guidelines are discussed for successfully promoting the adoption of vegetation management and structural defense. The guidelines are based on theory, but they have all been tested in real communities with real people and shown to work. The USDA Forest Service and California Department of Forestry and Fire Protection (CDF) are using these principles successfully in communities like O’Brien Mountain, Smiley Park, Sierra Springs, and Shingletown.

A. IDENTIFYING AND SOLVING THE REAL PROBLEM

Almost every year, California television screens are filled with images of towering flames, burning buildings, and devastated people amid the ruins of their homes. The scenes are dramatic and riveting. They appear on prime time television, on the front pages of newspapers, and are featured in weekly newsmagazines. It is difficult to believe that in this age of instant electronic communications there can be anyone who lives in the I-Zone who is unaware of the wildland fire threat and the potential losses they face. Nevertheless, a visit to any I-Zone neighborhood reveals very few, if any, efforts by residents to protect themselves and their property from wildfire. Homes are constructed in dangerous places. They are built of flammable material, and, most importantly, the wildland vegetation surrounding the homes grows thick, often choked with dead material, and arranged in fire ladders. Flames from a structural fire can quickly escape into the dense vegetation and crowns of the trees. Very few neighborhoods are protected so that a fire starting in them will not spread easily to the wildland, or that fires originating in the wildland will not spread to the neighborhood, destroying homes and valued landscapes.

I-Zone research and experience working with communities confirm the impression that people do know about the fire threat, believe that they can do something

about it by modifying the vegetation, and are not fatalistic about the possibilities of saving their homes and landscapes in the event of a wildfire. We see from this that although people are not creating fire-safe landscapes and fire-safe neighborhoods, it is not an attitude problem. Something else is preventing I-Zone residents from preparing fire-safe communities.

Of course, there may be places where a neighborhood is unconcerned about causing fires that burn into the forest, or where the danger of a fire burning out of the forest to threaten lives and homes is dismissed. However, no one can assume that lack of action in wildfire defense preparation indicates a lack of motive on the part of the residents. Action requires opportunity, means, and motive. If the motivation is there and the action does not take place, it is likely there is a problem with either the means for taking that action, or the opportunity. When devising strategies to promote the adoption of wildfire defenses among people who live in the I-Zone, one must be sure to address the real problem.

A motive is a felt need that pushes or pulls a person toward an action. For example, hunger motivates a person to seek food and eat. However, if there is no opportunity to eat because there is no food to be found, or if there is food but one cannot get to it, one will not eat no matter how hungry one gets. People lost in a strange environment, such as pilots downed in the jungle, sometimes starve where native people thrive because the flyer does not recognize the edible from the inedible. People may die on life rafts at sea because they lack the means to catch fish or desalinate water for drinking. Unless means and opportunity accompany motive, action does not occur.

In an I-Zone community, an older couple may have listened to all that was said about wildfire threats and wildfire defense preparations. They may have the opportunity to manage the vegetation around their home to make it more fire safe. However, age and illness or the lack of money may prevent them from doing much of the necessary work. Another resident may be young, strong, and capable of doing the work, but may be a renter who has no say about vegetation management on the property they rent. In another community, deed restrictions, property owner association rules, or forest practices laws and rules may restrict opportunity.

Before deciding that people do not care enough, and before launching a persuasive enforcement campaign, fire professionals must be sure that means and opportunity have been considered. All that may be needed to release a flood of pent-up motivation and convert it into action may be the removal of some barriers.

B. SEGMENT THE MARKET AND TARGET MARKET SEGMENTS

Perhaps nowhere in the world is cultural and socioeconomic diversity greater than it is in California. It is estimated that within a few years, no ethnic group will make up more than 50 percent of the California population. Given such diversity, it is difficult to find or create products or messages that would appeal effectively to everyone. A campaign to promote wildfire defense directed at the general population is almost certain to fail. Products and messages designed for one group's needs, tastes, and preferences will almost certainly miss the mark for most other groups.

Segmentation is marketing's solution to the problem of diversity. The markets one wishes to reach are first divided into smaller groups in which people are very much alike.

Good market segments are homogeneous in needs, tastes, and preferences relevant to the product. People in the same market segment tune to the same media and interpersonal channels. The members of a market segment should also have similar education levels, incomes, family status, and occupations.

Once the market has been segmented, fire protection officers can work closely with those who represent the community of interest to develop wildfire defense variations that will appeal to local needs, tastes, and preferences. Communication campaigns can be developed that take advantage of the natural communication patterns of the target market segment. Ways can be found more easily to overcome barriers that might arise, such as the lack of financial resources, time, or ability to do the necessary work, because those barriers will tend to be faced more or less equally by all members of the segment.

Fortunately, neighborhoods in the I-Zone make very good market segments. From the fire protection planning perspective, neighborhoods are ideal because all of the structures and landscapes one might wish to protect will be threatened by the same fire. Neighborhoods tend to be contained within the same fuel type, located on similar topography, and experience similar weather. A fire burning out of the wildlands into the community will behave pretty much the same way throughout the neighborhood. Firefighters are likely to attempt to protect the neighborhood as a unit if fuel and weather conditions permit.

If the wildfire defenses prepared on one piece of property are linked together strategically with wildfire defenses prepared on other properties in the neighborhood, a significant impact can be had on local fire behavior. From a fire protection standpoint, it is much more effective to prepare wildfire defenses on one hundred neighboring homes than on one hundred homes scattered throughout the I-Zone.

Neighborhoods also tend to be homogenous in socioeconomic terms, and the use of mass media, as well as in tastes and preferences with respect to the landscape. Furthermore, neighborhoods tend to be integrated into an informal communication network through which neighbors communicate with each other about common concerns and issues. Typically, there is a well-developed neighborhood decision-making process in which the various neighbors play roles they have worked out over time. These informal communication networks are critical to the success of campaigns to introduce new ideas into social systems.

Especially in the I-Zone, people are attracted to live where they do by the setting. Seldom are they forced to choose their neighborhoods by the circumstances of their work or other reasons that limit their choice of residential environments. It is likely that residents share similar tastes for wildlands, landscape aesthetics, architecture, climate, and culture. Because houses in a neighborhood tend to be similar in price range, neighbors are likely to have similar incomes. Incomes are closely related to occupations, and occupations are closely related to education level. Through the process of selecting a place to live within the I-Zone, residents have pre-sorted themselves into homogenous groups that make excellent market segments.

The most appropriate market segments for fire protection officers to target are individual neighborhoods. However, within those neighborhoods, there are sub-market segments. There are those who are interested in landscaping, those who are interested in ecology, those who are interested in building, and those who are interested in public safety and well-being. Within a neighborhood these smaller groups of people may be

organized into clubs, property owners associations, or Neighborhood Watch. Each of these subgroups within the neighborhood make up smaller market segments that might be targeted with specific kinds of information, or through different channels of communication.

As described elsewhere in this paper, some kinds of people move through the decision process to adopt or reject new ideas or technology more quickly than others (Rogers 1995). The early adopter may have different communication behaviors than do later adopters. The early adopter also tends to have different decision-making capabilities, and different socio-economic characteristics. Those who work through the consumer decision-making process faster than others form an important market segment to be targeted early with the information and education programs. Those who work through the process more slowly will rely on earlier adopters to help them make the decision. They will look at the experiences of earlier adopters with the new technology. They will need different kinds of information, more concrete information, and more hands-on experience with the technology to make their decisions (Rogers 1995).

In summary, effective communication with the diverse population of California's I-Zone requires first that the larger population be segmented into smaller, more homogeneous groups; second, that the wildfire defense product be adapted to the needs, tastes, and preferences of each of those market segments; and third, that promotional communication be developed to match the market segment's natural communication behavior. Neighborhoods tend to be homogeneous on most of the variables important to the adoption of vegetation management and architecture for wildfire defense. Fire protection officers should identify and target appropriate I-Zone neighborhoods as market segments in the campaign to promote the widespread adoption of wildfire defenses.

C. PROMOTE TO THE COMMUNITY—NOT THE INDIVIDUAL

Perhaps the most common mistake made in fire prevention is to target individuals instead of social systems. Even Smokey Bear's famous message, "Only you..." is directed at individual responsibility. Of course, ultimately it is the action of a single person that results in a fire starting or the implementation of some fire protection measure, but human beings are social creatures and make very few choices without the support of their families, neighbors, coworkers, or other social groups. Important decisions such as making major modifications to homes and landscapes are virtually never made by individuals acting alone. The family is involved at the very least, and usually the matter is discussed extensively with neighbors and others whose opinions are valued before work is done. Even if the landowner does not talk it over with the neighbors, the neighbors will talk about it, and social pressures will be brought to bear if the idea does not meet with the neighbors' approval.

There are good practical reasons for people to consult with their neighbors before making decisions to adopt or reject new ideas. Neighborhoods and other social systems are webs of shared knowledge, influence, and resources (Rogers & Kincaid 1981). People rely on each other for help in many ways, from borrowing tools to getting advice on how to do some task from some more experienced neighbor. Neighbors watch each other's homes and provide social support in times of personal trouble and distress. It would be very difficult for a person to live without ties to family and neighbors, because good ties

immeasurably improve the quality of life. One is not likely to risk such valuable associations by taking independent action on matters that will influence others.

Fire professionals must treat the neighborhood as if it were an organization that must decide to adopt or reject your new technology as a whole. Focusing on individual landowners to change patterns in behavior, without involving their neighbors, will not be successful. The key to success is working with neighborhoods as a whole.

D. WORK WITH OPINION LEADERS

Within every social system there are those to whom people go more than others for advice about new ideas. These opinion leaders are influential because they are able to reliably and accurately predict the consequences of new ideas, and because they are trusted and socially accessible to those who want the advice. In the modern communities of the I-Zone, opinion leaders are likely to be specialists. Some are experts in landscaping and horticulture, others in building, and still others in matters of public safety. A person wishing to discuss a new idea is likely to seek out the neighborhood resident influential in that subject rather than to look for a person influential in a broad range of subjects. In more traditional communities in less complex societies, opinion leadership for most ideas may be held by one or two key individuals. Such “monomorphic” opinion leadership may occasionally be encountered in rural areas of the United States, or among some close knit ethnic communities, but typically opinion leaders will exert influence in a relatively narrow range of topics (Rogers 1995).

Failures of efforts to promote new ideas have often been traced to failure to work through community opinion leaders (Rogers 1995). People want to hear some discussion about an idea before they choose to adopt it. If the person whose opinion is valued has not heard of the new idea, or has not formed an opinion about the idea, there is little chance for a positive recommendation. If, on the other hand, an opinion leader has not only heard of the idea, but has decided to adopt it for himself, a positive recommendation is assured. In the first case, one is likely to drop the idea altogether; in the second case, one will at least consider it further.

How do you identify an opinion leader? The easiest way is to ask people who are likely to know the neighborhood well. The school principal will know who opinion leaders are or will know someone else who does. Religious leaders typically know the influential people in the community. Elected officials depend on knowing the influential people in order to get elected. The officers of neighborhood and community organizations will know some of the influential people. The rural, volunteer fire company and auxiliary who depend on the community for fund raising can be important sources of information about who is and is not influential. In some places, the volunteers are the most important social organization in the community.

It is important to remember that while elected officials, school principals, and other public figures may be opinion leaders, they often are not the most influential people in the community. Sometimes, opinion leaders are relatively invisible. The elected officials and most visible people may be activists and innovators not necessarily well integrated into the community (Rogers 1995). It is especially important not to assume that people actively promoting an idea are opinion leaders. Real influence is usually wielded quietly. Opinion leaders usually exert their influence in response to questions from

followers, and not by seeking out their followers and trying to persuade them to adopt the new idea.

The opinion leaders important to the promotion of defensible space and other wildfire defense preparations include those who are influential in landscaping and gardening, the environment, building and home design, public safety and security, and forestry and fire. If a garden club exists, its members are likely to be influential in their neighborhoods on landscape issues. The officers of the club can also identify businesses such as nurseries and individuals who are influential locally on landscaping matters. The neighborhood watch can serve the same purpose among those concerned with public safety. Similar groups may exist that represent those interested in architecture or home improvements.

E. WORK WITH EXISTING ORGANIZATIONS

It is tempting to organize a special fire protection committee in a neighborhood to promote wildfire defenses and fire safety. Such committees may eventually be appropriate, but, in at least the first year or two, fire prevention officers should work through existing organizations such as property owners associations, the neighborhood watch, or garden clubs. Establishment of a new committee requires much work and time that could better be spent on establishing wildfire defenses. Furthermore, each organization in a social system has established its own niche. Organizations compete with each other for people's time and attention as well as financial support. New organizations must spend much of their energy early on establishing their place in the social system and their credibility with the public. They are not immediately effective.

On the other hand, existing organizations that have already established themselves as legitimate in the areas of public safety, land use, horticulture, and building or aesthetic issues can easily adopt wildfire protection as part of their mission. They have an established membership, are typically interested in expanding their membership with appealing new projects, and have an infrastructure of leadership and a calendar of events into which wildfire defense promotion can be folded.

F. BEGIN WITH EDUCATION

Very few people living in the I-Zone understand the principles of fire behavior, and, as a result, recommendations about landscaping and building for wildfire defense are not quickly understood and accepted. It is relatively easy to get on the agenda of a property owners association or garden club meeting to talk about fire behavior. The presentation can be made using slides or graphs developed from available fire behavior instruction manuals used in the fire services. Demonstrations of the effects of fuel types, wind, and slope have been made to neighborhood groups using a burn table, or by making small area demonstration burns of grass or bear clover.

Most of the people who live in the I-Zone are well-educated and have experience in technical or managerial occupations. They easily grasp the principles demonstrated and are able to apply them to the situation in their neighborhoods.

It is also useful to teach residents the fundamentals of controlling wildfire using hand tools and a limited water supply. This information makes it easier for them to

conduct their own debris burns with less chance of escape, and helps them understand the kinds of actions firefighters will have to take to combat a fire in their neighborhood.

Residents are likely to be as poorly informed about the principles of ecology and forest health as they are of fire behavior. Presentations on forest health, wildlife ecology, hydrology and underground water, soils, landscape design, and horticulture can all be used to provide the basis for landscaping for wildfire defense. It may be useful to provide residents with a herbarium collection that they can use to identify the different plants, brush, and trees in their area. If information about the flammability of the different species and how to manage them to make them less flammable is included, the collection will be particularly effective in advancing the cause of wildfire defense preparation.

It is important to establish the fundamental base of knowledge before getting too far with specific recommendations for wildfire defenses. At the most fundamental level, a resident cannot decide which tree to take and which to leave unless he or she can tell what species the trees are and which ones are preferred.

When working with communities, it is most effective to provide information and education as the residents feel the need for it. In the beginning that need is likely to be for knowledge of fire and the fire threat and how to defend against it. Later the need will move to information on which species to select in landscaping and how to do vegetation management work properly.

When whole neighborhoods are involved, a large landscape will be modified. The effect on wildlife, aesthetics, and other values is likely to be significant. As they undertake wildfire defense preparations, neighbors will need to develop a shared image of the desired future condition of the forest they live in, and that will require basic education and discussion about many matters not directly related to fire. However, to achieve the desired level of wildfire safety, the fire protection officer will need to arrange for that education when people feel the need for it.

G. COMMUNICATE AND PROMOTE EACH MARKET

As people in each neighborhood work through the consumer decision process to decide whether or not to prepare and maintain wildfire defenses, they will pass through several stages, from initial awareness to opinion formation, choice making, implementation, and confirmation (Rogers 1995). At each of these stages, they will want different kinds of information and look for it in different media and from different people. Promotional campaigns will be effective to the degree that fire protection officers provide the kinds of information people want, where they want it, and when they are likely to look for it.

In general, people will use three types of communications. They will encounter or look for information in the mass media, including television, radio, newspapers, and magazines. In addition, they will seek information face to face from experts. Finally, they will communicate with each other through their informal communication networks.

The mass media can be used effectively to create awareness of the wildfire threat and the possibilities of defending one's family, property, and neighborhood against it. Mass media reaches many people quickly and at a low cost. Some forms, such as printed materials and video tapes, are easy to keep, copy, share with others, and use when how-to

information is needed. However, the mass media is relatively ineffective as a tool for opinion formation and for confirmation of the wisdom of the decision.

Interpersonal networks linking members of the community with each other are very effectively used during the opinion formation stage of the consumer decision process, but tend to be information poor about new technology. The networks can spread awareness about a new idea but depend on that information first being introduced by mass media or some other outside source.

The needs for information and its timing will vary from neighborhood to neighborhood. In any neighborhood some residents may be experts on wildfire and fire suppression. There may be those who are ecologists, landscape architects, or other professionals who can contribute formally and informally to the needed information. One cannot build a communication campaign that will work equally effectively in every neighborhood. It is necessary to learn each particular neighborhood well, and to find out, by constantly listening to the residents as they work through the process, what information they need. The effective strategy will make provisions for identification of information needs as they develop, and will provide a rapid response to that need.

H. ADAPT DEFENSES TO MARKET SEGMENTS

The attractiveness of a new technology depends heavily on how it is perceived compared to the alternatives. Considerable research has been done concerning the characteristics of new technologies that potential users consider (Rogers 1995). The important perceived characteristics include relative advantage, complexity, compatibility, observability, testability, and plasticity.

Successful promotion of wildfire defenses will be enhanced to the extent that fire protection officers can:

- Increase the degree to which landscaping and construction for wildfire defense is perceived to be better than the alternatives they will replace;
- Reduce the perceived difficulty of implementing and using wildfire defenses;
- Make wildfire defense technology more compatible with resident values;
- Make the beneficial results and the technology itself more visible to potential users,
- Arrange ways to demonstrate wildfire defense technology before committing to total adoption;
- Keep wildfire defense technology flexible so that it can be reinvented easily by potential users without losing its effectiveness as a protection against wildfire losses.

I. INCREASE RELATIVE ADVANTAGE

Relative advantage is the degree to which a new technology is perceived to be better than alternatives. Costs, labor requirements, discomfort, and effectiveness for the intended purpose are all part of relative advantage (Rogers 1995). The following are the results of a survey of residents in communities located between Grass Valley and Paradise, California.

Effectiveness

Four out of five people surveyed believed that defensible space would help save their property in the event of a wildfire. For most people, defensible space is perceived to be effective for its intended purposes. Still, one in five does not think it will help save their property. We don't know whether that is because they don't think it will save their homes, or because they think of their property in a larger sense that includes the surrounding landscape.

Fatalism

Lack of defensible space implementation is not because people are fatalistic. Less than one in ten thought that whether a house burns or not is a matter of luck.

Cost

About half of the respondents to the survey believed that defensible space would cost them more money in the long run than the alternative. Less than one in twenty thought defensible space would cost less. Clearly, defensible space is at a relative disadvantage with respect to costs. This is an important barrier to widespread adoption. Increasing the number of people who implement defensible space in the I-Zone depends heavily on our ability to bring the perceived initial conversion and long-term maintenance costs down.

Work

Almost two-thirds thought the work required to maintain defensible space would be about the same as required for their current landscape. Nearly thirty percent, however, thought it would be harder, and less than ten percent said it would be easier. Defensible space has no labor saving advantage to make it attractive to residents.

Time

More than half thought it would be difficult finding the time to do the things needed to make the landscape more fire safe, while twenty-five percent thought it would be easy. Defensible space has little relative advantage from reduced time demand in the minds of most residents, but an important fraction may see potential benefits.

Discomfort

Although no question about the perceived discomfort of creating and maintaining defensible space was asked in the survey, later focus groups in Paradise raised concerns over poison oak, snakes, and Lyme disease. Some residents may be reluctant to work on the undeveloped parts of their lots for these reasons. To the extent that they are barriers, finding ways to get the initial conversion work done for residents without requiring them to expose themselves to these perceived dangers could make defensible space more attractive.

Although defensible space is believed by four out of five people surveyed to help protect their property from wildfire, there remains an important number of skeptics. Perceived costs, labor, time requirements, and perhaps aversion to snakes, poison oak, and Lyme disease leave defensible space without a clear relative advantage. This, in part, accounts for the low level of implementation in the I-Zone in spite of sustained

promotional efforts. To achieve greater adoption, costs, labor requirements, and time demands must be brought down.

One way to bring costs down is to achieve economy of scale by doing hazard reduction on relatively large areas—neighborhoods instead of individual lots. When that is done it is possible to bring in larger equipment and spread the costs among landowners. Another approach is to subsidize the wildfire defense and forest health improvements by selling some timber or other forest products from the lands on which improvements are made. The easiest of these products is fuel wood, either as chips to be used in wood-fired power plants, or firewood. When forest products are sold, exemptions to Forest Practices regulations need to be applied for through the California Department of Forestry and Fire Protection (CDF). In some cases, a timber harvest plan or other plan may be required. County regulations and local CC&R's may limit possibilities for this kind of subsidy.

Very limited amounts of money are available from state and federal cost-sharing programs designed to improve forest quality. Again, the local CDF foresters are the appropriate contacts; they can identify other possible funding sources. Even a small subsidy can make a considerable difference in the perceived relative advantage.

J. INCREASE COMPATIBILITY WITH LOCAL VALUES

Compatibility is the degree to which the new technology is perceived to fit with existing values, and the traditional ways of doing things (Rogers 1983).

Natural Beauty

A little over forty percent believed that natural landscapes are more beautiful than planted landscapes, while an almost equal number disagrees.

Changes

More than one-third believes that one should make as few changes as possible in the natural landscape, while more than half is willing to make changes.

Modifying what is seen as the natural landscape and replacing it with a planted landscape is not compatible with the attitudes of many of the people who responded to the survey. It is important that defensible space and wildfire defenses in general be seen as compatible with natural landscape values. Landscaping for wildfire defense will be more attractive if it can be shown to restore and protect wildlife, watershed, aesthetics, air quality, and other values.

Improving compatibility is best done in cooperation with residents through participatory programs such as focus groups and other techniques used by market researchers. The relevant values cannot be identified before the project is begun, typically because residents do not know enough about wildfire defenses and forest health. Consequently, an adaptive approach must be used in which learning, doing, and planning are constantly cycled. As residents learn about wildfire defense and forest health, they will be able to come to a consensus about the desired future condition of the forest, but that image will change as they learn more and gain more from experience. Typically, however, the changes represent refinements, not revolutions in their thinking.

Fire protection officers marketing wildfire defenses need to be careful to abandon the usual linear approach to planning and project implementation for a more naturalistic, adaptive management approach.

K. REDUCE COMPLEXITY

Complexity is the degree to which people find the new technology difficult to understand and use (Rogers 1995).

Changes Required

Two-thirds of those surveyed believed that they would have to make more than a few changes in their landscape to make it fire safe. About 17 percent thought they would have to make many changes.

Understanding Defensible Space

Well over half of those surveyed thought it easy to understand how different kinds of landscape features work to protect property from wildfire. Only about 15 percent thought it hard to understand. In fact, we have found that people in the neighborhoods where we have worked learn the basic principles of fire behavior easily and can apply them to their landscaping decisions quite well.

Need to Learn

Somewhat less than two-thirds said they would need to learn new things about landscaping to make the changes required for defensible space. The good news is that for the most part they would enjoy learning more about landscaping.

Knowing Defensible Space

Considerably less than one in five thought it difficult knowing which things in a landscape make it more or less fire safe.

What Kinds of Plants

About a third of the respondents said it would be hard to know what kinds of plants to grow in a fire-safe landscape. Increasing the adoption of defensible space will require better and more available information on recommended plant materials and landscape designs that provide wildfire defense. Knowing where to get the plants seems difficult to about 20 percent of respondents, and another 20 percent are unsure.

Maintenance

More than a quarter thought a defensible space landscape would be more complicated to maintain, while almost two-thirds thought it would be about the same, and less than one in ten thought it would be less complicated. Of those who thought it would be more complicated, few thought it would be much more complicated. Perceived complexity of maintenance is a barrier for a few, but is not a major barrier to adoption.

Brush Disposal

Although there is no survey data on this point, experience in the neighborhoods where we have promoted defensible space clearly demonstrates that difficulties in disposing of the large amounts of brush produced in the initial conversion to a fire-safe landscape add significantly to the perceived complexity at the implementation stage. The amount of brush produced is dangerous to burn, costly and difficult to haul, and won't be accepted by landfills. This is a major barrier to widespread adoption.

People generally do not find it difficult to understand defensible space and how it works to protect their property. The major sources of complexity are the amount of work needed to make property fire safe, lack of certain how-to-do-it information, and, especially, the difficulty of disposing of the brush.

Brush disposal is perhaps the thing that fire protection officers need to pay the most attention to; it is the most difficult and dangerous of the problems landowners face in converting their property. As described earlier, however, the brush and wood removed as part of hazard reduction might be converted to an economic by-product in some cases. If it must be chipped or burned, expert advice will be needed to support the community's efforts.

L. INCREASE VISIBILITY

Observability is the degree to which people can "see" the technology and its positive effects (Rogers 1995). The more observable a new technology and its benefits, the more quickly and widely it will be adopted in social systems.

In order to make wildfire defenses as compatible as possible with local values, properties that have been landscaped for wildfire defense must look natural. They will be more open, the crowns of trees will be more separated, and there will be less brush and reproduction that might create a fire ladder in the understory. However, wildfire defense landscaping is likely to go unnoticed unless it is pointed out. It is typically necessary to draw attention to wildfire defense landscaping to take advantage of the growing social influence as the idea spreads.

In Shingletown, it was the practice to have residents pile the brush from their lot clearance on the shoulder of the subdivision roads where it would be chipped. The growing number of piles and their size served to make wildfire defense preparations visible to anyone traveling through the neighborhood. Later, when the chippers were working, the noise and bright colors of the equipment, workers shirts, and hard hats added to the visibility and sense of things happening.

It has been suggested that signs be prepared that can be attached to mail box posts declaring the property a participant in the wildfire defense landscaping program and identifying for firefighters the degree of preparation at the site and available water or other resources. As such signs appeared in the neighborhood they would demonstrate the increased rate of adoption, influencing those who have not yet considered wildfire defense.

Tours of the neighborhood for others interested in a wildfire defense campaign in their own neighborhoods, coverage of the project by the media, and visits by elected

officials and dignitaries will all help make the project more visible and encourage adoption of wildfire defense preparations.

It is extremely important to make the benefits of adopting wildfire defense visible. Sometimes this can be done by working with the media and information officers on fires in the general area of the community. Television and print stories describing the effects of fuel modifications on the fire behavior and of wildfire defense on neighborhood survivability help to make the effects visible to everyone. Wildlife, forest health, and related benefits can be pointed out and illustrated with stories in the local newspaper, which include photographs from project sites. Teaching programs about fire behavior and fire effects might use fire tables on which real fires are burned to show how changes in fuels and slope can influence the spread and intensity of a fire. It may be possible to take residents to observe prescribed fire, where the effects of vegetation management can be demonstrated.

M. ENCOURAGE EXPERIMENTATION

Often people find it too much to commit all at once to a large landscape change. They want to see how it looks and consider how it will affect them in other ways. Usually, the residents of a neighborhood will want to modify the wildfire defense idea to better fit their own situation. Such reinvention is a natural part of the consumer decision process (Rogers 1995), which should be encouraged, because it makes the idea more attractive to those who modify it.

There are many different combinations of vegetation management, suppression, and prevention activities, and many ways to do each of these, all of which would improve the wildfire defenses for a neighborhood. However, the resulting landscape design and combination of firefighting methods must be technically appropriate for the conditions. To ensure that happens, the experimentation and modification should be done with the assistance of fire behavior and firefighting specialists. Protection of aesthetic and other values will require inputs from other experts as well.

Demonstration sites where residents can be involved in the actual work provide opportunities for experimentation and trial. Often such demonstration sites can be established along main entrance roads, around public buildings and fire stations, in parks, or on the property of cooperative residents who would be pleased to see their property serve as a showplace. Garden club members might be among those most willing to cooperate in that way. Projects to make roadways safer during evacuations by reducing the amount of brush in the right of way and making it less flammable provide excellent demonstration opportunities.

N. KEEP DEFENSES FLEXIBLE

One of the disadvantages of legislation that requires residents to prepare defensible space is that it sets the same requirements for every home on every I-Zone lot in the State. The fire threat and the best way to deal with it, however, differ widely from lot to lot even in the same neighborhood, as slope, aspect, and fuel types vary. For example, while a thirty-foot clearance may be adequate in grass on a level lot, it is woefully inadequate in tall, decadent chaparral below a house at the top of a steep slope.

Avoid any actions that will reduce the resident's ability to reinvent wildfire defenses to fit their particular situation and conditions. Inflexibility limits the usefulness and acceptability of new technology intended for use under variable conditions.

O. COMBINE BENEFITS WITH PREVENTION

Prevention technology and ideas are particularly slow to be adopted by most social systems (Rogers 1995). That is partly because it is difficult to experience the relative advantages of fire-safe landscaping and ignition-resistant structures compared to the alternatives. One can only experience the preventative benefits of wildfire defense preparations when a wildfire strikes. That is an almost unthinkable situation to most people, and it is rare in most people's lives.

There are other reasons why preventative innovations do not spread rapidly through social systems. They range from calculations of the net present worth of investments compared to losses expected and the discount rate used, the time horizon of many residents, and psychological denial of the threat. In almost all cases, technology that promises to prevent losses is not nearly as attractive as technology that promises immediate improvement in the quality of life (Rogers 1995).

The best way to counteract the effects of a perceived preventative technology is to package the new technology with other compatible technologies that promise immediate satisfaction. In the case of vegetation management for wildfire defense, the finished landscape can be designed to not only be more fire safe, but also to provide more opportunities to view wildlife and flowers, and experience other forest amenities.

The best way to discover what kinds of benefits to attach to the preventative wildfire defense technology is to work with groups of residents in the target neighborhood, especially the opinion leaders. Their suggestions, reworked by technical efforts in the appropriate fields, will allow the fire protection officer to provide the most attractive possible wildfire defense design, and the officer can feature its benefits in protection communication.

P. APPLY RESIDENT ORIENTATION TO WILDFIRE DEFENSE

All of the above can be summarized in the recommendation that the fire protection officer must approach the problem of promoting wildfire defense preparations by adopting the perspective of the resident in the target I-Zone neighborhoods. The technology should be modified to meet the resident's felt needs, tastes, and preferences. Their natural decision-making processes should be supported and assisted with appropriate information in the media they use at the times they want it. They should be involved in designing the technology and helping to implement it.

The fire protection officer should recognize that the decision to make major changes in the landscape is not an easy one. Many secondary impacts must be considered. The reaction of one's neighbors and significant others are important. The relative advantages are not always clear. The technology can seem very complex, and difficult to understand and use. Usually it will eventually be seen as compatible with the needs, tastes, and preferences of the residents, but at first there will be questions about the effects on other forest values. All concerns are legitimate, no matter how often the fire

protection officer has dealt with them in other places and times, or how obvious the answers seem.

It is important to remember that the fire protection officer comes to the I-Zone fire problem with the perspective and biases of a firefighter, a perspective that most of the residents will not share. It is sometimes difficult for the firefighter to empathize with the I-Zone resident. The firefighter knows much about fire, but less about the things that residents value most. The firefighter frequently sees I-Zone fires and their impacts, while residents seldom see them except on television and in the newspaper. The fire protection officer cannot hope to have a perfect impression of the residents' needs, tastes, and preferences. Therefore, the residents must be intimately involved in every step of the wildfire defense project. The task is to make wildfire defense exactly what the residents want, while making sure it retains its fire protection and forest health effectiveness.

Q. TAKING ACTION THROUGH A FIRE-SAFE COUNCIL

A fire-safe community is one that has taken as many measures as possible to survive a fire. Staying fire safe requires regular attention and maintenance, and the support of the entire community. One way to do this is through a local fire-safe council. By working together as partners in a local fire-safe council, organizations can share resources and accomplish much more than they can individually.

Many organizations are working toward the same fire safety goals separately. By working together as partners in a local fire-safe council these organizations can share resources and accomplish much more than they can individually. Because members are invested in the community, many will be willing to volunteer their knowledge, time, efforts, and other resources for fire-safe projects.

A safer environment is one of the obvious benefits of a fire-safe community. There are other, less tangible, advantages as well. For example, residents and business owners who work together on fire-safe projects establish pride-in-ownership in their community and are more likely to maintain the results of their efforts.

There are economic benefits, too. Businesses that provide fire-safe services can expect repeat customers; fire-safe properties may have higher property values and lower insurance premiums. Lost wages, lost business and recovery time are reduced in the event of a fire.

A community can achieve these benefits and many more by using a cooperative approach to fire safety such as that embodied by California's Fire Safe Council.

(1) Solutions for Diverse Communities

The California Fire Safe Council is a statewide coalition of public and private sector organizations working to help local communities mobilize residents and others in the area to make their homes and neighborhoods fire safe. The statewide council is a resource to help local councils develop programs that fit their unique needs.

Any member of a local community can organize a fire-safe council. The person or group of people who accepts the challenge to start a local fire-safe council can turn to the statewide Fire Safe Council for support and advice.

A fire-safe council can begin with existing organizations interested in the well-being of the community. Chambers of commerce, rotary clubs and homeowners associations are all working on behalf of the community and may be willing to help organize a fire-safe council.

A fire-safe council representing many industries and interests can influence local decision-makers. The combined expertise and resources of a fire-safe council may improve an area's safety through such endeavors as public education campaigns or lobbying for more stringent enforcement of fire safety codes. Educating citizens and encouraging city planners to adopt fire-safe building codes, construct adequate roads and develop emergency water systems can help ensure fire safety in the future.

(2) Forming a Fire-Safe Council

Improving fire safety may seem like a daunting assignment. By breaking the responsibilities down into workable projects and delegating tasks, a community can begin to see immediate changes. Here are eight action steps to assemble a fire-safe council that can be tailored to fit the needs of any community:

- (1) Identify potential members
- (2) Invite them to a meeting
- (3) Hold a meeting
- (4) Appoint a facilitator
- (5) Define area of concern and values at risk
- (6) List objectives and action items
- (7) Develop a plan and mission statement
- (8) Review the plan regularly

(3) Cooperation is the Key

A fire-safe council is a voluntary organization that knows the citizenry can work together to improve the community's ability to survive a fire. The council might consider the following projects:

- Plan annual clean-up days for schools, parks and other community amenities.
- Sponsor a chipper to come through neighborhoods. (A chipper is a machine that turns tree trimmings into mulch.)
- Produce a quarterly publication for residents and businesses with fire-safe information.
- Sponsor a seminar on designing and maintaining fire-safe landscapes.
- Set up demonstration gardens.
- Schedule media events and write news releases about council activities.
- Promote public service messages through newspaper inserts, billboards or radio and television advertising.
- Form a speakers' bureau to give fire-safe presentations to local civic clubs.
- Organize education campaigns such as safety fairs or community-wide mock fire exercises.

More information about how to plan and carry out any of the above projects is available through the statewide Fire Safe Council.

(4) Case Study: Oakhurst

The picturesque mountains and landscapes of Oakhurst have caused many to call this Eastern Madera County town the "Gateway to Yosemite." However, Oakhurst's scenic forests and rugged terrain present special needs for wildfire prevention.

Oakhurst's economy has shifted from natural industries, such as logging and grazing, to providing services centered around tourism. This shift has stimulated rapid population growth and an increase in the number of homes and businesses located in the Urban-Wildland Interface.

Oakhurst faces a constant challenge that many California communities face: developing ways for citizens to protect their communities from wildfire while maintaining the beauty of their surroundings.

(a) Joint Efforts Achieve Results

In a cooperative effort among several state and local government agencies, private professionals, and the public, Oakhurst was able to coordinate a fire prevention, fire suppression, and resource management program.

A permanent fuel break was the top priority. First, the steep and treacherous Deadwood Peak needed to be cleared of the dense and highly flammable manzanita that grew there. The peak was so steep that using tractors to clear it was impossible and hundreds of hours were devoted to removing the brush by hand. Next, CDF conducted a controlled burn to eliminate the dense brush, leaving only the manzanita root system to prevent soil erosion. As the final step, 35,000 ponderosa pine tree seedlings were planted.

Another project, called "Trees for Oakhurst" was sponsored by the Madera County Chamber of Commerce. It included replacing trees that were cut down during construction along Highway 41. The 1,400 oak, sycamore and evergreen trees that were planted by the community helped reduce noise and the effects of vehicular emissions, improved air quality and enhanced wildlife habitats, and restored the natural beauty of the area.

In a similar endeavor, government agencies, citizens, and local businesses contributed time and money to the "Oakhurst River Parkway Project." This project worked to restore Oak Creek and the Fresno River to a level of stability that existed before intense development nearly destroyed them.

(b) Community Spirit Spurs Success

Local citizens and community organizations such as the Rotary Club, Chamber of Commerce and Oakhurst Community Center played an active leadership role in these efforts.

Other participating groups included the Coarsegold Resource Conservation District, CDF, USDA Agricultural Stabilization and Conservation District, USDA Forest

Service, California Department of Transportation and Madera County Road Department, among others.

Funding for many of the projects was secured through federal and state programs such as the Stewardship Incentive Program and the Agricultural Conservation Program.

Through these projects, the citizens of Oakhurst found their town's greatest strength was in their natural resources and that fire prevention could be achieved through proper management of those resources.

R. CHOICES FOR ACTION

Finally, it should be noted that ideas and opinions about wildland fire are diverse and passionate, and in your community the question will arise whether or not fire is a problem, what sort of problem it is, and what, if anything, should be done about it. It might be helpful to note, in advance, that there are three distinct philosophies that people typically latch on to, and these philosophies each require a distinct choice of action on the part of the community. Of course, one philosophy might fit a specific community better than another, and perhaps it is some combination of these philosophies that truly would work best. Still, it's helpful to know what the three broad-brush choices for action are. They are:

- Choice 1—reduce fuel to make fires easier to manage and control;
- Choice 2—strengthen communities against wildfire;
- Choice 3—let the risk-takers pay.

(1) Choice 1—Reduce Fuel

People who advocate this view blame the wildland fire problem on an unnatural fuel accumulation in California's I-Zone and adjoining wildlands. They hold our aggressive fire suppression policies responsible for current conditions. The solution to our present problem, as they see it, is to fund strategic efforts to reduce the amount of fuel in our forests, chaparral wildlands, and grasslands. Advocates insist this is the only way to protect both the I-Zone and the wildlands.

(2) Choice 2—Strengthen Communities

People who advocate this view don't dispute the source of the wildland problem, but they insist that protecting homes and communities is now of primary importance. Instead of tackling the effort and expense of widespread fuel reduction, they want to focus on making I-Zone communities safer places in which to live and from which to fight fires. They support policy changes that would require I-Zone residents to keep their own property fire-resistant, require new development to follow fire safety standards, involve the insurance industry in planning, and enable fire-management partnerships to develop among agencies, communities, and individuals.

(3) Choice 3—Let Risk-Takers Pay

People who take this position believe that who pays the cost is the most important factor. They tend to think that people should decide for themselves how much risk they want to take as long as they are made to pay for the consequences. Proponents of this choice are tired of subsidizing the lifestyle of Californians in fire-prone areas through their taxes, insurance premiums, and cost of living. They propose that residents educate themselves about fire ecology, finance their own fire protection, and agree not to hold the government responsible for underwriting their losses.

(4) Solving the Problem

One thing is certain—we need to do something to protect California from the negative effects of wildland fire. If we had an unlimited budget, we could clear out the excess fuels from our wildland and I-Zone areas and still have the money to make our communities as defensible as possible. However, that's not the case, and people typically do not agree on a single approach to the problem.

Sorting out differences and discovering areas of common ground begins with discussions between you and your fellow citizens. Please give a fair hearing to each approach, listening to others as well as expressing your own ideas. Considering the positive and negative consequences of each option is the first step in working out an integrated way to reduce the effects of wildfire in California.

No single approach is likely to be exactly right for your community. Each community is unique, with its own social, environmental, economic, and historic characteristics. The wildland fire approach your community eventually chooses will be just as unique. Your deliberation may require you to select things from all three approaches in order to develop your strategy. By discussing these issues together, you and your neighbors will begin to understand the different perspectives on the wildland fire problems facing your community, and will act together to resolve them.

S. LOCAL FIRE-SAFE COUNCILS

Amador/El Dorado Fire Safe Council

Contact: Mr. Carl Kent
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Phone: (707) 527-1152
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Firesafe Foresthill

Contact: Paula Nelson
PO Box 1099
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Fax: (530) 367-2992

Big Sur Community Collaboration Action Team

Contact: Mr. Steve Crump
Initial Attack
3099 Hampton Road
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Phone: (925) 229-4971
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Highway 168 Fire Safe Council

Contact: Mr. Josh Chrisman
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Fresno/Kings Ranger Unit
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Sanger, CA 93657
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Butte County Fire Safe Council

Contact: Glenn Nader
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Laguna Beach Insurance Free Choice Discussion

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Fire Safe Marin

Contact: Mr. Ray Mortiz
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OR
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Pacific Gas and Electric
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San Francisco, CA 94177
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Mariposa County Fire Safe Council

Contact: Jan Hamilton
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Mission Viejo Fire Safe Council

Contact: Council Chair Sherry Butterfield
Phone: (714) 586-0439
OR
Jo Ann Corey
Phone: (714) 470-3008

Fire Safe Sonoma County

Contact: Mr. Vern Losh
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Monterey Fire Safe Council

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Nevada County Fire Safe Council

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Oak Glen Fire Safe Council

Contact: William Brown
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Plumas County Fire Safe Council

Contact: Andy Anderson
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Riverside Fire Safe Council

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San Diego Fire Safe Council

Contact: Erwin Willis
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San Luis Obispo County Community Fire Safe Council

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San Mateo Fire Safe Committee

Contact: Steve Richmond
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Santa Barbara South Coast Fire Safe Council

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Topanga Fire Safe Council

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Tuolumne-Calaveras Fire Safe Council

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