



## The Firewise Program *Perspectives of Incident Commanders*

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### Overview

The goal of this project is to capture insights of senior-level wildfire managers regarding the potential of the Firewise Program to alter 1) the risk to firefighter safety, 2) the ability to successfully save structures, and 3) wildfire suppression costs. We interviewed 16 Incident Commanders (ICs) of large and complex western wildfires (in which highly trained, interagency Type I or II Incident Management Teams responded). In total, approximately 45 Type I or Type II Incident Management Teams operate in the West. The ICs of these teams have experience coordinating some of the West's most challenging wildfires and have held numerous wildfire-related positions throughout their 20-30 year careers, giving them valuable knowledge helpful to gaining an in-depth understanding of the logistical, safety, and community issues that arise during wildfire suppression.

The study design and approach is qualitative in nature. In order to facilitate communication of the ICs' opinions and impressions and allow for follow-up questions, interviews were structured in the form of guided conversations as opposed to questionnaire-style surveys.

This project is part of a larger empirical study by Headwaters Economics to better understand the effects of Firewise on wildfire suppression costs. Findings from the empirical study and related research are at <http://headwaterseconomics.org/wildfire/firewise>.

### Summary Findings

A number of common shared beliefs are evident based on our conversations with participating Incident Commanders:

- Community wildfire preparedness programs, such as Firewise, are seen as highly valuable because these programs both increase firefighter safety and the likelihood of successful structure protection.
- Community wildfire preparedness programs consistently result in improved communication among residents and first responders while creating an informed public. Together, these increase the efficiency of those charged with fighting wildfires.
- Defensible space, including fuel treatments, should be created at the parcel, community and landscape scale. While of equal importance when compared with home site treatments, community scale treatments such as fuel breaks are often not applied in wildfire preparedness programs, including Firewise.
- Variability in the implementation of wildfire preparedness measures within communities is a problem that prevents fuller realization of structure protection and safety benefits. The probability of success in managing risk within Firewise Communities was perceived to be limited by "patchy" landowner participation in Firewise activities.

## Introduction

The cost of fighting wildfires is increasing while federal budgets have been limited, at times straining wildland firefighting resources. As a result, policy makers, private landowners, wildland firefighters, and public land managers are looking for politically and financially viable solutions to reducing wildfire risks and costs. One often-talked about remedy is the voluntary Firewise Program. Started by the National Fire Protection Association (NFPA) in 1997, the national Firewise Program aims to teach people and communities to adapt to living in areas prone to wildfire. Currently, there are more than 1,000 Firewise Communities throughout the U.S., many in the West.

Each Firewise-designated community must complete a series of actions before applying for and being awarded the Firewise accreditation. First, they must get a written wildfire risk assessment from their state forestry agency or fire department. Second, communities are required to generate an action plan and form a board or committee based on their risk assessment. Next, they must organize and hold a public education “Firewise Day” event. The final step before applying requires that they invest at least \$2 per person in annual Firewise actions. Once these steps are completed, communities are eligible to apply for the designation through their state Firewise liaison (NFPA, 2013). Examples of Firewise actions include safe structure placement relative to ridges and slopes, fire-resistant landscaping in various zones around homes, improving construction and maintenance of roofs and gutters, and establishing neighborhood communication and evacuation protocols.

In addition to enrolling in the Firewise Program, there are a number of other ways communities can prepare for wildfire. For example, they can write Community Wildfire Protection Plans (CWPP) to become eligible for federal assistance in fuel treatments on adjacent public lands; and communities can also participate in other well-recognized programs, including Ready, Set, Go, administered by the International Association of Fire Chiefs (<http://www.wildlandfirersg.org>) or the Nevada wildfire preparedness program, Living with Fire (<http://www.livingwithfire.info>). Many of the required actions in each of these programs have similar requirements to the Firewise Program.

### Past Research

Despite the interest in solutions for risk and suppression cost reduction in the Wildland-Urban Interface (WUI), there is a shortage of research on the impacts of community-level wildfire preparedness. The studies currently available on this topic are focused on site-specific (individual properties) approaches for reducing risk of home ignition (Quarles et al. 2010, Cohen 2008). Examples include recent case studies that evaluate site-specific risks and outcomes for entire subdivisions, documenting and summarizing post-fire data on all home sites (National Institute of Standards and Technology 2013, Morrison and Wooten 2013). The National Institute of Standards and Technology (2013) study investigated the effect of structure attributes, landscaping characteristics, topographical features, and potential wildland fire exposure on structure survivability for a subdivision north of San Diego, CA.

The existing studies provide needed information about the effects of actions taken by individual homeowners. What is missing is information about the effect of community-level wildfire preparation on the risk exposure for the entire community.

### Project Objectives

This report goes beyond site-specific approaches, and sheds light on community-level actions that ICs believe create a lower-risk, and potentially more cost-efficient, environment for protecting communities from wildfires. Since programs such as Firewise are often discussed as politically and financially viable solutions for wildfire management problems in the WUI, the information provided by this study is highly relevant.

The objectives are to gain a more complete understanding of the potential of the Firewise Program to alter 1) the risk to firefighter safety, 2) the ability to successfully save structures, and 3) wildfire suppression costs from the experienced perspectives of current Type I and Type II ICs in the West. The ICs of Type I and II teams, of which there are only approximately 45 in the West, have experience coordinating some of the most complex wildfires and have held numerous wildfire-related positions throughout their 20-30 year careers, giving them valuable experiential knowledge helpful to gaining an in-depth understanding of the logistical, safety, and community issues that arise during wildfire suppression.

Headwaters Economics adopted a qualitative approach to this project for a number of reasons. This research is part of a larger, empirical project by Headwaters Economics that provides a great deal of breadth of information on factors affecting wildfire suppression costs (<http://headwaterseconomics.org/wildfire/firewise>).

A qualitative approach is useful in providing depth to the breadth of a quantitative study. It provides additional insights and a deeper and richer understanding of important ideas that can sometimes be elusive in statistical-based endeavors. Such an approach also captures valuable experiential knowledge missed in a traditional quantitative survey.

## Methods

A list of eligible participants was assembled in the following manner. First, an initial list of IC names was compiled from the “Significant Incident Summary Spreadsheets” available from the “Historical Incident ICS-209 Reports” ([http://fam.nwcg.gov/fam-web/hist\\_209/report\\_list\\_209](http://fam.nwcg.gov/fam-web/hist_209/report_list_209)). For the years 2010, 2011, and 2012, and for regions encompassing the western U.S. (Eastern Great Basin, Northern California, Northern Rockies, Northwest, Rocky Mountain, Southern California, Southwest, Western Great Basin), unique IC names were recorded for incidents in which Type I or Type II teams responded. Second, a key contact within the national wildfire community was contacted and made aware of the project. This contact subsequently provided a list of the Type I and II ICs active in the country.

In total, the list of eligible ICs with correct contact information totaled 41. Participants were called at random two times per day for three weeks in November and December 2013. Semi-structured interviews via telephone were conducted based on an interview guide (Morse and Richards, 2002). Each interview was audio-recorded and notes were written upon playback. A total of 16 semi-structured interviews were conducted (with 9 Type I and 7 Type II ICs) for a 39 percent participation rate. Upon data analysis, both the range of perspectives and shared themes among project participants were highlighted and coded based on a Hermeneutic approach (Patterson and Williams, 2002).

### Data Limitations

It is important to explain what these data can tell us and what the limitations are. We generated a purposive sample of participants by identifying a population, Type I and II ICs, which we believed would have insights into the subject based on their professional responsibilities and experience. We then interviewed the entire available population—those with viable contact information and who were willing to participate. The data resulting from the interviews do not tell us how many, or what percentage, share the represented perspectives; this is the domain of a quantitative study.

Data presentation within a qualitative study often looks different than in a quantitative study. Instead of numbers and representative summary statistics, the data, in this case, come in the form of text originating from interviews. The text used in this report can either be a typical example of a shared perspective, a particularly interesting or valuable insight made by one participant, or a new idea.

## Findings and Discussion

A number of shared perspectives among the interviewed ICs relate to the project objectives of firefighter safety, structure protection, and wildfire suppression costs. In addition, other shared perspectives are relevant to gaining a richer understanding of the project issues.

To ensure the anonymity of participants, names have been changed and duty locations are not revealed.

### Experience with the Firewise Program

All participants understood that the intent of the Firewise Program is to better prepare communities for wildfire. All participants were involved in one or more of the following activities that resulted in familiarity with the Firewise Program:

1. Simply having an understanding of the program, its requirements, and objectives,
2. Being an IC of a fire threatening a Firewise Community, or
3. Assisting communities in writing community action plans or community wildfire protection plans.

Among the 16 ICs interviewed, 10 had experience directing firefighting efforts in designated Firewise Communities. For instance, ICs interviewed had directed firefighting efforts in or near Spokane, Washington; Colorado Springs, Colorado; Sisters, Oregon; and Reserve, New Mexico.

### Firefighter Safety and Structure Protection

The ICs shared a great deal of uniformity on the topics of firefighter safety and structure protection. The two issues often were mentioned in tandem, especially in relation to the Firewise Program and related fire preparedness activities (e.g., fuel treatments, defensible space, etc.). Participants repetitively expressed the link between these two items.

As firefighter safety was discussed, it became clear that participants were convinced that the firefighting environment was much safer and posed a reduced risk to firefighters in Firewise Communities.

“There is more risk to firefighters in a non-Firewise Community since exposure to firefighter risk decreases in a pretreated area.” – Philip Z.

“Firefighter risk decreases and safety increases in a Firewise Community.” – George C.

This perspective was echoed by many other ICs. Some elaborated by explaining that creating defensible space and adequate safety zones, and properly treating fuels would create less combustible fuels and more sheltered places for firefighters, resulting in increasing their job site safety.

The idea of defensible space and fuel treatments (on both public and private land) was often discussed in relation to the likelihood of success in protecting structures.

“In Firewise Communities there is a higher likelihood of being successful regarding structure protection because people would be more prepared for fires—more defensible space, safety zones, etc.” – Gary A.

“Probability of success [of structure protection] increases with the amount of work done on a property.”  
– Philip Z.

“Proactive steps to protect property and community in advance of a wildland fire puts more options on the table for us. For example, fuels reduction versus fire behavior—fire behavior changes when it hits a fuel break or a place where the fuels have been treated. Lower fire intensity, lower fire behavior or more moderate fire behavior equal advantage to firefighters. Gives us more room, more time, more higher probability of success within our safety operations—our ability to operate safely, so that’s a plus.” – Ted P.

As stated above, many ICs mentioned both structure protection and firefighter safety in the same breath and communicated their view that the two were tightly linked. The more fire preparedness work done around a property, the safer and more likely the ICs would be to assign firefighters to that area and the greater the likelihood those firefighters would be successful at saving the associated structures.

“Firewise is safer for the firefighters and structure protection likely to be more successful.” – Paul T.

The ICs often commented on the importance of their own engagement in an on-the-ground assessment of the area—verifying and assessing the state of the area, including gaining a clear understanding of the fire prevention and readiness activities completed. Because fuel treatments, including defensible space, were so important to firefighting safety in the WUI, it was stressed that in-person assessments were completed immediately preceding firefighting efforts, even if the ICs had received information that a community was designated as Firewise.

“The fact that they’re a wildfire Firewise Community is less important than what’s happened on the ground.” – Mike P.

A number of ICs described the importance of engaging in general wildfire preparation activities as opposed to a specific preparedness designation such as Firewise. It did not seem to matter if a community was a Firewise Community specifically; instead, what seemed most important was the preparation work done on both private and public lands.

I don’t care if you call it Firewise Communities, or Living with Fire, or just doing the right thing, if everybody chipped in a little bit it would be a much better picture for the rest of us.” – Ted P.

Many ICs further explained that Firewise activity (e.g., fuel treatments, defensible space, etc.) in a Firewise Community is often patchy, or spotty. That is, not all private property landowners engage in Firewise activity. This variability in the implementation of wildfire preparedness measures within communities was viewed as a key factor preventing the full realization of possible risk reduction benefits. The probability of success in risk reduction to homes and firefighters was viewed as increasing with the amount of wildfire preparation work done. This is why many ICs often noted the importance of assessing the local situation upon arriving at a fire to gain a more complete picture of the area threatened by the wildfire. Consequently, some ICs noted they preferred to ask if a community had completed fuel treatments, created defensible space, or some other fire prevention activity instead of asking if the community were designated as Firewise.

### Most Important Wildfire Preparedness Activities

The ICs noted a long list of activities that they thought were most important or provided the keys to success for the Firewise Program. The most important and the most frequently mentioned activity was creating defensible space at both the parcel and community scale. Also frequently mentioned was the importance of an informed public and its effect on enabling more efficient communication between first responders and community residents.

### *Defensible space should happen at the community scale*

The interview participants said it was important to create defensible space around private structures at the level of the individual private parcel. However, it was mentioned that it is equally important to create defensible space as a buffer between private and public areas. The latter, also referred to as a fuel break, should occur at the community scale and focus on lands surrounding a community.

“Defensible space works. It works for the public and the resources. It makes the firefighters’ jobs easier and safer. We have a higher probability of success and lower risk.” – Ted P.

Fuel breaks should be combined with fuel treatments (e.g., thinning) on the forested areas surrounding a community to reduce the likelihood the fire will move into the community at all.

“Keeping the fire out of the subdivisions is the first step of structure protection. The second step is protecting the actual structures. With adequate fuel treatment we can focus more on step one.” – Ted P.

The combination of these two activities was underscored repeatedly as the most important fire preparedness activity that communities and individuals could complete to assist wildland firefighters. Participants noted that, as with other fire preparedness activities, implementation of fuel breaks was not consistent. In other words, not all communities who had engaged in fire preparedness activities, including those related to Firewise Communities, had created fuel breaks.

### *Wildfire preparedness should result in improved communication*

Establishing clear avenues for communication among other first responders and informing the public regarding fire preparedness was also mentioned frequently. The extreme importance of this was explained particularly well by one IC as he was reflecting on his prior experience directing a fire threatening a Firewise Community. He explained,

“If you get communities talking about wildfire and likelihood and the need to be prepared both with your physical structure and your defensible space, but also it puts it more on the forefront through discussions, so there’s an educational benefit. So when a wildfire occurs, the public is more likely to respond in a better informed, more efficient manner. And they often are able to find that they’ve done something in advance to be prepared for it. So I think a lot of it is just in the discussion and the dialogue that goes with Firewise Communities.” – George C.

By determining clear lines of communication prior to a fire emergency, first responders and residents knew who to call and what to expect when fire did arrive outside their community. Having an informed public also was important in order to increase the efficiency of those charged with fighting the fire and keeping the public safe. This includes making detailed evacuation plans and practicing executing each evacuation plan in advance. Firewise communities were referenced as faring well on these measures.

### Wildfire Suppression Costs

There were two distinct shared perspectives in the area of wildfire suppression costs. First, many ICs stated that they thought wildfire suppression costs were going to be less in areas that were pretreated, according to Firewise guidelines. One IC explained that success of the initial attack of fire would likely increase in a Firewise Community (if the fire started in the community).

“This corresponds to a decrease in fire suppression costs and it puts firefighters back in their fire stations and that transfers into your additional initial attack successes, because they aren’t committed to an incident. So that next fire won’t escape.” – Marshall D.

“Firesafe councils, community preplanning, and generally educating the public in the WUI are also very important aspects to firefighter safety, decreasing suppression costs, and increasing the success of structure protection.” – Henry H.

The other ICs chose not to comment on this issue. Some believed it was a subject others on their wildfire attack team should address. Others said they did not have enough information or had not seen those particular data.

Across both groups, many ICs commented on the exorbitant cost of aircrafts in fighting wildfire, but did not remark about whether aircraft use might differ around Firewise Communities.

## Conclusions

The 16 Type I and Type II ICs interviewed for this project provided insight concerning the potential of the Firewise Program to alter 1) the risk to firefighter safety, 2) the ability to successfully save structures, and 3) wildfire suppression costs.

The majority of participants shared the perspective that community wildfire preparedness programs, such as Firewise, greatly increase safety for firefighters by decreasing their risk exposure. The decrease in risk results from successfully completed fire preparedness activities, including creating defensible space at the parcel and community scale, creating safety zones, opening avenues of communication among a diverse set of first responders, and informing the public. Engaging in these activities, according to interviewed ICs, also results in an increase in the likelihood of saving structures threatened by wildfires.

According to the participants, the label of the wildfire preparedness program by itself is not important compared to having participants at all scales—communities, individuals, and public land managers—complete the fire preparedness activities, such as creating defensible space, treating fuels, establishing and practicing evacuation plans, and related actions. The issue of scale is a key factor since many participants noted that, while home site treatments are important, community-scale treatments such as fuel breaks are implemented less frequently. Most importantly, the improvements to efficiency and safety depend on the actual implementation of community preparedness actions, and the completeness of these actions is seen as highly variable among Firewise and other wildfire preparedness programs.

There is little consensus regarding wildfire suppression costs. Many ICs provide useful arguments as to why fires in Firewise Communities may incur decreased costs associated with suppressing fires threatening communities when compared to wildfires involving non-Firewise Communities.

“If a community is Firewise, often the complexity of the fire decreases. For example, maybe [we] only need a Type II team instead of Type I team.” – Mike P.

In other words, in a Firewise Community, with many of the wildfire preparedness actions completed, fewer resources (i.e., money, personnel) may be required to successfully engage the fire.

The findings of this project point to further questions and research needs:

1. Are there differences in the extent to which alternative wildfire preparedness options available to communities lead to complete and multi-scaled actions including defensible space, fuel breaks, safety zones, and open avenues of communication? Do the many wildfire preparedness options yield differences in response success and costs?
2. Do ICs need better post-fire information on costs incurred? Would better availability of cost data improve the ability of ICs to make more informed decisions about tradeoffs associated with the use of resources?
3. How is the effectiveness of community wildfire preparedness associated with different development scenarios? Do ICs or others have insights regarding the potential benefits of land use planning (e.g., housing density, clustering, and other aspects of community layout) that could be used to as guidelines for future development in areas of high fire risk? Could treatments be incorporated into county comprehensive plans and/or other ordinances?
4. What are the barriers to comprehensive community-level wildfire preparedness? To what extent is lack of implementation due to a lack of awareness of available resources and importance versus a lack of capacity and funding?
5. Are we doing enough to publicize examples of communities that are “doing it right”? Are there good case studies of communities that have successfully implemented comprehensive wildfire preparedness actions?
6. What policies or efforts could affect the consistency of wildfire preparedness activities within communities? What are options for increasing community-wide participation? Is greater regulation or enforcement of preparedness activities necessary to ensure firefighter safety and at what level (e.g., local, state, or federal)? Would risk to safety and property be significantly reduced if implementation was required by law or as a condition for federal support?

Even without future research, it is clear that communities in the WUI would be well-served by engaging in a number of wildfire preparedness activities. Successful completion and maintenance of these activities may well increase firefighter safety as well as increase the likelihood of effective structure protection when a wildfire threatens a community. Preparedness actions also will increase the effectiveness of wildland firefighters, though it is unclear at present if suppression costs also will be reduced.

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## **About Headwaters Economics**

Headwaters Economics is an independent, nonprofit research whose mission is to improve community development and land management decisions in the West, <http://headwaterseconomics.org/>.



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