



# User Guide for Communities

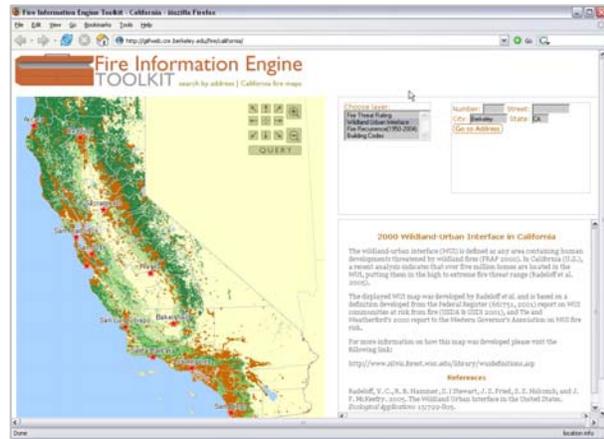
Developed by the Center for Fire Research and Outreach  
May 2008



## ABOUT THE FIRE INFORMATION ENGINE TOOLKIT

Wildfires affect communities around the world. The Fire Information Engine Toolkit was developed by the Center for Fire Research and Outreach in the College of Natural Resources at the University of California, Berkeley to provide Internet-available, interactive, science-based tools to help homeowners, decision-makers, and researchers better understand where wildfires occur and how to protect homes and neighborhoods, as well as get up-to-the-minute wildfire news. The Toolkit can be found online at <http://firecenter.berkeley.edu/toolkit>.

Some of the specific tools available through the Toolkit website include:



While many of these tools are self-explanatory, this guide was developed to provide a more detailed explanation of the Community Wildfire Hazard Assessment and Ranking (CWHAR). The following pages provide instructions for downloading and using the CWHAR form from:

<http://firecenter.berkeley.edu/toolkit/communityassessment.html>

Questions can be directed to [firecenter@nature.berkeley.edu](mailto:firecenter@nature.berkeley.edu) or 510-643-0409.

## STEPS IN COMPLETING A COMMUNITY ASSESSMENT

1. Download the latest version of the .pdf assessment form from (because this assessment incorporates the latest science, it is best to get the most up-to-date version):

<http://firecenter.berkeley.edu/toolkit/communityassessment.html>

A copy of this document is provided on page 4.

2. Complete hazard assessment for each parcel in a community. This can be done by an individual or in teams at a rate of approximately 30 parcels/day once trained.
  - a. A field guide for completing the assessment begins on page 5.
  - b. An example of a flier that can be handed out to community members in advance of an assessment is provided in Appendix A on page 14.
  - c. Frequently Asked Questions from homeowners and decision-makers are answered in Appendix B, beginning on page 15.
3. Rate answers to questions based on the hazard level given for each “yes” answer on the assessment form (for example, answering yes to question R1 yields a “high” hazard rating).
4. If desired, calculate an overall per parcel score for each parcel. Some guidelines are provided on page 12.
5. Communicate results with homeowners and other stakeholders using one or a combination of the several approaches outlined beginning on page 13.

## USE AGREEMENT

While the Toolkit is freely available, neither the names of the Center for Fire Research and Outreach, the College of Natural Resources, and the University of California, nor the names of its contributors may be used to endorse or promote products derived from these products without specific prior written permission.

This product is provided by the copyright holders and contributors "as is" and any express or implied warranties, including, but not limited to, the implied warranties of merchantability and fitness for a particular purpose are disclaimed. In no event shall the copyright owner or contributors be liable for any direct, indirect, incidental, special, exemplary, or consequential damages however caused (including, but not limited to, procurement of substitute good or services; loss of use, data, or profits; or business interruption) and on any theory of liability, whether in contract, strict liability, or tort (including negligence or otherwise) arising in any way out of the use of these products, even if advised of the possibility of such damage.

## COMMUNITY WILDFIRE HAZARD ASSESSMENT

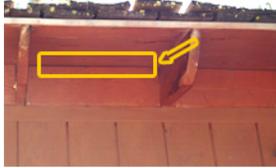
Fire Information Engine Toolkit - Community Wildfire Hazard Assessment Field Form				
A1	Address:			
A2	Number of structures on property:	A3 Number of sides surveyed: 1 / 2 / 3 / 4		
A4	Distance(ft) to neighboring structure:			
Roofing and Eaves				
R1	Is the roof covering something other than Class A fire rated?	Yes (High)	No	NA/UA
R2	Does the roof have any unstopped openings at the edge or ridge (e.g., open tiles)?	Yes (High)	No	NA/UA
R3	Is the roof in poor condition (e.g., broken pieces, open areas, badly curled shingles)?	Yes (High)	No	NA/UA
R4	Is there vegetation or other combustible debris in the roof valleys?	Yes (Med.)	No	NA/UA
R5	Does the roof have a 'complex design' where debris and embers can accumulate and possibly ignite adjacent combustible siding or other vulnerable components?	Yes (Med.)	No	NA/UA
R6	Does the roof have open eaves (i.e., exposed rafter tails)? (If no, go to R7.)	Yes	No	NA/UA
R6a	If yes, do gaps greater than ~1/8" exist between the blocking and rafters?	Yes (High)	No	NA/UA
R6b	Are there vent holes in the between-rafter blocking?	Yes (High)	No	NA/UA
R7	Does the roof have boxed-in (soffit) eaves? (If no, go to R8.)	Yes	No	NA/UA
R7a	Is there a vent in the soffit?	Yes (High)	No	NA/UA
R7b	Is the soffit material combustible?	Yes (High)	No	NA/UA
R8	Is the chimney opening unscreened?	Yes (Med.)	No	NA/UA
R9	Is there debris in the roof gutters?	Yes (Med.)	No	NA/UA
R10	Is there any vegetation near the roof or roof edge (overhanging, underneath, or adjacent to)?	Yes (High)	No	NA/UA
Windows				
W1	Does the home have single pane windows?	Yes (Med.)	No	NA/UA
W2	Is the window or window frame in poor condition (e.g., window can't be closed, frame is warped)?	Yes (Med.)	No	NA/UA
W3	Are there any man-made fuels within 3' of the windows?	Yes (Med.)	No	NA/UA
W4	Is there any vegetation within 6' of the windows?	Yes (Med.)	No	NA/UA
Decking				
D1	Does the home have a deck or an exterior staircase? (If no, go to next section.)	Yes (Med.)	No	NA/UA
D1a	Is there an open-frame deck attached to the house (e.g., a deck with boards with gaps between them)?	Yes (Med.)	No	NA/UA
D1b	Is it difficult to access/maintain the area under the deck (will it be easy to keep the area clean of debris)?	Yes (Med.)	No	NA/UA
D1c	Are there any man-made fuels under or within 3' of the deck?	Yes (Med.)	No	NA/UA
D1d	Is there any vegetation under or within 3' of the deck?	Yes (Med.)	No	NA/UA
Garage				
G1	Is there an attached garage or one close (within 30') to the home? (If no, go to next section.)	Yes (Med.)	No	NA/UA
G2	Does the garage have a vehicle access door? (If no, go to next section.)	Yes (Med.)	No	NA/UA
G3	Are there any gaps under or around garage doors?	Yes (Med.)	No	NA/UA
Siding				
S1	Is the siding combustible (wood, vinyl, or wood plastic composite material)?	Yes (High)	No	NA/UA
S2	Are there any other gaps (openings) located in the building envelope?	Yes (Med.)	No	NA/UA
S3	Is the trim combustible?	Yes (High)	No	NA/UA
S4	Is there a combustible fence or gate attached to the structure?	Yes (Med.)	No	NA/UA
S5	Are there any man-made fuels within 6' of the siding?	Yes (Med.)	No	NA/UA
S6	Is there any vegetation within 6' of the siding?	Yes (Med.)	No	NA/UA
S7	Are there unscreened vents or screened vents with a mesh size >1/4" (e.g., crawl space, room containing gas water heater)?	Yes (Med.)	No	NA/UA
Suppression				
SU1	Is the address less than 3" tall or otherwise unreadable?	Yes (Med.)	No	NA/UA
SU2	Is the driveway less than 12' wide or obstructed?	Yes (Med.)	No	NA/UA

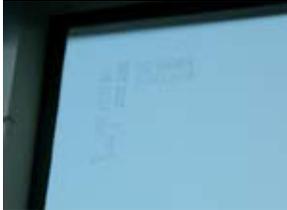
### To rate this form:

- For all "Yes" answers, use the corresponding rating in parentheses. Answers are rated High or Medium and correspond to the level of hazard. (Note that questions R6 and R7 do not need to be rated.)
- All "No" answers receive a Low hazard rating. Please note that for many of the questions, however, maintenance is required to ensure a No answer.
- "NA/UA" (not-applicable or un-answerable) answers often result from not being able to survey all sides of a home -- in this case, an effort should be made to communicate the importance of the question with the homeowner.

## FIELD GUIDE FOR COMMUNITY WILDFIRE HAZARD ASSESSMENT AND RANKING

Roofing and Eaves		Examples
<p>Roof and edge components (such as gutters) are arguably the most important part of a home in terms of making it safer from wildfires. While a home may only be subjected to the flaming front of the wildfire for a few minutes, the roof (and the rest of the house) could be subjected to airborne glowing or burning embers for a few hours as the wildfire approaches and burns through an area.</p>		
R1	<p>Is the roof covering something other than Class A fire rated?</p> <p>Roof coverings can obtain a Class A rating based on the covering alone (called a stand-alone Class A) or based on the covering and underlying materials that provide additional fire protection (called an assembly-rated Class A). Common stand alone Class A roof coverings include: asphalt composition ('3-tab') shingles, clay tiles, concrete tiles, and slate.</p> <p>Common assembly rated Class A coverings include: aluminum (metal) roofs; fire-retardant treated wood shakes (with Class B fire rating, approved by the California Office of the State Fire Marshal as a result of passing the required natural weathering test); and some recycled composite materials.</p> <p>It can sometimes be difficult to tell whether a roof is Class A or not. Even a homeowner may not know the classification of their own roof. In this case, the manufacturer of the roof covering can tell them. If you don't know the name of the manufacturer, you may have to consult with a professional roofer.</p>	<p>Class A roof covering:</p> 
R2	<p>Does the roof have any unstopped openings at the edge or ridge (e.g., open tiles)?</p> <p>Wind-borne debris can accumulate under a clay tile barrel roof covering or other openings at the edge of the roof. If accessible, birds can also build nests in the space between the roof sheathing and the bottom of the tiles, also providing combustible debris (fine fuels), that are easily ignited if embers are driven into the openings between the roof covering and sheathing.</p>	<p>Bird-stopped tile:</p> 
R3	<p>Is the roof in poor condition (e.g., broken pieces, open areas, badly curled shingles)?</p> <p>An older roof may lose some of its fire resistance characteristics with time. It is up to a homeowner to make sure their roof covering is inspected and maintained, and replaced when needed. When new, this asphalt composition roof covering has a Class A rating. The older, weathered roof may not provide the same protection from wildfire, and may also be more vulnerable to water leaks.</p>	<p>Poor condition roof:</p> 
R4	<p>Is there vegetative fine fuel, or other combustible debris in the roof valleys?</p> <p>Another critical inspection and maintenance item for a roof is the removal debris (needles, leaves, and other combustible material) from areas where they naturally accumulate, and in gutters. Ignition of debris in these locations can ignite other roof components besides the roof covering - components that don't perform as well as a Class A roof. This issue is even more critical if the roof is something other than Class A.</p>	<p>Debris in roof valley:</p> 

R5	Does the roof have a 'complex design' where debris and embers can accumulate and possibly ignite adjacent combustible siding or other more vulnerable components?	Complex roof:
	The complexity of a roof is determined by how many levels and wall/roof intersections there are. A complex roof may include features like dormers and included windows, and roof to exterior wall intersections. The more complex a roof design, the more likely it is to have debris collection points, and therefore the need to ensure that it is debris free.	
R6	Does the roof have open eaves (i.e., exposed rafter tails)? (If no, go to R7.)	Open eaves:
	The eave occurs at the edge of the roof. Eaves usually project beyond the side of the building. Open, or unboxed, eaves can make a home more vulnerable to embers.	
R6a	If yes, do gaps greater than ~1/8" exist between the blocking and rafters?	Gap in blocking:
	With an open eave construction, blocking is installed between the rafters. Gaps greater than 1/8" can provide a location for embers to accumulate, and potentially gain access to the attic.	
R6b	Are there vent holes in the between-rafter blocking?	Vent holes in blocking:
	In open eave construction, blocking is installed between the rafters. Vent holes in the blocking (provided to allow air entry for drying and cooling in the attic space) also provides an entry point for embers to enter the attic.	
R7	Does the roof have boxed-in (soffit) eaves? (If no, go to R8.)	Boxed eave:
	The eave occurs at the edge of a roof. Eaves usually project beyond the side of the building. A boxed, or soffit, eave is enclosed.	
R7a	Is there a vent in the soffit?	Soffit vents:
	Entry of burning embers has been problematic for attic vents in general, and soffit vents in particular. There are several types of soffit vents, including the strip vents seen in the photo on the right, and the one in the photo accompanying question R7b.	

R7b	Is the soffit material combustible?	Combustible soffit:
	If the soffit material is combustible, it is even more important that any vent screening is well maintained and that combustible vegetation is cleared from around the soffit area.	
R8	Is the chimney opening unscreened?	Screened chimney:
	In the case of chimney screening, it is more of a concern that embers not be able to leave the chimney (and spread fire to wildland areas), than that embers enter the home through the chimney in the event of a wildfire.	
R9	Is there debris in the roof gutters?	Gutter debris:
	Combustible debris can build up in gutters, especially from nearby or overhanging trees. Second story gutters are even more problematic, since they are seldom cleaned on a regular basis. If ignited, combustible debris in the gutter will expose the edge of the roof covering, and may be able to more easily enter the attic. Even screened gutters must be routinely maintained.	
R10	Is there any vegetation near the roof or roof edge (overhanging, underneath, or adjacent to)?	Vegetation near roof:
	Not all plants are strictly 'good' or 'bad'. The size, location, structure, and condition of vegetation determines its risk to a home. Plants or trees located closer to a home are will pose a greater risk. Some trees farther away can sometimes serve as buffers against radiant and convective energy, and fire brands (embers). However, any trees or other vegetation within 6' of the roof should be pruned, regularly watered (preferably by incorporating into a drip irrigation system), and any dead material removed, including debris at the soil level.	
<b>Windows</b>		<b>Examples</b>
If the glass in a window breaks during a wildfire, the fire can easily enter the home. Similarly, if a window frame ignites, it is possible that fire could burn through the frame material, and ignite other combustible materials inside the home.		
W1	Does the home have single pane windows?	Tempered window:
	An older home will likely have single pane windows. However, single pane windows can also be tempered, which affords even better protection than windows with dual pane annealed glass. Tempered glass is stronger than 'regular' annealed glass, and will provide additional protection during a wildfire (but your window will have to be closed in order to benefit from the tempered glass). Building codes already require tempered glass in some locations (for safety reasons), so some newer windows may already have tempered glass. For example, in newer construction, windows that come within 18 inches of the floor must have tempered glass. Sliding glass doors, and other doors with windows, and windows immediately adjacent to doors, will have tempered glass. A small etched label will be present in the corner of a piece of glass in a window if it is tempered. Since it is small, it may be too small to read.	 <p>ABC GLASS TEMPERED SAFETY GLASS 16 CFR 1201 CAT.II ANSI 1984 SGCC 1494 3/16 U</p> 

W2	Is the window or window frame in poor condition (e.g., window can't be closed, frame is warped)?	Warped frame:
	Burning embers could land on a window sill, or as is shown in this photo, the sill at an entry door. The embers could then ignite debris, or ignite the decayed trim. Decayed wood (shown in this photo) ignites as a lower temperature than that required for sound wood, so is more vulnerable to an ember exposure.	
W3	Are there any man-made fuels within 3' of the windows?	Man-made fuels:
	Man-made fuels include construction materials, newspaper or trash, coir or wood doormats, arbor or trellis, propane tanks, combustible lawn furniture, firewood pile, gas-powered vehicle, carport or detached garage, gas-powered lawn tools, flammable bins or cans, outbuildings, and other structures.	
W4	Is there any vegetation within 6' of the windows?	Vegetation near window:
	Not all plants are strictly 'good' or 'bad'. The size, location, structure, and condition of vegetation determine its risk to a home. Plants closer to a home are a greater risk to a structure. Any plants near a house should be pruned, regularly watered (preferably by being on a drip irrigation system) and any dead material removed, including at vegetative debris at the soil level. Along with these precautions, don't use bark or other combustible natural materials as plant bedding. Embers can land in this, smolder, and later go into flaming combustion. In addition, the smaller the better, especially close to combustible siding, under a window, or inside a corner. Better yet, consider using noncombustible ground cover next to combustible siding or near windows, regardless of siding type.	
<b>Decking</b>		<b>Examples</b>
In using the term 'decks', we are including all types of horizontal walkways, including landings, porches, and patios directly connected or close to a house. Decks are described by the surface that you walk on (called the deck covering) and the area under the deck.		
D1	Does the home have a deck or an exterior staircase? (If no, go to next section.)	Decking:
	By decks, we are including all types of horizontal walkways, including landings, porches, and patios that are directly connected or very close to a house. If ignited, a deck can provide a flame impingement exposure to the adjacent siding and windows.	
D1a	Is there an open-frame deck attached to the house (e.g., a deck with boards with gaps between them)?	Open-frame deck:
	There are two basic kinds of decks – those that use deck boards as the deck covering, and those that have a solid surface deck covering. The deck boards are almost always made from combustible materials (wood or one of the wood fibers – plastic composite or 100% plastic deck board products), although metal deck boards are now available. Solid surface deck coverings are usually made from noncombustible materials, and include light-weight concrete or stone.	

D1b	Is it difficult to access/maintain the area under the deck (will it be easy to keep the area clean of debris)?	Under deck access:
	Decks that are close to the ground or covered with trellis or otherwise difficult to access underneath can allow for the build up of debris. In addition, fascia boards are often used as decorative edges on decks, but often cause decay to develop between the fascia and deck. This deck corner ignited in a decayed area at the deck corner:	
D1c	Are there any man-made fuels under or within 3' of the deck?	Man-made fuels:
	Man-made fuels include construction materials, newspaper or trash, coir or wood doormats, arbor or trellis, propane tanks, combustible lawn furniture, firewood pile, gas-powered vehicle, carport or detached garage, gas-powered lawn tools, flammable bins or cans, outbuildings, and other structures.	
D1d	Is there any vegetation under or within 3' of the deck?	Vegetation:
	Not all plants are 'good' or 'bad'. The size, location, structure, and condition of vegetation determine its risk to a home. Plants closer to a home are a greater risk to a structure. Any plants near a house should be pruned, regularly watered (preferably dripped) and any dead material removed, including at the soil level. Along with these precautions, don't use bark or other combustible natural materials as plant bedding. Embers can land in this, smolder, and later go into flaming combustion. In addition, the smaller the better, especially close to combustible siding, under a window, or inside a corner. Better yet, consider using ground cover wherever possible next to combustible siding or near windows for any type of siding.	
<b>Garage</b>		<b>Examples</b>
When houses are surveyed for wildfire vulnerabilities, quite often the garage is not considered even though it could be the most hazardous aspect of the house.		
G1	Is there an attached garage or one close (within 30') to the home? (If no, go to next section.)	Garage:
		
G2	Does the garage have a vehicle access door? (If no, go to next section.)	Non-closing garage:
	If the garage has a vehicle access door, the door should be closed to ensure that embers and flames do not enter. Garage (vehicle access) doors are typically 'leaky' to embers. Combustible materials should not be stored in the garage; however, because combustible materials are often stored in the garage, it is even more important to ensure that it is resistant to embers and ignition.	

G3	Are there any gaps under or around garage doors?	Gaps around garage door:
	Gaps at the top, bottom and edges of doors can let glowing embers enter, and we all know that garages are full of combustible materials. Garages can have vents at various locations, especially if they contain gas furnaces or hot water heaters (for make up air). These vents are also easy entry points for embers. Vents that resist intrusion of embers and flame have been designed and are becoming commercially available. If the vents in garage doors can't be eliminated (for safety reasons), the newer vents could be used in these, and other, locations.	
<b>Siding</b>		<b>Examples</b>
Siding (cladding) is an important esthetic attribute for houses, but it also has a key role as part of a protective enclosure to help shed rain, while permitting excessive vapor to move through and out of the house.		
S1	Is the siding combustible (untreated wood, vinyl, or wood or wood-plastic composite material)?	Combustible siding and interlocking lap:
	Combustible siding provides a rapid vertical path for flames to reach vulnerable portions of a house such as the eaves or windows. If the siding is combustible, it should have interlocking lap construction and should be carefully maintained.	
S2	Are there any other gaps (openings) located in the building envelope?	Building gaps:
	Other gaps may include, for example, reentrant corners (an interior corner).	
S3	Is the trim combustible?	Combustible trim:
	Combustible trim materials can compromise noncombustible siding.	
S4	Is there a combustible fence or gate attached to the structure?	Non-combustible gate:
	There are several reasons for fences to be of concern. For one, a combustible fence or gate attached to a structure is a threat if it catches on fire, and can act as a wick, bringing fire the house. The fire can arise in a number of ways. One is that debris (leaves, trash, etc) often collect at the bottom.	

S5	Are there any man-made fuels within 6' of the siding?	Man-made fuels:
	Man-made fuels include construction materials, newspaper or trash, coir or wood doormats, arbor or trellis, propane tanks, combustible lawn furniture, firewood pile, gas-powered vehicle, carport or detached garage, gas-powered lawn tools, flammable bins or cans, outbuildings, and other structures.	
S6	Is there any vegetation within 6' of the siding?	Vegetation:
	Not all plants are 'good' or 'bad'. The size, location, structure, and condition of vegetation determine its risk to a home. Plants closer to a home are a greater risk to a structure. Any plants near a house should be pruned, regularly watered (preferably using drip irrigation system) and any dead material removed, including at the soil level. Along with these precautions, we don't recommend using bark or other combustible natural materials as plant bedding. Embers can land in this, smolder, and later go into flaming combustion. In addition, the smaller the better, especially close to combustible siding, under a window, or inside a corner. Better yet, consider using ground cover wherever possible next to combustible siding or near windows for any type of siding.	
S7	Are there unscreened vents or screened vents with a mesh size >1/4" (e.g., crawl space, room containing gas water heater)?	Vents:
	Evidence from recent wildfires has shown that vents are an easy entry point for burning embers and (not surprising) flames. Most vents incorporate a screen at the inlet. Most building codes stipulate a minimum mesh size of 1/4-inch to minimize plugging of vent holes with accompanying reduction in air movement. Smaller mesh screen is easier to plug up, whether by air borne debris, or as shown in the photograph below, being painted over during routine painting.	
<b>Suppression</b>		<b>Examples</b>
There are many other suppression components that could be assessed, such as road width, ingress and egress, and fire hydrant locations. However, because this assessment approach is focused on things that individuals can do to reduce fire hazards, only factors that are under homeowner control are considered here.		
SU1	Is the address less than 3" tall or otherwise unreadable?	Address visibility:
	The address of the house should be easy to see from the street -- at least 3" tall and possible to see at night (reflective, lit, etc.).	
SU2	Is the driveway less than 12' wide or obstructed?	-
	A fire truck needs at least 12' to be able to access a road or driveway. Ensure that emergency responders can reach a house by clearing obstructions.	

## CREATING A COMMUNITY-WIDE RANKING SYSTEM

There are several different ways that a community-wide ranking can be calculated, and which one you use depends on your goals for completing your assessment.

Some general approaches include:

1. Give “worst case scenario” – e.g., one high makes a high rating
2. Develop appropriate cut-offs – e.g.:
  - 3 or more highs = high
  - 0-1 highs = medium
  - everybody else gets a low
3. Create relative ranking across a community
  - rank by the largest to smallest number of highs and break into thirds so that 1/3 of community is high, 1/3 is medium, etc.

From our perspective, the first option gives the most accurate hazard rating because of the “weakest link” principle. This means that if, for example, a home has a vulnerable wood roof, it may not matter whether the siding is non-combustible because the roof material already poses such a severe hazard. However, some newer communities may not have any wood roofs due to zoning restrictions, and may choose instead, to go with a scheme as described in number two above.

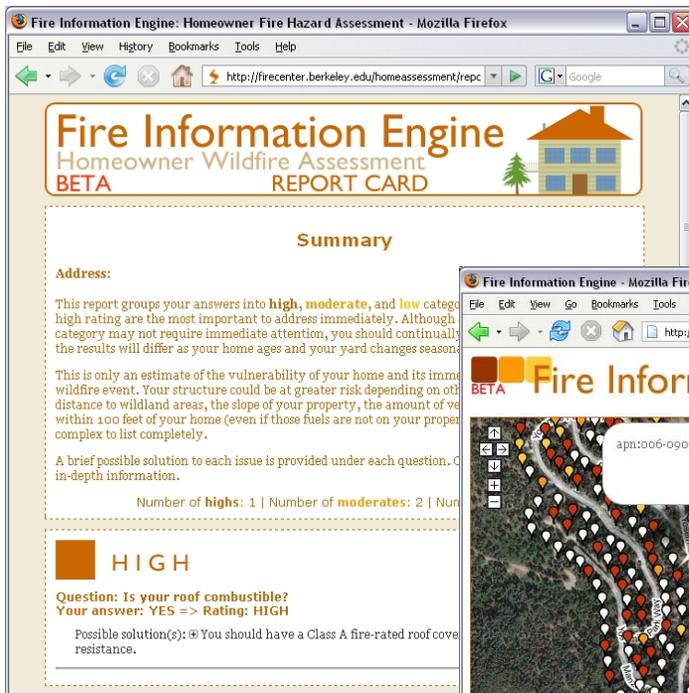
Determining the best overall rating system to use depends on the goals of your assessment. For example, if unscreened vents are a particular problem in a neighborhood or community, it could be that any house with unscreened or improperly screened vents would receive a high rating.

## COMMUNICATING RESULTS

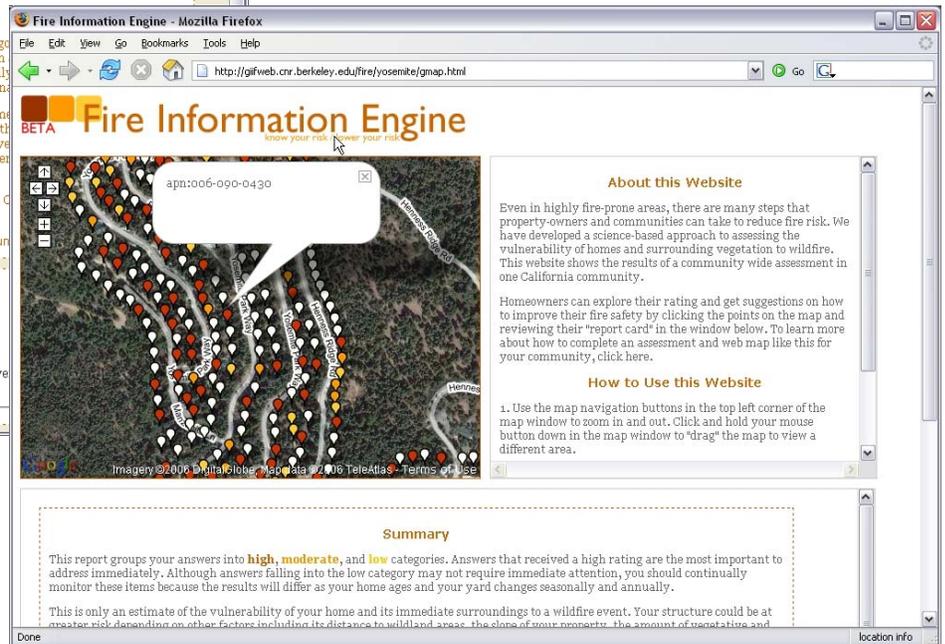
Communicating the results of the Community Wildfire Hazard Assessment and Ranking is one of the most important components of the project. Our recommended communication tools are made up of two main components:

1. A “report card” that summarizes the hazard assessment results for each parcel, and
2. A web-based mapping application (webGIS) interface that allows users to explore both their report card and the results of the assessment throughout their community. WebGIS is particularly useful in this context because it readily portrays the spatial configuration of hazards in a community.

The webGIS interface below shows the results of an assessment of the community of Yosemite West, CA, located near Yosemite National Park. Because this is a remote community, in addition to developing the webGIS that many users were able to access via a dial-up modem, we also mailed copies of the “report card” to all community members – something that could easily be done in any community.



This type of webGIS system can also be created using ESRI’s ArcIMS product and many types of open source tools, though this type of effort would require specialized knowledge by a trained technician.



## APPENDIX A: SAMPLE NOTICE OF COMMUNITY FIRE HAZARD ASSESSMENT

When completing a community-wide fire hazard assessment, you may wish to provide prior notice to community members, or have an informational sheet on hand. A sample of this type of informational bulletin is provided below:

Even in highly fire-prone areas, there are steps that home-owners and communities can take to reduce fire risk. However, identifying the fire hazards for a specific property or neighborhood can be difficult because the general public often does not have access to relevant information. The **FIRE INFORMATION ENGINE TOOLKIT Community Wildfire Hazard Assessment** allows property-owners and communities to better understand fire hazards at a parcel level through the use of an intuitive, interactive Internet mapping application.

To complete this assessment, we will be conducting street-level surveys of individual parcels during a two-week period in June – **we will not be going onto private property** unless a homeowner is interested in a full home assessment.

Hand-held GPS units will be used to capture location information, measure distances, and record data. Each assessment should take around 20 minutes. The evaluations will consider site fuel hazards and structural hazards. Site fuel hazards are things like trees overhanging a roof, dense shrubs next to windows, and large wood piles stored under a combustible deck. Examples of structural hazards are wood roofs, unscreened vents, and large gaps under a garage door.

All fire hazard information will be made available through a web-based Geographic Information System (webGIS). Home-owners will be able to identify the hazards for their parcel, understand how it was determined and get more information on how to make improvements. To learn more about this project please visit our website at \_\_\_\_\_.

If you have any questions, please feel free to visit us on the web at the address listed below, send an email to \_\_\_\_\_, or call us at \_\_\_\_\_.

## APPENDIX B: FREQUENTLY ASKED QUESTIONS

*Questions asked by homeowners:*

### **1. How will this assessment affect our insurance rates?**

This assessment is not targeted at identifying the potential loss in value of a home. It is instead a survey based on the latest science and focused on helping homeowners to identify and mitigate parts of their homes and yards that are vulnerable to wildfire damage. Our goal is to provide homeowners with the best possible information about preventing losses in the event of a wildland fire. So, while there is no definitive answer to this question because insurance policy requirements differ from company to company, in general, anything that you can do to mitigate potential damage to your property is going to be seen as a positive by most insurance companies. In addition, most insurance companies already have their own proprietary method for assessing fire risk.

### **2. How will this assessment affect home values?**

Again, this assessment is not targeted at identifying the value of a home, it is a tool for identifying components of a home that may put an owner at risk in the event of a wildland fire. California is leading the way in working with homeowners and communities to reduce potential losses from wildland fires, so there is little data on how this type of assessment would affect home values. However, Colorado Springs, Colorado, completed a similar survey, and over a period of several years found that homeowners that mitigated vulnerable components of their property were generally rewarded with increased property values. In addition, they truly mitigated their risk for any potential loss in value posed by a wildland fire.

### **3. Doesn't putting this information on a website impact privacy?**

There is no easy answer to this question because when it comes to natural resource issues because they cross all boundaries, whether public or private property, state or federal lands, etc. When a fire affects a home, that home in turn can affect a neighborhood, a community, the state, and even federal services. Therefore, the condition of other properties in a community is as important a single property. By looking at a single home, and the community as a whole, it is possible to identify areas that might put your community at risk, and therefore to take steps toward reducing any potential losses. We live in a time when most homes are readily viewed on one of several popular web-based map sites, including Google Maps (<http://maps.google.com>) and Microsoft's TerraServer (<http://terraserver.microsoft.com/>) – we hope to use this technology to help homeowners and communities prevent losses from wildland fires.

### **4. Why is a parcel-based assessment important?**

Extensive research from both post-fire surveys and field experiments indicate that wildfires do not affect communities indiscriminately -- as many other natural disasters do (earthquakes, floods, landslides). There is strong evidence that a properly prepared home can withstand the most intense wildland fires in the absence of firefighting forces. On the other hand, poorly prepared homes can ignite and burn to the ground from a single ember. What this means for the homeowner is that mitigation done on the structure and its immediate surroundings may be as or even more important than fuel reduction in surrounding wildlands.

If a home is in the wildland-urban interface, there is already an underlying risk of being exposed to a wildland fire. However, there are steps that individuals can take to improve the fire safety of a home. For example, homeowners may be able to reduce hazards by removing debris from their gutters or screening attic vents. These vulnerabilities might be overlooked if fire risk were assessed based only on, for example, proximity to a wildland area.

*Questions asked by community leaders:*

**1. How is your assessment different from the Fire Hazard Severity Zone (FHSZ) map completed by, and currently being updated by, the California Department of Forestry and Fire Protection (CALFire)?**

In general, the state-wide FHSZ map is completed at coarse spatial and temporal scales, and does not include structures. This means that an area of the FHSZ map gives a more general depiction of baseline or underlying hazard – for example, the hazard posed by living in an area that has steep topography or is highly forested. However, this does not mean that there aren't things you can do to mitigate hazard on your property – indeed, if your community is in a hazard zone, it is even more important that structures are as fire safe as possible. Completing a parcel-based assessment for your community is complementary to the statewide work being completed by CALFire – the FHSZ map is useful for understanding hazards at a larger scale, and a parcel-specific assessment can help local communities to target areas for hazard reductions.

**2. How much does it cost to do a parcel-based assessment?**

There are different ways to complete a parcel-based assessment. In general, using a completely field-based assessment, meaning that the assessment is completed by trained individuals going to each property and spending approximately twenty minutes to collect all the variables, will cost less than \$10 per parcel based on our estimates. This price would likely increase if the surveys were completed by highly trained fire officials.

Some of the questions used for this assessment can also be answered using a combination of remote sensing and Geographic Information Systems (GIS). However, the level of resources, expertise, and willingness to share various datasets will vary from community to community. For example, currently available Urban Areas Imagery from the U.S. Geological Survey is available for the great Bay Area, but not for Marin County. NAIP imagery at 1 meter resolution aerial imagery is now available for California. However, analyzing this type of imagery takes a good deal of expertise that may be more costly than a field-based assessment. Some communities have also commissioned hyperspectral imaging flights that may be useful for gathering variables such as roof type – though this type of imaging shows great promise, it is still quite costly.

**3. Why is this important?**

As people increasingly move into the wildland-urban interface, at the same time that fire operations resources are being reduced, it is vital that citizens understand the risk of wildland fire and their role in reducing that risk. Pre-disaster mitigation efforts can greatly reduce during-disaster problems and post-disaster clean up. There is no doubt that large wildland fires will continue to affect communities, and helping citizens to better understand the steps that they can take in advance to reduce potential losses is a critical step in effective emergency response.