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<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>	
<p>R1 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> 
<p>R2 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 coverings 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> 
<p>R3 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> 
<p>R4 Is there vegetative fine fuels, 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> 
<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?</p> <p>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.</p>	<p>Complex roof:</p> 

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 (soffited) 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 soffited, 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 spreading fire to the wildland area) 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.	
Windows		Examples
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.	
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 at 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.	

Decking		Examples
<p>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.</p>		
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.	
Garage		Examples
<p>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.</p>		
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.	
Siding		Examples
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	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.	
Suppression		Examples
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.	