



# Wildfire

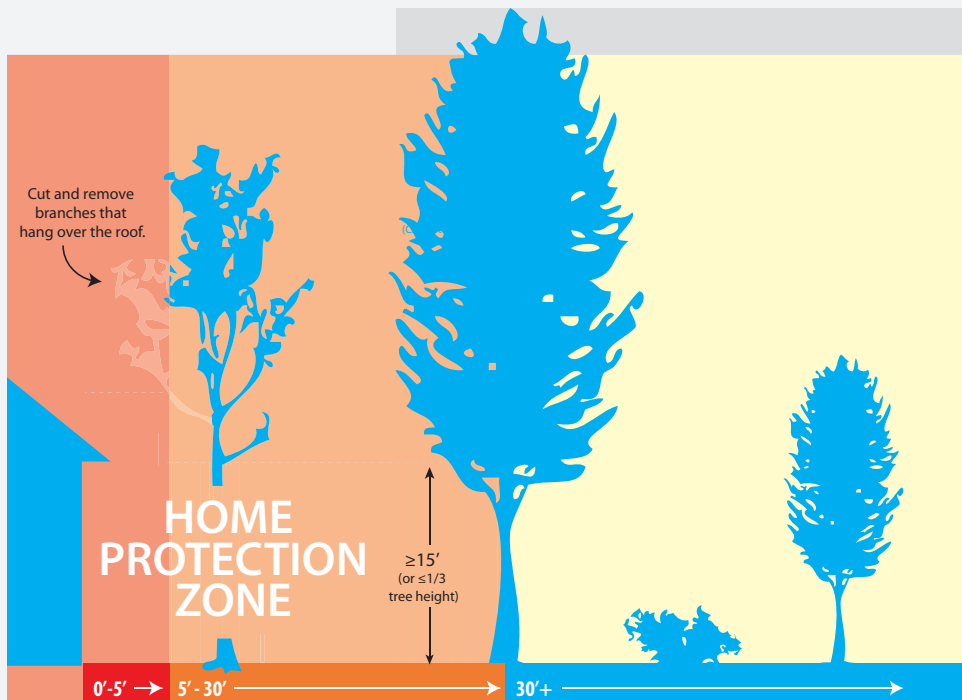
HOME ASSESSMENT &

# Checklist

What to know and what you can do to prepare.

# Assessment:

## WHAT TO KNOW TO BETTER PROTECT YOUR HOME FROM WILDFIRE



### SLOPE

The slope of the land around your home is a major consideration in assessing wildfire risk. Wildfires burn up a slope faster and more intensely than along flat ground. A steeper slope will result in a faster moving fire, with longer flame lengths.

Homes located mid- or on top of a slope (without set back) are generally more vulnerable because of increased flame length and intensity of a fire moving up the slope. Depending on the location of your home, defensible space may need to be increased.

### ZONE 1

#### 0-5 ft. around the perimeter

The objective of this zone is to

reduce the chance of wind-blown embers from a nearby fire landing near the home, igniting combustible debris or materials and exposing the home to flames. This zone is closest to the house, so it requires the most careful selection and management of vegetation and other materials.

### ZONE 2

#### 5 ft.-30 ft. around the perimeter (or to the property line)

The objective of this zone is to create and maintain a landscape that, if ignited, will not readily transmit fire to the home. Trees and shrubs in this zone should be in well spaced groupings and well maintained. Ladder fuels (i.e., shorter vegetation or shrubs under taller trees) should be avoided to prevent the fire from climbing into the crown or upper portions of trees. If these groupings were to be ignited by wind-blown embers, the resulting fire should not be able to threaten the home by a radiant heat exposure or by flames being able to touch the exterior surfaces of your home.

### ZONE 3

#### 30 ft. - 100 ft. (or to the property line)

The objective of vegetation management in this zone is to reduce the energy and speed of the wildfire. Tree and brush spacing should force the fire in the tops of the tree, brush or shrub crowns to drop to the ground. Flame length should decrease.

# Assessment:

## WHAT TO KNOW TO BETTER PROTECT YOUR HOME FROM WILDFIRE

### TREE BRANCHES OVERHANGING OR WITHIN 10 FT. OF THE ROOF

Branches overhanging your roof will result in more debris accumulation on your roof, in your gutters and near your home.

### OTHER COMBUSTIBLE ITEMS/STRUCTURES

A fire in close proximity to a propane tank can result in gas releasing at the pressure relief valve, potentially resulting in a column of flame. Flames impinging on the upper surface of the tank can result in an explosion, particularly when the fuel level is low.

If ignited, other combustible items on your property, such as a tool storage shed or gazebo, could expose your home to radiant heat and flames.

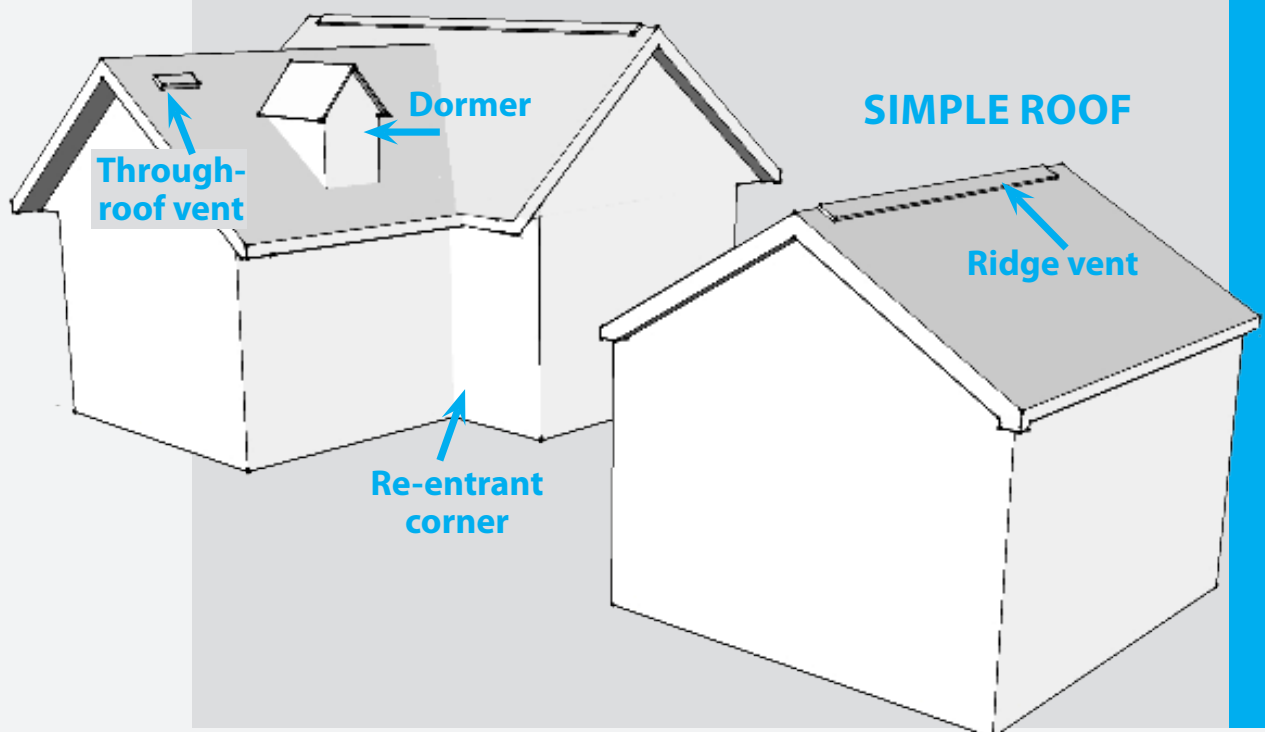
### ROOF SLOPE

Roof slope is important because it will affect the amount of debris that accumulates and will also influence the radiant exposure to the roof if near by vegetation or buildings ignite.

### ROOF MATERIAL

Your roof is a large, relatively horizontal surface where debris from trees and other vegetation can accumulate. When a wildfire is threatening your home, wind-blown embers can also land on your roof and ignite this debris, potentially putting your home at risk. Your roof must be able to resist the burning embers from the wildfire and flames from ignited debris. Roof coverings are rated as Class A, B, or C. A Class A fire-rated roof covering offers the best protection.

### COMPLEX ROOF



# Assessment:

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### ROOF DESIGN

Even with a Class A roof, locations where the roof covering meets another material can be vulnerable. Debris can accumulate at these locations, and so can wind-blown embers. It is important to inspect these locations as they are potential “weak links” on your roof (for example, wood shingle siding on a dormer next to a Class A roof covering), or areas where the Class A roof can be by-passed (for example, non-bird stopped tiles at the roof edge).

### SKYLIGHTS

During a wildfire, skylights could be an entry point for wind-blown embers and flames if the glass or plexiglass opening were to fail. Operable skylights would also be vulnerable if left open when a wildfire threatens. Debris accumulation on top of and around skylights will be greater on flat or lower-sloped roofs. Dome-type skylights use an acrylic glass product and flat-type skylights use tempered or other specialized glass. Performance differences between acrylic and glass would make the flat-type skylights less vulnerable to wildfire exposures. All skylights incorporate metal flashing at the base, where it integrates with the roof.

### VENTS

Most homes have enclosed spaces that are vented, including attics and crawl spaces. Other openings in an exterior wall include those for dryer vents and vents to supply make-up air for rooms where gas appliances are operating (e.g., furnace and/or water heater). Wind-blown embers that enter the attic or other enclosed spaces can ignite combustible materials that have either accumulated there or have been stored there.

Vents on vertical walls or surfaces have been shown to be vulnerable to the entry of embers. For the attic, these vents would include gable end vents, through-roof vents with a dormer face and under-eave vents used in open-eave construction. Crawl space vents (also called foundation vents), dryer vents and vents to supply make-up air would also be vulnerable to the entry of embers.

Some attic and foundation vents that have been specifically designed to resist the entry of embers and flames are commercially available. Your local fire or building department would know if any of these vents have been approved for use in your area.

Consider using closure devices. There are commercially available options or you can make your own and store in a place where they can be easily retrieved and installed when wildfire threatens. The commercial devices should be deactivated, or home-made covers removed, after the wildfire passes. Some gable end and crawl space vents have been designed to resist the entry of embers and flames - check with your local fire or building official to find out if any have been approved for use in your area.

### EXTERIOR WALL - FOUNDATION

There are three basic types of foundations: concrete slab-on-grade, raised floor (i.e., one having a crawl space) and pier (or “post”) and beam (unless a perimeter skirting has been installed, this one will be open underneath). An “open underneath” foundation will be vulnerable if combustible materials or vegetation and debris has accumulated or has been stored there. Raised floor and slab-on-grade foundations can be vulnerable if the distance from

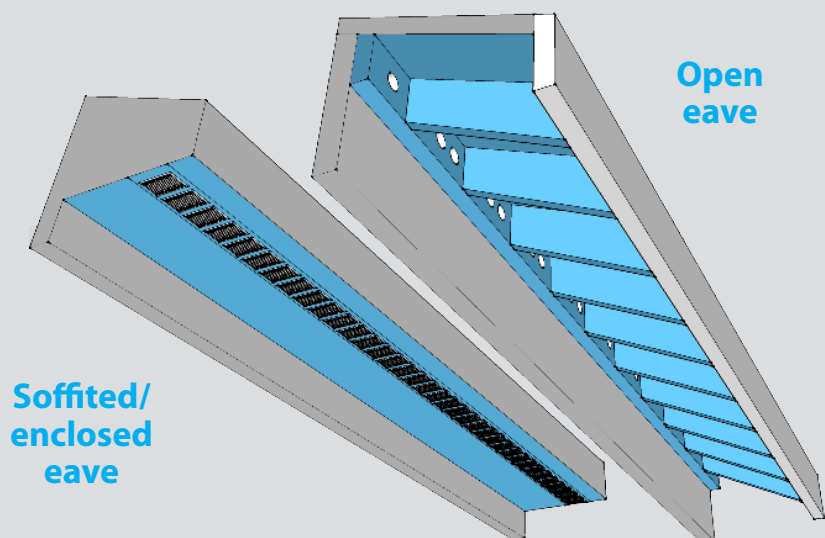
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the ground to the siding is much less than 6 in., or, in the case of a crawl space, ember entry occurs through a foundation vent. Combustible siding will be more vulnerable if the ground-to-siding clearance is less than 6 in. if embers can accumulate at the base of the wall. The use of combustible mulch and woody vegetation will make this area even more susceptible to ignition from wind-blown embers. Untreated wood shingle and vinyl siding are relatively more vulnerable to flame contact and radiant heat exposures that would result from an ember ignition of near-home debris or other combustible items.

### UNDER-EAVE CONSTRUCTION

Under-eave construction consists of either “open-eave framing” or is enclosed with a “soffit” material (also called “boxing-in”). Vent openings are often found in this area. Vents in open-eave construction can be vulnerable to the entry of embers, and are more vulnerable to ember entry than vents located in a soffit-ed eave. Open-eave construction can also trap heat if subjected to flames, resulting in more rapid ignition of combustible construction materials and lateral flame spread. Flames reaching the under-eave area would be more likely if combustible vegetation and mulch were included in the 0-5 ft. “near-home” zone and similarly, if combustible siding were used.



### EXTERIOR WALL - MATERIAL

Siding is vulnerable when it ignites and flames or embers get into the cavity behind it, or if the flames spread vertically, impinging on windows and the eave. With inadequate ground-to-siding clearance, accumulated embers can ignite combustible siding directly. Ignition is more likely if combustible siding is exposed to a direct flame contact or extended radiant heat exposure. The chance of direct flame contact is greater if you haven't created and maintained a 0-5 ft. noncombustible zone around your home. An extended radiant heat exposure is possible if nearby combustible materials (for example, a firewood pile) or a nearby building ignite. Untreated wood shingle and vinyl siding are relatively more vulnerable to flame contact and

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radiant heat exposures.

### **RE-ENTRANT (INTERIOR) CORNER**

An interior corner that is constructed using combustible siding and trim will be more vulnerable to flames. If ignited, flames will spread vertically more quickly.

### **WALL VENTS AND OPENINGS**

Vents located on a vertical wall, including crawl space vents (also called foundation vents), gable end vents, and other openings such as a dryer vent, will be very vulnerable to the entry of wind-blown embers.

### **WINDOWS**

An open window is the most vulnerable window when a wildfire threatens - as embers can easily enter the home. Closed windows are vulnerable to radiant heat and direct flame contact exposures. If the frame ignites or melts, the fire may burn into the stud cavity and into the living space of the home. If glass breaks, embers and flame can easily enter the home. Of these, the glass is the most vulnerable component.

### **GARAGE (ATTACHED OR DETACHED)**

Most people store combustible materials in their garage. Garage (vehicle access) doors, particularly on older garages, can have small gaps at the top, sides and bottom that can allow embers to enter. These embers can ignite combustible materials stored in the garage.

### **DECK**

Your deck is a vulnerable part of your home when it ignites. A burning deck will expose the building to radiant heat and flames, potentially igniting combustible siding and breaking glass in windows and doors. The materials used to build the deck, combustible materials you store under your deck, vegetation around it and the location of your deck relative to the slope

around your house all contribute to how vulnerable your deck will be. Debris that accumulates between deck boards and at deck-to-wall intersections can be ignited by embers. Rotted wood deck boards and structural support members are more easily ignited when they are dry.

### **FENCES**

If ignited, combustible lattice or nominal 1-in. thick slat fences that attach directly to your home can allow the fire to burn directly to it. This would defeat any defensible space work you have done in the area next to it.



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# Checklist:

## MITIGATION ACTIONS OR RETROFIT OPTIONS

- \$ < \$500
- \$\$ \$500 - \$1,000
- \$\$\$ \$1,000 - \$5,000
- \$\$\$\$ > \$5,000

### SLOPE

**Is your home located in the middle of a steep slope or at the top of a slope with minimal setback?**

- If yes, increase vegetation management in the 5 ft. to 100 ft. zones. Consider installing a noncombustible wall within 15-20 ft. of the downslope side of your home, particularly if you have a deck overhanging the slope.

**YOUR DEFENSIBLE SPACE IS COMPRISED OF THESE THREE ZONES. THE SELECTION AND MAINTENANCE OF VEGETATION AND OTHER COMBUSTIBLE ITEMS IN THESE ZONES WILL DETERMINE HOW ADEQUATE YOUR DEFENSIBLE SPACE IS.**

### ZONE 1

**0-5 ft. around the perimeter of the home**

- Install hard surfaces in this zone, such as a concrete walkway, or use noncombustible mulch products, such as rock. Keep the lawn well irrigated and use low-growing herbaceous (non-woody) plants. Shrubs and trees are not recommended in this zone. Remove dead vegetation and implement a maintenance strategy to keep the area clear of dead plant materials. **\$-\$**

### ZONE 2

**5 ft.–30 ft. around the perimeter (or to the property line)**

- Create islands or groupings of vegetation to form a discontinuous path of vegetation to make it difficult for the fire to burn directly to your home. Remove dead plant material and tree branches. Remove lower tree branches and shrubs positioned under the tree line so that a surface fire cannot reach the tree crown. Trees located within this zone should be maintained with a minimum horizontal spacing of 10 ft. between crowns, with the distance increasing with slope. Prune limbs and branches to a height of up to 15 ft. For shorter trees, pruning should not exceed one-third of the

tree height. Relocate propane tanks larger than 125 gallons (water capacity) at least 30 ft. from your house. Create 10 ft. of Zone 1 defensible space around the tank. Consider surrounding three sides with a noncombustible wall to help protect it. **Free - \$\$\$**

### ZONE 3

**30 ft. - 100 ft. (or to the property line)**

- Trees located in this zone should be maintained with a minimum horizontal spacing of 10 ft. between crowns, with this distance increasing with slope. Ladder fuels under taller trees should be eliminated. Separation between groupings of shrubs and bushes should be created and maintained. Remove dead plant material from all vegetation. Vegetation management beyond 100 ft. should be considered if the home is located on a steep slope. **Free - \$\$\$**

**Does your home have a tool shed, detached garage, playset or other structures in the yard?**

- Create defensible space around secondary buildings or relocate them at least 30 ft. from your home. Consider a noncombustible material for a tellis. Carefully maintain vegetation used on trellis-type structures, pruning regularly to remove dead vegetation. Combustible materials used for play sets are typically larger dimensions (and therefore more difficult to ignite). Combustible wood/bark or rubber mulch that are more commonly used as surfacing materials around play sets are easily ignited by embers. Playsets with combustible mulch surfacing materials should be relocated at least 30 ft. from your home. **Free - \$\$**

### ROOF COVERING

**Do you have a Class A fire-rated roof?**

- If not, choose a product rated Class A when it's time to re-roof. Non-rated products include untreated wood shakes or shingles. Other roof coverings may carry a Class B or C fire rating. A Class A fire-rated roofing product offers the best protection. **\$\$\$\$**

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\$	< \$500
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\$\$\$\$	>\$5,000

### ROOF EDGE(S)

#### Are your gutters full of debris?

- If yes and you have a *SIMPLE ROOF DESIGN*, clean out gutters and install a drip edge at the roof edge to protect any exposed roof sheathing or fascia. **Free - \$\$**
- If yes and you have a *COMPLEX ROOF*, clean out gutters and install a drip edge at the roof edge to protect any exposed roof sheathing or fascia. Remove any debris that has accumulated at roof-to-wall intersections, for example, near a dormer or a chimney. For added protection, consider replacing combustible siding at any "intersection" location with a noncombustible or ignition resistant siding product. Metal step flashing extending up from the roof a minimum of 6 in. can be installed at the base of combustible siding in lieu of replacing it (integrate with siding to avoid moisture-related degradation problems). If necessary, consult a roofing professional to get help with this. If windows are present, replace with ones that have dual / multi-pane, tempered glass. **Free - \$\$\$**

### VENTS ON YOUR ROOF

#### Are the attic vents located on your roof covered with screening that is free of debris?

- If there is no screening, install 1/8 in. metal mesh screening. **\$\$**
- If you have a turbine vent, enter the attic and inspect the location where the vent attaches to the roof. Attach 1/8 in. screening to the roof sheathing if none is present. **\$\$**
- If you have dormer-face vents, replace them with a low-profile vent. **\$\$**
- If you have ridge vents, they should be rated for high-wind / rain exposure, and specifically should be a Florida Building Code High Velocity Hurricane Zone approved ridge vent, regardless of where you are in the country. **\$\$**
- Consult your local fire or building department to find out if any vents designed to resist the entry of embers and flames have been approved for use in your area. **Free**

### SKYLIGHTS

#### Are skylights installed on a flat or low-sloped roof?

- Remove accumulated debris next to and on the skylight. **Free**

#### Do you have a dome-type skylight?

- If yes, consider replacing it with a flat, tempered glass skylight. If the skylight is installed on a steep roof and if vegetation is at the same level, remove and prune vegetation, clear away debris, and trim overhanging limbs. **Free - \$\$**
- Keep operable skylights closed when a wildfire threatens. **Free**

### FOUNDATIONS

#### Do you have a post-and-beam style foundation?

- If yes, enclose it with a noncombustible material—this process is sometimes called "skirting". Ventilate enclosed space according to your building code requirements. All foundation vents should have 1/8 in. corrosion-resistant metal screening that is in good condition. **\$\$\$\$**
- Remove combustible materials stored in the crawl space, or from under the building if you have a non-skirted post-and-beam foundation. **Free**

### VENTS ON THE EXTERIOR WALLS

#### Do you have foundation vents that are closeable?

- Some foundation vents are closeable - these vents should be closed when a wildfire threatens, but should be opened after the wildfire has passed. Some foundation vents have been designed to resist the entry of embers and flames—check with your local fire or building official to find out if any have been approved for use in your area. Remove combustible materials stored in the crawl space. **Free**



# Checklist:

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- \$** < \$500
- \$\$** \$500 - \$1,000
- \$\$\$** \$1,000 - \$5,000
- \$\$\$\$** >\$5,000

### Do you have vent covers for foundation and/or gable end vents?

- If not, consider using closure devices. There are commercially available options or you can make your own and store in a place where they can be easily retrieved and installed when wildfire threatens. The commercial devices should be deactivated, or home-made covers removed, after the wildfire passes. Some gable end and crawl space vents have been designed to resist the entry of embers and flames—check with your local fire or building official to find out if any have been approved for use in your area. **\$\$**

### Do you have other vent openings on the wall?

- Dryer vents and wall-mounted make-up air openings for furnaces should be screened with 1/8 in. corrosion resistant metal mesh. Consider installing a louver-type dryer vent that is closed unless the dryer is running. **\$**

## SIDING

### Do you have combustible siding?

- If yes, create a 0-5 ft. defensible space zone next to your home. Remove any accumulated debris as necessary. If siding extends to grade, consult with contractor to determine if your foundation would allow some siding at the base of the wall to be removed to obtain the 6 in. clearance. Moisture-related degradation and insect damage may be present in some siding products that have been installed such that it extends to grade. **Free - \$\$**
- Examine your siding for locations where embers could accumulate or lodge. Apply caulk at trim-to-siding locations where it is missing or has failed (\$). **\$ - \$\$**
- If you plan to re-side your house, use a noncombustible or ignition resistant material for the siding and corner trim. If you haven't already done so, create a 0-5 ft. noncombustible zone in this area. **\$\$\$\$**

## EAVES

### Do you have open-eave framing?

- If yes, consider converting open-eave framing to a boxed-in or soffit-eave design. Venting in the soffit material (and between the soffit and attic space) must be maintained. If you haven't already done so, create a 0-5 ft. noncombustible zone next your home. **\$\$\$**

### Do you have vents in the eaves?

- If yes, all vents should be covered with 1/8 in. mesh corrosion-resistant metal screening. If an open-eave construction is maintained, closure devices for vents located in the blocking of open-eave framing are commercially available. Consider purchasing these or making them from 1/4-in. plywood or thin sheet metal. Install these devices when a wildfire threatens and remove or open them after the threat has passed. Under-eave vents have been designed to resist the entry of embers and flames—check with your local fire or building official to find out if any have been approved for use in your area. **\$-\$\$\$**

## WINDOWS

### Do you have single-pane windows?

- If yes, replace single-pane windows with dual or multi-pane windows, preferably ones with tempered glass. **\$\$\$ - \$\$\$\$**
- Install window screening to improve performance against radiant heat exposures and to minimize the size and number of embers that could enter the home. Both plastic-clad fiberglass and metal screening will reduce radiant exposure to the glass and protect against ember entry but neither will protect against flames. The fiberglass screen will fail if exposed to flames, thereby allowing embers to enter if the window glass has also failed. If you haven't already done so, create a 0-5 ft. noncombustible zone near your home. **\$ - \$\$**

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- \$\$\$\$ > \$5,000

### GARAGE (DETACHED OR ATTACHED)

#### Do you have a garage door?

- If yes, weather seal the perimeter of garage doors. **\$**
- If you do not have a garage door, consider installing one to help protect combustible materials stored there. **\$\$**

### DECK

#### Do you have a deck?

- If your deck overhangs a steep slope, be sure your defensible space is sufficient to minimize flames spreading up the hill and reduce flame length to minimize the chance for a flame contact exposure to the underside of the deck. Consider building a noncombustible wall across the slope approximately 15–20 feet from the edge of the deck. **Free - \$\$\$**
- Do not store combustible materials under your deck. If you have no other option, installing a noncombustible siding product around the deck perimeter may be an option. Be sure the enclosed space is adequately ventilated to minimize the chance of water-related damage (i.e., fungal decay, fastener corrosion, etc.). **Free - \$\$\$**
- Most deck boards are combustible, including wood, plastic and wood-plastic composites. Solid surface decks, such as those made from lightweight concrete, are usually noncombustible, but are also more expensive. If you live in a wildfire-prone area anywhere in the country, when it's time to replace deck boards, choose a product that complies with the requirements of the California Building Code, as provided in the Office of the State Fire Marshal Wildland Urban Interface (WUI) Handbook ([http://osfm.fire.ca.gov/strucfireengineer/strucfireengineer\\_bml.php](http://osfm.fire.ca.gov/strucfireengineer/strucfireengineer_bml.php)). **\$\$\$**

- Regularly clean out debris from between deck board joints and other areas where debris has accumulated. Check the condition of wood deck boards and structural support members—replace or repair rotted members. **Free**
- When a wildfire threatens, move combustible deck furniture and cushions inside or move as far away from the house as possible. Treat other combustible items, such as a broom, as your furniture and move them inside or far away from the house. Any LP tank for a grill should be moved off the deck and away from the home. **Free**

### FENCE

#### Do you have a fence?

- Replace any combustible fencing that attaches directly to your home with a noncombustible section that is at least 5 ft. long. A chain link gate or fence, a wood frame fence with metal mesh infill, or other noncombustible material can be used. If metal wire is used, do not allow climbing vegetation to grow on the fence—this would defeat the purpose of the noncombustible material. **\$-\$\$**