ASSOCIATION OF BAY AREA GOVERNMENTS
METROPOLITAN TRANSPORTATION COMMISSION

Technical Assistance for Local Planning
HOUSING

Wildfire and Housing Resource Guide #8:
Building Codes & Mapping

November 14, 2025

Introduction – What this Guide Covers

This resource guide provides a synthesized overview of how recent changes are shaping wildfire-resilient housing in California. Organized around key elements of wildfire-housing mitigation, it offers insights into:

- **Where wildfire hazards are mapped**
  An update on the state's Fire Hazard Severity Zone (FHSZ) maps, Bay Area trends, and examples of additional local modeling efforts.
- **What building standards apply**
  A summary of updates to the state building code, its expanded application across FHSZ zones, and local adjustments.
- **What is the cost of home hardening**
  Two studies estimate the cost of implementing home hardening measures in both new residential construction and existing home retrofits in California.
- **How communities are addressing existing wildfire risk to housing**
  A look at programs that support retrofitting homes in vulnerable areas to reduce wildfire exposure.

Together, these elements provide a snapshot of wildfire-resilient housing efforts and a framework for developing policies and programs that advance fire-adapted communities.

Fire Hazard Severity Zone Mapping

Knowing where wildfires are likely to occur helps communities strategically invest in wildfire resilience measures.

Updated Fire Hazard Severity Zone Maps & Methodology (2025)

CAL FIRE released updated Fire Hazard Severity Zone (FHSZ) maps for Local Responsibility Areas (LRA) in February 2025, replacing maps developed in 2007–2009. The updates incorporate advancements in science and localized climate data, factoring in elements such as fire history, terrain, fuel loads, urban vegetation, wind-blown embers, and flame lengths to estimate the likelihood and behavior of wildfires over a 50-year horizon. CAL FIRE FHSZ maps are developed by the state and adopted by local jurisdictions. In addition, some Bay Area jurisdictions have created their own mapping layers which serve as additional tools for local wildfire planning.

Click for CAL FIRE's videos that provide background on how the FHSZ maps are made and used.

How FHSZ maps changed in the Bay Area

In the Bay Area, the FHSZ map update changed the landscape of wildfire hazard. The Local Responsibility Area (LRA), primarily incorporated cities and towns, now has 475,000 acres classified by a fire hazard severity, up from only 60,000 acres previously. Much of this jump is because CAL FIRE now maps not just very high zones but also high- and moderate-hazard areas in these maps. The increase is pronounced, but it is not uniform. While some

neighborhoods have gained new hazard labels, others have seen fire hazard severity classifications removed. Figure 1 shows where there is new FHSZ coverage in the Bay Area and where it has been reduced.

Zoom into subregional maps to more clearly view the change in your subregion.

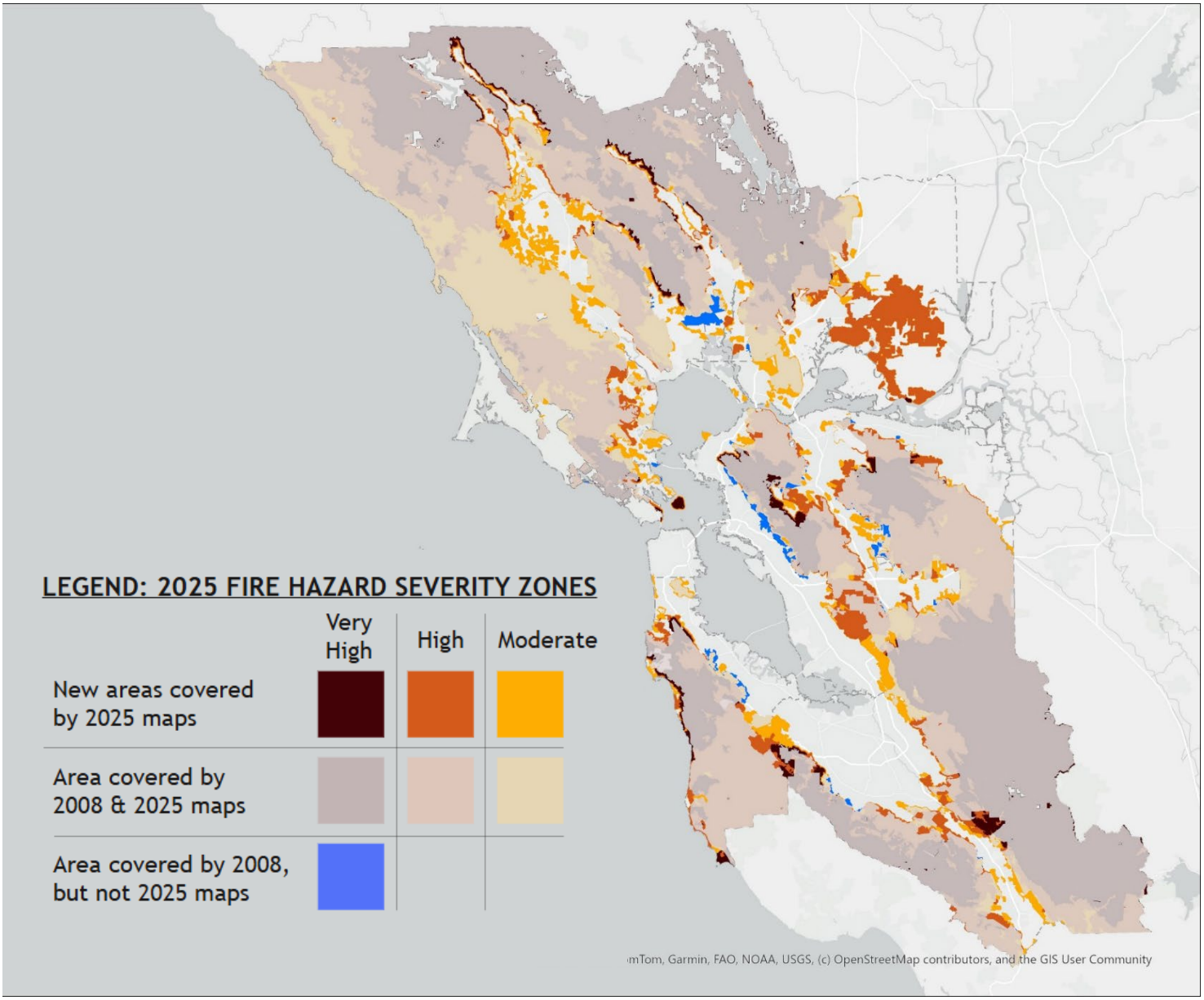


Figure 1. Change in Fire Hazard Severity Zones in the Bay Area (data source: CALFIRE 2025).

Using Historic Burn Perimeters to give a sense of the variation in hazard

The FHSZ maps are not predictive, and extreme conditions can cause fires to occur outside of the moderate to very high hazard zones. One of the inputs to the FHSZ maps is past burn perimeters, which complicates efforts to evaluate their past accuracy. However, when analyzing their effectiveness in mapping past fires, the maps characterize wildfire hazard well. Figure 2 displays the outcomes of the FHSZ and burn perimeter overlay analysis.

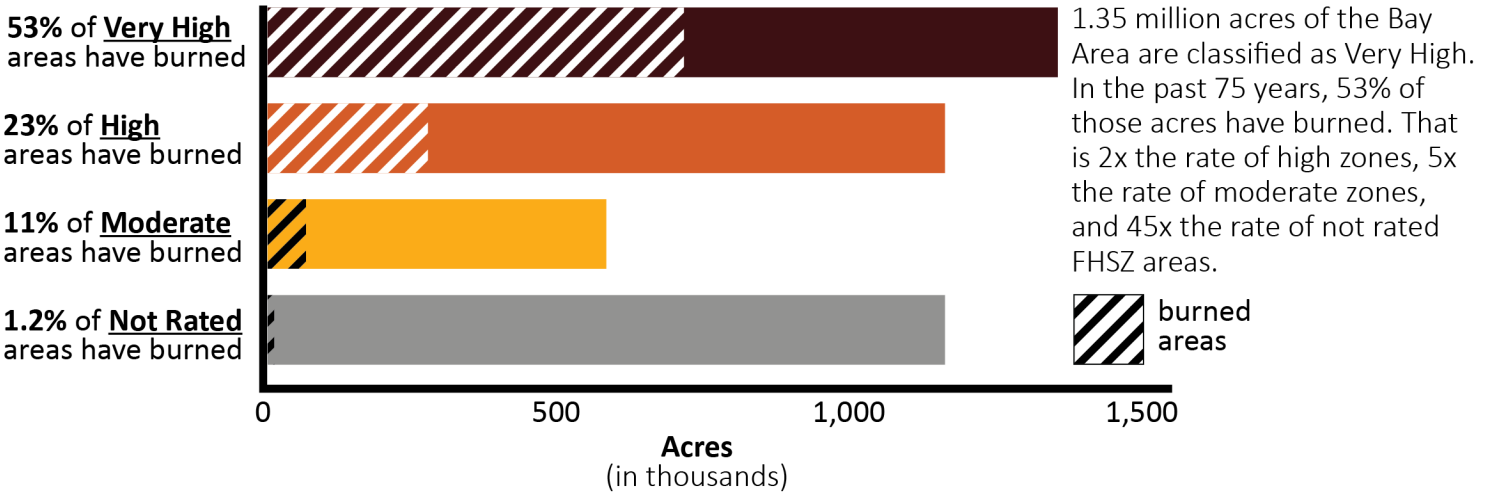


Figure 2. Share of each Fire Hazard Severity Zone that has burned

What percentage of recently built housing is in FHSZs?

HCD publishes Annual Progress Reports on the housing production pipeline which can be used to map where new housing is being built. Figure 3 below shows how much housing from 2018-2023 has been built in the 2025 mapped FHSZs. Regionwide, 4% of housing units from 2018 – 2023 were built in high or very high zones, and only 8% was built in any of the FHSZs. Most housing was built outside FHSZs. Housing units were calculated using HCD's APR Certificates of Occupancy dataset, geocoded by MTC-ABAG staff.

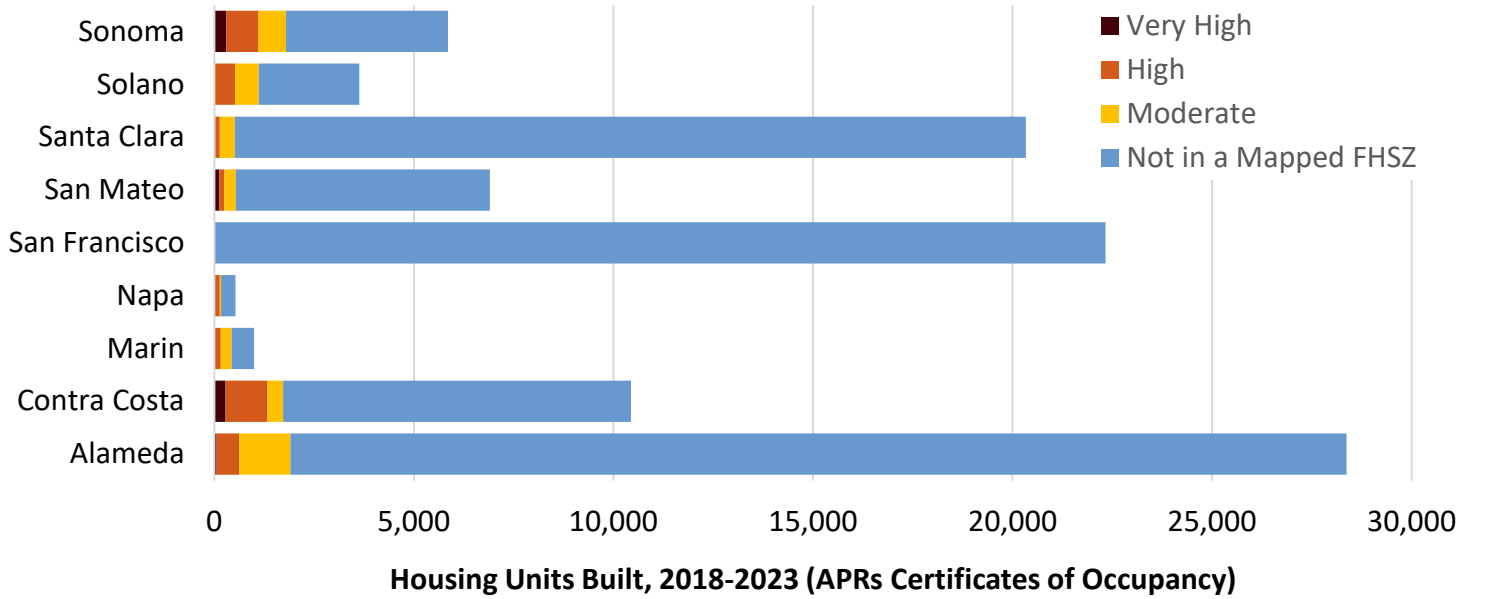


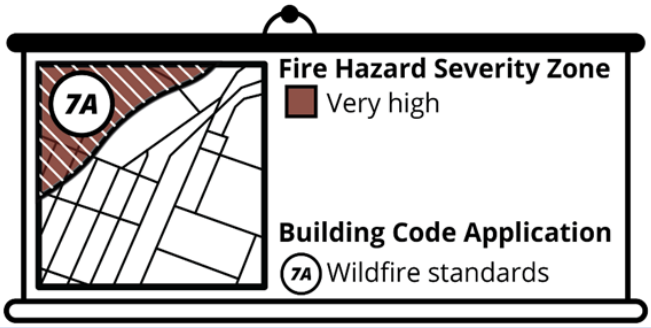
Figure 3: Share of residential units built in each fire hazard severity zone.

Building Code Changes

Where do wildfire standards apply?

One of the functions of the FHSZ maps is to determine where wildfire-resistant building code requirements, such as home hardening standards, must be applied. The application of these standards within FHSZs has changed. Recent state legislation has expanded the coverage of wildfire building code requirements in Local Responsibility Areas (LRAs), broadening where these protections are implemented. The figures below illustrates the changes.

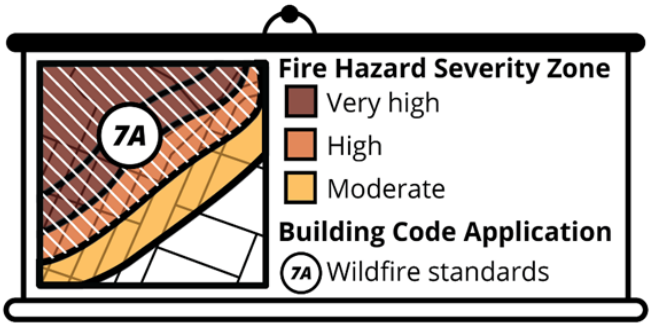
- **Senate Bill 63 (2021):** Expanded wildfire-resistant building standards to "high" zones within LRAs and directed state agencies to evaluate their applicability in "moderate" zones within LRAs. On October 15, 2025 the California Building Standards Commission officially incorporated the LRA high zone into the code.
- **Assembly Bill 642 (2021):** Required the expansion of the FHSZ mapping in Local Responsibility Areas (LRAs) to include high and moderate risk categories. Prior to 2025, only very high zones were mapped in LRAs.



Prior Condition, 2008-2025

Wildfire Mapping – Previously only the very high zone was mapped in local areas.

Building Code – The wildfire-resistant construction standards were only applied to the very high zone in local areas.



Future Condition, 2026 and onward

Wildfire Mapping – Now includes high and moderate zones in local areas. Updated mapping methods also changed prior mapped severity levels.

Building Code – Wildfire-resistant construction standards have expanded to the high zone in local areas. The state is studying its application in the moderate zone.

When will the updated building code take effect?

In addition to changes to where the code is applied, the code itself was recently updated. The bullets below highlight when changes to the code take effect and what has changed and what could change in the future.

January 1, 2026 – The 2025 California Wildland-Urban Interface Code, Title 24 – Part 7 (CWUIC) was recently updated and published on July 1, 2025. The code will be effective on January 1, 2026. The code update streamlined and reorganized standards to become a clearer one-stop shop for all wildfire requirements.

- As mentioned in the section above, the updated building requirements now apply to *Very High* and *High* FHSZ in Local Responsibility Areas. Previously, it only applied to the *Very High* zone.
- The code does not apply to the *Moderate* FHSZ in LRAs. Moderate LRA zones are up to local jurisdictions.
- How do the code and regulations updates impact existing homes?
    - Existing buildings are not affected by changes to structure components of the code updates.

- However, permitted additions, modifications, or retrofits to an existing building do have to comply.
- Existing buildings will have to comply with Zone Zero, the 5-foot area immediately surrounding a structure that is a key component of the code's "ember-resistant defensible zone." In the LRA that standard will only apply to the *Very High* FHSZ.

July 1, 2027 – The intervening code cycle which will be worked on in 2026 will take effect on July 1, 2027 after being published on January 1, 2027.

- As part of the intervening code cycle the state may revisit specific standards for exterior walls, windows, vents, and the definition of ignition-resistant materials. The state may also consider whether the moderate zone is included in the intervening code cycle.

Find up-to-date WUI building code "Building in the Wildland" CAL FIRE Webpage

How does AB130 impact local amendments?

The final section of this resource guide highlights jurisdictions that have added local amendments to the wildfire code. Local amendments to the building code will be limited by Assembly Bill 130 (2025) which among other reforms restricted building code changes for residential units through 2031. However, the bill did make an exception for home hardening modifications.

- **Assembly Bill 130 (2025):** As part of the bill, most building code changes are restricted through June 1, 2031, but wildfire home hardening code modifications remain allowable: "changes or modifications related to home hardening" and building standards that "relate to home hardening and are proposed for adoption by a fire protection district." Local agencies would need to make express findings when adopting any changes explaining why the changes are needed and tied to local conditions and those findings should be supported by evidence in the record. Potential outside challenges could involve not having findings, not having adequate support for the findings, CEQA challenges, and other procedural challenges based on how the ordinance was adopted. ABAG published resources summarizing AB130 and SB 131 recently and many other professional organizations are working to produce AB130 guidance for jurisdictions.

How much does home hardening cost?

Cost is a constraint to home hardening. Headwaters Economics, an independent, nonprofit research group with partners like the Insurance Institute for Business & Home Safety, published two studies to answer the questions: how much would it cost to retrofit a typical California single family home, and how much extra would it cost to build a new single-family home with the wildfire building standards applied?

Cost to complete a wildfire home hardening retrofit to an existing single-family home

In California, retrofitting costs can be as low as $2,000 for minimal retrofits to upwards of $100,000 if all retrofits to the highest level of protection are completed. Targeted replacement of components may reduce risk effectively and more affordably. For example, a $10,000 - $15,000 investment could reduce home vulnerability to wind-blown embers during a wildfire significantly. The 48-page user friendly report breaks down investments into individual building components, identifies which investments address ember ignitions versus radiant/direct flame ignitions, and sorts each line item into good, better, or best scenarios. Read the full 2024 report.

Cost to build a new single family home with wildfire home hardening standards

The report estimates that meeting *baseline* wildfire-resistant home standards in Northern California would increase construction costs by approximately $25,000. An *enhanced* wildfire-resistant home would add $28,000 and an *optimum* wildfire-resistant home would add $43,000. The siding and roofing contribute the most to the increase. The report breaks down the added by cost by each building component and describes how each upgrade reduces wildfire risk. Read the full 2022 report.

Examples of Active Programs and Policies

Home Hardening Programs

CAL FIRE and Cal OES: California Wildfire Mitigation Program (CWMP), Home Hardening Program (State)

The CWMP focuses on cost-effective structure hardening and retrofitting to create fire-resistant homes as well as defensible space and vegetation management activities. The primary goal of the CWMP is to offer financial assistance to vulnerable populations in wildfire prone areas throughout California. To achieve that goal, the CWMP has active home hardening pilot programs in communities across the state and has developed a framework that can be modeled elsewhere in California. The CWMP Framework linked in the resources below has program resources like: sample applications, contractor procurement, an outreach toolkit, and more.

Funded by California budget, state grants, and federal grants

Supports Home hardening, defensible space, and vegetation management activities

Resources: CWMP Website, Program Storymap, CWMP Framework & Appendices, Minimum Quality Standards

Marin Wildfire Prevention Authority (MWPA) Home Hardening Program

The MWPA is a joint powers agency formed to coordinate and fund wildfire prevention, preparedness, and vegetation management efforts across Marin County. As part of the larger suite of activities the MWPA has a resident grant program that provides grants to residents for activities like: fire resistant vents, gutter guards, non-combustible fence/gate attachments to structures, and zone 0 activities.

Funded by Measure C, a 10-year local parcel tax

Supports Wildfire prevention, preparedness, and mitigation projects including, home hardening, defensible space, and vegetation management activities

Resources: MWPA Website, Resident Grants Webpage

County of Sonoma Home Hardening Program

Sonoma County developed a two-phase process to offer free wildfire and defensible space risk assessments to homeowners. After going through an assessment a second phase offers up to $10,000 in rebates for property owners to complete defensible space and home hardening tasks identified as priority actions.

Funded by FEMA grants

Supports Home hardening, defensible space.

Resources: Program Website

HCD ReCoverCA Wildfire Retrofits

The California Department of Housing and Community Development (HCD) provided funding through the ReCoverCA Owner-Occupied Wildfire Mitigation Retrofits program to serve low-to-moderate-income households, with households eligible or up to $50,000 in wildfire retrofits. Eligibility was constrained to areas in counties that were effected by specific disaster declarations, including Napa County.

Funded through HCD

Supports Home hardening, defensible space.

Resources: Program Presentation, Program Webpage

Local Mapping Adjustments

Town of Windsor – local mapping adjustment

The Town of Windsor amended the state's LRA FHSZs to designate the entire town of Windsor as Moderate FHSZ. This action was taken by the Town in response to the Tubbs Fire that occurred in October 2017 and the Kincade Fire that occurred in October - November 2019.[1]

Resources: Town of Windsor Ordinance

City of Berkeley – local mapping and building code adjustment

In 2025, the City adopted new FHSZ maps for LRAs using local data on fire history, steep terrain, dense housing, and limited evacuation routes. The local mapping studied fire pathways to understand various wildfire scenarios which informed the creation of City identified "Very High" and "High" fire hazard zones.

In addition to layering on local mapping, Berkeley adopted the Ember Resilience (EMBER) ordinance, which applies home hardening and defensible space requirements. EMBER requires all properties in the locally designated Very High zones to maintain a five-foot non-combustible "Zone 0" buffer around structures. The local maps also phase mitigation work, "focusing resources on the highest priority areas, creating a buffer along the edges of the community [to] prevent the transition of fire from vegetation to densely spaced structures."

Resources: Council agenda and staff report, Interactive map and methodology, EMBER ordinance details

Other

NIST Fire Hazard Mitigation Methodology (HMM)

The HMM was published in March 2022 and provides an implementable path to consider the spatial relationships between fuels, exposures, and hardening at the structure and parcel levels. The HMM demonstrates how complex structure hardening is, and how and why hazards associated with both fire and ember exposures need to be mitigated. This report documents the methodology and addresses the critical issues of mitigation effectiveness at the parcel and community levels.

Resources: NIST WUI Structure/Parcel/Community Fire Hazard Mitigation Methodology Report

[1] https://www.townofwindsor.ca.gov/1585/Fire-Hazard-Severity-Zones-Map