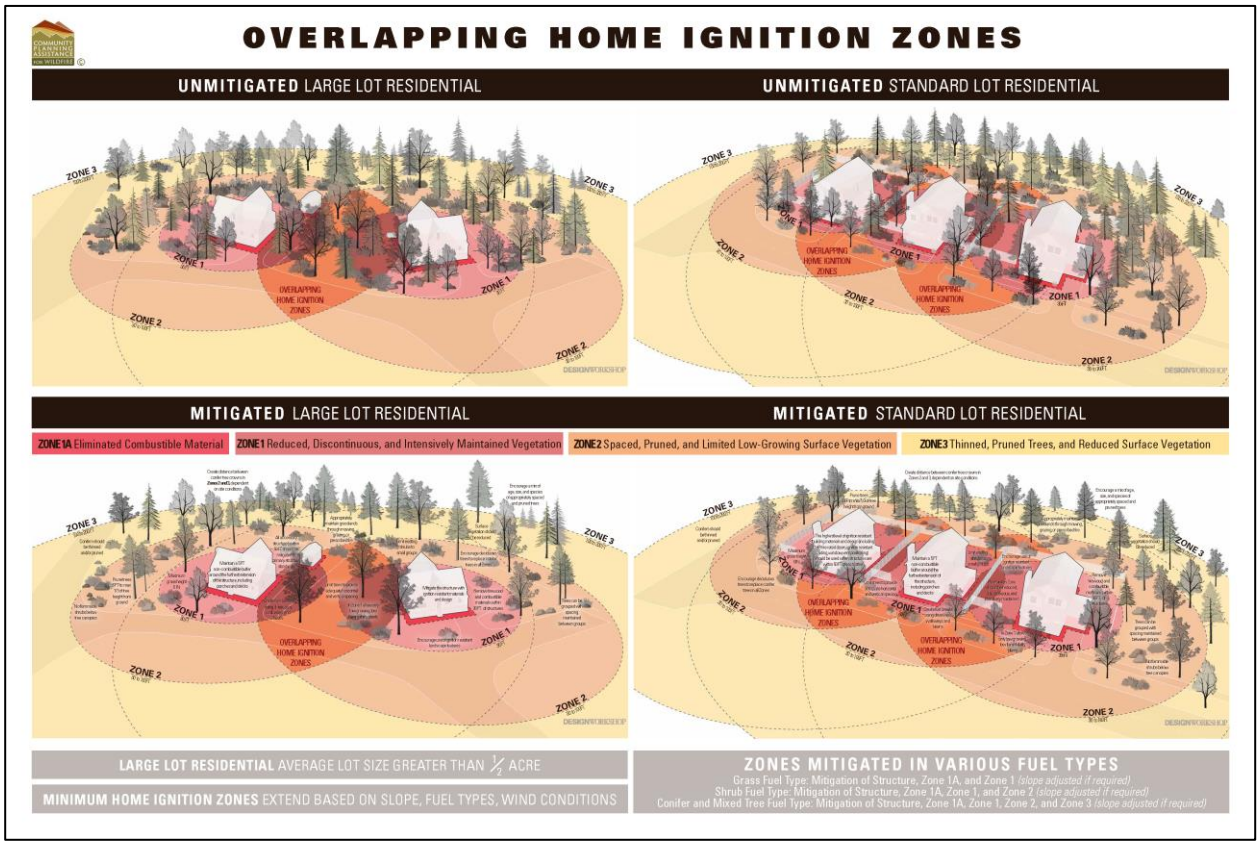
Community Guide for Wildland-Urban Interface Visuals



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Introduction

The Community Planning Assistance for Wildfire (CPAW) team contracted an internationally-renowned urban design firm, Design Workshop Inc., to prepare a set of wildland-urban interface (WUI) visuals that will support communities in communicating wildfire planning concepts to different audiences. CPAW developed the set of visuals in response to community interests for visuals that went beyond typical defensible space diagrams, which may be overly general or ignore specific development challenges that occur in the WUI. Communities are encouraged to use these new visuals available through CPAW; this community guide provides additional information for reference when using CPAW's WUI visuals.

Formats and Use

CPAW's WUI visuals are formatted in several sizes (8.5 x 11", 11 x 17", and 24 x 36") for easy use as handouts, presentations, or posters. Visuals can also be used for:

- Graphics in local planning and development documents;
- Educational aids in the pre-planning stages of a development;
- Talking points in story maps or blog posts;
- Decision support tools for planners.

All visuals are available as PDF and PNG files. Image credit should be given to the Community Planning Assistance for Wildfire program, or "CPAW".

For more information about CPAW, visit planningforwildfire.org. For specific questions related to the use of CPAW visuals, contact Molly Mowery: molly@wildfireplanning.com

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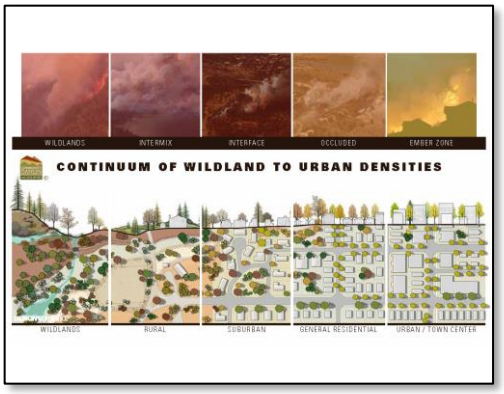
The CPAW program is a joint partnership between Headwaters Economics and Wildfire Planning International.

Continuum of Wildfire Densities

The Continuum of Wildland to Urban Densities was modeled from the rural-to-urban "Transect" widely used in the planning community. The Transect places elements of the built environment in a useful order, from most rural to most urban. The WUI continuum shows a similar relationship between wildfire-prone areas in increasingly dense built environments—from the least dense wildlands to the most dense urban core. The continuum also conveys how wildfire can affect any of these densities if conditions allow.



The WUI continuum is based on CPAW's definition of the WUI:

> ***Any developed area, or potential development, where conditions affecting the combustibility of both wildland and built fuels allow for the ignition and spread of fire through the combined fuel complex.***

The five WUI areas in the continuum were adapted from WUI classifications in the U.S. Federal Register and the University of Wisconsin's SILVIS Lab, which spatially defines the WUI based on vegetation and housing density. These definitions align with the USDA Forest Service Rocky Mountain Research Station (RMRS) hazard assessments conducted in several CPAW communities.

Specific information and definitions to accompany each element of the WUI continuum are as follows:

Wildlands

- The wildlands are the most commonly associated area pertaining to wildfire with minimal development.
- *Federal Register/SILVIS Lab's Definition*: Greater than 50 percent wildland vegetation and no structures present.

Intermix

- The intermix is typically referred to as rural, and large lot development does not generally affect neighboring structures' home ignition zone(s).
- *Federal Register/SILVIS Lab's Definition:* "Greater than 50 percent wildland vegetation and structures present (up to approximately 16 structures per square mile) and there is no clear line of demarcation, i.e., the wildland fuels are continuous outside of and within the developed area.

Interface

- The interface is associated with denser suburban development where individual structures and lots affect neighboring structures' home ignition zone(s).
- *Federal Register/SILVIS Lab's Definition*: Structures present ≥16 structures per square mile and less than 50 percent wildland vegetation.

Occluded

- *Federal Register Definition:* Where structures abut an island of wildland fuels (park or open space) and there is a clear line of demarcation between the structures and the wildland fuels along roads and fences.

Ember Zone

- The entire WUI continuum is susceptible to embers, including dense urban development that may be several miles from wildlands.
- Once a home is ignited in a dense environment, it can easily impact adjacent and nearby structures through radiant, convective, and ember heat transfer; this structure-to-structure ignition scenario is known as an urban conflagration.

Generally, the application of wildfire mitigation concepts is dependent on the fuel complex (wildland and built fuels), condition, and arrangement. Spatially distinguishing between these WUI areas assists planners and fire managers to identify and relate the appropriate wildfire mitigation application in planning policy and effectively communicate with stakeholders and elected officials.

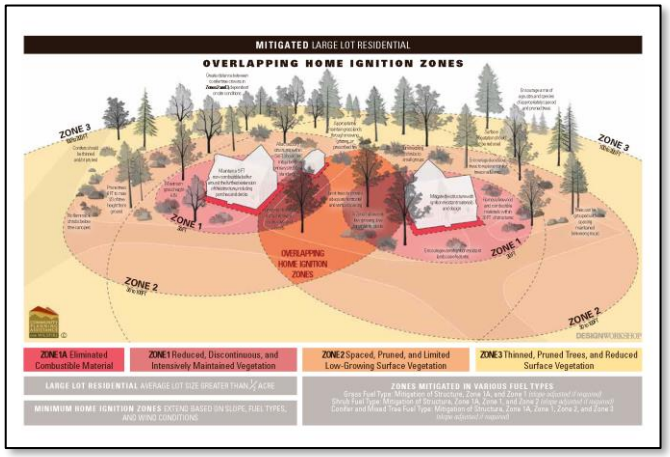
Overlapping Home Ignition Zones

When communities develop in wildfire-prone areas, the required space to implement home ignition zone concepts varies based on development patterns, such as lot size and setback requirements. CPAW created two sets of visuals to illustrate the differences between home ignition zone mitigation practices on large lots and standard lots.

Mitigation concepts outlined in the large and standard lot visual series can be implemented through different planning tools, including:

- Wildland-urban interface codes;
- Subdivision regulations and site design standards;
- Development and land use codes (e.g., landscaping or defensible space requirements);
- Zoning regulations.

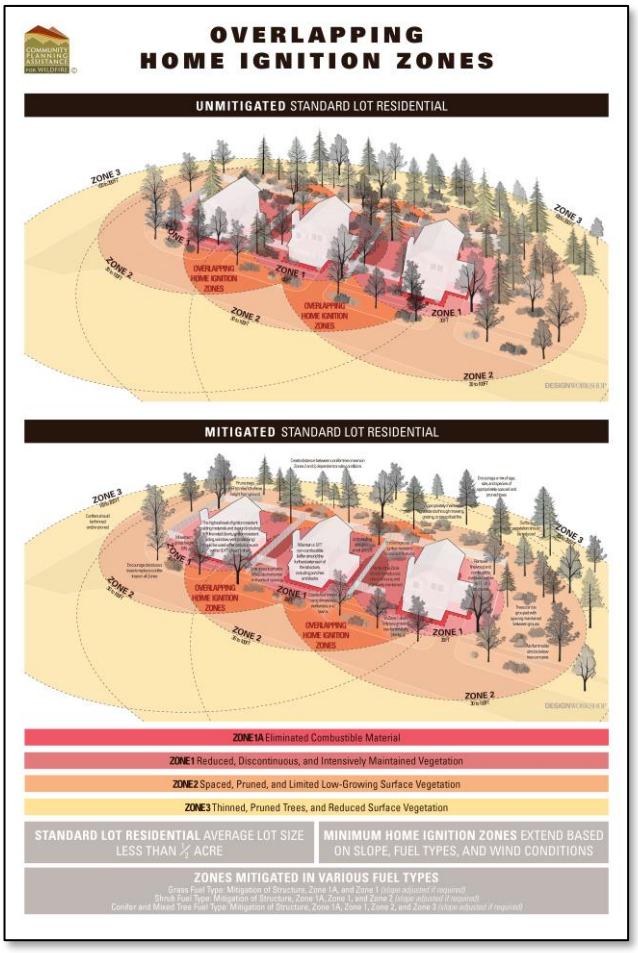
Large Lot Residential



The Large Lot Residential series is based on a half-acre minimum lot size, and shows how larger lot sizes allow home ignition zone mitigation practices to be implemented within 30 ft. of the structure without significant overlap on a neighbor's property.

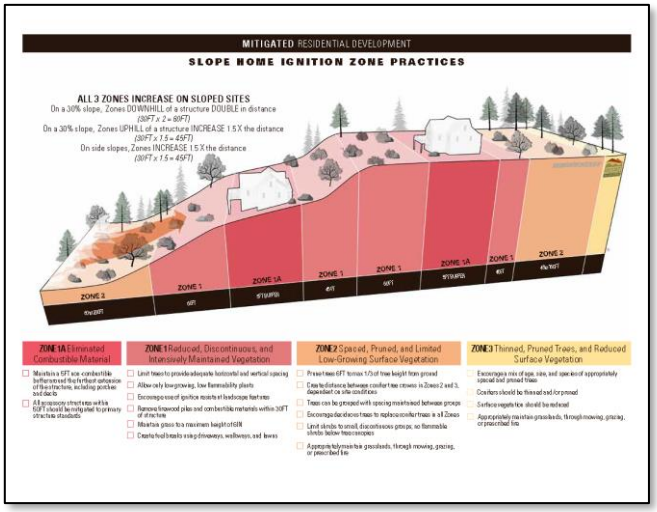
This series includes mitigated and unmitigated home ignition zones to highlight the visual differences between each. For example, the mitigated visuals can be used to point out how potential heat impacts from surrounding fuels reduce structural ignitability while still providing privacy vegetation between two lots. Also note that the placement of structures on a lot can influence the distance between structures and a property owner's ability to implement home ignition zone practices.

Standard Lot Residential



The Standard Lot Residential series is based on quarter-acre lot sizes, and shows how smaller lot sizes alter a property owner's ability to implement home ignition zone mitigation practices due to increased density. Unmitigated properties provide the continuity of fuels needed for fire to move from structure to structure, including through unmitigated privacy fencing, direct flame impingement from an involved structure, and the radiant heat it creates. Appropriate structural and vegetation mitigation practices outlined in the Standard Lot visual series account for all heat transfer methods, while still allowing for denser WUI development.

Slope Home Ignition Zone Practices



Topography is a factor in fire behavior and slopes can have the same effect as increased wind: faster spreading and higher intensity fires where convective heat typically has a greater impact on uphill fuels (including structures). Many hillside developments also have attachments, such as decks, that extend over slopes and create an ideal trap for rising heat, embers, and direct flame contact.

Because of the slope effect, flat ground home ignition zone distances for defensible space are inadequate in mitigating these impacts. When building on a slope, all home ignition zone concepts are expanded to mitigate the increased flame length, convective, and radiant heat moving uphill. Distances shown in the Slope Home Ignition Zone Practices visuals were based on a 30% slope; this slope percentage is where wildfire behavior increases significantly, and development generally becomes restricted in many communities.

To account for the increase in convective, conductive, and radiant heat, proper lot siting of the home is critical. Siting practices include:

- Avoiding chimneys, saddles, and narrow canyons;
- Providing 30ft. setbacks from ridges (if the building is multiple stories, the increased set back from the slope should be 50 ft.);
- Allowing for increased home ignition zone mitigation between structures.

Wildfire Mitigation Concepts for the Home

As shown in the Continuum of Wildland to Urban Densities, embers need to be accounted for in all types of WUI areas. If unmitigated, homes are susceptible to ember intrusion which is the primary cause of home losses in a wildfire. The practices outlined in the Wildfire Mitigation Concepts for the Home visual address ember intrusion and direct flame impingement to the structure.

This visual can be used as a checklist to planners, developers, and homeowners when assessing new and existing development. These identified concepts can be implemented through a local WUI code, building code, and landscaping requirements. Note that certain structural practices can vary depending on the fire hazard rating of the property (e.g., high or extreme).

When discussing structural mitigation with stakeholders, it can be helpful to highlight the dual benefits provided by the materials and practices required, such as:

- Energy saving materials for the home;
- More durable products that increase the longevity of home materials;
- Materials already used by developers to mitigate other hazards, such as wind.