Planning for the WUI

Tools, Tips, and Trends

Image Credit: Leon Konz, TDF

Wildland URBAN Interface 2019

IAFC.org/WUI

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Why Land Use Planning?

Rapid growth of the US wildland-urban interface raises wildfire risk


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The wildland-urban interface (WUI) is the area where houses and wildland vegetation meet or intermingle, and where wildfire problems are most pronounced. Here we report that the WUI in the United States grew rapidly from 1990 to 2010 in terms of both number of new houses (30.8 to 43.4 million; 41% growth) and land area (from 581,000 to 770,000 km²; 33% growth), making it the fastest-growing land use type in the contiguous United States. The vast majority of new WUI areas were the result of new housing (97%), not related to an increase in wildland vegetation. Within the perimeter of recent wildfires (1990–2015), there were 286,000 houses in 2010, compared with 177,000 in 1990. Furthermore, WUI growth often results in more wildfire ignitions, putting more lives and houses at risk. Wildfire problems will not abate if recent housing growth trends continue.

Significance

When houses are in vegetation, they will be more likely to burn. Thus, understanding WUI patterns and WUI growth is important with respect to wildfires and many other environmental problems. The WUI is widespread in the United States (1, 14) and in many other parts of the world (15, 16), including Argentina (17), Australia (18), France (19), and South Africa (20). Furthermore, both the annual area burned (8, 21, 22) and the average size of fires (23) have rapidly increased in the United States. The area burned annually nearly doubled, from an average of 0.52 km² in 1984–93 to 1.03 km² in 2004–13 (24). Consequently, federal wildfire suppression expenditures tripled from $5.4 billion in 1995 to $16.4 billion in 2013 (25), and exceed $2 billion in 2017. While there is ample evidence that houses in the WUI pose a problem, it is not clear how fast the WUI is growing. Overall, the US population grew by 60 million people and 29.2 million houses from 1990 to 2010, but how much of that growth occurred in the WUI is uncertain. Previous assessment of WUI growth (24, 25) estimated only housing data up to 2000, and did not account for changes in wildland vegetation. Post-2000 housing data are important, because the United States entered a recession after 2001, accompanied by a strong downturn in the housing market. Similarly, without data on vegetation change, the major cause of WUI growth is unclear. Areas where forests are regrowing on abandoned farmland, such as in the New England states (26), could see WUI growth without any additional houses. Fundamentally, two processes can create new WUI: construction of new houses or new encroachment on wildland vegetation, or an increase in wildland vegetation within and near previously developed areas. The persistence of each process is unclear.

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Wildfire Planning Tools!

FIRE CODE
- Maintenance Agreements
- Site Design Standards
- Conservation Easement
- Comprehensive Plan
- Site-Specific Assessment
- Nuisance Ordinance
- Landscaping Requirements

SUBDIVISION REGULATIONS
- Building Code
- Wildfire Overlay
- Zone District

Hazard Mitigation Plan
- Open Space Plan
- Land Acquisition
- Wildland-Urban Interface Regulations
- Post-Disaster Building Moratorium

USE-SPECIFIC STANDARDS
- Community Wildfire Protection Plan
- Future Land Use Map
- Development Fees

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Wildfire Planning Tools

• Plans
• Regulations
• Incentives/ Voluntary Programs
Community Planning Assistance for Wildfire

- Land Use Planning
- Hazard Assessments
- Capacity Building
- Research
Comprehensive Plan

Hazard Mitigation Plan

Community Wildfire Protection Plan

Community Plans
Wasco County, OR
Wasco County, OR
RECOMMENDATION 2: Include Wildfire Goals in Wasco County 2040 to Support Hazard Plan Implementation

Why This Recommendation Matters

Wasco County is currently updating its Comprehensive Plan, which was first adopted in 1983. Since its initial adoption, the Comprehensive Plan has undergone multiple revisions—most recently in 2010—and is now in need of a full revision. The planning update process, known as Wasco County 2040, began in 2015 and final adoption of the plan will occur by 2020. The purpose of the update is to provide a long-term planning horizon for the next 20 years of anticipated growth and change. It also gives county staff an opportunity to engage the public in shaping the future of Wasco County.

Wasco County 2040 policies will lay the groundwork for an update to the Land Use and Development Ordinance and other local plans, implementation tools, and strategies. Following discussions with Wasco County planning staff, Wasco County 2040 will relate to hazard plans, including the Wasco County Multi-Jurisdictional Natural Hazards Mitigation Plan and the Wasco County Community Wildfire Protection Plan (CWPP), by providing high-level goals and/or policies to support long-term implementation of hazard risk reduction. The most detailed information on wildfire and corresponding mitigation actions will be contained in the Wasco County CWPP. Wasco County 2040 therefore presents an important opportunity to support wildfire risk reduction across the county by providing a solid foundation of resilience-oriented community goals and policies upon which future hazard activities can be built.

Implementation Guidance

Background on Current Comprehensive Plan

Wasco County’s current Comprehensive Plan contains information on wildfire topics dispersed throughout the plan. References include:

- Detrimental effects of fire on local habitat and/or communities and other associated impacts (e.g., poor air quality);
- Fire occurrences on the land, including effects on rangeland and vegetation types;
- Detailed information on fire protection capabilities and fire protection districts;

[https://Wasco2040.com/bag](https://Wasco2040.com/bag)
Wasco County 2040 Comprehensive Plan

Wasco County Natural Hazards Mitigation Plan

Wasco County Community Wildfire Protection Plan

Where and how should growth occur?
What kind of fire protection resources are available?
Wasco County 2040 Comprehensive Plan

Wasco County Natural Hazards Mitigation Plan

Wasco County Community Wildfire Protection Plan

What kind of mitigation requirements are necessary?
Comprehensive Plan

Hazard Mitigation Plan

Community Wildfire Protection Plan

Regulations
WUI Landscape Regulations

• Home Ignition Zone vegetation mitigation
• Based on local wildfire risk
• Locally applicable and consistent approach- community benefit
• Alignment:
  – Between new and existing development mitigation efforts
  – Other regulations and community values
Common Problems

- Misconceptions of wildfire susceptibility
- No consistent local guidance/requirements
- Conflicting community values
- Conflicting regulations or initiatives
- Limitations to compliance
- Capacity
Town of Mammoth Lakes, CA
RECOMMENDATION 1: Adopt a New Wildfire Hazard Assessment

- Why This Recommendation Matters

Overview Mammoth Lakes Wildfire Risk Assessment History
Currently, there are two separate wildfire risk assessments that can potentially influence planning decisions within the Town of Mammoth Lakes: The first is the California Department of Forestry and Fire Protection wildfire hazard assessment adopted (with modifications) by the Mammoth Lakes Fire Protection District Board of Commissioners. The second is the Community Wildfire Hazard Assessment that was undertaken as part of the 2009 Mono County Community Wildfire Protection Plan (CWPF).

The Need for a Updated, Cohesive and Consolidated Risk Assessment
Current WUI research and best practices typically describe the wildland-urban interface as a "set of conditions" in which both vegetation (wildland fuels) and the built environment (built fuels) are influenced by weather and topography to create an environment where fire can ignite and spread through its combined fuel complex (the combination of wildland and built fuels). Our cohesive and comprehensive town-wide risk assessment and spatial definition of the WUI is necessary to provide consistent decision support for developing and implementing land use policies and regulations. The Mammoth Lakes Fire Protection District has recently engaged with the Anchor Point Group to produce a wildfire risk assessment in a format and scale that will support land use planning decisions and provide context for individual parcel-level assessments.

What is Wildfire Risk?
Wildfire risk can be visualized as a triangle, consisting of these components:
1. Likelihood of a wildfire occurring based on topography, weather, and ignition patterns; this can also include ignition sources from hazardous land uses (e.g., swales or proposed storage facilities);
2. Potential intensity of a wildfire (usually measured in flame length) based on vegetation type and weather conditions;
3. Susceptibility of values, sometimes referred to as Highly Valued Resources and Assets (HVRA). For land use planning purposes, values typically consist of communities, structures, and infrastructure, but other values that may be considered can include:
   - Recreation, tourism-based activities

Community Planning Assistance for Wildfire
IAFC.org/WUI
Challenges and Successes

- Tree preservation “Village in the Trees”
- Town landscape plan requirements
- Town visual screening requirements
- Mammoth Lakes Fire Protection District requirements
Improving Administration

• Streamlined permitting process
• Integration of MLFPD into plan review process
• Provide a prescriptive approach with a performance alternative
Partnership and Outreach Support

• Recommended plant list
• Partner with landscape industry:
  – Suppliers, nurseries
  – Horticulturists, Landscape architects
  – Landscape contractors
• Collaborative public outreach
  – Town of Mammoth Lakes
  – Mammoth Lake Fire Protection District
  – Mammoth Lakes Fire Safe Council
  – Landscape industry
Successful Regulatory Solutions

• Relate to local wildfire risk assessment
• Measurably contribute to wildfire risk reduction
• Involves local landscape industry
• Address conflicts (regulatory, practice, community values)
• Provide prescriptive and/or performance path
• Compel compliance and maintenance
• Account for local administrative capacity
BUILDING CODES AS A WILDFIRE MITIGATION TOOL
• Building Codes developed out of tragedy
• Great Chicago Fire
  – 17,000 building
  – 300 lives
• Peshtigo
  – 1,200,000 Acres
  – 2,500 killed
• Current – look around
WILDFIRE CODES – The Big 3

- NFPA 1144
- IWUIC (ICC)
- California Building Code
  - Chapter 7
- Consensus Codes
- Local Codes
WUI STRUCTURAL CODES

- 3RD LEG
- Time to focus on the exterior
- How structures ignite
- Designed to slow fire, not stop fire
- Wildland fire, not urban conflagration
WHEN THEY FAIL

- California
- Statistical average
- Weakest link
- No control group
OREGON CODES

- Progressive?
- Mini/Maxi
- Roof Ordinance
- SB 360
- Consequences

WELCOME TO OREGON
and thanks for visiting...
Now Leave!

IAFC.org/WUI
• Path to adoption
  – Chief Klienburg
  – Chief Sartain
• BCD
• Concessions
• Now in local hands
• Hurdles

HALLELUJAH!
(KIND OF........)
MOVING FORWARD

• Heavy lift begins
• Changing the narrative – cost vs. safety
• Cost? – Headwaters Economics study
• Our responsibility to our community
• Can’t extrapolate data from the past
LESSONS LEARNED

“Wise men learn many things from their enemies.”

— Aristophanes

• Always something to be learned from the other side
• Understand opponents
• Bridge the divide
• Get support from higher powers early
• What are you willing to accept?
• The best ways to persuade others is by listening to them
Design Review Standards and Guidelines

- In 2016 the Town of Vail amended its Design Standards to include use of Ignition Resistant Building Materials and Landscaping
- Inclusions were aimed at changing decades worth of irresponsible building and landscaping practices in the WUI
  - Designed to create a new aesthetic
Design Review Standards and Guidelines

Past desired aesthetic

New aesthetic
Design Review Standards and Guidelines

• 2016 – Town amended design guidelines to recommend use of ignition resistant building materials and landscaping designs
• Fire Department reviews development applications and provides comments on incorporation of design elements
Design Review Standards and Guidelines
Design Review Standards and Guidelines

• Opportunities
  – “Softer” approach than regulation
  – Educational tool -- Community, Professionals, Boards and Elected Officials
  – Uses non-prescriptive standards

• Challenges
  – Only addresses new construction or substantial remodels
  – Inconsistently applied
  – Requires substantial education for acceptance

• First step in long term changes to the community aesthetic and wildfire adaptation
Land Use Planning Tools

- Plans
- Regulations
- Incentives/ Voluntary Programs
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