



Why conduct wildfire risk assessments?

To encourage and inform better land use planning to reduce wildfire risk to the built environment

Community Planning Assistance for Wildfire | July 2017

What does successful land use planning look like for a fire adapted community?

Successful land use planning means a community has worked towards being fire adapted by applying policies and regulations that minimize wildfire risk to the built environment, including homes and other buildings and critical infrastructure.

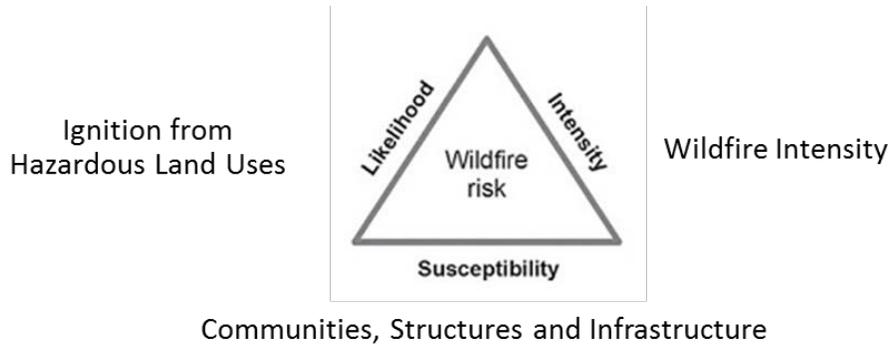
Scientifically-driven wildfire risk assessments—calibrated to local conditions—can be used to inform and justify where to apply regulations for existing and new developments. These regulations include development standards (location, setbacks, density, landscaping), subdivision design (road access, grade, width, signage), protection of water supply and critical infrastructure, and open space management, among others. As a result of good land use planning, federal land managers also are able to effectively maximize ecological benefits while minimizing suppression costs and the negative effects on community safety, economic, and social values.



What is the necessary scale for wildfire risk assessments to be useful in land use planning?

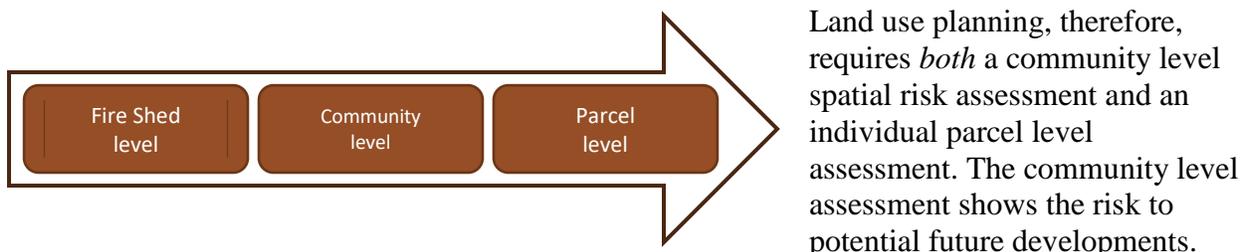
To implement appropriate land use policies and regulations that are effective in mitigating the wildfire impact on a community, local planners must first understand the wildfire risk. Once the risk is assessed, planners will use this information as the decision support tool to develop and defend land use policies and regulations appropriate to the level of risk.

The wildfire risk triangle consists of three primary aspects: likelihood, intensity and susceptibility:¹



Land use planning typically focuses on addressing the susceptibility aspect of the risk triangle by applying mitigating measures to the built environment through policy and regulation. Land use planning can also address a portion of the likelihood aspect by mitigating ignition sources through policy and regulation.

To be useful for land use planning, a wildfire risk assessment must be defensible and provide a spatially ranked delineation of risk at scales compatible with community planning – such as zoning districts, subdivisions, or parcels.



The individual parcel level assessment, or Home Ignition Zone level assessment, shows the susceptibility of individual structures on existing developments.

It is also helpful to include Fireshed level assessment which provides the likelihood and intensity context for a community level assessment. A Fireshed level assessment identifies: fire transmission pathways;² which stakeholders should be engaged; the possible implications of wildfire policy implementation to neighboring lands; and a community's role as a stakeholder in planning beyond their jurisdictional boundaries.

How can wildfire risk assessments be applied in land use planning?

The following examples demonstrate different ways wildfire risk assessments can inform and encourage better land use planning.

- To inform where development should be encouraged or avoided through incentives such as density bonuses, transfer of development rights or other growth management tools. Implementation of such policies can include a criterion which evaluates the degree of wildfire risk in a given area. Specified areas, such as those with higher risk, would be discouraged from allowing new growth, whereas areas with less risk would receive bonuses to redirect growth to those preferred locations.
- To justify where regulations are applied in different areas of a community through a designated wildland-urban interface or wildfire overlay zone. Based on spatially delineated risk, some neighborhoods may be required to manage hazardous vegetation or use different construction techniques and materials for new or existing development. A defensible risk assessment ensures that local regulations, such as building codes and landscaping ordinances, are appropriately applied and avoids controversies over implementation of local regulations.
- To provide the authority to make codes enforceable. While we know intuitively roof replacements, vegetation management, and other risk reduction measures are a good thing, (just like we intuitively know where the WUI is), we can only require these reduction measures if they are part of an enforceable, adopted regulatory code. A city council or board of county commissioners will not pass codes unless they can justify that applying these restrictions to specific areas of a community will reduce risk. Land use plans by themselves are not enforceable, but the codes are, and risk assessments provide critical justification for applying and enforcing codes.
- To require adequate fire protection standards. It can be difficult to require in every subdivision at least two means of access, adequate water supply, and other community safety requirements due to associated development costs. With the appropriate assessment, however, subdivisions in identified risk areas should be subject to adequate fire protection standards.
- To identify permitted and conditional land uses in higher risk areas. Some land uses may be inappropriate for identified risk areas, or require appropriate mitigation before they can be approved. For example, industrial uses that may include the storage of combustible or hazardous materials should not be permitted unless specific conditions for approval are required.
- To support a balanced approach to community planning for natural hazards. In addition, a risk assessment supports a more meaningful integration between wildfire and land use planning efforts. Communities often have an awareness of flood risk due to the prevalence of floodplain maps and regulations. However, without a valid risk assessment it can be

challenging to elevate the importance of wildfire within the Comprehensive Plan and other community plans.

In addition, wildfire risk assessments also can be used for:

Education and communication. To provide a spatial reference tool between multiple stakeholders, land management agencies, local planners and the public to build awareness and encourage discussion.

Political support. To empower county and city staff to take action. One of the first questions that residents, developers, and elected officials will ask community staff (for example, planners and fire marshals) is how the WUI was determined. Providing a consistent and defensible risk assessment enables community staff to discuss appropriate mitigation strategies based on the risk and enables local elected officials to justify improvements to land use planning.

Fundraising and grants. To strengthen and justify funding requests for grants and proposals, such as the support of cost-benefit analysis requirements, fuel treatments, and other fire adapted community activities.

Who should be involved in wildfire risk assessments?

In addition to fire modelers experienced in both wildland fire and wildland urban interface modelling, it is important to involve experts with knowledge in ecology, fire behavior, forest management, fire management and other specialties. It is also important to include knowledge from local subject matter experts (e.g., fire practitioners, foresters, ecologists, land use planners) in the development of wildfire risk assessments. Local knowledge can help calibrate the risk assessment by incorporating local information and expertise into the analysis. Integrating local knowledge also creates important ownership and buy-in throughout the process from local officials, who are more likely to understand and use the assessment if they can see their feedback was incorporated.

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About Community Planning Assistance for Wildfire (CPAW)

Established in 2015, Community Planning Assistance for Wildfire (CPAW) works with communities to reduce wildfire risk through improved land use planning. CPAW is a collaborative effort between Headwaters Economics and Wildfire Planning International. It is funded by the U.S. Forest Service and private foundations. <http://planningforwildfire.org/>

End Notes

¹ Scott, Joe H.; Thompson, Matthew P.; Calkin, Dave E. 2013. A wildfire risk assessment framework for land and resource management. General Technical Report RMRS-GTR-315. U.S. Department of Agriculture, Forest Service, Rocky Mountain Research Station. 83 p. <https://www.fs.fed.us/rmrs/publications/wildfire-risk-assessment-framework-land-and-resource-management>.

² Ager, Alan A.; Kline, Jeffrey D.; Fisher, A. Paige. 2015. Coupling the biophysical and social dimensions of wildfire risk to improve wildfire mitigation planning. Risk Analysis. 35(8): 1393-1406. <https://www.treearch.fs.fed.us/pubs/49471>.