Are state and local governments in the United States prepared for handling more wildland/urban interface costs?

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Abstract

Wildland/urban Interface (WUI) fire is a devastating and growing problem in communities all around the world. It threatens the safety and security of those who live, work, and play in areas where undeveloped lands meet developed areas as well as fire service personnel that protect those areas. That threat has grown dramatically. Planning can play a significant role in implementing what we know about minimizing the risk and impacts of wildland/urban interface fires. The concepts of anticipation, minimization, mitigation and prevention are fundamentals of planning. They can range from advocating the use of fire-resistant material in construction to promoting vegetation management (removing fuel), to designing fire safe communities. Planners and others involved with planning and development must be aware of this issue, although all planners need not be wildfire experts.

Wildland fire protection issues in the interface are extraordinarily complicated. All of the uniquely wide-ranging barriers must be overcome to address them. These barriers include legal man-dates, zoning regulations, fire and building codes, community grading and rating systems, environmental concerns, and cooperative protection agreements. Political, social and psychological factors further complicate the problems. Grassroots involvement from homeowners, local government, as well as other agencies, organizations, groups and councils has a part in solving this issue. Leadership and direction from a committed collaborative national wildland protection group with no political or turf issues, and with experience in planning and management is critical to adequately address this complex problem.

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Enabling community planning in the wildland/urban interface

It is a well-documented fact that catastrophic wildfires today are one of the most significant threats to communities and homeowners living in or adjacent to wildlands around the world. There has been accomplishments since the beginning of the decade, advancing coordination and cooperation in interface fire protection issues. Many countries have made significant strides. Increased communication with interface property owners, planners, elected officials, and others through education and awareness messages about the role of fire in wildland ecosystem health and inherent risks in interface areas. Expanded programs, curricula, and distribution systems for interface educational materials in cooperation with structural protection agencies have all helped. Yet we have a long way to go. The real challenge is to plan in the absence of a motivating catastrophe. Planning at all levels is required yet it must be coordinated and in full collaboration with all the appropriate partners. It has to start at the grassroots level, be integrated at the county or city level, blended at the geographic and national levels.

Planning can play a significant role in implementing what we know about minimizing the risk and impacts of wildland/urban interface fires. The notions of anticipation, minimization, mitigation and prevention are fundamentals of planning. They can range from advocating the use of fire-resistant material in construction to promoting vegetation management (removing fuel), to designing fire safe communities. Planners and others involved with planning and development must be aware of this issue, although all planners need not be wildfire experts. Plans, strategies, policies, and standards developed to address the wildland fire issue must be:

Practical, otherwise they will not be successfully applied,
Defensible, otherwise they will not be supported,
Reflect the reality of wildfire behavior, otherwise they amount to poor advice, and make sense, otherwise they will be ignored.

Many areas have developed comprehensive strategies that place a priority on working collaboratively within communities in the interface to reduce their risk from large-scale wildfire. In the United States the Healthy Forests Initiative and Restoration Act builds on existing efforts to restore healthy forest conditions near communities and essential community infrastructure by authorizing expedited environmental assessment, administrative appeals, and legal review for hazardous fuels projects on federal land. The Act emphasizes the need for federal agencies to work collaboratively with communities in developing hazardous fuel reduction projects, and it places priority on treatment areas identified by communities themselves in a fire plan process. At the same time, tens of millions of acres of healthy fire-adapted forests need to be kept healthy. That means getting fire back into the ecosystem in a prudent manner.

<u>Geographic areas</u>

Geographic areas have the lead for identifying communities at risk (or

alternately, landscapes of similar risk) on a geographic area-by-geographic area basis, with the involvement of all organizations with wildland fire protection responsibilities along with other interested cooperators, partners, and stakeholders.

The following are the guidelines that states are utilizing:

Using census data (or other suitable means) identify all communities in the state or similar area that are in the wildland/urban interface and that are at risk from wildland/urban fire, regardless of their proximity to government lands. Ideally, the results of this effort would be displayed on a map or series of maps.

Develop state-specific criteria for sorting communities (or landscapes) into three, broad categories (or zones) of relative risk, using the methodology described in the following section. You also may want to include a fourth category denoting little, or no significant risk.

Prioritize the categories/zones as high, medium, and low. Alternately, a classification of very high, high, and moderate may be more appropriate depending upon fuel types. Again, you may have a fourth category/zone that you would prioritize as having little, or no significant risk.

Using the identified criteria, sort communities (or landscapes) into each of the three categories or zones of risk. The product may be map-based with lines or colors depicting the three zones on a map or series of maps. In this case, all communities that fall within the same zone would be classified as having an equivalent degree of relative risk. Alternately, in some states cooperators may choose to use a written document to display how communities have been classified, such as a simple spreadsheet or table. In this case, individual communities would be listed by name under one of the three previously identified categories of risk.

If there are land ownerships that cross state lines (for example Indian Reservations or Forests), it is important to coordinate the risk assessment process with neighboring state(s) or countries to ensure consistency in classification.

After completing the assessment process for a specific community, strongly encourage the development of a mitigation plan to reduce the identified risks to the community, particularly for communities in the higher risk categories. Annually, using available mitigation plans or another similar analysis process, national agencies, state or geographic agencies, will each examine the lands under its own ownership or jurisdiction and, with the involvement of all interested parties, identify high priority fuels reduction and ecosystem restoration projects which have the potential to reduce the risk to a specific community or communities.

STEP 1 – IDENTIFY STAKEHOLDERS

The safety of the citizens of any community is a shared responsibility between the citizens, and the local, county, state and federal governments. The ultimate effectiveness of a wildfire plan in making significant changes in a community depends on the support of the people who live and work there, as well as those from surrounding areas and from agencies that have an interest in wildfire planning. When a broad range of appropriate stakeholders are involved in the planning process, the plan is more likely to address all of the relevant issues and gain greater acceptance from the community. A governmental entity or a commission appointed by a governmental entity should take the lead in the planning process since the local government is the only entity legally able to make decisions on public safety, public spending and so forth

STEP 2 – DESCRIBE THE COMMUNITY

The community description identifies the area the wildfire plan will affect, as well as resources that can be used to achieve the goals of the plan. It also provides an opportunity to list assets and resources that may be threatened by a wildfire. Much of the information below may be available by reviewing the county's "County Hazard Mitigation Plan." The community should work with the County Emergency Manager to obtain this information and to coordinate planning efforts.

Planning Committee Members List
List the names, affiliations and phone numbers of the planning committee members.

Population
Provide information regarding the population of the area covered by this plan, both rural and municipal. The area the plan will affect should correspond to the fire protection districts that surround the community.

Estimated Property Values at Risk
Provide an approximation of the estimated current values of residential and commercial property covered by the plan (the county assessor should be able to assist with this information). List the number of structures affected.

Economic Values at Risk
Describe how the loss of businesses and homes would affect the local economy (tourism, lost pasture land, out-migration)

Natural Resources at Risk
Describe the natural resources at risk in the surrounding area, such as parks, lakes, rivers, conservation areas, and wildlife refuges.

Historical Structures and Sites at Risk
List any historical structures and/or culturally significant sites.

Commercial Entities
List the contact information, location, and potential need for wildfire risk assessment for commercial entities.

Formal Associations
List the contact information for civic groups, churches, volunteer organizations, and so forth.

Media Support
List the contact information for local media, such as newspapers, television and radio.

Schools
List the contact information for all public and private schools.

Transportation List
The contact information for any railroad, highway, or other public transportation.

Restrictive Covenants, Ordinances, etc. Describe any pertinent restrictive covenants, ordinances, or other regulations that concern or impact wildfire. For example, list any regulations regarding building construction materials, burning permits, vegetation removal, tree trimming requirements and so forth.

STEP 3-INFRASTRUCTURE ASSESSMENT

An infrastructure assessment evaluates conditions that may improve or hamper emergency response during a wildfire. The community should work with the municipal and rural road superintendents and utility companies to complete this section.

A. Access/Community Location. Provide detailed information about emergency access in the community. This allows emergency responders from other counties, or state or federal entities hat are unfamiliar with the area to easily locate the community in the event of a wildfire.

Include latitude and longitude coordinates and maps if possible.

B. Roads
Provide information regarding the condition and types of roads. Will roads and bridges be able to handle heavy emergency response equipment? Can emergency response equipment easily enter and exit residential areas? Can mutual aid agencies find roads easily? Reviewing and mapping the following items may be useful when assessing infrastructure:

- Presence of road signs.
- Presence of paved, gravel, and dirt roads.
- Number of roads that will support (#) lanes of traffic.

- Presence of loop roads.
- Presence of dead-end roads.

Review turnaround space available at the end of the road for emergency equipment. Since roads can provide places from which to fight wildfires, identifying these resources prior to a wildfire is crucial information for emergency response personnel.

C. Driveways

Provide a general assessment of the driveways with regard to emergency equipment access. Are width and height clearance and road grades adequate for emergency equipment? Do individual homeowners have their name and address posted in visible locations?

D. Structures

Assess the vulnerability of structures to ignition. Research shows that if a wildland fire ignites a building within a community, it is often that burning structure rather than the wildfire itself which will ignite other structures. For this reason, it is important to understand how a wildfire would likely enter the community, which structures are most vulnerable, and how they could cause further damage in the community.

Reviewing the following may be useful when assessing the vulnerability of structures:

1) Use of defensible space around buildings.
2) Wood-frame construction
3) Type of siding used
4) Wood decks or porches
5) Wood shake or shingle roofs .
6) Visibility from the main road
7) Abandoned or unmaintained buildings in vulnerable areas
8) Prevailing wind direction (buildings on certain sides of town may be more vulnerable)

E. Bridges and Culverts
Assess infrastructure for potential obstacles to emergency response.
Consider weight, height, and width of emergency vehicles

F. Utilities
Assess and provide information on the utilities serving the community. Damaged utilities, such as downed electrical lines or propane tanks, present hazards to the public and emergency response personnel. They can hamper communications during a disaster and create health and safety issues. Note areas where utilities may be at a higher risk for damage during a wildfire.

Telephone service is (below/above) ground.
Provided by: Telephone #

Electrical service is (below / above / both) ground.

Provided by: Telephone #:

Are there homes or structures utilizing propane? If some are above ground, are they marked with a flag or by other highly visible means?

List & map locations of propane tanks above ground
Are there homes or structures utilizing natural gas?

Note primary water sources such as: central water systems, individual wells, or additional private water sources. Water provided by: Telephone #:

G. Wildfire Risk
Assess the community's fire risk, including its fire history, the presence of hazardous fuels in the area, and related issues. As described in Section D, a community's risk from wildfire is related to the vulnerability of the structures within it.

Wildfire risk, though, also consists of other factors, such as the amount of flammable fuels around the community. An increased wildfire risk may be found in areas containing an accumulation of trees, shrubs and grasses, or where there are mature CRP fields. National grasslands and wildlife refuges may also contain high fuel loads. During drought conditions, these areas can contribute to more extreme wildfire behavior. Analyzing the fuels will help identify areas where mitigation actions can reduce fuels, where firebreaks are needed, or where the community should work together with landowners to reduce risks.

Another factor affecting a community's wildfire risk is the historic occurrence and cause of wildfires. After analyzing these factors, a community it may find, for example, that most wildfires occur in April and October, and most are caused by agricultural or trash burning. The community may decide that implementing a wildfire awareness campaign during those months could lessen the risk from wildfire. Factors to consider include:

- Area Fire History
- Month/Year of Fire
- Acres burned
- Ignition point
- Prevailing wind direction
- Ignition source

> **Presence of hazardous fuel sources** – identify places where fuel loads are high, such as forested areas, mature CRP fields, or large grasslands.

> **Describe how natural resources within the community are managed** or could be managed to reduce fire risk.

> **Describe any regulations affecting burning** in the community.

STEP 4 –WILDFIRE MITIGATION

After assessing the condition of the community's infrastructure and its vulnerability to wildfires, the community now needs to determine how it will address those issues and reduce its vulnerability. This part of the plan is the hazard mitigation section, and it states the goals of the community, identifies specific actions needed to meet these goals, identifies timelines for achieving the goals, and lists responsible parties, resources and priorities.

a. Goals-Provide a brief statement of the goals of the Community Wildfire Plan. Goals should address the following:
- Fuel Reduction/modification
- Facilities and equipment
- Infrastructure Improvements (Utilities, Water Developments, Equipment Acquisition/Repair)
- Wildfire Prevention Education/Awareness

EXAMPLES OF POSSIBLE GOALS

1. Decrease fuels to reduce wildfire intensity and impact in and around the community and maintain those areas in a Firesafe condition.*

2. Educate community members to prevent, prepare for and respond to wildfire.

3. Actively address identified regulatory issues impacting community wildfire prevention and response needs.

4. Regularly evaluate, update and maintain planning commitments.

Fire safe and Firewise are programs that encourages certain building, landscaping and maintenance practices to reduce vulnerability to wildfire. Smaller communities can receive a wildland/urban interface (WUI) assessment from a WUI assessor, and fulfill requirements for recognition status through wildfire planning and activities. Actions describe projects needed to complete the goals of the plan.

EXAMPLES OF POSSIBLE ACTIONS

Fuel modification projects will be implemented through:

Educational campaigns utilizing informational meetings, brochures, Firesafe workshops, and a community assessment by a fire expert.

Group services, such as hauling, cutting, chipping, and roofing.

1. **School and youth** community service projects.

2. **Fuel break development** and establishment with the assistance of state/federal fire experts.

3. **Community roadside cutting,** spraying, and reseeding projects.

4. **Identification of Responsible Parties,** Resources and Priorities
   Outline how the action items will be accomplished by listing
   responsible parties (person who is responsible for each action),
   resources (assets needed to complete actions), and priorities
   (designating each action as high, medium or low priority). Include a
   timeframe for completing the goal/action item.

5. **Monitoring and Evaluation**
   Describe how this plan will be monitored and evaluated over the
   next 5 years. How will the document remain a living document?
   Who will make sure the information is current and correct?

STEP 5- WILDFIRE RESPONSE

After assessing the community's vulnerability to wildfire and planning how to address
mitigation issues, the next step is to determine how the community will respond to a
wildfire. This part of the plan creates the community's emergency response structure.
It lists emergency support equipment and identifies what the emergency support units
require to safely and efficiently respond to a wildfire. Each county should also have a
response plan in place. The community plan should take the county plan into
consideration and whenever possible, community and county plans should complement
each other and there should be no conflict between the two plans. The community
should work with fire departments, law enforcement, emergency medical services and
the County Emergency Manager to complete this section.

Emergency Services Equipment. Describe and list the types of emergency services
and equipment available from private, local, county, state, and federal resources.
Include contact information.

Wildfire Preparation Plan. Communities should have a wildfire "Preparation Plan" in
the event a wildfire exceeds local fire department capability. If, during a wildfire
incident, the local fire department determines that the fire is going to exceed their
capacity to control it safely and efficiently, they will call on their mutual aid partners
for support. The department must also have a mechanism in place to contact the county
emergency manager if the fire exceeds the capacity of mutual aid. The county
emergency manager will contact the Emergency Management group if additional
resources are required. Working with emergency response personnel, the community
should determine what steps to take if a wildfire exceeds local suppression efforts.
Addressing the following issues in a response plan may save time, money, property and
lives:

Emergency notification procedures

- Briefing template for incoming personnel on safety and hazards
  (Templates are available from the NDFS, and include information on
  jurisdiction, incident location, fire size and behavior, weather, fuels,
  topography, hazards and assets at risk

- How local fire departments will coordinate their efforts.

- Fire protection responsibilities and response times for private, state and federal   agencie

- Factors in determining evacuation vs. shelter-in-place

- How to accomplish evacuations.

- Traffic control for evacuations and incident management.

- If an Incident Command System is put in place by authorities, who in the community will be a liaison?

- Pre-determined locations for:
    a. Incident Command Post
    b. Staging Areas
    c. Fire Camps
    d. Early Warning Systems -Are early warning systems (sirens, radio/TV broadcasts) in place in the community?
    e. Water Sources Map areas where water may be obtained during a wildfire. Areas include: ponds, hydrants, dry hydrants, cisterns, water tanks, swimming pools or other water storage areas.
    f. Training Needs and Equipment-Work with the rural fire department to assess the current and needed equipment and training to respond to a wildfire event.
    g. As in Step 4, list the response plan's goals, actions, responsible parties, resources and priorities, and how monitoring and evaluation will be accomplished.

STEP 6 – MAPS

Maps are a critical part of a wildfire plan. They identify areas that contain hazardous fuels, infrastructure that will not support emergency vehicles, evacuation routes and so forth. They also provide emergency response personnel with crucial information needed during an incident, such as the exact location of transportation routes and critical facilities. Copies of maps should be included in an appendix of the plan as well as made available to all local emergency personnel and to any additional resources that may be called upon during a wildfire event.

For communities and homeowners

> **Step 1: First, recognize that you have a problem.**
> Set-up a simple workshop that brings in all of the homeowners and key players and discuss and look at what you can do.
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Step 2: Develop a team
Form a group made up of homeowners, appropriate local governments, local fire authority, and emergency management organizations and others as deemed necessary from your workshop attendees.

Step 3: Involve National, Geographic and Local Agencies

Identify and engage local representatives of Federal and State land management agencies.

Step 4: Engage all interested parties

Contact and encourage active involvement in fire plan development from a broad range of interested organizations and stakeholders, you can develop this from your first workshop.

Step 5: Establish a community base map

Work with partners to establish a baseline map of the community that defines the community's interface and displays inhabited areas at risk, forested areas that contain critical human infrastructure, and forest areas at risk for large-scale fire disturbance.

Step 6: Develop a community risk assessment

Work with partners to develop a community risk assessment that considers fuel hazards; risk of wildfire occurrence; homes, businesses, and essential infrastructure at risk; other community values at risk; and local preparedness capability. Rate the level of risk for each factor and incorporate into the base map as appropriate.

Step 7:   Establish community priorities and recommendations

Use the base map and community risk assessment to facilitate a collaborative community discussion that leads to the identification of local priorities for fuel treatment, reducing structural ignitability, and other issues of interest, such as improving fire response capability. Clearly indicate whether priority projects are directly related to protection of communities and essential infrastructure or to reducing wildfire risks to other community values.

Step 8:   Develop an action plan and assessment strategy

Develop a simple yet detailed implementation strategy to accompany the Fire Plan, as well as a monitoring plan that will ensure its long-term success.

Step 9:   Finalize community wildfire protection plan

Finalize the plan and communicate the results to community and key partners.

Step 10: Bring key players back for a workshop to evaluate

Plan a short evaluation workshop and make sure everyone is in attendance to review and evaluate the plan.

The key to successful wildfire planning is extensive participation from a wide variety of community representatives. With broad stakeholder support, a wildfire plan represents the dedication of individuals proactively protecting their community. Through proper planning, communities can take action now to mitigate or prevent the destructive effects of a wildfire, as well as be prepared to properly respond to a wildfire. Assist with the implementation of these plans.

The autonomy and multiple mandates of federal agencies contribute to inconsistent and sometimes conflicting policies and procedures. Federal, Tribal, State, and local agencies, as well as the private sector, are all facing the interface protection issue. Even though past reports, reviews, and mitigation plans have articulated the problems and recommended solutions, many of the problems still have not been solved. The National Fire Plan, The Cohesive Strategy, the Healthy Forests Initiative and Healthy Forests Restoration Act and other programs like Firewise, Firesafe, Firefree and Firesmart are helping. But we have a ways to go.

In conclusion, no one will argue that wildland fire protection issues in the interface are extraordinarily complicated. All of the uniquely wide-ranging barriers must be overcome to address them. These barriers include legal mandates, zoning regulations; fire and building codes, community wildfire protection planning, basic fire protection infrastructure, insurance/fire protection grading and rating systems, environmental concerns, and protection agreements. Political, social and psychological factors further complicate the problems. There is no one simple solution. Leadership and cooperation is essential, but grassroots involvement, meaning homeowners, local government, as well as all of the other agencies, organizations, groups and councils have a part in solving this issue. Being decisive and setting into motion the actions to solve this issue is a top priority and essential to for all of us.

We all need to stand committed and ready to provide our key staff in making this effort timely, productive, and meaningful. Most importantly we see this concept as a way to bring all of the organizations, groups, associations and councils collaboratively together to solve this International issue.

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