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Community Wildfire Protection Plans: Reducing Wildfire Hazards in the Wildland Urban Interface

The 2003 Healthy Forests Restoration Act calls for local communities in the wildland-urban interface to collaborate on developing Community Wildfire Protection Plans to reduce their wildfire hazard. To craft a successful CWPP, a community must collaborate effectively. A Joint Fire Science Program-sponsored research team studied 15 communities as they developed CWPPs. They found that social networks, learning communities, and community capacity were key indicators of success, and that working together on a CWPP can enhance a community's capacity to collaborate, helping it address future challenges more skillfully.

WUI communities develop their own wildfire-protection plans—and improve community capacity in the process.

A new species of human habitation

The wildland-urban interface—that zone where human development intermingles with undeveloped land—has been called "a new species of human habitation." Neither rural nor urban, neither wild nor tame, the wildland-urban interface, or WUI, is a belt of territory between sparsely populated agricultural, forest, and rangeland and more-populated cities and suburbs. The WUI constitutes more than 9 percent of the land mass in the lower 48 states, and it is expanding every year.

Extensive areas of WUI are found around many metropolitan communities, where subdivisions push against adjacent wildlands to create a complicated human and natural geography. Patches of forest are studded with houses every few acres; paved driveways circle through old farmsteads cut up into homesites; vacation developments are enclosed by barbed-wire fences to keep out curious cattle; resort communities grafted onto old mining towns are wedged up against national forest boundaries.

To a county fire marshal or a federal fire manager, the WUI presents special challenges. Beyond the sheer rapid growth of these communities, a constellation of factors is placing them at risk from wildfire. Not only does their location potentially put them in the fire's path, but home construction and landscaping within the WUI often do not follow fire-safe precautions. It's common to see homes with cedar-shake roofs and yards filled with shrubs from foundation to property line. In vacation communities especially, houses may be unoccupied and grounds untended most of the time. Insects, other pathogens, and invasive weeds are increasing the flammability of many areas of forest and grassland. Finally, global climate change is contributing to longer fire seasons.

"Nobody wants to see a forest burn out of control."

The fire risk in the WUI zone not only threatens life and property, it is also a hazard to firefighting budgets. The Forest Service has responsibility for managing fire on 193 million acres of national forest and grassland. Now that human development has encroached upon many of these lands, agency firefighters—hired and trained to fight wildland fires—put themselves at risk to protect homes. In fact, in the last decade most of the Forest Service's fire-suppression dollars have been spent protecting homes in the WUI.

The severe wildfires of recent years have focused nationwide attention on the WUI, and many communities are taking steps to reduce their risk from wildfire. Such efforts are bringing together federal agencies, state and local agencies and government bodies, tribes, community groups, and citizens from across the nation to confront a common threat. "Fire protection is a 'white hat' issue—it tends to get people to the table," says Pamela Jakes. "Nobody wants to see a forest burn out of control."

The Research Team

Community Wildfire Protection Plans:
Enhancing Collaboration and Building Social Capacity
(JFSP Project 04-S-01)

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Jakes is a research forester for the Forest Service and co-lead researcher on a recently completed, JFSP-supported study of how communities work together to protect themselves against wildfire. The research team focused on a tool called a Community Wildfire Protection Plan, or CWPP, created under the Healthy Forests Restoration Act (HFRA) of 2003.

The HFRA calls for communities to work collaboratively to develop CWPPs. The plans must identify and prioritize fuel treatments and set forth strategies to reduce the ignitability of houses and other structures. A CWPP has to have buy-in from the applicable local government (for example, a county or township), the local fire jurisdiction, and the state agency responsible for wildfire management.

As might be expected, given the West's recent severe wildfire seasons, western communities have embraced the idea of CWPPs, which were created with WUI communities specifically in mind. At least 44 counties in Idaho have developed them, as have more than 45 communities in Washington, more than 50 in Oregon, and nearly 40 in New Mexico. According to the 2008 Healthy Forests Report, about 75 percent of all CWPPs are in western states, and just over half of the 6,312 "communities at risk" in the western states are covered by a CWPP. Plans are also being adopted in eastern and midwestern states, including Arkansas, Florida, Minnesota, Virginia, and Wisconsin.

CWPPs are "the new kid on a block already crowded" with various wildfire planning and mitigation efforts, according to Victoria Sturtevant, sociologist at Southern Oregon University and member of the research team. For the past couple of decades, national programs like the National Fire Plan and Firewise Communities USA, as well as state programs like California's Fire Safe Councils, have helped counties, cities, and smaller entities like homeowners' associations develop plans to protect themselves from wildfire. Many communities across the country have taken advantage of the technical and organizational resources and networking opportunities these programs offer.

From "my property" to "our property"

The CWPP process builds on these ongoing efforts in two ways: by encouraging more collaboration at the community level, and by giving local stakeholders more influence over fuel-management decisions on federal lands.

The law does not make any government entity responsible for initiating a CWPP, nor does it define what "community" means. This opens the door for leadership to develop at a scale that makes sense for the community in question, whether a neighborhood, a township, a city, or a county. Local entities such as these are expected to engage with local stakeholders and state and federal agency managers to develop a plan tailored to the community's own fire-risk situation.

"We want you to take responsibility for managing your fire risk."

Says Jakes: "The HFRA is saying, 'Look, communities, we want you to take responsibility for managing your fire risk. We want you to do it collaboratively. We want you to identify and prioritize fire risk and we want you to reduce structural ignitability. And how you go about doing this is pretty much up to you.'"

Earlier WUI wildfire-mitigation efforts tended to focus on the individual homeowner—offering advice such as how to create defensible space around a home or how to thin flammable brush from one's private forest. Currently, most programs also encourage

David Williams

Typical home with high fuels in Grizzly Flat, California.

David Williams

Typical home in Grizzly Flat, California, after cleanup of fuels.

collective action, says researcher Dan Williams, but a CWPP scales the process up. "This is a natural evolution: the shift in emphasis from 'my property' to 'our property,'" says Williams, a Forest Service research social scientist and co-leader of the study team. "The key idea [of CWPPs] is that effective protection from wildfire is embedded in landscape and community, where risk operates at a larger scale."

"It's an opportunity to map the area that's a high priority for protection in your community."

Accordingly, a CWPP gives a community the power to define the WUI for itself—that is, to create a customized map of the surrounding wildland-urban interface that includes resources of local value on both private and public land. "It's an opportunity to map the area that's a high priority for protection in your community," says Jakes, "and to make that area as big or as small as you want." If a community writes a CWPP with a WUI map that includes federal lands, then managers of those lands must make the community's fuel-reduction projects a priority when allocating their fuel-treatment budgets. This gives federal managers an incentive to partner with local communities in developing and sustaining their CWPPs, and it gives local communities real influence over fuel-reduction projects on nearby federal lands.

In practice, says Sturtevant, communities take a variety of approaches to the WUI question. Some smaller communities, such as neighborhood organizations or property owners' organizations have not chosen to incorporate a WUI definition into their planning, although some go back and add one in later. Some communities' plans are embedded in a larger plan that defines the WUI. Some communities have relied on WUI definitions developed by state or federal agency managers. Nevertheless, because communities can define their own WUIs, the CWPP process makes it possible to incorporate public and private land into a single CWPP, thus encouraging a landscape-wide approach to wildfire protection.

The people factor

Jakes, Williams, Sturtevant, and their colleagues share a social-science background, with rural sociology, policy science, and environmental psychology part of the mix. From the standpoint of human interactions, they say, the WUI tends to be "a complex mix of social adaptation and local culture" in which the customary dichotomies of rural/urban, blue collar/white collar, and extractive industry/amenity tourism cannot tell the whole story. Because of its fast growth, diverse populations (including many part-time residents), and geographically scattered households, the WUI tends to lack the social cohesion of more stable places like city neighborhoods or farm towns. The social dynamics of WUI communities are not well understood, yet they play a large role in how successfully national wildfire policies are implemented in WUI communities, and how these communities cope with fire preparedness or any other resource issue.

Pamela Jakes

Bill and Claire Cave live in Auburn Lake Trails, a Firewise Community studied by the JFSP researchers.

Pamela Jakes

Landscaping around the Cave's home: Reducing structural ignitability merges appropriate building materials and architectural design with fire-wise landscaping.

This underscores a point often overlooked: addressing the fire hazard in the WUI zone is not just a technical problem—not simply a matter of finding the most effective brush-clearing or home-construction techniques. Much good research has been done on such subjects, say the researchers, but it is even more important to understand the "people" factor—the diversity of experiences, attitudes (especially toward environmental issues), social classes, political leanings, economic interests, and collective social resources of WUI communities.

The research team examined the social dynamics within 15 communities as each one developed its CWPP plan. The study communities range in size from neighborhood (High Knob near Front Royal, Virginia, and Em Kayan near Libby, Montana), to unincorporated town (Auburn Lake Trails and Grizzly Flat, California, and Taylor, Florida), to city (Ashland, Oregon) to county (Josephine, in Oregon, and Lake, in Minnesota). In between are areas where smaller, dispersed communities have joined together to create a CWPP.

"Outreach seems like a no-brainer, but it is very difficult in practicality."

The law's ambiguity about who is supposed to be in charge proved a mixed blessing, says Pam Jakes. "Some communities just spun their wheels—they didn't know what to do. But in communities that already had a high awareness of the problem and the need for action, [the law] provided flexibility for local champions and local stakeholders to initiate or lead the process."

Most of the study communities had already developed wildfire plans under the National Fire Plan or some other program. In other words, they already had some practice at collective action. For them, the CWPP process consisted of modifying the earlier plans and folding them into the new plan. For example, two of the study communities that had developed plans under the Firewise Communities USA program expanded those plans to meet CWPP requirements. Some communities ended up with plans nested within plans: for example, the Illinois Valley (Oregon) CWPP was included in the larger CWPP for Josephine County.

Typically, the researchers found, people in local government and managers from state and federal agencies initiated and sustained the planning efforts; there was not much grassroots initiative from private citizens. "We found that most CWPPs were done at the county scale," says Sturtevant, "and in many cases the communities, or their representatives, were not initially at the table. In Josephine County [Oregon], for instance, an integrated county plan was prepared and then smaller communities were expected to tier off that."

A CWPP is supposed to have buy-in from local residents because they are the ones expected to benefit most from the results. In most cases, private citizens and landowners were drawn into the process after it started through outreach efforts from the core planners. Success of the outreach was variable, says Sturtevant. "Outreach seems like a no-brainer, but it is very difficult in practicality. Programs like Firewise and Fire Safe Councils helped a lot with community outreach, but some of the CWPP processes didn't have the funding or ability to mount extensive outreach."

The researchers also found that intermediaries—people from organizations and institutions inside or outside the community—were important catalysts of the CWPP process. Many of these intermediaries were contractors (some of them retired Forest Service employees), who had helped other communities develop CWPPs, and who brought information, skills, technology, experience, and organizational capacity to the process.

Pamela Jakes

A private landowner near Libby, Montana, thins fuels and burns slash.

Lessons in Partnership

Now more than ever, as fire-prone areas in the WUI become more populated, managers need to know how to engage communities effectively in wildfire protection. But what does effective engagement look like? Researchers have learned what works and what doesn't by watching communities go through the process of organizing themselves against wildfire loss, as the JFSP research team did when they examined the 15 CWPP communities. They have also approached the question in a more theoretical way from perspectives that include cognitive theory, sociology, systems theory, communications, and marketing. Together, these approaches are producing a growing body of useful knowledge for managers.

For example, Adam Liljeblad and William Borrie of the University of Montana and Alan Watson of the Aldo Leopold Wilderness Research Institute have explored the concept of trust in a case study of several communities in Montana's Bitterroot Valley (JFSP Project No. 03-1-2-02; see Suggested Reading). The researchers broke down the generalized notion of "trust" into three dimensions: the extent to which people in communities share norms and values, the perception that others are acting in good faith and reciprocating one's trust, and the perception that others are acting in expected ways. Further analysis led to methods for measuring these three strands of trust in the context of fuel-reduction projects proposed by Forest Service managers in the Bitterroot Valley. Contrary to some perceptions, the researchers found generally high levels of community trust in agency intentions and actions. They were able to segment the study population and identify the characteristics of those people who tended to be less trusting. Their results open the way for further research to find better ways to engage these "lesser-trusting" members of a community.

Another JFSP project by Bruce Shindler and Eric Toman of Oregon State University looked at community fuel-reduction projects across the United States and evaluated the communication strategies used (JFSP Project No. 01C-3-317; see Suggested Reading). Their goal was to identify and prioritize the elements of a successful communications campaign and guide managers in adapting them to specific situations. The researchers found that people surveyed were generally aware of, knowledgeable about, and supportive of fuel-reduction efforts and trusted agency people to carry them out, and that the right communication strategies, used in the right order, increased the effectiveness of outreach. Shindler and Toman identified three stages in the communication effort: building awareness, increasing public acceptance, and motivating people's behavior. Strategies that might be adequate for the first stage—for example, a newspaper insert or web site announcement—were less effective later on, when more focused, more interactive formats would be called for. Shindler and Toman's 2005 guidebook, *A Practical Guide to Citizen-Agency Partnerships* (see Suggested Reading), offers a priority-based approach for managers who want to build or improve on a public-outreach program in their community.

Finally, a Forest Service team of social scientists, including Pamela Jakes, has synthesized recent social-acceptability research into a handbook titled *Social Science to Improve Fuels Management: A Synthesis of Research on Assessing Social Acceptability of Fuels Treatments* (see Suggested Reading). The handbook offers lessons in many communications-related topics, including understanding one's audience, constructing persuasive appeals, crafting a successful message, choosing appropriate delivery strategies, choosing the right medium for delivery, assessing levels of trust, and engaging in effective partnerships. A set of case studies demonstrates these strategies in action, and the authors provide an extensive bibliography.

Pamela Jakes

In communities with significant community capacity, financial, political, and human resources come together to support a CWPP.

Social capital

A successful CWPP process demands a fair degree of social capability—communities have to be able to initiate and work together on a sustained, often difficult project. The researchers found important commonalities among the study communities. Three in particular seemed critical: **social networks**, **learning communities**, and **community capacity**. Interestingly, these same elements were also *outcomes* of successful processes—suggesting that embarking on a CWPP can strengthen a community and equip it for other collective tasks.

Social networks are those human relationships that facilitate interactions, help people do things together, and strengthen shared identity. The

Six Steps for Effective Community Outreach

1. Organize an outreach plan within the management unit before approaching the public. This initial step involves creating a plan that allows agency personnel to agree on how community members will be included and how to communicate with them in an organized and effective manner.

2. Choose the right people for the outreach job and then support them. The ability to make genuine connections with citizens is a special talent; not everyone is adept at this aspect of the job. However, it is these personal relationships that form the foundation of successful partnerships.

3. Take advantage of existing resources and build the fire message. Local residents already know each other and usually have defined accepted forms of communication in their community. In many cases, they have also figured out how to work together for a common purpose.

4. Create opportunities to meet the local community in their setting. It is important to meet with citizens in their "backyards" and other familiar places where they have a stake in the outcomes. When projects are relevant to citizens as well as agencies, people can work together to accomplish mutual objectives.

5. Let your actions speak for your intentions. People respect and respond to individuals they view as trustworthy. Citizens are looking for leaders who share their concerns. A manager's actions and professional competence are the criteria by which people judge the sincerity of your efforts.

6. Stay in it for the long term. Building and maintaining partnerships requires a sustained commitment. Effective partnerships reflect an iterative process; one that builds on itself, one interaction or one project at a time. Success is achieved by organizations that promote trust and relationship-building as the long-term goal of public interactions.

—From Bruce Shindler and Eric Toman, *Evaluating Community Strategies and Local Partnerships: Methods for Reducing Fuels, Sharing Responsibility, and Building Trust* (JFSP Project No. 01c-3-3-17).

Tony Simons

Homes in the Windcliff subdivision near Estes Park, Colorado.

researchers found that the CWPP process not only tapped into a variety of social networks within the study communities, but encouraged further networking. For example, local fire departments were often already in touch with other emergency management agencies. The CWPP process linked this network more closely with community groups such as homeowners' associations, town councils, and conservation organizations.

Enriching networks facilitated better communication, helping to ease pre-existing tensions and improve overall community relations. Says Sturtevant: "We constantly heard that stronger relationships, both among agencies and between agencies and the community, allowed people to get work done that they couldn't have done earlier."

The researchers defined **learning communities** as "places where people come together to share knowledge that affects performance." Learning communities tend to evolve in environments that encourage people to share information rather than withhold it. People who are part of a learning community find it easier to negotiate a shared reality, such as a common framework for understanding a problem.

Because the CWPP process requires many different kinds of learning, the flow of knowledge within a learning community can be rich indeed. For example, in East Portal, Colorado, the Forest Service furnished GIS maps of fuel and topography; the National Park Service shared information about forest ecology; the Colorado forestry department provided data on fire behavior and forest management; the local fire department shared its expertise on fire response; and community members identified and mapped their shared values. Information flowed through many channels: team meetings, field visits, homeowner association meetings, demonstration projects, and community events.

Learning communities were better equipped for success in every way: their CWPPs provided strong strategic direction and well-defined roles and responsibilities, and the habit of sharing information boded well for carrying out CWPP measures in the future. People in learning communities were better informed, more trusting of their planning partners, and more supportive of measures to reduce fire risk.

Community capacity is a big concept that encompasses all the ways in which communities are equipped to take care of themselves. Well-equipped communities have enough "capital" in the form of both tangible assets like money, credit, physical

infrastructure, and natural resources; and intangible assets like human knowledge and skill, social cohesion, cultural traditions, and local leadership—collectively known as "social capital." Social capital, say the researchers, can be defined as both the "glue" that binds a community together and the "grease" that enables it to function.

Perhaps the team's most encouraging finding is that the CWPP process itself increased community capacity. In working together on a CWPP, communities built up their leadership, strengthened relationships, improved coordination, enhanced stewardship and community acceptance for projects, facilitated learning communities, produced successful projects, and most of all, created a sense of hope and trust.

"When we asked people what the most important outcome was for them," says Pam Jakes, "they told us that it was building awareness, building partnerships, and coming to a shared understanding. All those are vital to community capacity. We'd say, "'Well, what about reducing fire risk?' and they'd say, 'Oh, yeah, we did that, but this other thing was really important.'"

Getting the knowledge out

In keeping with the JFSP's practical focus, the CWPP researchers built their outreach into the project from the very start. They realized their target audience was diffuse and hard to characterize, consisting of people who didn't necessarily move in discrete social or professional circles. To help them sharpen their focus, the researchers called together an advisory group of people with experience working on a community CWPP. The group helped the researchers design their study so that the information gained would be immediately useful.

Once the project started, Sam Burns, a sociologist at Fort Lewis College in Colorado and the team's designated knowledge-transfer specialist, urged his fellow scientists to stay focused on their goal. "Sam held our feet to the fire," says Pam Jakes. "He'd stop us mid-sentence and say, 'Okay, this is intellectually interesting, but so what? How are people going to use it?'"

The advisory group suggested that personal interaction was the most effective method of knowledge transfer, says Jakes. "But we couldn't do

Pamela Jakes

Strong historical ties to the forest industry help Libby residents understand the role of logging in reducing fire risk.

Creating a Community Wildfire Protection Plan? These Quick Guides Can Help.

From studying 15 diverse communities as they developed their Community Wildfire Protection Plans, the Joint Fire Science Program research team gleaned general principals about community collaboration, including factors that can help or hinder any collective effort. They've organized their insights into 19 succinct, two-page "Quick-Guides" to help other communities embarking on a CWPP process.

The guides are organized into four broad headings, (1) community context and readiness, (2) the CWPP development process, (3) outcomes of collaboration, and (4) resources for support. They cover such topics as existing leadership within a community, the scale of the wildfire problem, key components of a CWPP, factors that influence collaboration, resources contributed by government participants, and monitoring the outcome of the CWPP process. The Quick Guides are on the project website, http://jfsp.fortlewis.edu/.

Joe Walsh

Residents participating in a Windcliff work day.

face-to-face with every community doing a CWPP, so we hit on the idea of regional workshops." She, Burns, and Sturtevant conducted the first day-long workshop in Eugene, Oregon. Burns and Williams were joined by Tony Cheng for the workshop in Golden, Colorado, and Burns and Kristen Nelson conducted a third workshop in Rhinelander, Wisconsin.

Not surprisingly, the team found that their different audiences had different needs. "In Oregon, people were way out in front; they'd already developed CWPPs and were in the process of updating and revising them," says Jakes, whereas communities in the Great Lakes region were closer to the beginning stages. The researchers tailored their presentations accordingly, revisiting their findings and learning from participants as they went along.

In the process, the team made a serendipitous discovery: they were creating, and participating in, the very sort of learning community they had been studying. "And that's where we think the focus of knowledge transfer should be," says Sam Burns. "It's not just that we transfer the findings of the research. While that is a piece of it, it's not the most important piece. The most important piece is that participants get to bring their own experiences to the table," and be respectfully listened to.

In other words, it's not so much knowledge transfer as knowledge creation, he explains. "I like the word 'deliberative.' Deliberative means you learn by listening to one another. Together we jointly, mutually, deliberatively create knowledge."

The final workshop (an abbreviated version of the all-day sessions) was held last November at the biennial Backyards and Beyond conference in Tampa, Florida, sponsored by Firewise Communities USA. The conference draws together people from many areas and backgrounds, all interested in mitigating fire risk. Last year's conference was an opportunity for workshop participants and researchers to network on a national level. Drawing on feedback from all the conferences, the team has now created a series of 19 two-page "Quick Guides" summing up key lessons about the collaborative processes necessary for CWPPs. (The Quick Guides are available at http://jfsp.fortlewis.edu/).

For Dan Williams, the dynamic nature of such collaboration—the back-and-forth between scientist and practitioner, the fluid boundary between teacher and learner—is the most exciting thing about this kind of research. "This project enables me to ask the question: knowledge for whom? Knowledge for what uses? Knowledge transfer is a fluid social process, and as a social scientist, I think that's fascinating."

Pamela Jakes

Victoria Sturtevant interviews a Libby resident in the fire hall.

David Williams

The Auburn Lake Trails (California) CWPP working group meets with JFSP researchers.

Suggested Readings

Print Resources

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Rachel Brummel

Extreme fire danger in the pine-dominated Barnes-Drummond (Wisconsin) planning area.

Web Resources

Community wildfire protection plans: enhancing collaboration and building community capacity. http://jfsp.fortlewis.edu/.

The Fire Safe Council. http://www.firesafecouncil.org/index.cfm.

Firewise communities. http://www.firewise.org/.

Firewise conference: Backyards and Beyond. http://www.firewise.org/fw_youcanuse/conference/08/index.htm.

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Rachel Brummel

Fernberg Trail, east of Ely, Minnesota. The Fernberg Corridor was one of the top three priority WUI areas for the Lake County CWPP.

Cover Photo Credits: Top Left – A hillside in Ashland's WUI. Photo by Victoria Sturtevant. Top Right – Residents removing hazardous fuels during a Windcliff work day. Photo by Joe Walsh. Bottom – Meeting of the El Dorado County Fire Safe Council. Photo by David Williams.

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