Local Capacity for Integrated Forest and Wildfire Management

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Executive summary

The purpose of this document is to examine how some organizations have developed local, cross-trained workforces to address wildfire risks alongside intensifying wildfire management needs. We conducted case studies of four organizations in the western United States that have found ways to successfully navigate the challenges of developing and maintaining local capacity for forest restoration and fuels work. We found that:

Local workforce development may take a variety of paths. The case study organizations all actively contributed to workforce development in their local areas, but the organizations varied in their type, scale and scope of work. The strategies, funding sources, and mechanisms used to create this capacity also varied between cases.

Strategies can be both broadly replicable and context specific. In all case studies, organizations took long-term, multi-pronged approaches that required adapting as circumstances change. In many cases the mechanisms used to develop workforce capacity were not necessarily new, but were applied or combined in creative or unconventional ways to achieve program goals.

Wildfire suppression work is both an opportunity and a barrier. The role of unpredictable wildfire suppression work (contracting for federal and state fires) is a reality for local workforces. Although it provides valued organizational and individual income, its unpredictability makes it impossible to depend on year to year, and can impact other summer work deadlines and projects.

Staff retention is a common challenge. Community-based institutions all reported that keeping stable employment for staff members alongside seasonal and unpredictable workloads was a significant challenge.

Some lessons and keys for success may be broadly applicable in other places. Across case studies, organizations that have successfully made progress recommended common factors as keys to their success, including:

- *Diversity in funding sources, mechanisms, and approaches is key to maintaining a sufficient program of work.* Organizations used a wide range of partnerships, contracting and cooperative agreement mechanisms, often in creative and innovative ways that work within and around the dominant business models for forestry and fire services. In all cases, diversity of funding was cited as necessary to leverage funds, find sufficient cost-share, supplement existing work, and address the limitation of one funding source with another.

- *Local buy-in, investment and support are critical.* Organizations reported that engagement, outreach, and funding support depended on local awareness of, engagement in, and support of projects and objectives.

- *Year-round and year-to-year support for those working in at-risk forested communities is key for further building local wildfire mitigation and response capacity.* Variability in funding, project work and fire response within individual years and across multiple years was consistently cited as a primary challenge across organizations and places. Ensuring organizations can find sufficient long-term, multi-year projects for their crews' skill sets (e.g. forestry services, hazardous fuels removal, home assessments, education, fire response, etc.) is critical for developing and maintaining local capacity to prepare for and reduce fire risk and respond quickly and efficiently when fire strikes.

As the long-term social, ecological, and economic costs of wildfire suppression escalate, there has been increasing emphasis on evolving management approaches. Policies and programs such as the National Fire Plan and the US Forest Service's fire adapted communities program began focusing on the role of local communities, governments and organizations as key components in reducing wildfire impacts. Most recently, the National Cohesive Wildland Fire Management Strategy has sought to improve cross-jurisdictional coordination of wildfire management and expand local preparedness and response capacity. These strategies have placed new emphasis on developing local workforces that are trained to prepare for and respond to wildfire risks in their communities. However, place-based workforces often face significant challenges. Businesses and workers trained in techniques related to forest and fire management face challenges such as declining federal non-fire budgets, diverse landowner objectives, unpredictable work, and complicated contracting practices that often favor larger scale and mobility. All of these challenges can limit local capacity to prepare for and respond to wildfires. Communities seeking to become more fire adapted have been grappling with these local capacity challenges. Enabling communities to become more fire-resilient, sharing innovations and best practices, and developing products that community practitioners can use and adapt to their own regions and local contexts are all goals of the Fire Adapted Communities Learning Network.

This document provides information about how organizations in different places have addressed the fundamental challenges of building and maintaining local workforces to reduce wildfire risks, enhance landscape resilience, and engage in wildfire response. In addition to this document, the "Innovative Contracting" Quick Guide by the Ecosystem Workforce Program provides definitions of key contracting terminology as well as references to additional information, and may be used alongside this document.[1]

Approach

In this document we present case studies to show how nongovernmental organizations, government entities, and private sector firms have focused on developing local capacity to prepare for and respond to increasing wildfire risks, with a focus on Fire Adapted Communities Learning Network members. In the case studies, we describe the strategies, specific mechanisms, and funding sources (e.g. agreements and contracts) that organizations have been using to develop an integrated fire workforce. We include advice from these organizations about their keys to success and tips for navigating workforce development and retention challenges. Each of these approaches reflects different local circumstances. We did not attempt to provide an exhaustive list of strategies and approaches; rather, we selected cases that provide examples of a wide range of tools and approaches that could be used across contexts.

About fire adapted communities (FAC) and why a FAC workforce matters

A fire adapted community can be defined as, "a human community consisting of informed and prepared citizens collaboratively planning and taking action to safely co-exist with wildland fire.[2]" "Taking action" includes activities such as: individual residents creating and maintaining defensible space around their homes, community wildfire protection planning, implementing complex fuels management projects, and building and sustaining the capacity of local fire responders. Moving beyond actions related to individual responsibilities, the capacity of government institutions, fire districts, non-governmental organizations and private contractors becomes critical.

On a national scale, the dominant model of forestry services and fire management focuses on the deployment of highly mobile regional and even national resources to manage both fuels and fire around at-risk communities. The FAC concept suggests that cultivating and sustaining a local workforce, by training local employees to perform the tasks associated with preparing for and responding to wildfire risks, will contribute to increased local fire adaptation and community resilience that can, cumulatively, reduce growing levels of wildfire risk across the nation as a whole.

A wide array of entities can contribute to local FAC workforce development. Depending on what local organizations can provide the services and contributions, and how their work can be integrated through partnerships, contracts, and agreements, local workforce development may take a variety of paths. Local government and fire services, NGOs, private businesses and tribes should all have a role.

Case study examples

Currently (at the time of this investigation), the four case study examples in this document are all actively contributing to workforce development in their local areas. The organizations are diverse in their type, scale, and scope of work. The Coalition for the Upper South Platte is a regional nonprofit organization. The Forest Stewards Guild is also an NGO, but their national and sub-regional structure means that the Southwest Guild operates much like a local organization. The Sante Fe Wildland Division is part of a city government, and the Trinity County Resource Conservation District is a state government agency. This diversity exemplifies the variety in organizations that can and in some places are driving efforts to increase local capacity in fire and fuels work.

The strategies, funding sources, and mechanisms used to create this capacity also vary across contexts and scales. Factors such as local landscape conditions, state, federal and local fire service orientation and engagement, relationships to regional forestry and fire services contractors, and local workforce suitability all contribute to local potential. Taken together, the case studies represent a suite of successful strategies that could potentially be mixed and matched to work in other contexts.

I. Coalition for the Upper South Platte (CUSP)

Sustaining local capacity through agreements, diversification, and contracting out services

Overview

Location: Central Colorado

Mission: To protect water quality and ecological health of the watershed, with a focus on community values, stakeholders, and economic sustainability

Organization type: 501(c)(3)

Year formed: 1998

Size: 25 staff members

Scale of program-relevant areas: multi-county watershed

Website: http://cusp.ws

About CUSP

The Coalition for the Upper South Platte (CUSP) was formed in 1998 in central Colorado by Upper South Platte Watershed stakeholders, including local, state, and federal governments, as well as businesses and private individuals/landowners in the watershed.

CUSP currently has multiple program areas, including:

- Forest health and fire rehabilitation
- River, roads, and trails restoration
- Noxious weed management
- Water quality monitoring
- GIS mapping
- An ice fishing contest
- Sustainability and renewable energy outreach and education

CUSP has a large database of over 3,000 volunteerss, which they use to accomplish some of their projects and objectives. In addition, they employ in-house staff and contract with local companies. On average, CUSP contracts with 10-15 different contractors each year on projects across program areas. The organization's efforts to develop and maintain a workforce with capacity to respond to local wildfire threats are contained within the Forest Health and Fire Rehabilitation Program, which works on a variety of projects, including:

- Community Wildfire Protection Plans
- Fire Adapted Communities Learning Network
- Fire suppression
- Mitigation and fuels reduction
- Forest restoration projects
- Watershed work with communities
- Slash drop off sites (including biomass storage facilities and a chipper program)

Approximately 85% of CUSP's funding for forest management comes from grants related to community wildfire planning and preparedness.

Opportunities, funding, and mechanisms

CUSP has developed and maintained local capacity for wildfire response by engaging in a combination of wildfire suppression, forest restoration, and community wildfire protection planning efforts, which are described in greater detail below. To maintain consistent and reliable capacity for forest work, CUSP employs crew members throughout the year, which means that in addition to wildfire response, crew members also conduct forest restora-

tion work, post fire rehabilitation, and other related work. CUSP assesses how much of this work they can conduct within their existing staff, and then they subcontract the remaining work out to local businesses. Generally, CUSP staff conducts approximately 15% of the work in-house and contracts out the remaining 85% to contractors, with a preference towards local contractors. This approach increases opportunities for local contractors to connect with work. When offering contracts, CUSP carefully plans and maps the projects, and puts out a Request for Proposals (RFP) where they list goals, timelines, equipment needs, and any specific insurance bond or damage deposit requirements. They then select a contractor based not only on bid amount, but also past work history, references, ability to complete the project within budget, and known customer service. CUSP also ranks local contractors higher than those from outside the region or state to keep contract dollars local.

1. Wildfire suppression

CUSP first developed an eight-person in-house professional hazardous fuels reduction and fire suppression crew in response to a declining number of volunteers at the local fire department. The CUSP crew participates in wildland fire training and initial and extended attack in central Colorado through agreements with three local fire districts. In the past two years, CUSP started deploying their team members as "single resources"—individual firefighters who can be dispatched to the districts with which CUSP holds agreements. This has provided a new stream of revenue for CUSP, which in some cases, has created revenue to reinvest in CUSP's fuels reduction program.

CUSP uses memoranda of understanding and work orders with Florissant, Mountain Communities, and Northeast Teller Fire Protection Districts to deploy crewmembers as single resource firefighters. In turn, the fire districts hold interagency cooperator agreements with Colorado Division of Fire Prevention and Control. In March 2015, the Colorado state legislature enacted a non-fire-district-entity program.[3] In the future, CUSP hopes to use these authorities to transition from a local fire district support team into its own fire entity within the state. CUSP notes that one challenge they face in transitioning to a local fire entity is having the time to engage in the political process necessary to make this transition, given their on-the-ground work.

CUSP pays salary for staff on fires and then is reimbursed for staff time and overhead after the fire. This added program funding plays a critical role as it provides additional sources of income for staff members, stretches out CUSP's staff workload, and can provide an unpredictable influx of funding. Although wildfire suppression work provides an important revenue, it also creates added administrative challenges because CUSP must pay their staff members for firefighting up front and then wait for reimbursement from the state or fire district.

2. Cooperative fire reimbursement project

CUSP has developed prescribed burning and pile burning projects. Using funds from The Nature Conservancy, Cohesive Strategy, and other sources, they administer agreements and reimburse local rural fire departments when they participate in these prescribed and pile burning projects. In addition to getting work done in forests and providing income, this approach provides CUSP and local fire department staff opportunities to advance their fire fighting skills and training. In an effort to increase local capacity and conduct more forest restoration work, CUSP is also partnering with the US Forest Service to expand this program. With the expansion, interested private sector workers and business can develop prescribed burning skills, which further enhances local forest and fire management capacity.

3. Post-fire rehabilitation on public lands

CUSP has established multi-year partnership agreements with federal land management agencies and other partners for post-fire rehabilitation work. For example, the Hayman Partnership between the National Forest Foundation, US Forest Service, Denver Water, and Aurora Water is a multi-year restoration project on a large portion of the South Platte Watershed impacted by the large Hayman Wildfire in 2002. CUSP coordinated the Hayman Recovery and Assistance Center work for several years following the fire. Recently, CUSP became engaged in public lands work following the Waldo Canyon fire of

2013.

Funding for this partnership work is typically made up of funds pooled from federal agencies and their partners such as water utilities that depend on affected public lands and the National Forest Foundation, which has provided the fiscal organization and administration of the partnership. Memoranda of understanding between partners provide a record of shared interest for partnership. Other mechanisms such as collection agreements are used for reimbursement and invoicing procedures. Although CUSP dedicates some staff time to post-fire rehabilitation projects, they accomplish most of the post-fire rehabilitation work by engaging with subcontractors.

4. Risk mitigation, fuels reduction, and forest restoration on private lands

CUSP also engages in a variety of projects on private lands in green forests, including risk mitigation and reduction, and, on larger parcels, landscape restoration. CUSP's forestry work on private land is primarily funded through state and federal grant programs. These grants typically involve a 50:50 cost share, which means CUSP often pulls together multiple grants from other sources to find sufficient funding for their portion of the cost share. CUSP uses grants they obtain from a variety of sources to make their portion of the match with the landowner. This includes grants from the Colorado Department of Natural Resources, Natural Resource Conservation Service (NRCS) Environmental Quality and Incentives Program (EQIP),[4] some utilities companies (depending on location of critical power line or water infrastructure), and landowner contributions. CUSP sells as much material from private land projects as possible, but the market is generally weak for the small-diameter materials that come from the projects, and the quantity of material from the forests is often limited. CUSP is challenged to keep costs low because of limited funding available and the limited ability of private landowners to pay for fire prevention work.

CUSP: Key takeaways

By combining fire suppression, prescribed fire, and forest management, CUSP provides work and training opportunities for local workers and contractors. Through these projects, CUSP is increasing in-house professional fuel reduction and field crew development, and contracting remaining work out to local contractors to build their own capacity as a business for service work on private lands. Although the role of CUSP's fuels reduction and fire suppression crew serves a clear need for the region, CUSP constantly reassesses their ability to continue such work since stable financial support has not always been sufficient to maintain the program.

- ***Don't always go with the lowest bid for a project.*** CUSP has focused on picking contracts not simply based on the bid price but also on a series of other considerations, including whether dollars would stay in a local community. CUSP has also taken calculated risks to hire local contractors and support them to build their skills. They have found that this approach creates greater local rewards than hiring contractors from outside the area would.
- ***Consider unconventional relationships with contractors.*** CUSP has developed unconventional relationships with contractors, describing them more like partnerships in which CUSP and the contractors spend time working together on sharing relevant knowledge and practices to ensure contractors have everything they need to make informed business decisions on their end. Strong relationships are key to CUSP's success: if CUSP was not able to work with contractors to advise on the types of skill sets and equipment they needed to get work done, contractors would not have the right equipment available locally to do their work. CUSP also works to engage contractors in collaborative planning processes in the area, as well as advocating for and providing the contractor perspective to other collaborative planning efforts in the region.
- ***Diversify funds.*** CUSP has focused on leveraging and diversifying funding as much as possible, often engaging with unconventional partners and working to figure out how to use grant programs to diversify local investments.
- ***You need local investment and buy in.*** CUSP focuses on creating local investment and buy in by asking property owners to provide as much funding as they can to a project. This is because buy in (financially and conceptually) is necessary for making risk reduction and restoration work go as far as possible, as it gets landowners to value the work.
- ***Encourage landowner responsibility and engagement for fuels reduction work.*** CUSP also suggests using caution with grant money to avoid overlooking locally sustainable opportunities for funding, which would be a significant disservice to the community. It is also critical for local landowners to take some responsibility for addressing issues of risk on their own land.
- ***Build on your local and existing strengths.*** CUSP started by building on neighborhood capacity and involvement. All of CUSP's success is based on their original forestry foundation, which they started as a chipper program going neighborhood to neighborhood, sharing resources, and making connections with landowners.

II. Forest Stewards Guild Southwest Region

Supporting crews in building their own businesses

Overview

Location: Forest Stewards Guild Southwest Region covers Southwestern United States (Arizona, Colorado, New Mexico, and Utah), with a focus on New Mexico.

Mission: Forest Stewards Guild Southwest Region supports the Forest Stewards mission of "practicing and promoting forestry as a means of sustaining the integrity of forest ecosystems and the human communities dependent upon them." The Guild engages in education, training, policy analysis, research, and advocacy for stewardship, supporting forestry practices and engaging in broader forest management and conservation goals.

Organization type: 501(c)(3)

Year formed: 1984

Size: ~9 staff members

Scale of program-relevant areas: single state (New Mexico)

Website: http://www.forestguild.org/southwest

About the Forest Stewards Guild Southwest Region

The Forest Stewards Guild Southwest Region is part of the Forest Stewards Guild, a nationwide professional organization focused on forest integrity, restoration and the communities dependent on forests. The Southwest Region includes the states of Arizona, Colorado, New Mexico and Utah, and focuses on key issues for the region: ecological restoration needs from a history of fire suppression, high worker compensation rates inhibiting local contractors' competitiveness, inconsistent federal forest contracts impacting region's forest industry, and vulnerability of low income, rural and minority populations to wildfires. The region has developed programs in community forestry, ecological forestry, and public policy.

The Forest Guild in this region works closely with local government and fire departments (City of Santa Fe, McKinley County Village of Angel Fire Departments); state agencies (New Mexico State Forestry Services, Association of Counties, Land Office, Youth Conservation Corps Commission); federal agencies (US Forest Service: specific forests, Southwestern Region, and Southwestern Collaborative Forest Restoration Program (CFRP), Joint Fire Science Program); organizations (The Nature Conservancy); and universities (University of New

Mexico, University of Arizona, Northern Arizona University).

The Forest Stewards Guild Southwest operates and/or participates in a number of different programs and partners, including:

- The Southwest Fire Science Consortium
- Collaborative Forest Restoration Program
- New Mexico Forest Health Initiative Program, which assists private and public land managers with increasing resilience to forest pests, drought and other potential impacts through improving forest health.
- The Forest Worker Safety Certification Program

In addition to these programs, the Forest Stewards Guild Southwest also works on other local workforce development issues.

Opportunities, funding, and mechanisms

1. Prescribed fire planning, design and management

The Forest Stewards Guild Southwest Region conducts prescribed burning projects to demonstrate how integrated forest and watershed restoration techniques can expand the use of prescribed fire. The Guild engages landowners in reducing hazardous fuels on their lands, logistics and coordination for a burn (e.g. obtaining permits), and developing low complexity burn plans for landowners and managers. In some cases, the Guild will contract out burn plan development to other contractors. The Guild also trains environmental groups to conduct monitoring and other natural resource management efforts. When the Guild first started this work there were not sufficient burn bosses to take on contracts on either private or public land. One Guild solicitation for a burn boss resulted in no bids from New Mexico; the closest burn boss that bid was from California. To find more local options, the Guild worked with local organizations to collaborate with them to use their burn bosses, and with additional burning experience in the area, the Guild has more recently found and developed relationships with individuals locally that have gained enough experience to be burn bosses. These prescribed burn projects not only address restoration needs, but they also provide opportunities for staff from different nongovernmental organizations as well as federal agencies and local government to develop their burn qualifications and advance their task book.

For their prescribed burn planning, the Guild engages with multiple partners, findings ways for organizations to contribute match or in-kind support or volunteers on projects. The partners include US Geological Survey, Bureau of Land Management, the Forest Service, volunteer fire departments, and private landowners. For example, a nongovernmental organization or federal agency might provide staff as a burn boss and other technical roles at no cost to the project. The Guild may then use funds from a variety of sources to fund the prescribed burns. The Guild started with a Collaborative Forest Restoration grant that focused on prescribed fire to fund this work. Since then they have used a variety of funding sources, including the Fire Learning Network and the State Land Office. They have also leveraged funds and in-kind donations from other partners.

2. Forest thinning capacity development

When the Guild began their efforts to support local thinning capacity, it employed staff to conduct forest restoration work. Due to challenges in finding sufficient work to keep crew members employed, as well as challenges in incentivizing productivity at an hourly rate, beginning in 2006 the Guild began to support staff in branching off into their own businesses. The Guild identified a need for these businesses to be separate from their organization, but also the need for local support and continued development of the businesses and their staff (training and workflow). Accordingly, the Guild supported the development of these businesses, training these staff members in forest restoration work while they were still at the Guild and continuing to support them by subcontracting for relevant work opportunities.

As independent business owners, the former employees were responsible for finding sufficient contracts to keep their business opened and contracted

with multiple of entities instead of relying only on the Guild. Some of the resulting businesses focus only on thinning work, while others work on thinning and fire management. More recently, some of these former employees have become more involved in wildfire suppression, as individuals or contractor crews. Fire suppression can provide supplemental income to those working seasonally. Although the increased number of contracting businesses has created a more dynamic local workforce for wildfire preparation and response, these businesses still face challenges, such as the unpredictability of wildfire needs that can impact crew availability to complete other projects and the need for crews to have longer-term, steadier streams of income. For example, if a contractor has a crew on a project, and yet are also trained and listed for wildfire suppression, they may leave a job when a fire comes along. This leaves the contractor understaffed to complete thinning and other local forestry jobs, leading to turnover. In addition, although wildfire suppression can serve as an income generator and offset other business costs at times, this income can also be highly unpredictable. Wildfire suppression in some cases can be a good option financially for businesses, who might decide to develop their entire crew into a fire suppression crew. In other cases, contractors have had to decide between branching out to fire suppression work or staying with tree thinning, since juggling both is not always feasible. In response to unpredictable workflows some contractors have picked up other income streams such as fence building or watershed restoration to create a longer work season and more reliable year-to-year work flow.

The Guild subcontracts projects with local crews through requests for proposals, on which local con-

tractors can bid. The Guild finds opportunities for local forest restoration needs and helps to shuttle work to their contractor contacts in the region. The majority of the Guild's local capacity development has been through the Guild playing unpaid support roles. Training and development that the Guild supported for individuals while the forest thinning work was still within the organization was covered under grants and hazardous fuels reduction funding.

The Guild has supported local contracting in a variety of ways. In one case, the Guild used their connections in managing large ranches as an opportunity to train individuals to conduct fence building and related restoration work, which are additional off-season skills for contractors. The Guild also has worked directly with contractors to support their development. For example, the Guild worked with a new contractor local to their project area to conduct a request for proposals (RFP) training process while contracting with them for projects. The intent was to develop the contractor's skills to respond to request for proposals, and conducting this process in a phased manner meant the contractor could work with the Guild to develop an appropriate bid and project while meeting standard RFP guidelines. In another case, the Guild had Collaborative Forest Restoration Program (CFRP) funding that included capacity building components. They used this funding to identify a local group to do the work and to conduct local meetings to talk about the intent and purpose of the process. This included a multiday workshop on watershed restoration treatments, including a micro implementation practice process. So when the Guild sent out their RFP for the project, local contractors had a better understanding of the project and bidding process to aid in their applications. Learning sessions such as these not only build contractors' understanding of the bidding process and new treatment approaches and methods, but also provided general skill building opportunities.

3. Youth Conservation Corps

Each year the Guild conducts youth training and natural resource management through the Youth Conservation Corps. The program is intended to help address a concern that employers have often expressed: having a lack of available local workers experienced in natural resource management. The Forest Stewards Guild Youth Conservation Corps (YCC) has worked with all five national forests in New Mexico and, in 2016, the YCC crew worked a total of nearly 17,000 hours.

The YCC program funds the training and operational support, as well as paying wages to the participants. Funds for this program come from the New Mexico Youth Conservation Commission, which is then leveraged by the Guild from sources such as the National Forest Foundation's Matching Awards Program, the McCune Charitable Trust, and other local business and individual donors. The national forests within New Mexico have also supported the YCC. In recent years the Forest Service Region 3 has provided financial support for the program. Forest Service ranger districts donate staff time to educational support of YCC.

In addition to contributing to forest restoration and increasing investment in New Mexico communities, the Guilds Youth Conservation Corps has also created career opportunities for youth to pursue natural resource management, thus contributing to local workforce development for young adults.

4. Forest Worker Safety Certification Program

The Guild started the Forest Worker Safety Certification Program in 2006 with the New Mexico Division of Insurance, Workers Compensation Administration, State Forestry, and Forest and Watershed Restoration Institute, New Mexico Mutual, Mountain States Insurance Group, Forest Service Region 3, and industry partners. The program was created to address the extremely high costs of worker compensation insurance for forestry-related work for companies based in New Mexico compared to businesses based in other states, especially Oregon. The significant cost difference created a significant competitive disadvantage for local firms bidding on fuel reduction and hazard reduction contracts. Employers of workers certified through the program can receive significantly reduced workers's compensation insurance premiums, helping to address this bidding disadvantage.

Forest Guild Southwest Region: Key takeaways

This work provides capacity develop opportunities for local contractors bidding on projects as well as agencies and organizations looking to improve their fire training skills. There are some areas for improved opportunities; there are also tradeoffs. For example, if prescribed fire priority and/or budgets increased, there could be some improvement to capacity and turnover issues for contractors who struggle with finding consistent and sufficient work (it would be planned seasonally since it would be easier to plan and work around than wildfire). Additionally, a contractor's crew going out on wildfires provides individuals more work and money, but can impact the contractor's ability to complete jobs with adequate staff during fire seasons.

- ***Recognize where funding sources are flexible enough to incorporate training and learning opportunities.*** The Guild's strategy has been to build contractors capacity by supporting business development, increasing the local workforce through young adult training, and policy engagement to improve the market and policy environment for local businesses and workers.
- ***Identify funding flexibility to allow for training and learning opportunities.*** The Guild has worked to find grants such as the Collaborative Forest Restoration Program, which include capacity-building components in alignment with the project, and can provide valuable local workforce training opportunities.
- ***Ensure that your organization's internal procurement policies allow for setting up agreements*** in a manner consistent with supporting local organizations and contracting. For example, subawards often have specific policies that should be considered to understand how and where subcontracting can occur.
- ***Local workforce development will take longer than you think.*** The time it takes to reach out to those in your landscape should not be underestimated, and it is critical to reach out enough to ensure you are not missing someone in your local watershed.
- ***Develop youth work programs*** if your community faces challenges in keeping local kids local after high school. Particularly in places with agencies nearby, providing natural resources management training provides youth opportunities to develop their skills for natural resource careers. In addition, some funding sources provide funding for youth specific programs, which can diversify an organization's funding streams.
- ***Look to community fundraising when additional grant or foundation support is not available to support work.*** In some years, adequate funding may not be available from external sources like foundations and state and federal grants. The Guild has turned to community fundraising before in years when foundation support is not available. Having an existing community support base can help keep an important community program afloat in a lean financial year.

STIHL

III. City of Santa Fe Wildland Division

Community engagement and strategic collaboration: hand crews as needed to make money

Overview

Location: Santa Fe, New Mexico.

Mission: The City of Santa Fe Fire Department Wildland Division focuses on providing information, assistance and recommendations to homeowners and landowners in areas potentially impacted by wildfire.

Organization type: Local government: city

Year formed: City of Santa Fe: 1880, Wildland Division: 2010

Size: Includes 20 staff members in the Wildland Division (4 semi-permanent (10 months/year), 11-15 seasonal)

Scale of program-relevant areas: Single small city and environs

Website: http://www.santafenm.gov/wildland_fire_preparedness

About the City of Santa Fe Wildland Division

The Santa Fe Fire Department contains a Wildland Division that has full time positions dedicated to wildland urban interface issues and wildfire prevention. The division focuses on support, assistance and information about wildland fire preparedness and response. It also has a 20-person seasonal wildland fire crew to help with fuels reduction, wildland fires, and prescribed burning. The crew works projects on private and public property. In 2006, Santa Fe conducted a wildland fire hazard and risk analysis, which ranked areas within one mile of city limits by wildfire hazard.[5] The city also conducted a modeling and visualization process to understand wildfire conditions and possible outcomes in the city.[6] These assessments, combined with recent history in the Santa Fe area (2000, 2003, 2010 nearby fires) has increased the city's attention on wildfire risk.

Opportunities, funding, and mechanisms

1. Wildland firefighting

The Santa Fe Wildland Division crew conducts wildfire suppression as needed during the fire season. When the division started, several of the crewmembers had little to no forest or wildland firefighting experience. The division started slowly with training people, building their experience and knowledge in wildfire planning and preparedness along with fire suppression. The division now serves as a central resource for maintaining and expanding fire suppression and prescribed burning experience. The division contains several resources for wildfire suppression, including engines, handcrews, chipper, rapid extraction module, and ambulance with paramedic. The division also provides cross-training opportunities, including teaching crew members how to conduct home assessments for fire risk, teaching commercial driving so staff can obtain their Commercial Drivers License to run the grapple truck, and instructing staff in chainsaw cutting for thinning, risk reduction, and suppression. This work provides opportunities to network with other firefighting resources, increase learning and knowledge, and develops additional skills and training—from fire training knowledge and abilities to additional certifications. In some cases wildfire suppression also provides an opportunity for

crew members who typically work on slash to work on a firefighting crew and see more of the work that happens as part of integrated forest and wildfire management.

The Wildfire Division requests reimbursement through the state district office after a fire at their agreed-upon rate for different services. Money generated from fire reimbursement work from their crew goes to pay for the next year's crew. This process means they are always one year behind on fire revenue, which makes planning challenging. The city must figure out creative ways to keep full-time staff paid in lean years. Strategies have included reducing full-time staff positions to part-time to stretch work through the year, searching for new grant opportunities, or diversifying work through home wildfire risk assessments, and other opportunities in the non-fire season. This model depends heavily on fire suppression funding influxes to supplement work. The city emphasizes that getting their staff on fires and training them appropriately are critical to developing more qualified and trained local wildfire response. The outreach and collaboration conducted by the wildfire division through education and field projects provide opportunities for local workforce collaboration, education and learning. The division uses the Santa Fe area Operations Plan to guide their work. The plan was created to detail how the city, county, and national forest would work together if there was a fire in the area, including communication and resource sharing and availability. The plan helps lay out the roles of entities involved in wildfire risk in the region.

2. Public education projects, information, and outreach

The Wildland Division conducts public education and planning projects, such as working with homeowners associations to create neighborhood-scale community action plans (e.g. 50 or 100 homes). The division holds agreements with homeowners and homeowners' associations to cost-share projects to assess and address fire risk, as well as providing fuels reduction debris pickup. One staff member performs the majority of the planning and outreach work, as well as the work to obtain grants for wildfire risk reduction work. The division also engages informally with zone boards and networks of land managers and homeowners concerned about wildfire issues. These outreach efforts help community members become more aware of wildfire and what they can do to reduce their risk to wildfire.

The division uses a combination of division funding (e.g. from wildfire suppression income), Youth Conservation Commission grants (for education components), Firewise, and other funding sources to pay for these projects. The division is writing a management plan to continue maintenance burns on lands around the city and continue to conduct information sharing, outreach and plan development. They work on community events such as Wildfire Preparedness Day.

3. Hand thinning and prescribed burning

The Wildland Division employs a twenty-person hand crew employed in the summer on projects such as prescribed burning on city, national forest, and park service lands. These multi-landowner projects provide opportunities to the crew to work with different agencies, and learn about how they operate, and identify potential future employment opportunities. The division conducts cross training activities with the crew, such as chainsaw operation, commercial drivers license, and home assessment training.

The city employs a variety of mechanisms and funding sources to conduct their on-the-ground projects. Some agreements, such as with federal agencies, require memoranda of understanding and collection agreements. With other partners, the city uses a variety of agreements to share work. The division often conducts fuels reduction and prescribed fire projects in collaboration with multiple entities (e.g. other city departments, federal agencies, local NGOs), where collaborators contribute differently to projects, providing resources such as staff time and necessary equipment. The division uses multiple sources of funding for projects, and holds agreements with a variety of entities including their state forestry, local water division, and land management agencies in their watershed. The city has pursued a variety of funding sources, including fire

reduction grants, Federal Emergency Management Agency (FEMA) funds, New Mexico Association of Counties, federal funding through BLM and others which is sometimes funneled through municipalities and local governments. Some of the funding the division uses are restrictive about the number, age, and types of hiring they can do for projects. To address this challenge, the division uses other funding, such as state funding to fund the remaining needs of a project. For example, the city's Youth Conservation Commission grant requires that the city hire people under 25 years old, which limits their hiring pool. Being able to use other funds to augment the crew can relieve some of those restrictions (e.g. pay those over 25 from a different funding source).

The Wildland Division serves as a training ground for people who want to join the structural firefighting component of the city. The city has already had several wildfire crew members eventually become structural firefighters, owing in large part to the experience they gained working on the seasonal wildfire crew. Being part of a wildfire fire suppression crew and conducting prescribed burning provides training opportunities for employees to diversify and better develop their skills. The division struggles not only with finding sufficient funding to maintain positions, but also with the ability to keep employees on staff year to year. They have expanded their department from two permanent employees to five, with the remaining 15 seasonal positions. The seasonal positions are often in flux, due to crew members needing more permanent employment or benefits such as health care. The wildfire division has addressed some of these issues by creating full-time positions but having to restructure hours in a manner that allows them to keep staff employed year round with sufficient hours for benefits.

City of Santa Fe Wildland Division: Key takeaways

The Wildland Division provides opportunities for local workforce development in wildfire suppression, prescribed burning, fire risk reduction projects, and education and outreach. It has provided skill development to current and former employees that allowed them to advance their careers.

- ***Patience is a valuable skill.*** The division has worked to expand their program slowly, incrementally growing the program with continued persistence over the years.
- ***Be flexible and open to new ideas and opportunities and ideas as they arise.*** This flexibility in being able to shift goals and plans over time to fit the most feasible program need helps create more adaptive programs.
- ***Be ready to experiment with different program options.*** The division has experimented with different program structures. For example, keeping the structural fire division connected to their program, and having a key staff member engaging with structural fire staff has been key.
- ***Use full-time staff to help find funding opportunities.*** Having a dedicated staff member on board who can use some of their time to look for other funding opportunities for the division increases the ability to fund the division and think longer-term.
- ***Use small projects to build trust and capacity.*** Starting with small projects can serve as opportunities to develop success stories, as well as develop buy-in and interest with the local community (e.g. the neighborhood where a project is occurring).
- ***Network between departments and organizations.*** The city is now engaging in a fire department exchange pilot where Fire Departments and wildland coordinators from different cities learn from other operations across the nation.
- ***Make sure you have buy-in to your program.*** The division credits building trust and creating buy-in within the city and the community more broadly as critical to their success and continued expansion of the division.

IV. Trinity County Resource Conservation District

Local workforce development and support

Overview

Location: Trinity County, California

Mission: The Trinity County Resource Conservation District is committed to sound management of Natural Resources on public and private lands.

Organization type: Special district of the state

Year formed: 1956

Size: 18 staff members, 4-6 full time and 2-3 part time forestry crewmembers

Scale of program-relevant areas: single county

Website: http://www.tcrcd.net

About the Trinity County Resource Conservation District

Trinity County Resource Conservation District (TCRCD) was formed in 1956 under Division 9 of the State Resources Code, and is governed by a board of directors who are landowners in the area. TCRCD operates on local, state, federal, and private funding and performs restoration and land stewardship activities in the 2.1 million acres of Trinity County, of which roughly 80% is federally-managed land. Like Soil and Water Conservation Districts in other states, Resource Conservation Districts work with private landowners on private lands conservation, but because of the predominance of federal lands, TCRCD also works closely with federal land & resource management agencies (USFS, BLM, Bureau of Reclamation). TCRCD performs planning, development, and collaborative management activities with government agencies and landowners with the ultimate goal, among other conversation goals, of reducing the risk of severe wildfire. Much of this work involves collaborative information sharing, grant administration and implementation, which includes assisting landowners with management plans and cost share programs.

TCRCD first became a partner with federal agencies when it entered into cooperative agreements with the Bureau of Reclamation Trinity River Restoration Program (TRRP) and BLM (both US Department of Interior agencies) to rehabilitate the Grass Valley Creek Watershed. TCRCD provided services to reduce sediment delivery into the Trinity River as a result of legacy logging practices that included poorly built roads. The long-term goal of these activities has been to reduce sediment and restore fisheries in the Trinity River. TCRCD has been the lead agency in facilitating the development of the Weaverville Community Forest, using the Stewardship Contracting Authorities of the BLM and USFS, based in part on the successful partnership in Grass Valley Creek Watershed and a history of securing funding for and providing maintenance of the Weaverville Basin Trail System in partnership with a local group, the Weaver Basin Trail Committee since 1996. TCRCD has assisted the trail committee with establishing a trail system of over 50 miles of trails for use by community members and tourists who hike, bike, ride horse, and sightsee in Trinity County. Additionally, the TCRCD serves as the coordinator for the Fire Safe Council, maintains

the Trinity County Community Wildfire Protection Plan, and administers the Education and Outreach program for the Trinity River Restoration Program.

Opportunities, funding, and mechanisms

1. Ecosystem management on public and private lands

In the early 1990s, TCRCD began to work with both private and federal land managers on forest health projects: everything from reforestation in Grass Valley Creek Watershed to fuels reduction and defensible space. They saw the opportunity to work with landowners on issues of defensible space around homes, as well as to work on larger private land parcels with Natural Resources Conservation Service's (NRCS) Environmental Quality Incentives Program. Around the same time that TCRCD was doing this work, transitions in the forest sector were leading to less timber harvest, timber mill closures, and subsequent job loss. TCRCD obtained funding for jobs in the woods to re-train people accustomed to doing timber harvests to perform other work in the emerging field of ecosystem management. This included a longer-term scaling up to provide forest health services to BLM and USFS. They expanded the crew using emerging funding sources—especially Secure Rural Schools Title II and III funding and associated Forest Service "allocated dollars," as well as NRCS EQIP funds—to implement forestry projects on federal and private lands.

At their peak, TCRCD had two six-person crews working as a result of special funding from the 2009 American Recovery and Reinvestment Act (ARRA). However, they have not had sufficient funding to maintain this level of staffing. Over the past decade, TCRCD has also managed the Weaverville Community Forest, which is a cooperative venture between the TCRCD, BLM, and USFS to co-manage about 15,000 acres of public lands around the town of Weaverville. The federal agencies identified these lands as stewardship project areas, and through 10-year stewardship agreements with TCRCD have been able to use the stewardship funds (retained receipts from forest health timber harvests) to implement other stewardship activities (e.g. fuel reduction work, invasive weed control, trail maintenance and re-routing). The success of the Weaverville Community Forest led to the establishment of the Grass Valley Creek Watershed Stewardship area through a similar 10-year stewardship agreement between BLM and Trinity RCD. Task orders, supplemental project agreements and contracts under the community forest project have supported fuels work by private logging contractors, TCRCD crews, and have benefited from in-kind work such as The Nature Conservancy's prescribed fire training exchanges (TREX). In 2016, TCRCD operated with a forestry crew of 4-6 full time employees and 2-3 seasonal employees focused on fuels reduction work and other forestry work, including a robust chipping program for homeowners.

Although a Special District of the State, the TCRCD receives no direct tax assessed funding and is entirely grant and fee-for-service funded for work on both public and private lands, primarily restoration and risk reduction work. They note that being able to work on both federal and nonfederal lands allows them access to a variety of diversified funding sources, allowing them to weather different ebbs and flows (e.g. private funding ebbs while public flows and vice versa). They obtain funding from the California Fire Safe Council, which provides grants—primarily federal pass through funding—to do work on private lands. A new funding source through CALFIRE, called the State Responsibility Area Fund, collects parcel fees on nonfederal properties and then issue grants for private land. In some cases, utilities fund projects that address and reduce fire risk to their infrastructure, either through grant programs or directly to organizations like RCDs that can implement the risk reduction work. Funds from Pacific Gas & Electric to TCRCD allowed them to do defensible space projects in 2014 and 2015, and funding from Trinity Public Utility District funds the TCRCD crew to do brush management under the utilities lines.

Private landowners also contract TCRCD for fee-for-service work to reduce fuels and other forestry work. Retained receipts from stewardship on federal lands have been a major source of funding for TCRCD's work, both with BLM and the US Forest Service. They use both cooperative agreements and stewardship agreements to conduct work with these land management agencies.

Most recently, TCRCD noted new funds from a Joint Chiefs project will increase work on public and private lands. New funding through the Trinity County Collaborative Group supported the region in applying for Joint Chiefs. This funding influx ($500,000 the first year and $1 million + for the following two years) is intended to fund implementation work primarily on USFS-managed lands (mostly in the footprint of the 2015 wildfires), and some funding to augment NRCS EQIP Projects. Trinity RCD will be a contractor to implement some of the projects under Joint Chiefs through EQIP, and also work through cooperative agreements with the USFS on National Forest System Lands.

2. Training and cross-training employees

In addition to its forestry crew, TCRCD has another crew that does sediment reduction and roadwork. When particular projects require additional help, or weather conditions change, or one crew needs more funding, then both crews will work on the same project regardless of whether it is a roads or forestry project. This not only cross-trains their staff, diversifying their skill sets to work both forestry and roads jobs, but also gives them longer-term employment. Crew members learn additional skills from on the job training and work with other staff members and partner agencies. The full time staff TCRCD maintains have full benefits and year round work with only short lay-offs associated with inclement, winter weather. Seasonal staff needs are determined each year depending upon work availability.

TCRCD has worked in the past with the SMART Business Resource Center, the local California unemployment and development office which receives funding to train young workers entering the labor force and re-train displaced workers for other jobs. For example, TCRCD worked with the office to use their funding to train local people for specific jobs with TCRCD. This opens the opportunity for TCRCD to then hire the trained workers. In some cases, training funding would require additional training in addition to on-the-job experience in the form of classroom time. TCRCD would teach classes on forest ecosystems and watersheds. In some instances, TCRCD employees have gone on to get jobs at the local mill, which they were competitive for due to their skills developed at TCRCD.

3. Expanding into wildfire suppression

Although the TCRCD has had limited engagement with fire suppression efforts, hiring out their chipper crew during the 2008 fires in Trinity County, they are now considering more expanded wildfire suppression work and hiring out their forestry crew members for wildfire suppression. Their experience providing forestry crew to implement defensible space to threatened neighborhoods in the 2008 fire season was positive, as it provided new experiences to the crew and reimbursement was profitable.

Trinity RCD has not conducted wildfire suppression work with their crews since that time and suppression is not a normal part of their program of work, in part because wildfire suppression work

can adversely affect the implementation of their other projects. They anticipate some challenges in meeting deadlines on other forestry and roads related projects if crews are sent on fires for long periods of time, and away from their existing longer-term work.

However, the need for suppression work is present, and TCRCD is moving ahead with National Wildfire Coordinating Group (NWCG) training fall of 2016 to move four of their crewmembers to Firefighter II qualifications, allowing them to begin work with the US Forest Service and other land managers on prescribed burning with the potential to eventually work on wildfire response. Crews will then be available to not only perform suppression work but also to work on prescribed fire projects, a growing segment of the forest health program of work on private and public lands.

Trinity County Resource Conservation District: Key takeaways

- ***Work on both public and private land.*** TCRCD has been able to keep their crew working full time by working on both private and public lands. The ebb and flow of available funding differs between private and public land dollars, so working on both allows for opportunities to capture both streams of funding.
- ***Partner with local groups.*** TCRCD credits its continued success to its partnerships with organizations such as the Watershed Research and Training Center in Hayfork and the Northwest CA Resource Conservation and Development Council. This provides expanded opportunities for grant funding. For example, TCRCD will work with an NGO partner to write a grant of mutual benefit when the grant is applicable to NGOs, and TCRCD will take the grant request lead for grants relevant to RCDs. Recently a new NGO was established to specifically assist the TCRCD in fund development. This new entity is the Friends of TCRCD. They were a critical player when the Weaverville Basin Trail Committee secured the rights to the World Endurance Mountain Bike Race for October 2015.
- ***Look for opportunities to link to local work training.*** TCRCD's ability to work with the employment office to train people for specific TCRCD jobs has provided relevant training and increased employment opportunities to individuals in the area.
- ***Engage with local collaborative(s)***. Having a county-wide collaborative group has brought together environmental, industrial public land, and private land perspectives. This collaborative keeps organizations in the area such as TCRCD accountable to sharing information about planned and ongoing work with the community. The county-wide collaborative (Trinity County Collaborative Group) was based on the Weaverville Community Forest Steering Committee established by the TRCD to keep the community engaged in natural resources (forest) management.
- ***Maintain positive working relationships with Local, State and Federal agencies.*** TCRCD regularly communicates successes and challenges of the projects they work on, and keep open lines of communication with other agencies.
- ***Look for opportunities to engage in long term projects, such as stewardship agreements.*** Stewardship agreements and other long term funding has been key for TCRCD's ability to provide steady funding sources that allows the district to retain quality workers. Single year funding can make retaining long term, skilled, employees a challenge.

Conclusion

Implications

These examples represent just some of the many strategies that fire-adapted communities are developing to build and sustain their local fire services, contracting businesses and NGO workforces. They are utilizing a wide range of partnerships, contracting and cooperative agreement mechanisms, often in creative and innovative ways that work within and around the dominant business models for forestry and fire services. In all cases described here, there are local workforce development opportunities occurring both within the organizations and in connection to local private contractors in their regions. By capturing a diversity of work from across the three goals of the Cohesive Strategy—servicing resilient landscapes, wildfire response and fire adapted community's actions—these case studies and organizations demonstrate both the potential and challenges of grounding fire resilience in local communities. Along with contributing to expanding local FAC workforce efforts across the country, these case studies offer insights for adapting national and state funding programs and authorities to better meet the needs and potential of local FAC workforce development efforts.

Key lessons

Strategies can be both broadly replicable and context specific. Our cases show both broadly replicable strategies as well as contextually specific strategies. Both can be useful to consider for application in your own region. We also note that in many cases the mechanisms used to develop workforce capacity are not necessarily new, but are being applied and combined in creative or unconventional ways to achieve program goals. In none of these cases do we see an organization taking only one approach to local workforce development. They all take a long-term, multi-pronged approach that requires adapting as circumstances change. For example, the Guild shifted from direct hiring to supporting the development of external private contract crews instead, sharing both the risks and the rewards; CUSP moved beyond the standard practice of thinning and burning onsite, developing new biomass markets to help improve the economic and social benefits of their risk reduction work.

Wildfire suppression is double-edged. The role of unpredictable wildfire suppression work (contracting for federal and state fires) is a reality for local workforces. Although it provides valued organizational and individual income, its unpredictability makes it impossible to depend on year to year. The increasing role of wildfire suppression income is affecting the ability of local workforces to maintain steady and reliable work, as well as the ability for crews to reliably complete non-fire projects in a timely manner. Non-fire summer work is often grant contingent and requires certain timing and weather conditions for completion, which is not always compatible with wildfire response.

Staff retention is a common challenge. Although there appear to be multiple pathways for building local workforce capacity for increasingly complex wildfire management, a common challenge faced by community-based institutions is the ability to keep stable employment for staff members alongside seasonal and unpredictable workloads. The goal of stable, fair-pay work for local individuals to build local fire response capacity was well supported in our case-studies and policy review. The challenges faced in maintaining such capacity over time varied based on place, timing, fire seasons, and unpredictable needs for both wildfire suppression services as well as other supplemental shoulder season work accessible. Maintaining staff with unpredictable workloads and a lack of job security will be a continued challenge for organizations.

Diversity of funding is key. Diversity of funding is key to leveraging funds, finding sufficient cost-share, and addressing the limitation of one funding source with another (e.g., a grant that restricts timing or number of staff augmented by another to prolong seasonal crew retention). In addition, some organizations are able to obtain certain funds such as fire recovery funding following social and ecological impacts to an area. These types of funding sources can go a long way towards implementing work on the ground.

Look to local buy-in, investment and support to maintain long-term funding. Federal and state grants and other external funding sources like foundation funding come and go over the years, and lean funding years can directly impact local communities dependent on those income streams. Several of these cases noted that just as important as finding external funds is ensuring that you have a local base of funding and support to keep programs going in lean years.

Common pathways to success

Although local approaches to wildfire management vary, our investigation suggests that year-round and year-to-year support for those working in at-risk forested communities is key for further building local wildfire mitigation and response capacity. Variability in funding, project work and fire response within individual years and across multiple years was consistently cited as a primary challenge across organizations and places. Ensuring organizations can find sufficient long-term, multi-year projects for their crews' skill sets (e.g. forestry services, hazardous fuels removal, home assessments, education, fire response, etc.) is critical for developing and maintaining local capacity to prepare for and reduce fire risk and respond quickly and efficiently when fire strikes.

An "all-hands, all-lands" approach embodies cross-jurisdictional and place-based responses, which are critical to reducing the risk of, effectively responding to, and adequately recovering from wildfire. In a time of increasing wildfire costs and impacts, and with national focus on increasing communities' abilities and responsibility for fire adaptation and response, equipping these local institutions with adequate tools to build and sustain capacity is critical for fire management across scales. Along with local creativity and ingenuity, federal and state agencies may be able to customize and adapt their contracting and agreement strategies to help build and stabilize local capacity for wildfire management across the three goals of the Cohesive Strategy.

Endnotes

1 Moseley, C., E.J. Davis, and R.P. Bixler. 2015. Innovative contracting: A guide for collaborative groups and community partners. Ecosystem Workforce Program Quick Guide. Available at http://ewp.uoregon.edu/sites/ewp2.uoregon.edu/files/QG_InnovativeContracting.pdf.

2 For more information on the National Wildfire Coordinating Group, go to: www. nwcg.gov.

3 For more information on the 2015 Colorado state non-fire -district-entity program, go to http://www.legispeak.com/bill/2015/hb15-1017.

4 For more information on the Natural Resource Conservation Service (NRCS) Environmental Quality and Incentives Program, go to http://www.nrcs.usda.gov/wps/portal/nrcs/main/national/programs/financial/eqip/).

5 Santa Fe Wildland Fire Hazard and Risk Analysis is available at: http://www.santafenm.gov/wildland_fire_hazard__risk_analysis).

6 For more information on the Santa Fe modeling and visualization process to understand wildfire conditions and possible outcomes in the city, go to: http://www.redfish.com/wildfire/).

For more information:

1. Fire Adapted Communities: **http://www.fireadapted.org**
2. The National Cohesive Wildland Fire Management Strategy**: https://www.forestsandrangelands.gov/strategy/index.shtml**

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Ecosystem Workforce Program

FIRE ADAPTED COMMUNITIES LEARNING NETWORK

JOINT FIRE SCIENCE PROGRAM

NORTHWEST FIRE SCIENCE CONSORTIUM