INVESTMENT OPPORTUNITIES FOR
Increasing Forest and Fire Management Capacity in California

A CAPACITY AND NEEDS ASSESSMENT OF LOCAL GROUPS, NON-PROFITS, AND TRIBES

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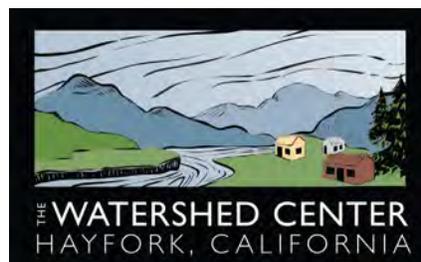*Cover Photo: Forest Stewards Guild*

Table of Contents Photo: Lenya Quinn-Davidson, University of California Cooperative Extension

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AUTHORS

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THE WATERSHED CENTER
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Acronyms

CAL FIRE	California Department of Forestry and Fire
CARCD	California Association of Resource Conservation Districts
CEQA	California Environmental Quality Act
CFSC	California Fire Safe Council
CNRA	California Natural Resources Agency
DOC	Department of Conservation (California)
FAC Net	Fire Adapted Communities Learning Network
FRAP	Fire Resource and Assessment Program
FSC	Fire safe council
GIS	Geographic information systems
IRWM	Integrated Regional Water Management
NEPA	National Environmental Policy Act
OSU	Oregon State University
RCD	Resource conservation district
RFFC	Regional Forest and Fire Capacity
UC ANR	University of California Division of Agriculture and Natural Resources
USDA	United States Department of Agriculture
WUI	Wildland-urban interface

CONTENTS

EXECUTIVE SUMMARY

Wildfires increasingly affect California in several ways, including longer fire seasons, more impacts to communities, and more threats to the people, places and other priorities that Californians value. In response, the state of California is investing in a range of initiatives spanning several agencies and departments to improve forest and watershed health and resilience. Although these investments have enhanced the capacity of regional, local, and tribal entities and their partnerships, funding is rarely provided for the explicit purposes of building capacity. Thus, there can be uneven capacity for forest and/or fire management across the state. Most recently, the Regional Forest and Fire Capacity (RFFC) program, authorized in 2018 and administered by the California Department of Conservation, deliberately seeks to increase capacity to prioritize, develop, and implement projects consistent with the goals of the California Forest Carbon Plan and Executive Order B-52-18. The RFFC program uses a block grant approach to deliver funding to regional entities who then oversee planning and implementation of landscape-level forest health projects.

To help inform future capacity building investments, the Watershed Research and Training Center (the Watershed Center)

Throughout California, countless communities, urban and rural alike, are surrounded by dense fuels in need of restoration.

engaged Oregon State University (OSU) to assess entities active in forest and/or fire management in California. The goal of this assessment was to gather information about entities that worked or wanted to work at landscape or watershed scales. Data collected included basic organizational characteristics, as well as if entities currently had (or wanted to develop) specific capacities for forest and/or fire management. This assessment was administered as an online survey from September – October 2019, and a total of 227 usable responses were recorded. One person per entity was asked to respond on behalf of their entity. Entities such as nonprofit organizations, resource conservation districts, tribes, collaborative groups, and fire safe councils took the survey; state and federal agencies were not eligible to participate unless doing so on behalf of a collaborative.

This report is intended to help better describe and illuminate what forest and fire capacities are, who possesses/needs them and why they may matter.

These findings may be of interest to respondents who took the assessment, state-level allies of forest and fire management work, and other decision makers who could help remove or mitigate barriers. It may also be of utility to other states that pursue similar work or want to consider strategic investments in forest and fire management capacity. This state-level report will be followed by internal reports to each block grantee with a subset of data specific to their coverage area in the state, which will provide more detailed information. Those reports will include respondents' contact and budgetary information and therefore will not be made publicly available.
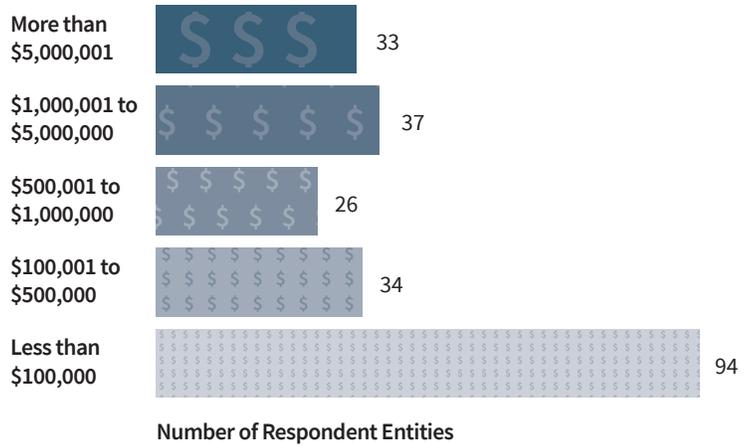

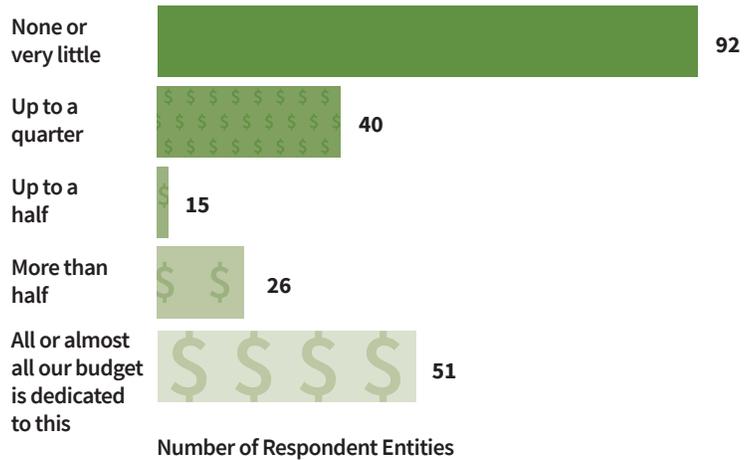David Jaramillo, The Watershed Research Training and Center

Summary of Assessment Findings: About Respondents (PAGE 21–28)

- Approximately two-thirds of respondents were from the Sierras, Cascades, northern Coast Ranges, and Klamath-Siskiyou areas, and were engaged in **conifer-forest-ecosystem types**. The results of this survey therefore better represent entities in these locations and that particular forest type, and likely offer an incomplete picture of the organizational capacities and needs of entities elsewhere in California.

- The most common entities to take the assessment were fire safe councils (19 percent) and nonprofits (18 percent).

- The majority of respondents had fairly small staffs, although staff size range varied widely. The median staff size (all employee types) was four.

- Forty-two percent of assessment respondents indicated that their entity had an average annual operating budget of $100,000 or less per year, and over half had a budget of less than $500,000 (Figure E1).

- A majority of entities had a quarter or less of their budget dedicated to forest and/or fire management (Figure E2).

- Half of the respondents had worked on forest and/or fire management at larger scales such as a watershed, fireshed, or landscape. The other half had not, but expressed a desire to be working at that scale.

- State grants or agreements were most commonly identified as a major source of support for forest and/or fire management; other major sources were federal grants or agreements and volunteer labor.

- Respondents providing open-ended responses stated that they most wanted to develop or enhance their relationships with regional, county, or local entities, particularly county governments and with

E1. Average Annual Operating Budgets for Respondent Entities

More than $5,000,001	33
$1,000,001 to $5,000,000	37
$500,001 to $1,000,000	26
$100,001 to $500,000	34
Less than $100,000	94

Number of Respondent Entities

E2. Proportion of Respondents' Annual Budget Dedicated to Forest and/or Fire Management Work

None or very little	92
Up to a quarter	40
Up to a half	15
More than half	26
All or almost all our budget is dedicated to this	51

Number of Respondent Entities

other fire safe councils. Relationships with tribes were also desired. For state agencies or programs, California Department of Forestry and Fire (CAL FIRE) was the most frequently mentioned, and the USDA Forest Service was the most mentioned federal agency, but the need for relationships with state and federal government entities were not listed as frequently as local, county, or regional relationships.

- A majority of respondents (66 percent) indicated that they would be potentially interested in teaching or mentoring others in a peer capacity-building setting.

Top Barriers Reported

▶ **Inadequate funding for forest/fire (~50%)**

▶ **Administrative time and costs (38%)**
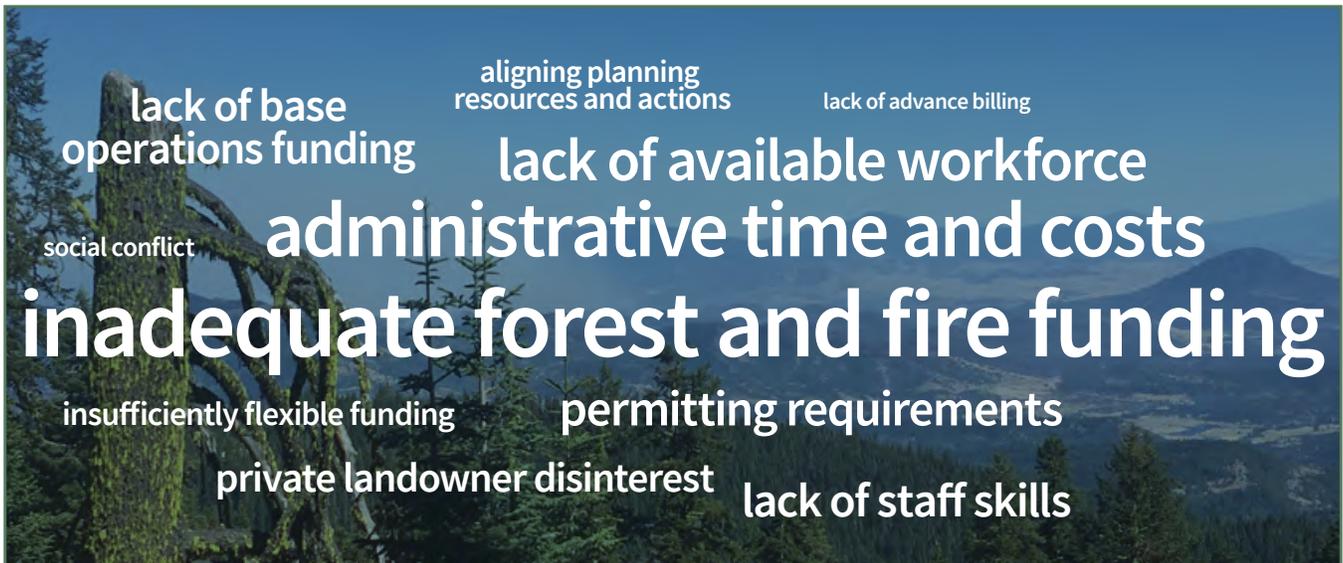
▶ **Lack of available workforce (29%)**

- Nearly half reported that inadequate amounts of funding for forest and/or fire projects, programs, and work was one of their top three barriers to this work, followed by administrative time and costs (38 percent), and lack of an available workforce to perform needed management activities on the ground (29 percent, E3).

- **A large majority (87 percent) reported that direct funding for them to address their needs themselves would be a "very useful" format for capacity building. Smaller majorities also stated that connections to peers working on similar issues and peer exchanges would be very useful.**

Summary of Assessment Findings: About Capacities (PAGE 28–49)

CAPACITIES CURRENTLY POSSESSED

- On average, 35 percent of respondents stated that they had capacities in the outreach category, and 34 percent had collaboration and partnership capacities.

- The most common specific capacity type that respondents currently possessed was administration and management of funds, agreements, and/or contracts.

- Forty percent or more of respondents indicated that they could conduct outreach to residents and public landowners. This may reflect that many respondents were fire safe councils and nonprofits with outreach roles.

- Less than 30 percent of respondents had any of the implementation, cultural burning, or monitoring capacity types.

- Greatest current strengths listed included: partnerships with other entities such as other local organizations and state agencies; interest, commitment, passion, desire to steward, and willingness from local

E3. Word Cloud of Most Commonly Selected Barriers, Size Reflecting Frequency Selected

lack of base operations funding

aligning planning resources and actions

lack of advance billing

lack of available workforce

social conflict

administrative time and costs

inadequate forest and fire funding

insufficiently flexible funding

permitting requirements

private landowner disinterest

lack of staff skills

Emily Jane Davis

Will Harling, Western Klamath Restoration Partnership

residents and partners; having a strong group of volunteers; project management skills; and grant writing skills.

- **Many respondents also reported that they had the ability to develop partnerships between public land managers and private landowners, and to identify shared priorities (or values) among multiple stakeholders.**

These capacities have been increasingly required in the past decade, as state and federal policies and programs have requested collaborative approaches and all-lands projects that cross ownership boundaries.

CAPACITIES TO ADD OR ENHANCE

- There were numerous and diverse capacities that respondents stated they wanted to add or enhance. This suggests a significant opportunity for capacity investment, but a concomitant challenge in determining strategic investments with resources that cannot meet all stated needs.

- A majority of respondents wanted to add or enhance capacities in the broad categories of monitoring and planning.

- A majority of respondents wanted to build knowledge-related capacities for various types of monitoring, and to better understand and analyze values at risk (i.e., priorities), assets, and other capitals in both biophysical and human areas. These included: 1) monitoring impacts on fire resilience; 2) GIS mapping of human (social,

cultural, and/or economic) values related to fire; 3) GIS mapping of biophysical resources, and 4) monitoring of carbon savings.

- Other top desired capacities included development of outreach materials, designing fuel treatments in and around communities, implementing defensible space programs, and conducting local workforce capacity assessments.

- Areas where respondents felt they most needed improvement through open-ended responses included: increasing the number of staff with fire experience (without specifics on what this experience might be), and number of staff overall; recruiting and training volunteers; obtaining funding, particularly from more diverse sources; grant writing; and the ability to clear defensible space and vegetation around homes and along roadsides.

- Interest was lowest in adding or enhancing capacities obtaining nonprofit status with the IRS, acting as a qualified burn boss for prescribed fire, as well as those related to cultural fire and tribal consultation (among non-tribal respondents). However, the majority of tribal respondents wanted to build almost all capacities related to cultural fire.

- The capacities that respondents most commonly reported not needing were related to cultural fire and tribal aspects of forest and/or fire management, but less than seven percent of the respondents were tribal governments and this finding shifts when examining only tribes' responses. Monitoring cultural outcomes was also included as a non-need when considering all responses, but monitoring other types of resources and outcomes was otherwise commonly selected as an area to build or enhance capacity.

Summary of Recommendations for Capacity Investments (PAGE 50–59)

Investing in capacity for forest and/or fire management should be preceded by addressing the following questions:

- What are the goals and desired outcomes of increasing capacity? How are you defining capacity?

- What is the existing funding strategy and structure for this work, and how might new investments interface with this current system?

- **What are the current local and regional organizational ecosystems, and how would capacity investments affect those?** Working in partnership is critical to this work, and no one entity necessarily needs all of the capacities; partnering based on assets is more efficient and realistic.

- What are the capacities that the most entities perceive needing?
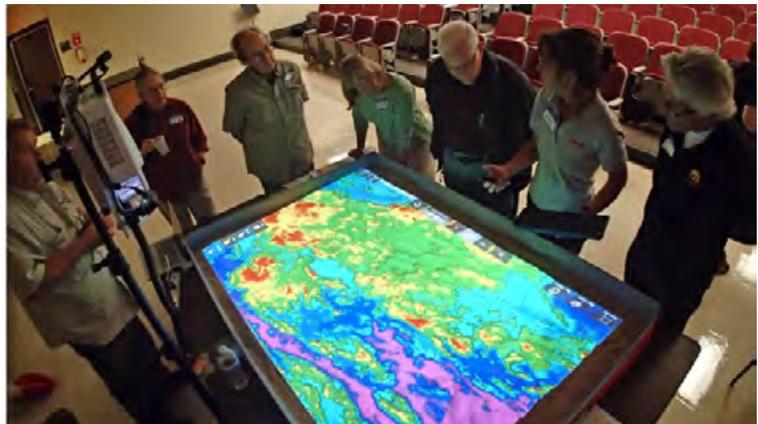
- What capacities do entities already possess?

Emily Jane Davis

- How should baseline capacity (i.e., ripeness) yet also equity be considered in investment decisions? What is a capacity logic model specific to forest and/or fire management?

- What formats and venues will be most effective for building capacity?

Taking these questions into consideration in light of the RFFC program and assessment findings, we recommended several pathways to building capacity within each category surveyed. Recommendations do not signify how RFFC funds will be invested.

- Some of the top capacities that respondents most wanted to add or enhance included monitoring impacts on fire resilience, GIS mapping, and monitoring of carbon savings. Therefore, prioritizing investment in these capacities would be responsive to the stated needs. However, as monitoring and GIS capacities can be technically, and intellectually cost-intensive, it would be essential to gain more information about why respondents want these capacities, and how they envision using them. Resource conservation districts (RCDs) were the entity type most interested in these capacities, so follow up on this could occur through the California Association of RCDs. Moreover, if planning and prioritization processes and monitoring activities occur in a collaborative setting, it may be possible that not all involved entities need these capacities in-house. Once there is a deeper understanding of these issues, capacity building strategies may include developing trainings and connections with expertise from universities and private sector entities, peer mentorships, databases of funding sources, and a repository to share templates and resources.

- Outreach was a category in which there was a combination of existing capacities as well as capacities that respondents wanted to enhance. Fire safe councils were the entity

Keith Vandervort, Timberjay Newspaper

type most interested in building outreach capacity. It is recommended that state-level service providers discuss a shared vision for the role of outreach in regional forest and/or fire management, versus engagement of local landowners or residents; and given the common interest in outreach materials, provide an event focused on sharing knowledge about the formats and types of communications materials that exist, and particularly which are best suited for which types of messages and purposes.

More respondents reported currently having several outreach capacities than capacities from any other category.

- There were several distinct planning and implementation capacities that respondents wanted to enhance, each of which likely requires its own approach to capacity building. More specific recommendations for each are provided on pages 54–56.

- Because increased organizational capacity was reported to be less needed than other capacities in the quantitative portions of the survey, one could infer that this is not a top priority. However, outcomes are often only as strong as the scaffolding off which they build, and organizational capacity needs were prevalent in the open-ended answers. It may be strategic to have regional block grantees identify a few entities who may be able to contribute more significantly to forest and/or fire management if their basic administrative functions were improved, and/or evaluate all

entities that took the assessment in terms of population demographics and other socio-economic factors.

- Cultural fire capacity building will require an approach that considers the unique authorities and roles that tribes have in forest and/or fire management, and the importance of cultural burning to tribes. Recommendations include additional information gathering through formats more appropriate given tribal governance structures and processes, and finding examples and guidance for effective and respectful partnerships between tribal and non-tribal entities.

Designing fuel treatments in and around communities was a top capacity need expressed by respondents.

- The top capacity needs varied by entity type. For example, the capacities that fire safe councils wanted to enhance differed from those that tribes wanted to enhance. Focusing on needs by entity type may further target effective investments.

Summary of Key Implications and Recommendations at the State Level (PAGE 59–61)

- **This assessment revealed substantial and diverse needs for capacity building.**

  These needs are likely even more extensive than articulated in these data, as the assessment may not have adequately captured perspectives from certain areas of California. The RFFC program is unlikely to be able to fully meet these needs. Continued and deliberate investment could include approaches such as: 1) expanded flexibility in existing grant programs to more explicitly fund capacity building functions such as participation in trainings, coordination and partnership development, and planning; 2) providing non-competitive awards to local groups for baseline operational capacities and serving in their coordination and

Yosemite National Park

planning role; and 3) expanded investment in California's re-emerging Watershed Coordinators grant program.[1]

- The scope and scale of these needs also suggests the importance of being strategic in leveraging investments. This could include ways to seek stronger synergy among the many programs that state agencies are deploying to ensure a set of leveraged outcomes that help organizations and partnerships grow and sustain capacity. Another approach could be to expand the use of cooperative agreement authorities for state agencies, and CAL FIRE in particular, to facilitate more deliberate investment in building the capacity of local organizations to be qualified and capable partners.

- **There is strong interest in receiving capacity assistance from peers, and there appears to be a broad base of skilled entities in California that could serve as peer teachers or mentors.** Given the concerted focus and investment in forest and/or fire resilience in California and the urgency of fire-related issues, there may be a need for new or expanded intentional, strategic connections within the state and perhaps directly affiliated with the RFFC program as a community of practice or peer network.

- The common interests of many respondents in scientific and technical capacities (monitoring and GIS) indicates a need to more explicitly link universities and other educational institutions with the fields of forest and/or fire management. These partners could incentivize applied research with practitioners, and connect students to internships and future employment opportunities.

- State and federal government permitting processes or requirements (e.g., CEQA, NEPA) were among the top barriers for about a quarter of assessment respondents. Continued investment in this will likely be necessary, as non-governmental organizations are increasingly being tasked with taking leadership roles in environmental compliance.

- Given the continued interest in building the capacity for forest and/or fire management work at smaller scales such as neighborhoods and communities, there may be a need to continue to invest locally.

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1 https://www.conservation.ca.gov/dlrp/grant-programs/watershed

1. INTRODUCTION

California Context

The state of California is increasingly investing in wildfire management initiatives and programs related to the management of natural lands. These efforts, which span several agencies and departments, have a diversity of complementary purposes including: reducing wildfire risks and hazards to communities, enhancing the resilience of natural systems and working lands, sequestering carbon and mitigating climate change impacts, enhancing and protecting wildlife habitat and watershed resilience. Funding is provided from bond initiatives (e.g., Prop 1 and 68), annual general fund appropriations, annual appropriations from the Greenhouse Gas Reduction Fund, and from statutorily mandated fee and tax revenues.

Within the California Natural Resources Agency (CNRA), this funding flows through a multi-scaled system to support forest and/or fire management that targets forest and watershed health and resilience. Several of the Resource Agency's departments, including the Wildlife Conservation Board, the Department of Fish and Wildlife, the Department of Conservation, CAL FIRE, and the Department of Water Resources, deliver these funds through competitive grant programs. This can be with regionally designated allocations; or as block grants to regional agencies within CNRA (e.g., Sierra Nevada Conservancy, State Coastal Conservancy, etc.), Resource conservation districts (RCDs), and Integrated Regional Water Management (IRWM) Planning Groups, who then make subawards to local groups. An array of local and regional entities are active in forest and/or fire management, such as fire safe councils, resource conservation districts,

nonprofits, watershed councils, homeowners' associations, land trusts, Firewise ® USA sites, and collaborative groups. Local and tribal governments, as well as government land management agencies and landowners, are also engaged.

These CNRA programs, coupled with complementary federal and local programs and private landowner investments, are intended to facilitate landscape resilience to wildfire. Although these investments have helped to grow the capacity of regional, local, and tribal entities, funding is rarely provided for the explicit purposes of building capacity. Thus, there can be uneven capacity for forest and/or fire management across the state. Factors that affect capacity may include but are not limited to the presence/absence of entities that can foster strong coordination and planning, such as state conservancies or an IRWM planning group; the culture and extent to which local resource conservation districts, local NGOs, and local governments choose to focus on land stewardship and fire resilience; and the extent to which local or investor-owned utilities voluntarily value and invest in watershed and forest resilience.

Some examples of modest investments in deliberate capacity building to date include the California Department of Conservation (DOC)'s Watershed Coordinator Grants[1] program, the Sierra Nevada Conservancy's Watershed Improvement Program[2], and the inclusion of limited funding allowances in several grant programs to support training and planning. Most recently, the Regional Forest and Fire Capacity[3] (RFFC) program, authorized in 2018, is unique in that it deliberately seeks

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1   https://www.conservation.ca.gov/dlrp/grant-programs/watershed

2   https://sierranevada.ca.gov/what-we-do/

3   https://www.conservation.ca.gov/dlrp/grant-programs/Pages/Regional-Forest-and-Fire-Capacity-Program.aspx

to increase regional capacity to prioritize, develop, and implement projects that are consistent with the goals of the California Forest Carbon Plan and Executive Order B-52-18. These include improving forest health and fire resilience, facilitating greenhouse gas emissions reductions, and increasing carbon sequestration in forests throughout California. The RFFC program is funded by California Climate Investments and administered by the DOC on behalf of the CNRA. The RFFC uses a block grant approach to deliver funding to support regional planning and implementation of landscape-level forest health projects. This means that it provides funding to regional entities who are tasked with developing regional priority plans, completing necessary project development and permitting processes to create implementation-ready programs of work, implementing demonstration projects, and conducting outreach and training. Many of these regional entities are also expected to deliver support to local entities within their coverage areas (Figure 1). One or more entity not covered by a regional block grantee will be serviced by the Watershed Center. Other service providers who may also help address needs relevant to their missions and capacities may include, for example, the California Fire Safe Council, University of California Agriculture and Natural Resources (UC ANR) Cooperative Extension, Watershed Coordinators, or the California Association of Resource Conservation Districts.

> ## RFFC Program Definitions
>
> ▶ **For the purposes of this program, a "region" is the area served by an individual block grant recipient.**
>
> ▶ **"Landscape-level" means a heterogeneous area within a region that contains multiple and interacting land-uses, watersheds, and ecosystems.**
>
> ▶ **Under this definition of "landscape-level," a landscape is not defined by its size; rather, it is defined by its structures and functions.**

Figure 1. Block Grantee Coverage Areas within California

RFFC REGIONAL BLOCK GRANT AWARDEE COVERAGE AREAS

- *North Coast Resource Partnership*
- *Sierra Nevada Conservancy*
- *California State Coastal Conservancy*
- *Santa Monica Mountains Conservancy*
- *Inland Empire Resource Conservation District*
- *Resource Conservation District of Greater San Diego County*

OTHER FEATURES
- *Water*
- *County Line*

Considerations for Evaluating Capacity Building Needs

Existing research about natural resource management capacity and information from other capacity-building programs suggests that there are many considerations for evaluating how to best invest in capacity. These considerations depend on the scale of the individual entity, the local or regional organizational ecosystem, and the program or initiative's goals and desired outcomes. Some considerations are logistical (e.g., What is available and what are the parameters for investment?), and others are more conceptual (e.g., What is the Theory of Change?).

Questions to ask before investing in capacity include:

▶ What are the goals and desired outcomes of increasing capacity?

▶ What is the existing funding strategy and structure for this work, and how might new investments interface with this current system?

▶ What are the current local and regional organizational ecosystems, and how would capacity investments affect those ecosystems?

▶ What capacities do the most entities perceive needing? Do entities each need them individually or collectively?

▶ What capacities do entities already possess?

▶ How should baseline capacity (i.e., ripeness) and equity be considered in investment decisions?

▶ What formats and venues will be most effective for building capacity?

We will revisit these questions in the discussion portion of this report.

RFFC Context: What are the Goals and Desired Outcomes of Increasing Capacity?

The RFFC program deliberately seeks to increase capacity to prioritize, develop, and implement projects that are consistent with the goals of the California Forest Carbon Plan and Executive Order B-52-18. These include improving forest health and fire resilience, facilitating greenhouse gas emissions reductions, and increasing carbon sequestration in forests throughout California. The Forest Carbon Plan and the Executive Order also contain numerous recommendations to meet these goals.

A central aspect of the RFFC program is its emphasis on collaborating to strategically prioritize regional and landscape-scale activities. It is assumed that these larger scales of activity will advance these goals. For the purposes of this program, a "region" is the area served by an individual block grant recipient, and "landscape-level" means a heterogeneous area within a region that contains multiple and interacting land-uses, watersheds, and ecosystems. This indicates that RFFC investments are 1) to be targeted to build or enhance capacities for collaborating with other entities at scales beyond individual neighborhoods, and 2) intended to foster the ability to prioritize and strategically sequence forest and/or fire management actions in doing so.

The state of California has invested in a range of initiatives to improve forest and watershed resiliency to fire. Within the California Natural Resources Agency, several of the agency's departments deliver funds through competitive grant programs. These funds are commonly provided to regional entities, such as regionally designated allocations; or as block grants to regional conservancies, RCDs and IRWMs, who then make subawards to local groups. This funding strategy therefore is a multi-scaled system that centrally relies

on having functional regional intermediaries able to direct funding and support local entities. This model ideally ensures strategic investment of resources sensitive to regional and local context by placing regional entities in important intermediary roles, rather than making top-down decisions about investments. Conversely, risks with this type of model include that it may create a "middle-heavy" system that relies on regional entities to know what is best at smaller scales within their area.

The RFFC program follows this multi-scalar logic in that it delivered funds to regional entities who are in turn intended to make decisions about how to invest locally. It also tasks these regional entities with facilitating enabling conditions across their area, such as completing necessary permitting processes to create a prioritized suite of vegetation management work for future implementation. The RFFC program also focuses on building local coalitions of support and partnerships for forest and/or fire management projects. This program also engages other service providers who can offer technical assistance in 1) areas not already served by regional block grantees and 2) instances when needs and issues transcend a single region. Note this technical services portion of RFFC has a relatively smaller amount of funding appropriated to it (18 counties are not within RFFC regional block grant jurisdictions). RFFC's approach is in line with existing programs and investments in forest and/or fire management in California, and it has similar promises and risks. Investments made through the RFFC may amplify and further develop programs underway. However, what differentiates RFFC from most prior programs is that it is deliberately intended to invest in capacity building and the ability of entities to work collaboratively in prioritizing forest and/or fire management actions. This may make it complementary to other funding streams that can only be applied "on the ground" (i.e., to implementation portions of projects).

Watershed Research and Training Center

In the realm of forest and/or fire management, there is an array of local and regional entities such as tribes, fire safe councils, resource conservation districts, nonprofits, watershed councils, homeowners' associations, land trusts, Firewise ® USA sites, and collaborative groups. Public and private landowners, residents, government agencies and others also participate. These entities form different "organizational ecosystems" in different places; the entities present, the roles that they each play, and how they relate to each other within a local area almost always vary.

Local contexts (biophysical, cultural, social, economic, and political) shape these organizational ecosystems.

As does the presence/absence of a strong relationship between nontribal and tribal entities, a strong state conservancy or IRWM group, the historical focus and culture of local resource conservation districts, the extent to which local or investor-owned utilities values and invests in watershed and forest resilience, the orientation of local nonprofit organizations towards land stewardship and fire resilience, and/or the extent to which local governments

Forest Stewards Guild

value and invest in fire resilience. In certain areas, some entities may have specialized roles that fit together in a network or partnership. In other areas, there may be more redundancy, such as multiple entities with similar, overlapping, or even competing roles.

Moreover, these organizational ecosystems are not static—they are continually changing as people and resources move in and out, and galvanizing and fracturing events occur.

As a result of these varied and diverse organizational ecologies, each place and each entity has nuanced capacity needs. There are likely several different scenarios for capacity investment. For example, there may be a need for a certain capacity to be developed broadly across all the involved entities in a region—such as the ability to collaborate more effectively. Or, there may be a need for one entity in a local organizational ecosystem to build a key skill that is otherwise lacking there, particularly if it is a skill that is not well-suited for all entity types, that is high-cost for multiple entities to develop, and/or that can be a service available to other entities (e.g., a prescribed fire workforce and burn boss).

It is therefore important to take the local organizational ecosystem in each area into account when making capacity investments. Entities such as regional block grantees, if they are well-informed about these ecosystems, may well understand the potential impacts of investments into those systems. In particular, they can ask themselves: *Would this investment create diversity, redundancy, or competition here? Do we need to learn more before we can answer that?*

About This Report

To help inform investments through the RFFC, the Watershed Center engaged OSU (Dr. Emily Jane Davis) to conduct an assessment of the capacities of entities active in forest and/or fire management in California. The goal of this assessment was to gather information about entities that worked or wanted to work at a scale larger than an individual neighborhood. This included collecting some of their basic organizational characteristics, as well as if they currently had or wanted to develop specific capacities for forest and/or fire management. In sharing this information, this report is intended to help better describe and illuminate what forest and fire capacities are, which entities possess/need, and why those capacities matter. These findings may be of interest to several audiences, including 1) respondents who took the survey, 2) state-level supporters of forest and/or fire management work, and 3) local, regional, and state decision makers who could help remove or mitigate barriers. This report may also be of utility to those in other states who pursue similar work or want to consider strategic investments in forest and/or fire management capacity.

To protect the information of participants, results are reported in aggregate and entities are not identified. This state-level report will be followed by internal reports to each block grantee with a subset of data specific to their coverage areas in the state, as well as to the Watershed Center.

2. ASSESSMENT APPROACH

Survey Development and Review

This assessment was designed and implemented as an online survey through a collaborative approach between OSU (Dr. Emily Jane Davis) and the Watershed Center (Allison Jolley, Nick Goulette, and Michelle Medley-Daniel) with input from several other entities and individuals with relevant expertise. Prior to developing the survey, we reviewed existing assessments of organizational and partnership capacity in natural resource management, as well as related scientific literature. We then drafted a survey instrument and solicited review from the Sierra Nevada Conservancy, North Coast Resource Partnership, the California Fire Safe Council (CFSC), the DOC, the CNRA, and an experienced indigenous fire practitioner. The final survey questionnaire contained 29 questions, which included seven major questions with sub-questions about specific capacities. Because the RFFC is focused on regional-scale forest and/or fire management, we included a screening criteria question that asked respondents to confirm that their entity either had worked at or wanted to work at a scale larger than an individual neighborhood. We also included a screening question that asked respondents to confirm that they were the only individual responding on behalf of their entity. The survey instrument was administered through Qualtrics, an online survey administration platform for which OSU has an institutional license.

Survey Recruitment Process

A list of entities working in forest and/or fire management in California was compiled by the Watershed Center and CFSC based on the Watershed Center's individual professional contacts and the CFSC's newsletter subscribers. This list contained 311 entities with contact information including email addresses. It did not include state and federal government agencies, as those entities are not the focus of RFFC funds. Prior to the launch of the survey, the Watershed Center sent a notice to known collaborative groups and tribes to inform them that the survey was forthcoming given that these entity types typically require consensus or collaboration prior to responding to an information request. The survey was then launched on September 3rd, 2019 and remained open until October 15th, 2019. The duration was set to allow as many entities as possible to take the survey and for respondents to confer with their internal colleagues as needed. The researcher sent emails with a link to the survey to all entities on the contact list on the launch date, and then regional block grantees and other known entities with relevant contacts (the California Association of Resource Conservation Districts, the California coordinator for Firewise ® USA sites, the California Fire Science Consortium, the Californian Indian Water Commission, the Governor's Task Force for Forest Management, The Nature Conservancy-California, and UC ANR Cooperative Extension) were asked to send the link/announcement and two subsequent reminders to their relevant contacts on September 12th and 30th. The researcher also sent reminders to the Watershed Center/CFSC list on September 18th and October 8th. Reminders were confirmed as sent by the Sierra Nevada Conservancy, North Coast Resource Partnership, California Association of Resource Conservation Districts, and Governor's Task Force. Respondents had the option of downloading the survey instrument as a PDF, and completing it and returning it by email or mail.

In the recruitment email and initial text of the survey, respondents were instructed that in order to complete the assessment, they had to be: 1) not employed by a state

or federal government agency, unless they were responding on behalf of a collaborative group, 2) from an entity that worked or wanted to work at a scale larger than an individual neighborhood, and 3) the only person from their entity who would take the survey.

Data Analysis

We received 231 responses to the survey through Qualtrics and 12 responses in PDF format via email. Responses that were started but largely uncompleted and responses from entities that did not qualify for the assessment were removed. The final number of qualified and usable responses was 227. The number of responses by question varied slightly, however, as respondents could skip questions. Given the methods of distribution used, it is not possible to estimate the entire population that the survey request reached, nor a response rate. This is an inherent challenge in this emergent topic of research; although there are resources identifying USDA Forest Service collaboratives in California, or all RCDs in California, there are many other entity types included in this sample for which there is no peer-reviewed literature or resources that identify this exact target population.

The researcher downloaded, cleaned, and organized the data in Microsoft Excel. Each respondent was assigned to a RFFC block grantee coverage area based on their location, or classified as "Other" if they were not in a block grantee coverage area. For this state-level report on all respondents, basic descriptive statistics were calculated based on question type, using pivot tables, sorting, and simple formulas. Several questions provided open-ended responses. These responses were coded qualitatively for recurring answers or themes depending on the question, and frequencies were also quantitatively tallied as possible. The researcher engaged a third-party peer in reviewing her methods and checking calculations. In reporting the findings, we provide description of which items received the most responses, and noted when those constituted majorities. We also provide description of items receiving the fewest responses.

Piper McDaniel, Watershed Research and Training Center

3. ASSESSMENT FINDINGS

Respondent Population

This section examines basic characteristics of the respondents to the assessment, including their locations, ecosystem types, entity types, and annual operating budgets.

RESPONDENTS BY BLOCK GRANTEE COVERAGE AREAS

Of the total 227 respondents to the assessment, 38 percent were located within the Sierra Nevada Conservancy (SNC) coverage area (Table 1). Another 28 percent were within the North Coast Resource Partnership Area. Therefore, two-thirds of all responses to the assessment came from the Sierras, Cascades, northern Coast Ranges, and Klamath-Siskiyou areas; and the assessment findings as a whole should be considered in that light. The organizational capacities and needs of entities, to the extent that they exist, elsewhere in California are likely less well-represented in this set of respondents. Thirty (or 13 percent) were located in areas not currently served by a block grantee ("Other").

Two-thirds of all responses to the assessment came from entities located in the Sierras, Cascades, northern Coast Ranges, Klamath-Siskiyou.

Table 1. Respondents by Location within Block Grantee Coverage Areas

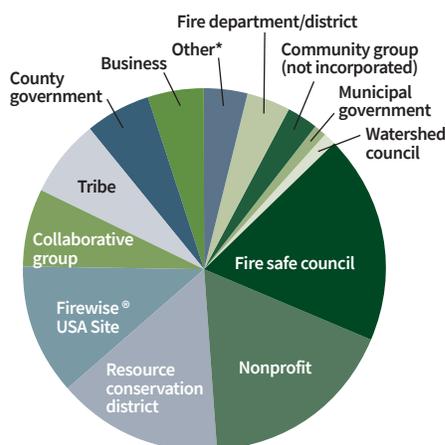| Block Grantee	Counties Included	Number of Respondents	Percent of Respondents
Sierra Nevada Conservancy	Alpine, Amador, Butte, Calaveras, El Dorado, Fresno, Inyo, Kern, Lassen, Madera, Mariposa, Modoc, Mono, Nevada, Placer, Shasta, Sierra, Tehama, Tulare, Tuolumne, and Yuba	87	38%
North Coast Resource Partnership	Del Norte, Humboldt, Mendocino, Siskiyou, Sonoma, and Trinity	64	28%
Other	Colusa, Glenn, Imperial, Kings, Lake, Merced, Napa, Orange, Plumas, Sacramento, San Benito, San Francisco, San Joaquin, Santa Clara, Solano, Sonoma, Stanislaus, Sutter, and Yolo	30	13%
State Coastal Conservancy	Alameda, Contra Costa, Marin, Monterey, San Luis Obispo, San Mateo, Santa Barbara, and Santa Cruz	29	13%
San Diego Resource Conservation District	San Diego	8	4%
Inland Empire Resource Conservation District	Riverside and San Bernardino	5	2%
Santa Monica Mountains Conservancy	Los Angeles and Ventura	4	2%
Total		**227**	

ECOSYSTEM TYPES

The ecosystem and vegetation types that an entity works in are important factors regarding capacity needs. The majority of assessment respondents were active in predominately conifer forest ecosystems (Table 2). This also reflects that two-thirds of the respondents were from locations where this ecosystem type is extensive or dominant. An additional 19 percent were from an oak woodland or savanna ecosystem, which means that 84 percent of all respondents were from forested ecosystems. Far fewer respondents were from non-forested ecosystem types including shrubland, grassland, juniper, agricultural, desert, or wetland areas.

ENTITY TYPES

Different types of entities may have different capacities in terms of their structures, funding, and missions, and therefore may play different roles in forest and/or fire management. The largest share of assessment respondents was from fire safe councils and nonprofits, although this did not constitute a majority (Table 3). Our approach to recruiting assessment responses likely shaped the types of respondents, and may explain why there are many fire safe councils and nonprofit organizations, as well as resource conservation districts in the respondent population. State and federal government agencies were not eligible to complete the assessment unless representing a collaborative group.

Table 2. Ecosystem Types in which Respondent Entities Worked

Ecosystem Type	Number of Respondents	Percent of Respondents
Predominantly conifer forest (this includes subalpine forests and any areas where tree cover is 10% or greater)	148	65%
Predominantly oak woodland or oak savannah (tree cover is 10% or greater)	44	19%
Predominantly shrubland (e.g., chaparral, coastal sage scrub)	16	7%
Predominantly grassland (tree or shrub cover is less than 10%)	13	6%
Predominantly juniper	2	1%
Predominantly agricultural	2	1%
Predominantly desert or shrub-steppe	1	<1%
Predominantly wetlands	1	<1%
Total	**227**	

Table 3. Respondent Entity Types

Entity Type	Number of Respondents	Percent of Respondents
Fire safe council	42	19%
Nonprofit	41	18%
Resource conservation district	35	15%
Firewise ® USA Site	27	12%
Collaborative group	15	7%
Tribe	15	7%
County government	13	6%
Business	11	5%
Other*	9	4%
Fire department/district	8	4%
Community group (not incorporated)	7	3%
Municipal government	2	1%
Watershed council	2	1%
Total	**227**	

*Other respondent types included special districts, irrigation district, community college, water district, and joint power authority.

Figure 2. Respondent Entity Types

ANNUAL OPERATING BUDGET

The operating budget of an entity can also be an important factor in the extent and types of work that entities may perform. Smaller budgets may pose a challenge to entities' capacities, and they may rely more heavily on volunteers, or play a niche role in larger partnerships or collaboratives. Larger budgets may require proportionate administration and funding management infrastructure. Forty-two percent of assessment respondents indicated that their entity had an average annual budget of $100,000 or less per year, and over half had an annual budget of less than $500,000 (Figure 3a and 3b). Of the entities with budgets of less than $100,000 per year, over one third were fire safe councils. Entities with larger budgets (over five million annually) tended to be county governments and large nonprofit organizations.

NUMBER OF EMPLOYEES AND VOLUNTEERS

The staff size of an entity can also be an important factor in the extent and types of work that an entity may perform. Entities with smaller or more volunteer-dependent staffing may face limitations while larger staffs require increased funding and administrative support. The majority of respondents had fairly small staffs, but the size range of respondent staff varied widely. The median staff size (all employee types) for respondent entities was four, with a range from zero to 4,000 staff (Table 4). The largest entities by staff size (over 1,000) were county governments. Entities with larger numbers of volunteers were citizen groups and nonprofits.

Figure 3a and 3b. Average Annual Operating Budgets for Respondent Entities

Figure 3a

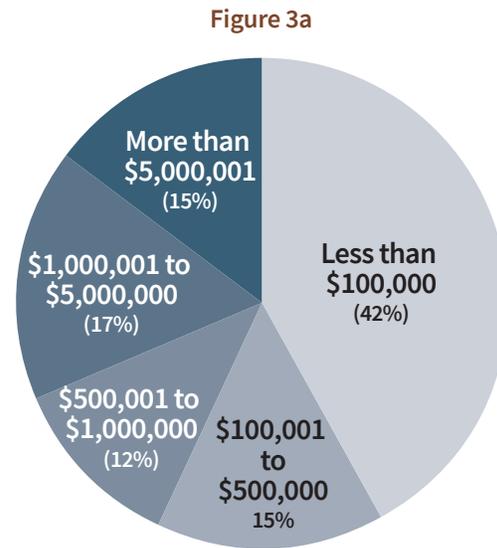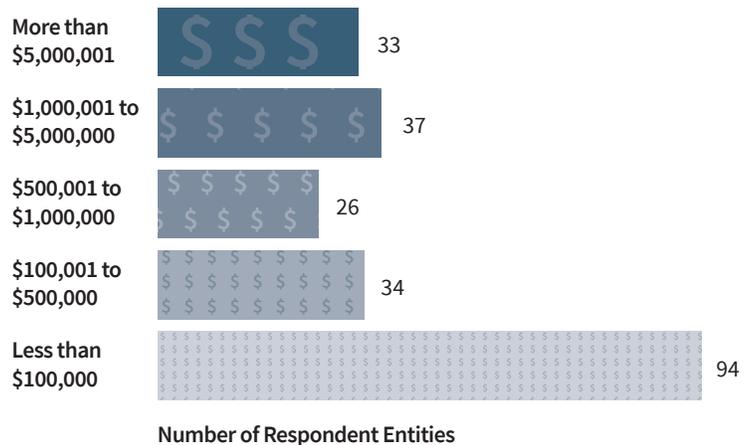**Figure 3b**

Number of Respondent Entities

Table 4. Staff Sizes for Respondent Entities

	Total Employees	Full-Time Employees	Part-Time Employees	Seasonal or Other Employees	Volunteers
Range	0–4,000	0–4,000	0–123	0–600	0–2,000
Average	83	110	7	12	71
Median	4	4	2	1	10

Respondent Forest and/or Fire Management Work

This section examines the forest and/or fire management work that assessment respondents have performed, including the scales they have worked at, the proportion of their budgets dedicated to this work, their sources of funding, and top barriers.

SCALE OF FOREST AND/OR FIRE MANAGEMENT WORK

We asked respondents to identify the largest scale at which they had worked on forest and/or fire management in their respective service areas to date. Respondents did not have to have worked at a particular scale to take the assessment, but did have to confirm either action or interest in working at a scale larger than an individual neighborhood. Respondents with experience already working at larger scales likely have different capacity needs than respondents working at primarily smaller scales, as the latter may need to learn new skills or find new resources in order to scale up their work. Half of respondents had worked at relatively larger scales such as a watershed, fireshed, or landscape (we intentionally did not define those terms).
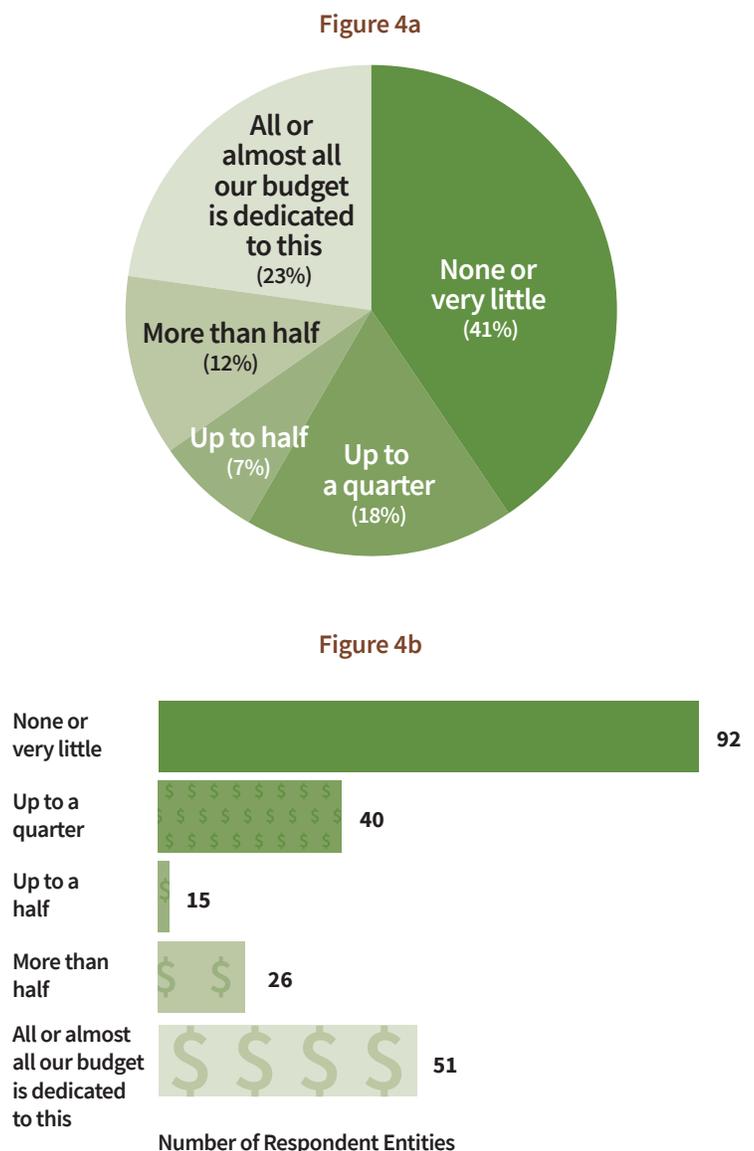
PROPORTION OF BUDGET FOR FOREST AND/OR FIRE MANAGEMENT WORK

In addition to their total operating budget, the proportion of that budget spent on forest and/or fire management can affect an entity's capacity for this work. Some entities may have broad mandates that include forest and/or fire management among many other activities, while others may be solely or largely focused on this work. Forty-one percent of respondents reported that none or very little of their entity's budget was dedicated to forest and/or fire management work (Figure 4a and 4b). The next most common response (23 percent) said all or almost all of their budget was dedicated to this work.

> The largest scale of forest and/or fire management work at which respondent entities had worked

▶ **Neighborhood: 11% of respondents**

▶ **Community: 38% of respondents**

▶ **Landscape: 50% of respondents**

Figure 4a and 4b. Proportion of Respondents' Annual Budgets Dedicated to Forest and/or Fire Management

Figure 4a

Pie chart: None or very little (41%); Up to a quarter (18%); Up to half (7%); More than half (12%); All or almost all our budget is dedicated to this (23%)

Figure 4b

Category	Number of Respondent Entities
None or very little	92
Up to a quarter	40
Up to a half	15
More than half	26
All or almost all our budget is dedicated to this	51

Number of Respondent Entities

SOURCES OF FUNDING FOR FOREST AND/OR FIRE MANAGEMENT WORK

We asked respondents to identify the general importance of various sources of funding and support for their entity's forest and/or fire management work. The funding source that was most commonly identified as a "major source of support" was state grants or agreements; half of respondents chose this response (Table 5). Other top major sources of support were federal grants or agreements and volunteer labor. A few respondents also indicated that federal sources, state sources, or volunteer labor were the only source of support for their entity's forest and/or fire management work. Non-government funding sources were less common as major sources of funding. For example, over half of respondents stated that private sources including corporate donations, private/philanthropic foundations, and endowment funding were not a source of support. Organizational sources such as funds collected from billing indirect costs,

The funding source that was most commonly identified as a "major source of support" was state grants or agreements.

fees for services rendered, and member donations were also more commonly not sources of support. "Other" sources of funds not listed, which respondents could write in, included homeowner association dues, county or community funding or grants, water or electrical utilities, general funds, timber revenues, business revenues, in-kind support from partners, property tax revenues, and funding from federal Secure Rural Schools Title II and Title III Resource Advisory Committees. Over half of the respondents who listed "Other" sources said that these were major sources of support.

Table 5. Importance of Sources of Funding for Forest and/or Fire Management Work by Percentage of Respondents

	This is our only source of support	This is a major source of support	This is a minor source of support	This is not a source of support	Unsure or NA
Federal grants/subgrants or agreements	2.4%	39.7%	18.2%	32.5%	7.2%
State grants/subgrants or agreements	2.9%	50.5%	14.9%	25.5%	6.3%
Private/philanthropic foundations	0.0%	15.2%	21.7%	54.5%	8.6%
Member donations	0.5%	16.7%	23.5%	50.0%	9.3%
Corporate donations	0.0%	6.1%	16.8%	65.0%	12.2%
Volunteer labor	3.9%	36.9%	28.2%	25.2%	5.8%
Endowment funding	0.0%	2.5%	5.6%	79.7%	12.2%
Fee for service	1.5%	14.5%	21.5%	52.0%	10.5%
Indirect costs	0.0%	4.9%	13.8%	61.6%	19.7%
Other (Responses = 46)	10.9%	54.3%	34.8%	NA	NA

BARRIERS TO FOREST AND/OR FIRE MANAGEMENT WORK

We asked respondents to identify the top three barriers that they faced in achieving their forest and/or fire-related vegetation management goals (Figure 5 and Table 6). Respondents could select only three (unranked). Nearly half chose inadequate amounts of funding for forest and/or fire projects/programs/work as one of their top three barriers. This was followed by administrative time and costs, and lack of available workforce to perform needed forest and/or fire management activities on the ground. About a quarter of respondents chose government permitting processes or requirements (e.g., CEQA, NEPA) as one of their

Figure 5. Word Cloud of Most Commonly Selected Barriers, Size Reflecting Frequency Selected

Emily Jane Davis

Table 6. Respondents' Top Barriers to Forest and/or Fire Management

Barrier	Number of Respondents	Percent of Respondents
Inadequate amounts of funding for forest and/or fire projects/programs/work	101	46%
Administrative time and costs	83	38%
Lack of available workforce to perform work on the ground	65	29%
CEQA, NEPA, or other permitting requirements	54	24%
Inadequate amounts of funding for base operations	49	22%
Lack of staff skills and qualifications in our organization	50	23%
Lack of private landowner interest and/or willingness	45	20%
Insufficiently flexible funding for this work	36	16%
Aligning planning resources and actions across ownership boundaries	33	15%
Other	28	13%
Social conflict/disagreement about forest or fire management	28	13%
Advance billing rather than reimbursement billing	25	11%
Active fire seasons that disrupt our and our partners' work on these issues	20	9%
Access to the appropriate kinds of insurance	15	7%
Lack of land management agency interest and/or willingness	14	6%
Lack of scientific information and knowledge	13	6%
Land use and zoning policies	4	2%
Total	**221**	

top barriers. Categories that respondents least commonly chose as their top barriers included land use and zoning policies, lack of scientific knowledge, and lack of land management agency willingness.

Respondent Partnerships

We asked respondents to report on their perception of the strength of their partnerships at several scales (Table 7). Partnerships are a key aspect of capacity as they may enable entities in forest and/or fire management to leverage resources and work together strategically, particularly as different entities may have different roles to play. The majority of respondents indicated that their partnerships at the local community level and the county level were very or moderately strong. The majority also reported the same for their regional (within California) and state level relationships, but more frequently chose "moderately strong" than "very strong" for these scales. Relationships at the larger scales of the western US, nationally, and internationally were considered weak or very weak by the majority of respondents. In addition, a number of respondents chose "unsure/NA" for these scales, which suggests that their work may not take place at these scales and/or that they may not view relationships at those scales as necessary. Of the 15 tribes that responded to the assessment, three said that their intertribal relationships were very strong, and nine said that they were moderately strong.

We also asked respondents to provide details about the types of partnerships that they most wanted to develop or enhance using an open-ended question format. We received 180 responses to this question. We coded those responses by categories and types of entities most frequently mentioned (Table 8; see also Appendix linked at the end of this report for more detailed breakdown of responses). It is important to note that respondents used

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Table 7. Perceived Strength of Respondents' Partnerships in Forest and/or Fire Management at Several Scales

	Very Strong	Moderately Strong	Weak	Very Weak	Unsure/ NA
Local community	42%	44%	8%	3%	3%
County	38%	35%	16%	7%	4%
Region of CA	22%	45%	20%	7%	6%
State level	16%	38%	28%	10%	7%
Western US	5%	11%	32%	27%	24%
Intertribal* *Responses are for tribes only*	20%	60%	13%	7%	0%
National	7%	16%	23%	30%	24%
International	0%	3%	16%	37%	44%

Table 8. Types of Entities with which Respondents Wanted to Develop or Enhance Partnerships

Broad Types of Entities	Count of Respondents Writing in this Entity Category
Regional, county, or other local agencies or entities	102
Other entities (tribes, nonprofits, universities or scientists, funders, etc)	90
State agencies or programs	54
Federal agencies or programs	39

varying precision to describe the entities with which they wanted to build partnerships; while some listed specific names, others described broad types of entities. Many respondents also chose to use this question to describe their broader needs and did not address partnerships. We found that regional, county, or local partnerships were the most desired across responses, particularly with county governments and fire safe councils. Relationships with tribes were also desired by non-indigenous respondents. For state agencies or programs with which respondents wanted to enhance relationships, CAL FIRE was the most frequently mentioned, and the Forest Service was the most mentioned federal agency—but state and federal government entities were not listed as frequently as local, county, or regional entities.

Respondent Forest and/or Fire Management Capacities: All Respondents

We asked respondents about seven categories of capacities: collaboration and partnerships, planning, implementation, cultural fire, monitoring, outreach, and organizational.

We found that regional, county, or local partnerships were the most desired across responses, particularly with county governments and fire safe councils.

Within each category was a list of several specific types of capacities. For each individual capacity type listed, respondents were asked to choose if they wanted to add or enhance it, already had it, did not need it (e.g., it was not related to their work or they relied on a partner or contractor for it), or were unsure. It is important to note that the findings reported here represent respondents' perceived capacities and needs—in other words, what they indicated that they had, needed, or did not need from their point of view. Responses were calculated by majorities and natural break points in the data.

In Section 4, we discuss how these reported capacities and needs may be evaluated in light of making strategic capacity investments. Here, we first discuss each capacity category individually and then discuss the findings for a few sub-sets of the survey population.

Table 9. Average of Respondent Responses for Capacity Types by Each Capacity Category

Capacity Category	Average of respondents who wanted to add or enhance capacities in this category	Average of respondents who didn't need capacities in this category	Average of respondents who currently had capacities in this category	Average of respondents who did not know/were unsure about status of capacities in this category
Monitoring	52%	21%	10%	17%
Planning	51%	22%	13%	13%
Collaboration and partnership	48%	10%	34%	8%
Outreach	48%	11%	35%	6%
Implementation	45%	32%	10%	13%
Cultural fire	35%	44%	3%	18%
Organizational	35%	22%	31%	12%

COMPARING CAPACITIES ACROSS CATEGORIES

As noted, we asked respondents about seven categories of capacities: collaboration and partnerships, planning, implementation, cultural fire, monitoring, outreach, and organizational. Within each category was a list of several specific types of capacities. We calculated the average for each category across all capacity types within that category, which provides a general sense of which categories respondents wanted to add or enhance, already had, or felt they did not need (Table 9). A majority of respondents on average wanted to add or enhance capacities in monitoring and planning.

There was no category for which a majority of respondents on average reported currently possessing capacities, but 35 percent had outreach capacities and 34 percent had collaboration and partnership capacities.

Below, we discuss the specific capacity types within each capacity category in more detail.

COLLABORATIVE AND PARTNERSHIP CAPACITIES

We defined collaborative and partnership capacities as those related to collective engagement on forest and/or fire management activities of any type. Collaboration among multiple stakeholders can enable the sharing of diverse values and interests. Partnerships are a key aspect of capacity as they may enable entities to leverage resources and work together strategically. Coordination is another form of working together for mutual information sharing and aligning of efforts.

We asked respondents about seven specific types of collaborative and partnership capacities and on average, 48 percent of respondents wanted to add or enhance capacities in this category (Table 10). The capacity type that respondents most commonly wanted to add or enhance was interorganizational data management and sharing (54 percent), which can challenge entities with different data formats and platforms who are trying to share information. This was followed by identifying shared values

Table 10. Capacity Status and Needs Related to Collaboration and Partnerships by Percentage of Respondents

	Our entity wants to add or enhance this	Our entity doesn't need this	Our entity currently has this	Don't know/unsure
Interorganizational data management and sharing	54.0%	10.7%	23.2%	12.1%
Identifying shared values among multiple perspectives regarding forest and/or fire management	50.2%	4.9%	40.0%	4.9%
Developing partnerships between tribal and nontribal entities	47.5%	16.7%	25.3%	10.4%
Developing partnerships between public land management agencies and private landowners	46.7%	5.3%	43.1%	4.9%
Facilitating/convening multiple entities to advance planning and prioritization	46.7%	8.9%	38.7%	5.8%
Planning multijurisdictional projects	46.8%	10.8%	35.1%	7.2%
Developing interorganizational contracts, agreements, MOUs, etc.	44.2%	11.6%	36.2%	8.0%

among multiple perspectives regarding forest and/or fire management (50 percent), which is an important aspect of collaboration and prioritization processes. However, another 40 percent of respondents reported already having this capacity.

On average, 39 percent of the respondents currently had capacities in the collaborative and partnership category. The specific collaborative and partnership capacities that the most respondents reported currently having were developing partnerships between public land management agencies and private landowners (43 percent) and as noted, identifying shared values among multiple perspectives regarding forest and/or fire management. There were not any collaborative and partnership capacities that a majority of respondents currently possessed.

PLANNING CAPACITIES

Planning capacities are those that involve the preparation of projects, programs, or other efforts for forest and/or fire management activities of any type. This may include addressing required permitting processes, acquiring necessary data and information, collaborating among diverse stakeholders and partners, and prioritizing actions and resources across space and time.

We asked respondents about 14 specific types of planning capacities and on average, 51 percent of respondents wanted to add or enhance capacities in this category (Table 11). The most commonly-desired planning capacity was GIS mapping of social, cultural and/or economic values (62 percent), followed by GIS mapping of forest resources or other biophysical resources (55 percent). This shows a clear desire for geo-spatial information and processes that

Table 11. Capacity Status and Needs for Capacities Related to Planning by Percentage of Respondents

	Our entity wants to add or enhance this	Our entity doesn't need this	Our entity currently has this	Don't know/ unsure
GIS mapping of social, cultural and/or economic values related to wild and/or prescribed fire	62.1%	10.7%	14.3%	12.9%
GIS mapping of forest resources or other biophysical resources related to wild and/or prescribed fire	57.8%	8.5%	25.1%	1900.0%
Designing fuel treatments in and around communities (i.e., the WUI or other developed areas)	54.9%	10.7%	27.2%	7.1%
Conducting local workforce capacity assessments	53.8%	22.7%	6.7%	16.9%
Participating in pre-wildfire season conversations with fire managers about local projects, priorities, and values at risk	52.9%	4.0%	40.5%	2.6%
Business or enterprise planning	52.9%	21.8%	4.4%	20.9%
Wood utilization project development	53.4%	22.2%	10.0%	14.5%
Identifying and prioritizing priority landscape level fuel treatment projects at the county scale or another larger scale	51.6%	21.8%	16.0%	10.7%
Completing state and/or federal environmental compliance processes	49.5%	12.2%	30.2%	8.1%

GIS mapping was a commonly indentified planning capacity need. GIS can also enhance collaborative planning efforts.

Mike Caggiano, Colorado Forest Restoration Institute, Colorado State University

can inform planning and decision-making. Other capacities that a majority of respondents wanted to add or enhance were: designing fuel treatments in and around communities, participating in pre-season conversations with fire managers, completing state and/or federal environmental compliance processes, identifying and prioritizing priority landscape level fuel treatment projects, conducting local workforce capacity assessments, wood utilization project development, and business or enterprise planning. This suggests that there is interest in growing the planning capacity for forest and/or fire management in a number of areas pertaining to both public and private sector activities. There was less interest in meeting tribal consultation requirements; 30 percent of respondents wanted to add or enhance this capacity.

On average, 13 percent of respondents currently had capacities in the planning category. Planning capacity types that most respondents possess were participating in pre-wildfire season conversations with fire managers about local projects, priorities, and values at risk (41 percent), followed by completing state and/or federal environmental compliance processes, although the latter had far fewer respondents with this capacity (30 percent). A majority of respondents chose "want to add or enhance" for these two capacities as well, however.

IMPLEMENTATION CAPACITIES

Implementation capacities are related to conducting on-the-ground work (i.e., the manipulation of vegetation for multiple purposes). This capacity focuses on developing, possessing, or accessing a workforce and equipment.

We asked respondents about 13 specific types of implementation capacities in this category (Table 12). On average, 45 percent of respondents wanted to add or enhance capacities in this category. Within the implementation capacity category, respondents most commonly chose implementing defensible space programs for

enhancement or improvement (54 percent). Other capacity types that a majority of respondents wanted to add or enhance were managing defensible space programs, developing and managing a cross-trained workforce, participating in cooperative controlled burning, and biophysical post-fire recovery. This indicates an interest in not only implementing but also managing defensible space work, as well as the capability to perform multiple types of forest and/or fire management activities beyond the areas adjacent to homes.

On average, only 10 percent of respondents currently had capacities in the implementation category. The capacities that the most respondents already had were managing defensible space programs (27 percent) and implementing defensible space programs (26 percent). A majority of respondents chose "want to add or enhance" for these two

On average, only 10 percent of respondents currently had capacities in the implementation category.

Forest Stewards Guild

Table 12. Capacity Status and Needs for Capacities Related to Implementation by Percentage of Respondents

	Our entity wants to add or enhance this	Our entity doesn't need this	Our entity currently has this	Don't know/ unsure
Implementing defensible space programs	54.2%	14.1%	26.4%	5.3%
Managing defensible space programs	50.7%	17.3%	26.7%	5.3%
Developing and managing a crosstrained workforce	50.9%	30.4%	6.3%	12.5%
Post-fire recovery addressing erosion, flood control, and/or revegetation	50.9%	19.6%	16.5%	12.9%
Participating in cooperative controlled burning	50.4%	29.5%	8.0%	12.1%
Conducting roadside clearing	46.7%	22.0%	24.2%	7.0%
Developing and managing a hand thinning workforce	46.5%	23.9%	17.3%	12.4%
Developing and/or managing a prescribed fire workforce	44.2%	39.8%	4.4%	11.5%
Owning equipment	40.6%	36.2%	16.5%	6.7%
Leading cooperative burning efforts	37.1%	39.7%	4.5%	18.8%
Developing and managing a planting workforce	36.6%	39.7%	8.9%	14.7%
Acting as burn boss in implementing prescribed fire	27.7%	48.2%	4.0%	20.1%

capacities as well, however. For many of the implementation capacity types, less than 10 percent of respondents indicated that they currently had that capacity.

CULTURAL FIRE CAPACITIES

Capacities related to cultural fire in our assessment are skills and abilities that support forest and/or fire management activities that support cultural burning (e.g., burning for a range of diverse and/or specific tribal resource values beyond the primary purpose of reducing hazardous fuels). These include enabling conditions such as intertribal coordination (if conducted on multiple tribes' ancestral homelands) and the protection of tribal sovereignty. We asked respondents about seven specific types of cultural fire capacities in this category. Given the central role of cultural fire in tribal management, and differences in the roles for tribal and non-tribal entities, we discuss results for each type of entity separately.

Colleen Rossier, University of California, Davis

Frank K. Lake, Karuk descendant, and daughter, Ada, gathering evergreen huckleberries. Frank is carrying Ada in a traditional hazel-stick baby basket.

Table 13. Capacity Status and Needs for Capacities Related to Cultural Fire by Percentage of Respondents, Tribal-Respondents Only

	Our entity wants to add or enhance this skill or expertise	Our entity doesn't need this	Our entity currently has this skill or expertise	Don't know/ unsure
Identifying indigenous practitioner "burn boss" standards	86.7%	13.3%	0.0%	0.0%
Supporting partner efforts regarding cultural burning with staff, financial assistance, equipment, or other resources	86.7%	13.3%	0.0%	0.0%
Conducting cultural burning for the enhancement of cultural needs and uses	80.0%	13.3%	6.7%	0.0%
Protecting tribal sovereignty around legal, policy, and regulatory frameworks	60.0%	13.3%	26.7%	0.0%
Achieving intergenerational learning	64.3%	7.1%	28.6%	0.0%
Intertribal coordination	60.0%	6.7%	26.7%	6.7%
Acquiring resources to support family-based burning	40.0%	40.0%	0.0%	20.0%

Tribal Responses about Cultural Fire Capacities

There were 15 responses to the survey from tribes. A majority (which is eight or more respondents in this particular data set) wanted to add or enhance all cultural burning capacities except acquiring resources to support family-based burning (Table 13). Identifying indigenous practitioner burn boss standards and supporting partner efforts regarding cultural burning were the most chosen among tribes for enhancement or addition. There was no capacity that a majority of tribes reported already having or not needing.

Non-Tribal Responses about Cultural Fire Capacities

There was less interest in building cultural fire capacities than other capacity categories among non-tribal respondents. Non-tribal respondents reported the most interest in the cultural fire capacity of achieving intergenerational learning (45 percent), followed by supporting partner efforts

Monitoring impacts on fire resilience was the most commonly-chosen of all capacities across all categories; followed by monitoring carbon savings.

regarding cultural burning (38 percent; Table 14). Very few non-tribal entities currently possessed any of the cultural burning capacities, which may be expected.

MONITORING CAPACITIES

Monitoring capacities are those related to collecting observational data about a program or action to understand impacts and trends. This can include developing monitoring indicators and plans, implementing data collection and analysis, learning from the results, and adapting future actions in response. Monitoring can occur in a range of disciplines, from ecological to social and economic.

Table 14. Capacity Status and Needs for Capacities Related to Cultural Fire by Percentage of Respondents, Non-Tribal Respondents Only

	Our entity wants to add or enhance this	Our entity doesn't need this	Our entity currently has this	Don't know/ unsure
Achieving intergenerational learning	45.0%	34.1%	3.8%	17.1%
Supporting partner efforts regarding cultural burning with staff, financial assistance, equipment, or other resources	38.1%	40.5%	2.4%	19.0%
Acquiring resources to support family-based burning	34.6%	45.0%	2.8%	17.5%
Protecting tribal sovereignty around legal, policy, and regulatory frameworks	27.8%	49.8%	4.3%	18.2%
Conducting cultural burning for the enhancement of cultural needs and uses	27.6%	53.3%	1.9%	17.1%
Identifying indigenous practitioner "burn boss" standards	26.7%	50.5%	0.0%	22.9%
Intertribal coordination	25.7%	51.9%	3.8%	18.6%

We asked respondents about five specific types of monitoring capacities in this category (Table 15). On average, 52 percent of respondents wanted to add or enhance capacities in this category. Monitoring capacities garnered the most interest in terms of adding or enhancing those skills, with planning capacity as a close second. Monitoring impacts on fire resilience was the most commonly-chosen of all capacities across all categories; 62 percent of respondents wanted to add or enhance this. This was followed by monitoring carbon

Andrew Phay, Whatcom Conservation District

Figure 6: Environment, Economy, and Equity Are Often Viewed as Three Essential Legs to Conservation/ Restoration

Socio-economic and cultural monitoring represent important opportunities for those who believe environment, equity, and economy must be addressed together.

savings (57 percent). At least 50 percent of respondents also wanted to add or enhance all other specific monitoring capacities.

Current monitoring capacities were limited; the capacity that respondents most commonly already had was monitoring wildlife habitat, but only 17 percent of respondents had this. Over a quarter of respondents stated that they did not need the capacity to monitor socio-economic (27 percent) or cultural (35 percent) outcomes. This may be an important outreach opportunity for social scientists and anyone who believes that environment, economy, and equity only improve if addressed together.

When it comes to forestry and fire, monitoring can involve everything from socio-economics to soil health.

Table 15. Capacity Status and Needs for Capacities Related to Monitoring by Percentage of Respondents

	Our entity wants to add or enhance this	Our entity doesn't need this	Our entity currently has this	Don't know/ unsure
Monitoring impacts on fire resilience	61.5%	12.4%	12.4%	13.7%
Monitoring carbon savings	57.1%	17.9%	8.9%	16.1%
Monitoring wildlife habitat	53.1%	14.3%	17.0%	15.6%
Monitoring socio-economic outcomes	50.4%	27.2%	5.4%	17.0%
Monitoring cultural outcomes	35.4%	35.0%	4.9%	24.7%

OUTREACH CAPACITIES

Outreach capacities are skills and abilities related to communication and engagement. They typically involve the provision of information and education of various audiences to increase their awareness, understanding, and/or involvement in an activity or program.

We asked respondents about six specific types of capacities in the outreach category (Table 16). On average, 48 percent of respondents wanted to add or enhance capacities in this category. The specific capacity type that the most respondents wanted to add or enhance was developing outreach materials (58 percent), followed by outreach to private landowners. Interest in adding or enhancing all outreach capacity types was over 40 percent for each type. However, more respondents reported currently having several outreach capacities than capacities from any other category. Thirty-five percent of respondents already had outreach capacities, with 47 percent currently possessing the capacity to conduct outreach to residents and 43 percent with the capacity to conduct outreach with public landowners. These responses suggest that there is existing *experience* with outreach, but a desire to develop stronger abilities to create outreach *materials*.

More respondents reported currently having several outreach capacities—more than capacities from any other category.
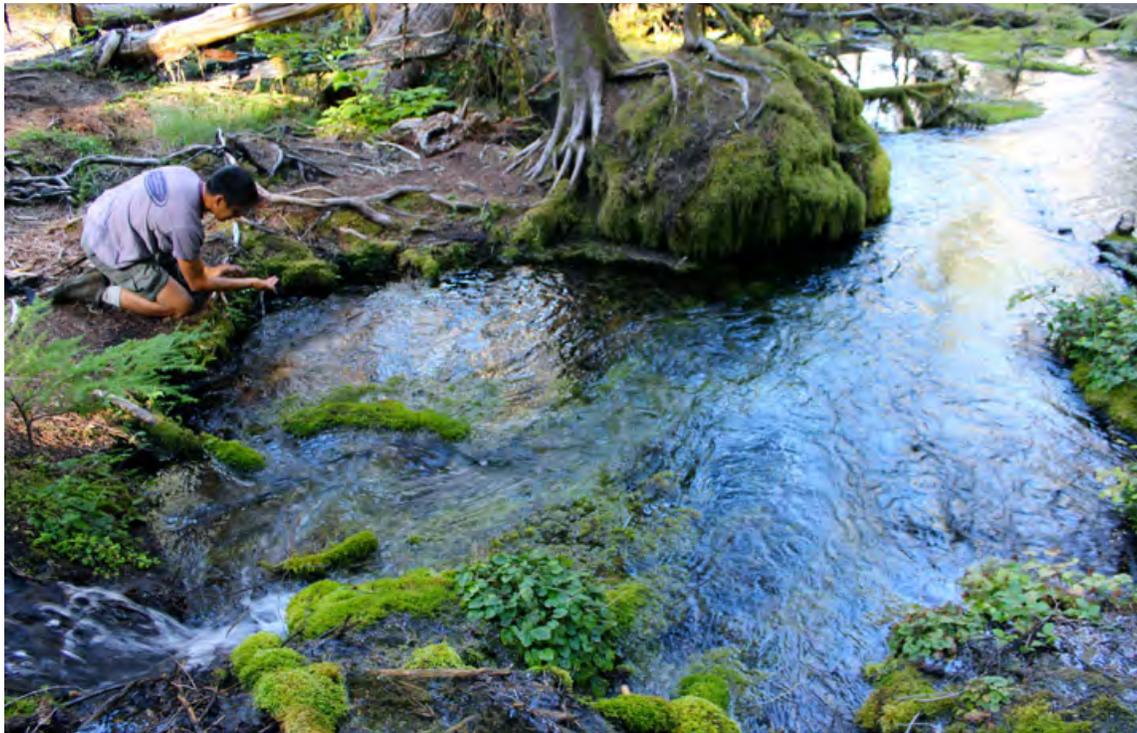

Ed Keith, Deschutes County

Outreach can occur in the field, during a presentation setting, online, or even one-on-one. Here, a group of interested parties were invited to see the effects of a local prescribed fire.

Table 16. Capacity Status and Needs for Capacities Related to Outreach by Percentage of Respondents

	Our entity wants to add or enhance this	Our entity doesn't need this	Our entity currently has this	Don't know/ unsure
Developing outreach materials	57.6%	6.7%	32.6%	3.1%
Outreach to private landowners	51.1%	6.2%	39.2%	3.5%
Outreach to disadvantaged communities	47.8%	12.9%	31.3%	8.0%
Outreach to residents	46.0%	4.4%	46.9%	2.7%
Outreach to tribal governments and tribal environmental departments	46.2%	23.3%	22.4%	8.1%
Outreach to public landowners (agencies)	44.0%	7.1%	43.1%	5.8%

Emily Jane Davis

Volunteers are critical to many entities' organizational capacity—whether that is helping with office tasks, field work, or both.

ORGANIZATIONAL CAPACITIES

Organizational capacities are those related to the management of an entity. This can include the administration of funds, instruments to receive and share resources, human resources, and legal status. Entities of different types and sizes may have different organizational capacity needs.

We asked respondents about six specific types of organizational capacities in this category (Table 17). On average, 35 percent of respondents wanted to add or enhance capacities in this category. This was the lowest average for a category of desired capacities to build. A majority of respondents wanted to add or enhance their capacity to recruit and manage volunteers (52 percent), followed by the capacity to conduct financial monitoring, modeling, and analysis (46 percent). There was very little interest in adding or enhancing the capacity of nonprofit status with the IRS,

Table 17. Capacity Status and Needs for Capacities Related to Organizational Administration and Management

	Our entity wants to add or enhance this	Our entity doesn't need this	Our entity currently has this	Don't know/ unsure
Volunteer recruitment and/or management	52.4%	15.9%	24.2%	7.5%
Financial monitoring, modeling, and analysis as it relates to forest and/or fire enterprises, projects, or workforce development, etc.	45.8%	24.9%	10.7%	18.7%
Applying for and updating federally-negotiated indirect costs rates	34.7%	22.2%	19.6%	23.6%
Administration/management of funds, agreements, and/or contracts	32.9%	8.4%	54.7%	4.0%
Nonprofit status with the IRS	9.3%	37.8%	45.3%	7.6%

which could indicate that many respondent entities either already have this status or do not view it as necessary or relevant to their work. A majority of entities (55 percent) already possessed the capacity to administer and manage funds, agreements, and/or contracts, which is a basic organizational function.

TYPES OF CAPACITIES THAT ENTITIES CURRENTLY HAD

Understanding what capacities entities in forest and/or fire management already possess is important for several reasons. It can assist with directing strategic capacity investments (e.g., toward areas with gaps and needs and not to areas that already have high capacity), and in identifying entities with skills that may serve as effective mentors or resources for others.

We found that the most common existing capacities were in the organizational, outreach, planning, and collaboration and partnerships categories (Table 18; for the full list of responses for capacities possessed, see Appendix linked at the end of this report.). The only capacity type that a majority of respondents possessed was administration and management of funds, agreements, and/or contracts; this is a basic function for any entity

with a budget and personnel to manage. Forty percent or more of respondents indicated that they could conduct outreach to residents and to public landowners. This may reflect that many respondents were fire safe councils and nonprofits. Many respondents also reported that they had the ability to develop partnerships between public land managers and private landowners, and to identify shared values among multiple stakeholders. These capacities have been increasingly required in the past decade, as state and federal policies and programs have requested collaborative approaches and all-lands projects that cross ownership boundaries. Less than 30 percent of respondents had any of the implementation or monitoring capacity types.

REPORTED GREATEST STRENGTHS

We asked respondents to write in their entity's two greatest strengths using an open-ended question. 214 entities responded to this question. We reviewed and coded each response for the capacity category(ies) with which it most aligned (Table 19; also see Appendix). The most frequent type of capacity strength mentioned were those relating to collaboration and partnerships (35 percent).

Table 18. Top Capacities that Respondent Entities Currently Have

Capacity Type	Example Skills and Expertise Surveyed	Percentage that Currently Had This
Organizational	Administration/management of funds, agreements, and/or contracts	55%
Outreach	Outreach to residents	47%
Organizational	Nonprofit status with the IRS	45%
Collaboration and partnerships	Developing partnerships between public land management agencies and private landowners	43%
Outreach	Outreach to public landowners (land management agencies)	43%
Planning	Participating in pre-wildfire-season conversations with fire managers about local projects, priorities, and values at risk	41%
Collaboration and partnerships	Identifying shared values among multiple perspectives regarding forest and/or fire management	40%

Planning, organizational, and outreach types of capacities were each listed as greatest strengths by about a quarter of respondents.

Within these responses, some of the most commonly mentioned strengths as described in more open-ended detail included:

- Partnerships with other entities such as other local organizations and state agencies;

- The interest, commitment, passion, desire to steward, and willingness from local community residents and partners who supported the entity's work;

- Having a strong group of volunteers;

- Project management skills; and

- Grant writing skills

Jennifer Fawcett, North Carolina State University Extension

40 percent or more of respondents currently possessed the capacities of outreach to residents and public land management agencies. This may indicate that outreach without materials has been more common and that there is a need for more robust skills in outreach product development. In our experience, many entities doing forest and fire work do substantial field-based outreach, by, for example, leading field visits.

Table 19. Summary of Responses to Open-Ended Question "What are your entity's two greatest strengths?"

Capacity Type	Example Skills and Expertise Described	Count of Respondents Listing as one of Their Greatest Strengths
Collaboration and partnerships	Dialogue, convening multiple stakeholders, coordination, partnerships, references to working with other entities, collective action	76
Planning	Project development and design, permitting and compliance processes, prioritization, GIS mapping, designing treatments, assessing capacity, business planning, tribal consultation	54
Organizational	Management and administration of an entity, strategic planning, fundraising, managing grants/contracts/ agreements, developing staff or volunteers	52
Outreach	Communication and education with target audiences such as landowners and community residents, the use of platforms such as websites and social media	52
Implementation	Owning equipment, managing workforces for various forest and/or fire activities, implementing prescribed fire, implementing defensible space, roadside clearing, post fire recovery	48
Monitoring	Collecting data to understand trends and impacts, use of research	8
Cultural fire	Tribal sovereignty, planning and conducting burning for cultural purposes, partnerships with tribes around fire, intertribal coordination	4

TYPES OF CAPACITIES THAT ENTITIES WANTED TO ADD OR ENHANCE

There were numerous capacities that respondents stated they wanted to add or enhance (Table 20; see also Appendix). Given the number and diversity of capacities that respondents wanted to add or enhance, there is a significant opportunity for capacity investment, but a concomitant challenge in determining strategic investments with resources that cannot meet all stated needs. These spanned all capacity categories. However, there was a clear desire to build capacities for various types of monitoring,

Table 20. Top Capacities that Respondents Want to Add or Enhance

Capacity Category	Capacity Type	Percent That Wanted to Add or Enhance This
Monitoring	Monitoring impacts on fire resilience	62%
Planning	GIS mapping of social, cultural, and/or economic values related to wild and/or prescribed fire	62%
Outreach	Developing outreach materials	58%
Planning	GIS mapping of forest resources or other biophysical resources related to wild and/or prescribed fire	58%
Monitoring	Monitoring carbon savings	57%
Planning	Designing fuel treatments in and around communities (i.e., the WUI or other developed areas)	55%
Implementation	Implementing defensible space programs	54%
Planning	Conducting local workforce capacity assessments	54%
Collaboration and partnerships	Interorganizational data management and sharing	54%
Planning	Participating in pre-wildfire season conversations with fire managers about local projects, priorities, and values at risk	53%
Planning	Business or enterprise planning	53%
Monitoring	Monitoring wildlife habitat	53%
Organizational	Volunteer recruitment and/or management	53%
Planning	Wood utilization project development	53%
Planning	Identifying and prioritizing priority landscape level fuel treatment projects at the county scale or another larger scale	52%
Outreach	Outreach to private landowners	51%
Implementation	Managing defensible space programs	51%
Implementation	Developing and managing a crosstrained workforce	51%
Implementation	Post-fire recovery addressing erosion, flood control, and/or revegetation	51%
Implementation	Participating in cooperative controlled burning	50%
Monitoring	Monitoring socio-economic outcomes	50%
Collaboration and partnerships	Identifying shared values among multiple perspectives regarding forest and/or fire management	50%

and to better understand and analyze values at risk, assets, and other capitals in both biophysical and human areas. Over 60 percent of respondents indicated that they wanted to add or enhance 1) their capacity for monitoring impacts on fire resilience, and 2) GIS mapping of human (social, cultural, and/or economic) values related to fire. Fifty percent or more also wanted to build or enhance GIS mapping of biophysical resources, and to monitor

Over 60 percent of respondents indicated that they wanted to add or enhance 1) their capacity for monitoring impacts on fire resilience, and 2) GIS mapping of human (social, cultural, and/or economic) values related to fire.

Tim Weaver

carbon savings. Developing outreach materials was the third-highest stated capacity type needed. However, as noted above, 40 percent or more of respondents currently possessed the capacities of outreach to residents and public land management agencies. This may indicate that outreach without materials has been more common and that there is a specific need for outreach product development.

In addition to these top desired capacities, there were 16 other specific types of capacity that a majority of respondents reported wanting to add or enhance. These included all categories surveyed except cultural fire. Within these capacities, those related to implementation were somewhat less commonly-chosen than those related to planning or outreach, although implementation capacities were still included.

This was followed by another 22 capacities that 40 percent of respondents reported wanting to add or enhance, which included all categories and was led by 1) completing state and/or federal environmental compliance processes (e.g., NEPA, CEQA), developing and managing a survey workforce, and outreach to disadvantaged communities.

The fewest numbers of respondents (less than 30 percent) wanted to add or enhance the following capacities: meeting tribal consultation requirements, acting as burn boss in implementing prescribed fire, intertribal coordination, and nonprofit status with the IRS.

Rapid City Fire Department.

REPORTED AREAS FOR IMPROVEMENT

We also asked respondents to write in their entity's two greatest areas for improvement using an open-ended question. 207 entities responded to this question. We reviewed and coded each response for the capacity category(ies) with which it most aligned (Table 21; also see Appendix). The majority of respondents listed capacities related to organizational management as their greatest area for improvement (57 percent), which contrasts with the results for the multiple choice questions around organizational capacity. Another 35 percent listed implementation capacities as their greatest area for improvement, and about a quarter did so for planning. Few respondents wrote in monitoring capacities as an area for improvement, despite the frequency with which respondents chose monitoring capacities as skills that they wanted to add

or enhance in other questions. This may have been due to the open-ended nature of the question, or perceptions that only additional areas of capacity building not previously mentioned should be written in for responses.

Some of the most commonly listed areas for improvement described in the open-ended responses included:

- Increasing the number of staff with fire experience, and number of staff overall;

- Recruiting and training volunteers;

- Obtaining funding, particularly from more diverse sources;

- Grant writing; and

- Ability to clear defensible space and vegetation around homes and along roadsides.

Table 21. Summary of Responses to Question "What are your entity's two greatest areas for improvement?"

Capacity	Examples	Percentage of Respondents Listing as an Area of Improvement
Organizational	Management and administration of an entity, strategic planning, fundraising, managing grants/contracts/agreements, developing staff or volunteers	56.5%
Implementation	Owning equipment, managing workforces for various forest and/or fire activities, implementing prescribed fire, implementing defensible space, roadside clearing, post fire recovery	34.8%
Planning	Project development and design, permitting and compliance processes, prioritization, GIS mapping, designing treatments, assessing capacity, business planning, tribal consultation	24.2%
Outreach	Communication and education with target audiences such as landowners and community residents, platforms such as websites and social media	21.7%
Collaboration and partnerships	Dialogue, convening multiple stakeholders, coordination, partnerships, references to working with other entities, collective action	12.6%
Cultural fire	Tribal sovereignty, planning and conducting burning for cultural purposes, partnerships with tribes around fire, intertribal coordination	8.2%
Monitoring	Collecting data to understand trends and impacts, use of research	4.8%

TYPES OF CAPACITIES THAT ENTITIES DID NOT NEED

Another potentially useful way to understand current capacities and needs was to ask respondents which capacities they did not need (Table 22; see also Appendix). Capacities may not be needed if they are not relevant or viewed as relevant, if another entity in their geographic or content areas already possesses that capacity, or if it can be contracted from an external source.

The capacities that respondents most commonly reported not needing were related to cultural fire and tribal aspects of forest and/or fire management, but less than seven percent of the respondents were tribal governments; see pages 33–34 for how this finding shifts when only examining tribes' responses. Monitoring cultural outcomes was also included as a non-need when considering all responses, but monitoring other types of resources and outcomes was otherwise commonly selected as an area to build or enhance capacity.

Acting as a burn boss to implement prescribed fire was also "not needed" by a majority. This perceived lack of need for burn bosses, as well as a prescribed fire workforce, participation in controlled burning, and owning equipment, may be related to perceptions of risk and investment necessary for these types of on-the-ground work with fire.

Table 22. Top Capacities That Respondents Did Not Need in Descending Order

Capacity Category	Capacity Type	Percentage That Did Not Need This
Cultural fire	Conducting cultural burning for the enhancement of cultural needs and uses	51%
Cultural fire	Intertribal coordination	49%
Implementation	Acting as burn boss in implementing prescribed fire	48%
Cultural fire	Identifying indigenous practitioner "burn boss" standards	48%
Cultural fire	Protecting tribal sovereignty around legal, policy, and regulatory frameworks	47%
Cultural fire	Acquiring resources to support family-based burning	45%
Implementation	Developing and/or managing a prescribed fire workforce	40%
Implementation	Developing and managing a planting workforce	40%
Implementation	Leading cooperative burning efforts	40%

Respondent Forest and/or Fire Management Capacities for Sub-Populations

Given the large size of this survey population, it is useful to examine any patterns in the stated capacities and needs of sub-groups by entity type. This can provide additional insight into how capacity may be built with attention to the characteristics of specific types. We performed this analysis for fire safe councils, resource conservation districts, and Firewise ® USA sites, as these are entity types that each have common characteristics; and for tribes, because understanding tribes' unique perspectives relative to cultural fire is important and also nuanced.

FIRE SAFE COUNCILS

Fire safe councils are local-level, community-led organizations focused on reducing wildfire risk. There were 42 respondents from fire safe councils, constituting 19 percent of all respondents. Three-quarters of these respondents wanted to add or enhance the capacity to recruit and manage volunteers, and nearly the same amount wanted to add the capacity to develop outreach materials (Table 23; see also Appendix). A majority (64 percent) already had nonprofit status with the IRS, and nearly a majority (48 percent) had the capacity to write or update community wildfire protection plans. Fire safe councils most commonly reported not needing capacities associated with cultural fire, or with prescribed fire workforces.

Table 23. Capacity Responses from Fire Safe Council Respondents

	Capacity Category	Percentage of Responses for This Item
Top Capacities Listed as Desired to Add or Enhance		
Volunteer recruitment and/or management	Organizational	76.2 %
Developing outreach materials	Outreach	73.2 %
Completing state and/or federal environmental compliance processes (e.g., NEPA, CEQA)	Planning	69.0 %
Participating in pre-wildfire season conversations with fire managers about local projects, priorities, and values at risk	Planning	66.7 %
Top Capacities Listed as already Possessed		
Nonprofit status with the IRS	Organizational	64.3 %
Writing/updating Community Wildfire Protection Plans	Planning	47.6 %
Outreach to residents	Outreach	40.5 %
Administration/management of funds, agreements, and/or contracts	Organizational	40.5 %
Top Capacities Listed as Do Not Need		
Intertribal coordination	Cultural fire	69.0 %
Protecting tribal sovereignty around legal, policy, and regulatory frameworks	Cultural fire	61.9 %
Conducting cultural burning for the enhancement of cultural needs and uses	Cultural fire	59.5 %
Developing and/or managing a prescribed fire workforce	Implementation	54.8 %

RESOURCE CONSERVATION DISTRICTS

Resource conservation districts (RCDs) are special districts that support voluntary conservation activities at local levels. Thirty-five (15 percent) responses to the survey were from this entity type. Eighty-six percent of RCD respondents wanted to enhance or add the capacity to monitor carbon savings, and over three-quarters wanted to add or enhance the capacity for GIS mapping of human values (Table 24). A large majority of RCD respondents already had the capacity to administer/manage funds, agreements, and contracts; and to conduct outreach to public land management agencies. Two-thirds did not perceive needing nonprofit status with the IRS, which is likely due to their existing status as special districts.

Mike Caggiano, Colorado Forest Restoration Institute, Colorado State University

Table 24. Capacity Responses for Resource Conservation Districts

	Capacity Category	Percentage of Respondents
Top Capacities to Add or Enhance		
Monitoring carbon savings	Monitoring	85.7%
GIS mapping of social, cultural, and/or economic values related to wild and/or prescribed fire	Planning	77.1%
Conducting local workforce capacity assessments	Implementation	71.4%
Outreach to tribal governments and tribal environmental departments	Outreach	71.4%
Top Capacities already Possessed		
Administration/management of funds, agreements, and/or contracts	Organizational	85.7%
Outreach to public landowners (agencies)	Outreach	80.0%
Developing partnerships between public land management agencies and private landowners	Collaboration and partnerships	77.1%
Outreach to private landowners	Outreach	77.1%
Top Capacities Do Not Need		
Nonprofit status with the IRS	Organizational	65.7%
Acting as burn boss in implementing prescribed fire	Implementation	37.1%
Owning equipment	Implementation	34.3%
Identifying indigenous practitioner "burn boss" standards	Cultural fire	34.3%

FIREWISE USA ® SITES

Firewise USA sites are designated through the National Fire Protection Association's national program[4] that provides education and resources about preparing home environments for wildfire. Twelve percent of all respondents were from Firewise sites. Eighty-one percent of these Firewise respondents wanted to add or enhance the capacity to conduct roadside clearing and over three-quarters wanted to manage and implement defensible space programs (Table 25). There was no capacity that a majority of respondents already possessed, but the most common was participating in pre-wildfire season conversations with fire managers (48 percent). Firewise respondents did not see a need to have capacities related to cultural fire.

Table 25. Capacity Responses for Firewise ® USA Sites

	Capacity Category	Percentage of Respondents
Top Capacities to Add or Enhance		
Conducting roadside clearing	Implementation	81.5%
Managing defensible space programs	Implementation	77.8%
Implementing defensible space programs	Implementation	77.8%
Developing partnerships between public land management agencies and private landowners	Collaboration and partnerships	72.0%
Top Capacities already Possessed		
Participating in pre-wildfire season conversations with fire managers about local projects, priorities, and values at risk	Planning	48.1%
Outreach to residents	Outreach	37.0%
Nonprofit status with the IRS	Organizational	36.0%
Writing/updating Community Wildfire Protection Plans	Planning	30.8%
Top Capacities Do Not Need		
Conducting cultural burning for the enhancement of cultural needs and uses	Cultural fire	80.0%
Intertribal coordination	Cultural fire	80.0%
Identifying indigenous practitioner "burn boss" standards	Cultural fire	72.0%

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4 nfpa.org/Public-Education/Fire-causes-and-risks/Wildfire/Firewise-USA

TRIBES

Fifteen responses to the survey were from tribes (seven percent). All but one wanted to add or enhance capacities for designing fuel treatments around communities and implementing defensible space programs (Table 26). A majority (eight or more tribes) already possessed the capacity to conduct outreach to tribal governments and environmental departments, as well as meeting tribal consultation requirements and administering/managing funds, agreements, and contracts. There was no capacity that a majority stated they did not need, but seven respondents indicated that they did not need nonprofit status with the IRS.

Table 26. Capacity Responses for Tribes

	Capacity Category	Count of Respondents	Total
Top Capacities to Add or Enhance			
Designing fuel treatments in and around communities (i.e., the WUI or other developed areas)	Planning	14	15
Implementing defensible space programs	Implementation	14	15
Writing/updating Community Wildfire Protection Plans	Planning	13	15
Managing defensible space programs	Implementation	13	15
Top Capacities already Possessed			
Outreach to tribal governments and tribal environmental departments	Outreach	10	15
Meeting tribal consultation requirements	Planning	9	15
Administration/management of funds, agreements, and/or contracts	Organizational	8	14
Outreach to residents	Outreach	7	15
Top Capacities Do Not Need			
Nonprofit status with the IRS	Organizational	7	15
Acquiring resources to support family-based burning	Cultural fire	6	15
Identifying and prioritizing priority landscape level fuel treatment projects at the county scale or another larger scale	Planning	4	15
Wood utilization project development	Implementation	3	15

Desired Capacity Building Formats

The formats and venues through which capacity may be built are also a key component of investment in forest and/or fire management capacity. Some types of capacities may be best suited to certain types of assistance or learning. Further, recipient interest and willingness to participate may also shape which formats are most effective. We asked assessment respondents to indicate the usefulness of several different formats for capacity building (Table 27). A large majority (87 percent) reported that direct funding for them to address their needs themselves would be very useful. Smaller majorities also stated that connections to peers working on similar issues and peer exchanges would be very useful. The least respondents indicated that webinars (26 percent) or job shadowing (21 percent) would be very useful, although larger numbers of respondents did view these as somewhat useful.

Respondents were also given the option to write in any other forms of capacity building that they would find useful but were not already listed in the question.

Ken Baldwin, Watershed Research and Training Center

Finally, we also asked respondents if their entity would be potentially interested in teaching or mentoring others in their areas of strength, especially if there were support and/or resources to do so. Responses to

Table 27. Reported Usefulness of Formats for Capacity Building by Percent of Respondents

	Very useful	Somewhat useful	Not at all useful	Unsure/NA
One-on-One Technical	49%	39%	3%	9%
Connection to Peers Working on Similar Issues	56%	37%	2%	4%
Peer Exchanges	52%	42%	2%	4%
Webinars	26%	56%	9%	9%
In-person Workshops or Conferences	47%	45%	3%	5%
Best-Practice Handbooks	36%	54%	8%	3%
Job Shadowing	21%	42%	21%	16%
Direct Funding	87%	11%	1%	2%

this question did not commit respondents to participating in such efforts as this was an attempt simply to gauge interest. Two-thirds of respondents stated "yes", 26 percent were unsure, and seven percent stated "no." This suggests that a majority of respondents would be potentially available to serve as peer resources.

Open-ended responses to capacity building that respondents would find useful, in order of responses

► **Accreditation program**

► **Chainsaw/forestry basics trainings**

► **Explanations, planning, and possibilities for various programs**

► **Facilities/workforce housing construction**

► **Financial resources and incentives for private property owner cooperation**

► **Free grant clearinghouse**

► **Greater county level fuels reduction assistance**

► **Increased understanding among policy makers and funders of the distinct difference between fuel-dominated fires in forests and wind-driven fire systems in shrublands**

► **Indirect administration rate on all grants**

► **Online trainings**

► **Our own lobbyist**

► **Outside management and grant funding**

► **Permit streamlining**

► **Regulatory reform/advocacy**

► **Rules or requirements to make the work a priority**

► **Software updates (e.g., ESRI)**

► **Technical and financial support for project development**

► **Tips, tricks, and traps guide**

► **Direct funding for potential partners (non-recognized tribes) so they can collaborate with us**

► **Educational meeting for our land stakeholders**

► **Full indirect cost recovery from all available grant sources**

► **Legislative changes**

► **Mechanisms for coordination with first responders**

► **University engagement in wildland-urban interface research**

4. CONSIDERATIONS AND RECOMMENDATIONS FOR CAPACITY INVESTMENTS

RFFC Capacity Building Approach

The discussion in this report focuses on the patterns, trends, general conclusions, and recommendations from the assessment data.[5] Decision makers and service providers may find this information useful as they seek to remove or mitigate barriers or invest in it. This report also offers considerations for strategic capacity building, and particularly for addressing capacity needs that may be best served at the state level. It also offers short recommendations for how entities may consider addressing their own needs.

WHAT CAPACITIES DO THE MOST ENTITIES PERCEIVE NEEDING?

It is important to first note that approximately two-thirds of respondents were from areas in the Sierras, Cascades, North Coast Ranges, Klamath Mountains, and Trinity Alps and were engaged in primarily conifer forest ecosystem types. This may be in part due to the extensive outreach of regional block grantees to potential respondents in these

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Most common open-ended capacity needs

▶ **Staff with fire experience**

▶ **Recruiting/training volunteers**

▶ **Obtaining funding**

▶ **Conducting defensible space work around homes**

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areas. (The Sierra Nevada Conservancy and the North Coast Resource Partnership, two RFFC block grant recipients, reported to have widely circulated the survey. Note that all grantees were given the same instructions regarding sharing the assessment.) The capacity needs found through the assessment best represent entities in these locations and forest types, and likely offer an incomplete picture of entities elsewhere in California. At the same time, there may actually be a higher number and density of organizations in these regions due to other factors (e.g., land ownership patterns, historical funding availability, the relative importance or efficacy of forest and fire management to landscape management and community resilience, or unique cultural factors).

According to assessment respondents, there were many diverse capacities that they would like to add or enhance. A majority of respondents on average wanted to add or enhance capacities in the broad categories of monitoring and planning. The most commonly-chosen were focused on the ability to conduct various types of monitoring, and to better understand and analyze values at risk, assets, and other capitals in both biophysical and human areas. These included 1) monitoring impacts on fire resilience, 2) GIS mapping of human (social, cultural, and/or economic) values related to fire, 3) GIS mapping of biophysical resources, and 4) monitoring of carbon savings.

Other top desired capacities ranged across several different categories of capacities.

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5 Given that specific local and regional recommendations need to include names, contact information, etc., this information will be nested in the internal reports distributed to the block grant recipients.

These included development of outreach materials, designing fuel treatments in and around communities (i.e., the WUI or other developed areas), implementing defensible space programs, and conducting local workforce capacity assessments.

When provided the opportunity to express their greatest areas for improvement in their own words, respondents most often listed needs applicable to the scale of the individual entity: increasing the number of staff with fire experience, and number of staff overall; recruiting and training volunteers; obtaining funding, particularly from more diverse sources; grantwriting; and the ability to clear defensible space and vegetation around homes and along roadsides.

WHAT CAPACITIES DO ENTITIES ALREADY POSSESS?

Examining existing capacities and capacities that entities do not perceive needing can also be useful. This may suggest capacity areas that are either 1) not necessary for investment, or 2) they are not yet ripe for investment in terms of likelihood of return on investment.

Quantitatively, the most common capacity that a majority of respondents currently possessed was organizational: the administration and management of funds, agreements, and/or contracts (yet organizational capacity also appeared as a major need in the open-ended responses). Forty percent or more of respondents also indicated that they could conduct outreach to residents and to public landowners. This may reflect that many respondents were fire safe councils and nonprofits. Many respondents also reported that they had the ability to develop partnerships between public land managers and private landowners, and to identify shared values among multiple stakeholders. These capacities have been increasingly required in the past decade, as state and federal policies

Marcus Kauffman, Oregon Department of Forestry

The lack of an available workforce trained to conduct forest and fire work on the ground was among the top three barriers among respondents.

and programs have requested collaborative approaches and all-lands projects that cross ownership boundaries.

When provided the opportunity to express their greatest strengths in their own words, respondents most commonly listed: Partnerships with other entities such as other local organizations and state agencies; interest, commitment, passion, desire to steward, and willingness from local community residents and partners having a strong group of volunteers; project management skills; and grant writing skills.

Less than 30 percent of respondents reported possessing the implementation, cultural burning, or monitoring capacity types about which the assessment inquired. But they did not consistently state that they wanted to add or enhance these capacities.

Potential Capacity Investment Recommendations Based on Findings

In this state level report, we provide observations and recommendations for capacity investments and other supportive work to reduce barriers to forest and/or fire management based primarily on 1) the most common needs and trends identified

Recommendations should be seen as a menu of possible options for addressing needs, not strict or all-inclusive prescriptions.

through this assessment, and 2) the findings that are most relevant to state and other decision makers. Recommendations do not signify decisions on how RFFC funds will be invested, and are proposed based on the assessment findings and what is known from other research and practice around capacity. Recommendations should be seen as a menu of possible options for addressing needs, not strict or all-inclusive prescriptions. In addition, many of these recommendations involve starting with a webinar; this is because of the quantity of respondents and the geography of California. These webinars are not meant to be the primary form of information delivery to entities, but can provide critical vetting and information collection on behalf of potential investors/technical service providers.

BUILDING CAPACITY FOR MONITORING

Some of the top capacities that respondents most wanted to add or enhance included monitoring impacts on fire resilience, and monitoring of carbon savings. Therefore, prioritizing investment in these capacities would be responsive to the stated needs. However, as monitoring can be technically and intellectually cost-intensive, it would be essential to gain more information about why respondents want these capacities, and how they envision using them. These activities require scientific and technical expertise, labor to collect and analyze data, use of software programs, and the purchasing and maintenance of equipment including data collection equipment and computers. Monitoring programs can be challenging to fund and sustain, and entities lacking a plan for how to learn and adapt from monitoring findings may not benefit from it. Given that resource conservation districts showed the

Forest Stewards Guild

Compared to the other capacity types (planning, outreach, etc.), monitoring was one of the most desired capacities.

most interest in these capacities, this follow up may be conducted through the California Association of RCDs in particular.

▶ **Recommendations:**

- Host a statewide "Monitoring for Evaluation, Learning and Adaptive Management 101" event that familiarizes entities with principles for monitoring and the adaptive cycle of applying monitoring data. Use this event as an opportunity to gather additional information from participants about how they would use monitoring data, particularly about the importance of adding these capacities in-house versus contracting them. Include discussions about how project and program-level monitoring within organizations or partnerships can link back to state plans, programs and priorities, and how program funding and state systems could help to ensure data quality, consistency, and utilization.

- Follow-up events could focus on specific types of monitoring relevant to fire impacts and carbon savings.

- Use existing relationships and resources from universities (particularly UC ANR Cooperative Extension, which is intended to bridge practice and research), scientific consortia, or other venues to explore options for a pool of researchers and consultants with monitoring expertise who would serve as potential resources. Include respondents with those capacities in that potential pool of teachers.

- Create a database and/or guide of sources of funding for monitoring.

- Create a repository for sharing monitoring plans and other documents that may provide templates or ideas.

- Consider how diffuse monitoring efforts might aggregate up to support higher-level learning and program or systems adaptation.

BUILDING CAPACITIES FOR USE OF GEOSPATIAL INFORMATION

The capacity type that the second-largest number of respondents wanted to add or enhance was GIS mapping and geospatial analysis of human (social, cultural, and/or economic) values related to fire, and the fourth was GIS mapping of biophysical resources. These are therefore important to discuss separately from other planning category capacities. GIS technologies may be useful for mapping, prioritizing, decision making, planning, and representing information, but it would be helpful to understand the exact uses that respondents envision. Given that resource conservation districts showed the most interest in these capacities, this follow up may be conducted through the California Association of RCDs, in particular, but in order to ensure that interested non-RCD entities receive access to these opportunities, this could be delivered as a nonprofit/RCD partnership endeavor. Moreover, if planning and prioritization processes occur in a collaborative setting, it may be possible

Ed Keith, Deschutes County

that not all involved entities need in-house GIS capacity, as some partners with those capacities may lead that component.

▶ **Recommendations:**

- Identify entities that currently have GIS capacity within each block grant coverage area. Learn more about if they have willingness to extend GIS services within their local areas, e.g., as a fee-for-service activity.

- Learn if there are any current collaborative prioritization or other processes in block grant areas that are lacking GIS support, and to connect those efforts with entities with GIS knowledge.

- Explore existing programs that may connect community colleges, technical schools, or other institutions that provide GIS training with entities that need this service as part of an internship or employment training opportunity; or explore creating one if none exist.

BUILDING CAPACITIES FOR OUTREACH

Outreach was a category in which there was a combination of existing capacities as well as capacities that respondents wanted to enhance

or add. Nearly 50 percent of respondents reported already possessing the ability to conduct outreach to residents, but at the same time, a majority wanted to add or enhance the capacity to develop outreach materials, and to conduct outreach to private landowners. This suggests that that outreach currently underway may be more informal, and/or not based on products. Interest in outreach capacities was highest among fire safe council respondents, so capacity building strategies may focus particularly on this entity type.

▶ **Recommendations:**

- State-level service providers could discuss a shared vision for the role of outreach in regional forest and/or fire management, versus engagement of local landowners or residents. Address questions such as: Who are the audiences, what are the goals, and how can complex concepts around planning and collaboration be effectively communicated? Perceptions and the impact that outreach has on them are often misunderstood, so goals need to be clearly understood before investing in this area.

- Given the common interest in outreach materials, provide an event or webinar focused on introducing resources and libraries of formats and types of communications materials, and particularly which are best suited for which types of messages and purposes. Incorporate peer examples from forest and/or fire management activities.

- Regional block grantees may want to further explore and identify specific projects or efforts areas where a lack of outreach is considered a major barrier to accomplishing goals, and consider targeting capacity building to relevant entities in those efforts. Again, outreach and awareness is often not as limiting of a factor as organizations often assume, so probing that further prior to additional investment is essential.

- Develop a pool of communications experts who may be able to assist entities in one-on-one or small group settings with developing strong foundations for effective outreach, which includes honing their messages, values, and asks.

- Build an accessible repository of examples of communications materials in a forest and/or fire management context.

BUILDING CAPACITIES FOR PLANNING

Beyond building capacity for GIS analysis, other top planning capacities desired in order of stated interest were: designing fuel treatments in and around communities, conducting local workforce capacity assessments, participating in pre-wildfire season conversations with fire managers about local projects, priorities, and values at risk; and identifying and prioritizing landscape level fuel treatment projects at the county scale or another larger scale. Each planning capacity may require different capacity building approaches.

▶ **Recommendations:**

- Each of these capacities is focused around a process. Guidelines or roadmaps for how to conduct each of these processes that included the essential steps and resources needed to do so may be helpful.

- Compiling, publicly databasing, and disseminating examples of how others have conducted these processes may also be useful.

- As designing fuel treatments in and around communities was the top desired planning capacity after GIS capacities, this could be an area of focused investment. However, given the RFFC program's goals of fostering regional prioritization and action, it would be necessary to better articulate how and why treatments around communities fit into larger landscape or regional plans—e.g., how would reducing

Yosemite National Park

fuels around communities alter fire risk and behavior in the larger areas in which these communities were embedded? How could treatments around communities be strategically linked to treatments in adjacent areas and further? Linking traditional spatial fire planning (i.e., how and where fire suppression will be safest and most effective) with fuels treatment planning may provide opportunities to prioritize potential projects. Deepening leadership and linkages with wildland fire response agencies at the local level could also build the capacity of non-agency actors to plan and prioritize more effective fuels treatment strategies across scales.

BUILDING CAPACITIES FOR IMPLEMENTATION

A majority of respondents wanted to build or enhance implementation capacities that included implementing and managing defensible space programs, developing and managing a crosstrained workforce (i.e., a crew capable of multiple disciplines such as fuels reduction, fire management, technical tasks, biophysical monitoring, etc.), participating in cooperative controlled burning, and post-fire recovery erosion, flood control, and/or revegetation. As with planning capacities, each of these implementation capacities would have its own considerations and possibilities for capacity building.

Designing fuel treatments in and around communities was a top capacity need expressed by respondents.

▶ **Recommendations:**

- As implementing and managing defensible space programs were the top desired capacities, this could be an area of focused investment. However, given the RFFC program's goals of fostering regional prioritization and action at the watershed scale, it would be necessary to better articulate how defensible space work fits into larger landscape or regional plans, and how working on defensible space would address RFFC program goals and desired outcomes.

- Developing workforces and participating directly in controlled burning require entities to have certain insurances, safety policies, and other organizational infrastructure that can support the presence of these human resources. As a relatively nascent field outside of the professional fire services, there are limited resources, but some are available through venues such as the Fire Learning Network, including their Prescribed Fire Training Exchanges (TREX), the University of California Agriculture and Natural Resources, and through non-governmental and private sector service providers. Expanding investment in formal training, peer networking and direct funding and service provisions concerning prescribed fire are all warranted.

- A coordinated peer group could allow entities who are serious about building a workforce and have done some preliminary work to interact directly with entities that already have workforces.

- Regional block grantees may want to further explore the capacity of existing workforces in their local areas to more precisely identify if the limiting factor really is available workforce, or if it is more a matter of connecting existing workforces. Assessing the amounts and types of work

Prescribed fire is a relatively nascent field outside of the professional fire services, and training opportunities have been historically limited.

needed locally and if there is adequate work to sustain expanded future workforces may also be important.

- Models for flexible controlled burning workforces, several of which are emergent in California, may be an option in some local areas where increased capacity is needed and multiple entities could pool their efforts to achieve necessary training and certifications. UC ANR Cooperative Extension, along with partners operating through the U.S. Fire Learning Network, the Forest Management Task Force, and CA Statewide Fire MOU Partnership, may be able to help diffuse examples and best practices, along with technical assistance.

BUILDING ORGANIZATIONAL CAPACITIES

There was less interest in adding or enhancing organizational capacities than other capacity categories, although a majority of respondents wanted to add or enhance volunteer recruitment capacities. A majority of entities already had basic administrative and grant management infrastructure. However, when provided the opportunity to express their greatest areas for improvement in their own words, respondents most often listed organizational needs: increasing the number of staff with fire experience, and number of staff overall; obtaining funding, particularly from more diverse sources; and grantwriting. This may reflect the number of smaller organizations in terms of budget and staff who completed the assessment, but likely also reflects respondents interest in stepping up to the increasing demand and opportunity given recent California wildfires and the related expanded funding and public interest. A desire for more and diverse funding is common in natural resource management regardless of entity type. Improving organizational capacities may be an area for equity considerations, as some smaller organizations with fewer resources may benefit from professionalizing their operations but have lacked opportunities to do so to date. The aggregate data may mask important earlier-stage investments needed in some geographies.

▶ **Recommendations:**

- Because increased organizational capacity was quantitatively reported to be less needed than other capacities, one could infer that this is not a top priority at the state level. However, outcomes are often only as strong as the scaffolding off which they build, and the open-ended responses indicate that these entities do in fact have organizational capacity needs. It may be strategic to have regional block grantees identify a few entities in their service areas who would be able to contribute much more significantly to forest and/or fire management in their local areas if their basic administrative functions were improved, and/or to evaluate all entities that took the assessment in terms of population demographics and other socio-economic factors.

- Create a database of funding sources for forest and/or fire management.

- Provide grantwriting workshops geared toward forest and/or fire management contexts.

- Allow for base organizational capacity building, maintenance and expansion through existing program, and expand investments in programs dedicated to base capacity (e.g., the Watershed Coordinator Grants Program, which provides flexible funding for coordination among partners, project planning and fundraising for project implementation.).

- Enable organizations to collect their full administrative costs, rather than capping indirect funding, this builds and sustains organizational capacity for expanding forest and fire programs. The state could consider a program similar to the federal Negotiated Indirect Cost Rate system, to ensure that organizations' rates are reasonable and that indirect costs are allocated according to best accounting standards to avoid fraud and waste while supporting robust, sustainable organizations.

BUILDING CULTURAL FIRE CAPACITIES

Cultural fire capacity building will require an approach that considers the unique roles that tribes have in forest and/or fire management, and the importance of cultural burning to tribes. Most tribal respondents were interested in adding or enhancing nearly all cultural fire capacities that we asked about in the

assessment. Their top desired cultural fire capacity was conducting cultural burning for the enhancement of cultural needs and uses.

▶ **Recommendations:**

- Explore other approaches to learn more about tribes' interests and needs for forest and/or fire management. Online surveys may not be the most appropriate means to reach their perspectives given tribal governance processes and procedures.

- Work with indigenous practitioners and tribal governments to consider how any RFFC involvement in cultural fire arenas could augment existing approaches.

- Articulate and share models and examples for partnerships between tribal and non-tribal entities in forest and/or fire management. This could include some basic principles for partnering respectfully with tribes, particularly given that there was interest in a partnership support role in cultural burning.

- Evaluate which approaches to working with tribes respect their sovereign status and self-determination, and why.

WHAT FORMATS AND VENUES MAY BE MOST EFFECTIVE FOR BUILDING CAPACITY?

There are many ways to invest in capacity, from directly delivering funds to trainings to technical assistance. Determining a format for capacity building depends on several factors such as: the interest of potential recipients in using it, cost, the availability of service providers, and what approach may be best suited for the capacity topic in question. The diversity of capacity building needs expressed, along with the varying stages of capacity indicated, warrants deployment of a range of capacity building approaches coupled with staged investments over time.

This assessment is able to offer information about the first factor: respondents' interest

Frank K. Lake, USDA Forest Service

Cultural fire capacity building will require an approach that considers the unique authorities and roles that tribes have in forest and/or fire management, and the importance of cultural burning to tribes. In this photo, Lois Conner Bohna is with acorns on a tree tended by her grandmother, Lilly Harris, at a ranch near North Fork, California.

in formats. We found that a large majority (87 percent) reported that direct funding for them to address their needs themselves would be a very useful format for capacity building. Smaller majorities also stated that connections to peers working on similar issues and peer exchanges would be very useful. The fewest number of respondents indicated that webinars or job shadowing would be very useful, although larger numbers of respondents did view these as somewhat useful. We also found that a majority of respondents (66 percent) indicated they would be potentially interested in teaching or mentoring others in a peer capacity building setting.

These findings suggest that RFFC funds to improve capacity directly are of strong

Capacities explored: monitoring, planning, collaboration and partnership, outreach, implementation, cultural fire, organizational.

interest, as is peer learning. It is not feasible, however, that funds would be directly provided to over 200 entities, as the dollars per entity and their likely impacts would be limited, particularly when keeping in mind that the program and grantees are expected to produce several other outcomes aside from building local capacity, including demonstration projects and regional prioritization plans (although it is intended that those outcomes will build capacity along the way). The state should seek broader ways through either new or existing programs to provide flexible base funding for organizational capacity to engage in forest and/or fire management.

Peer learning through matchmaking, facilitated learning exchanges, and perhaps platforms such as a deliberately designed and sustained peer learning network or community of practice, could offer productive venues. These approaches require support and guidance from a skilled service provider, working with agencies, experts and participating organizations. Peer learning must also be designed with awareness of the costs and burdens for the teachers/mentors. While these formats of peer networking require deliberate programmatic investments, peer networking facilitates the forging of direct relationships between peers that often lead to direct technical assistance and mentoring that occurs outside the bounds of the initial capacity building investments. This spin-off or multiplier effect capitalizes on the reciprocity generated from shared experiences and personal connections, particularly those facilitated through in-person interactions. More detailed analysis of the capacities of individual entities and their ability to serve as peer mentors/teachers to others in their areas will occur as a next step within each internal block grantee report.

These findings also indicate that many respondents do not view webinars as a useful format for receiving capacity building. However, if attempting to reach a statewide

A lack of specific and dedicated funding in support of capacity building for forest and fire management was the top barrier that respondents identified in their work.

audience with limited resources, remote presentations and meetings are reasonable options for expanding the reach of sharing technical information to broader audiences in an interactive format. Webinars may also be effective as an additional format in support of other types of capacity building investments, rather than as standalone tools to increase capacity.

Based on the Watershed Center's experience in facilitating peer learning networks, it is important to note that peer learning does not just happen organically, particularly if the rapid dissemination of forest and/or fire management best practices is a goal. It requires targeted, consistent investments to support its design, coordination, and stewardship. Strong networks include staff whose explicit role is liaising, or connecting network participants to one another based on needs, skillsets, etc. A well-supported network can generate better local and regional connectivity, capacity and forest and/or fire management outcomes.

Key Implications and Recommendations at the State Level

Here, we discuss capacities, barriers, and needs that the state of California, other decision makers, funders, and supportive service providers may potentially influence through policy, programmatic, or other decisions.

First, this assessment reveals substantial and diverse needs for capacity building, specifically for more funding for capacities for forest and/or fire management capacities.

A lack of specific and dedicated funding in support of capacity building for forest and/or fire management was the top barrier that respondents identified in their work. These needs are likely even more extensive than articulated in these data, as the assessment may not have adequately captured perspectives from some areas of California. The RFFC program is unlikely to be able to meet these needs. Continued and deliberate investment could include:

1. More regional or statewide capacity building programs akin to the Sierra Nevada Conservancy's Watershed Improvement Program, which links investments in organizations and partnerships across planning, implementation, economic development, and adaptive management, supported through a regional intermediary who also provides direct technical assistance and peer learning opportunities;

2. Expanded investment in the Watershed Coordinators grant program, which provides flexible funding for coordination among partners, project planning and fundraising for projects implementation;

3. Expanded flexibility in existing grant programs to more explicitly fund capacity building functions such as participation in trainings, coordination and partnership development, and planning (this is a growing feature in CAL FIRE's Forest Health and Fire Prevention Grants programs);

4. Focusing at least some funding on dedicated non-competitive block grants to local groups (perhaps tribes, RCDs, fire safe councils, or specified watershed or county-based NGOs) for baseline operational capacities and serving in their coordination and planning roles, similar to capacity granting programs from Oregon's Watershed Enhancement Board, for example; and

5. Fully funding administrative/indirect costs in grant programs to ensure that

local organizations, tribes, and others are able to grow and sustain administrative systems essential to high performance and accountability. A state-administered negotiated indirect costs rate system (akin to the system federal agencies use for cooperative agreements) could ensure that the goals of leveraging non-state funding and ensuring partners are not inflating costs are still achieved. A modified approach to match requirements could also address equity issues.

The scope and scale of these needs also suggests the importance of being strategic in leveraging investments. This could include ways to seek stronger synergy among the many programs that state agencies are deploying to ensure a set of leveraged outcomes that help organizations and partnerships grow and sustain capacity. Another approach could be to expand the use of cooperative agreement authority for state agencies, with CAL FIRE

There is strong interest in receiving capacity assistance from peers, and there appears to be a broad base of skilled entities in California that could serve as peer teachers, mentors, or sources of examples.

in particular given their local staffing with complimentary goals and capacities, to facilitate more deliberate investment in building the capacity of local organizations to be qualified and capable partners. This approach has been used by the U.S. Forest Service, e.g., through participating agreement authorities, to deliver resources through local nonprofits and other entities while fostering mutual goals and objectives. Allowing non-competitive funding allocation where mutual benefits exist facilitates capacity building and partnership development. As with grants, reimbursements of actual costs and indirect rates protects against wasteful spending, and matching requirements ensure investments are leveraged to expand impacts of the state investment.

Second, there is strong interest in receiving capacity assistance from peers, and there appears to be a broad base of skilled entities in California that could serve as peer teachers, mentors, or sources of examples. Networks for fire resilience practitioners are not a new concept; existing examples include the national Fire Adapted Communities Learning Network (FAC Net) also staffed by the Watershed Research and Training Center, and a number of affiliated state-scale networks across the western US. Given the concerted focus and investment in forest and/or fire resilience in California, and the growing urgency of fire-related issues with each fire season, there may be an opportunity and need for a state-scale, intentional, strategic network within California. This network could be directly affiliated with the RFFC program and/or FAC Net, leveraging these other ongoing investments and existing resources. Networks require operating resources and capacity in order to provide value to practitioners, but they are a proven method for transferring ideas and accelerating action. The CARCD already utilizes a peer network approach for its members. RFFC partners should explore expanded roles for state agencies to help support and participate in peer learning that helps to make and move best practices and innovations.

Third, the common interests of many respondents in scientific and technical capacities (monitoring and GIS) indicates a need to more explicitly link universities and other educational institutions with the fields of forest and/or fire management. Educational institutions could better serve these needs by providing expanded cooperative extension services, incentivizing applied research with practitioners, and connecting students to internships and future employment opportunities in forest and/or fire management. Further, CAL FIRE could expand the delivery and utilization of its Fire Resource and Assessment Program (FRAP) products

to this expanding field of organizations and practitioners, perhaps drawing upon the extension model, or expanding cooperative extension fire advisers with FRAP delivery as part of their charge.

Fourth, state and federal government permitting processes or requirements (e.g., CEQA, NEPA) were among the top barriers for about a quarter of assessment respondents. The RFFC program already identifies the need for regional block grantees to directly work on these processes to accelerate the planning and implementation of priority projects, and provides funding for them to do so. Continued investment in this will likely be necessary, as non-governmental organizations are increasingly being tasked with taking leadership roles in environmental compliance. Examples of successful processes and templates for efficient permitting processes may be helpful.

Finally, assessment responses revealed a continued interest in building the capacity for forest and/or fire management work at smaller scales such as neighborhoods and communities. These activities include defensible space, roadside clearing, landowner outreach, and volunteer engagement. This likely in part reflects the needs of fire safe councils, which were 19 percent of the survey population as a result of outreach to ensure their participation.

As the focus of funding increasingly seems to be toward regional entities, and to support regional processes that are hoped to deliver more measurable impacts across landscapes, there may be a need to continue to invest locally as well to ensure that there are building blocks for the success of larger strategies at smaller scales.

Potential Areas for Further Exploration

This assessment provided extensive information about the capacities and needs of entities engaged in forest and/or fire management in California. However, a survey format can be limited in insight about why and how findings and trends exist. Further, depending on who takes the survey, it can result in more knowledge about some entity types, needs, or geographic locations than others. Some possible areas for additional information gathering and applied research may include:

- *Entities and needs in areas outside of the Sierras, Cascades, North Coast Ranges, and Klamath-Siskiyou:* This could take the form of a follow-up survey administered in more concerted partnership with intermediary/regional entities in these areas, in-depth interviews with these regional entities themselves, or focus groups. This would also include a need to learn more about fire management in non-forested ecosystems. Rangeland, shrub-steppe, and other types of ecosystems support activities such as ranching and agriculture. There may be different types and networks of entities present in these areas than in forested areas. Approaches to addressing wildfire risk, tools used, and response to fire events may also look different. Accessing knowledge about these settings could occur through different intermediary entities such as industry associations, grazing groups, and agricultural organizations.

- *Organizational ecosystems:* How different entities partner, and their roles and activities relative to one another, often varies by location.

Some organizational ecosystems may be small, while others may have a density of numerous overlapping entities.

Understanding how these are structured and function may aid in more effective capacity building that fits well with local and regional contexts. Applied social network analysis of regions that particularly focuses on who does what, and what functions need to be enhanced or added, could provide additional insights that help target and refine capacity building approaches.

- *Roles and needs of tribes:* Certain research and outreach approaches may be better suited than others for engaging with tribes given their governance structures and processes. Online surveys may be less appropriate than interviews, for example. Follow-up with respondent tribes to learn more about their responses, and/or with other tribes who did not participate in the survey, could offer additional knowledge to inform activities and investments in cultural fire and related topics such as monitoring cultural outcomes.

A Note to Practitioners, From Practitioners

This section is developed based on the Watershed Center's experience building our capacity and is not tied to the dataset.

BEFORE BUILDING, TAKE STOCK

In our experience, entities cannot and should not rely solely on external entities to build their own internal capacity. Capacity building is an iterative process, rarely funded directly. Practitioners interested in building their capacity should consider how they can best leverage their existing capacities and build in a way that is sustainable, impactful, and mindful of the overall "ecosystem" in which they operate (i.e., what partners, and potential partners do/need/have etc.).

Questions to ask to help increase capacity

▶ **What are we doing well right now that we could build on?**

▶ **What are our partners doing well that we collectively could build on? What can we do together that we can't do alone?**

▶ **What could we accomplish with more capacity?**

▶ **Which of those things complement our strategic plan?**

▶ **Do we have a strategic plan? What needs to be in a strategic plan to help us make better decisions?**

▶ **What capacities would be too much to handle right now? What capacities would also introduce heightened or new risks? Are those risks worth it? Can they be mitigated?**

There are numerous resources and best practices around organizational capacity; issues such as maximum wing of supervision, organizational liability, and infrastructure should be analyzed in earnest to ensure decisions are going to make work more effective, not more disjointed and difficult.

HOW SHOULD RIPENESS AND EQUITY BE CONSIDERED IN INVESTMENT DECISIONS?

Entities that are healthy are more likely to provide a return on investment. In this instance, organizational health may include organizational qualities such as sufficient and qualified staff, the use of best practices, necessary financial and administrative systems, accountability, and adaptability. A "track record" of being able to take on similar or comparable activities or the presence of capacities related to those that an entity wishes to build may also matter. This would be

evidenced through validation of factors such as an entity's current legal status, alignment of current budget and staff with programs, and evidence of past performance.

Although ripeness and likelihood of success are a common factor in capacity decisions, equity is another important consideration. Entities with a track record may find it easier to further attract funds and support, as they are viewed as proven. Many funders are seeking to invest in entities, communities, or areas in order to facilitate specific desired outcomes, and they are seeking the "best bets," or investments that seem most likely to produce their desired outcomes. There also may be limited funding or programming dedicated to creating new efforts or building new capacities. Therefore, there may be entities at earlier stages of organizational development or in otherwise marginalized positions that may not appear "ripe" for investment yet warrant it. Continued lack of investment inhibits their access to opportunities for growth. If capacity investments are made with equity in mind, rationales should include historical inequity of investment and underserved community or population status. Realistic expectations and desired outcomes from early-stage investments should also be established accordingly.

Although this report did not include analysis at the level of each individual entity, the forest and/or fire management capacity wheel (the wheel), inspired by a concept in the Lake Tahoe Basin Forest Action Plan (Tahoe Fire and Fuels Team, 2019)[6], proposes a logic model for the order in which capacities/activities related to forest and/or fire management develop (Figure 2).

Since this model outlines the general order in which these activities occur, it offers a rough blueprint for the capacities that are needed, but they may not necessarily be built in this order. For example, the process of establishing

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6 https://tahoe.ca.gov/wp-content/uploads/sites/257/2019/08/Lake-Tahoe-Basin-Forest-Action-Plan.pdf

monitoring capacities (Figure 7, #7) should likely not wait until stages 1-6 are completed. Further, not all entities likely want to progress through this wheel in a linear fashion, and not every entity will need to possess all of these capacities. Many groups achieve outcomes through partnerships and collaborations that capitalize on the relative capacities of multiple organizations and individuals working in concert. Therefore, this is not necessarily a tool to assess all individual entity capacities, but serves as a useful decision support tool for investment when thinking about capacities across partnerships. Particularly at regional scales, it may aid block grantees and other supportive partners in identifying if they have each of these capacities present in: 1) their local organizational ecosystems, and 2) the

right forms, levels, and partnerships that will allow these capacities to achieve the desired forest and/or fire management goals. During our next stage of analysis and production of internal reports for block grantees, we will examine this. As a tool for reflecting on capacity needs at the broader scale of this report, the wheel suggests some of the following considerations:

1&2. Landscape Assessment and Strategy

The capacity wheel assumes that a base level of personnel and resources is needed to undertake assessment and prioritization or strategy processes. Understanding entity budgets, staff sizes, and if they have experience

Figure 7. Forest and Fire Capacity Wheel

Inspired by a concept in the Lake Tahoe Basin Forest Action Plan (Tahoe Fire and Fuels Team, 2019)

or are willing to develop experience working at larger scales is therefore important for these two stages. For developing a strategy, biophysical characteristics such as risk of wildfire and exposure matter, as do human values and priorities. Planning capacities such as GIS can therefore come into play, as well as collaboration and partnership skills (such as identifying shared priorities among multiple perspectives and facilitating/convening multiple entities for dialogue about priorities).

Importantly, not every single entity must possess the capacity to lead these processes or provide these types of technical expertise.

Some may be more equipped to lead, while others need sufficient resources, time, and ability to participate.

3&4. Project Planning, Permitting, and Field Prep

The RFFC approach is to foster strategic planning of projects that tier to larger landscape restoration, so the capacities found in stages 1 and 2 may be important prerequisites to then planning discrete projects. Planning specific projects that derive from a larger landscape strategy requires collaboration, partnerships, and planning capacities as well. These can include developing partnerships between public and private landowners, or across multiple jurisdictions, to develop cross-boundary coordinated efforts. This may necessitate the use of GIS, interorganizational agreements, and/or data sharing. Depending on the location and goals of projects, capacities relevant to planning fuels treatments in the wildland-urban interface and outreach to involved communities would apply. Specific government permitting and approval processes can also become necessary depending on the landownerships involved. These processes include tribal consultation, NEPA, and CEQA.

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During these processes, protecting tribal sovereignty and intertribal coordination may also be relevant.

Finally, field preparation once projects are approved requires technical capacities such as surveying. Through the design and permitting of specific projects, different types of entities have different roles that necessitate different capacities, depending on if they are involved as sovereign nations (i.e., tribes), landowners, government agencies, residents, etc.

5. Project Implementation

Assessment, prioritization, and then the development of specific projects is necessary to create actionable opportunities to perform work on the ground. The implementation of forest and/or fire management work engages multiple entities from residents, as well as the private and public sectors. The activities involved include creating defensible space around homes, thinning, prescribed burning, and planting. The ways that the work is accomplished can determine the level of labor, equipment, and/or technical workforces required. Having a workforce requires funding and infrastructure (e.g., contracts to perform the work, workforce development resources for training, housing a limiting factor in many rural communities), and funds to cover insurance and equipment needs.

There is strong interest in receiving capacity building assistance from peers, especially in the format of peer learning exchanges.

Not all entities must have the workforce capacity to implement all types of work.

Different types and sizes of entities may have different interests and appetites for hiring and managing on-the-ground workforces. However, there are specific capacities that, if entirely lacking in a given area, can cause bottlenecks.

For example, a certified burn boss is needed to oversee the implementation of prescribed fire activities. If prescribed fire is planned for cultural purposes, then capacities related to culture fire such as supporting family-based burning and intergenerational learning are necessary, and engagement from partners to support cultural burning, if appropriate and welcome, would also be important.

6. Economic Development

The ability of projects to be implemented often involves necessary economic capacities such as functional businesses to perform forest and/or fire management work, and infrastructure that can process the products of these activities. Business and enterprise planning are critical in

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Biomass utilization is considered an advanced capacity, best leveraged after foundational capacities, particularly regarding planning and workforce development, have been established.

this phase. During project planning processes, there should also be consideration of how the location of projects and types of byproducts anticipated align with the presence and availability of businesses and infrastructure. This should be taken into account when making capacity investments. For example, if there is a region with low planning and implementation capacity to produce reliable forest and/or fire work and byproducts, then investing in biomass utilization may be premature.

There may also be insufficient awareness of what it takes to develop some capacities.

For example, a limited number of respondents wanted to add or enhance financial planning but half wanted to grow their biomass utilization capacity. Yet financial planning would be a key type of expertise related to developing biomass utilization capacity.

7. Monitoring and Adaptive Management

Understanding the impacts of forest and/ or fire management activities is essential because it provides information that can foster learning and adaptation of future work. The collection of monitoring data may occur later in the wheel; however, building the capacity to develop a monitoring plan and the resources to implement it should begin far earlier. In addition, learning and adaptation may occur at any point in the wheel. However, deliberate learning in response to what is found through monitoring would certainly take place after a project has been implemented and outcomes are documented. Another consideration is ensuring that the types of monitoring capacity that are pursued align with the effort's/entity's goals. For example, if an entity would like to conduct carbon savings monitoring, their work should have explicit carbon savings goals.

5. CONCLUSION

This assessment was conducted to assess the capacities and needs of entities active in forest and/or fire management in California, and to inform the implementation of the RFFC program. The RFFC program is one of several recent cooperative initiatives and programs intended to reduce wildfire risk. This program is unique in that it provides funding and support for the explicit purposes of building capacity, which is not otherwise consistently available. The assessment findings described important capacities for forest and/or fire management in seven categories, as well as basic characteristics of respondent entities. We hope that these results are of use to respondents who took the assessment, state-level funders and allies of forest and/or fire management work, and other decision makers who could help remove and mitigate barriers; as well as those in other states who pursue similar work or want to consider strategic investments in forest and/or fire management capacity.

THIS REPORT'S APPENDIX CAN BE VIEWED ONLINE:

https://thewatershedcenter.com/appendix-wrtc-capacity-needs-assessment/

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