

Strategies for Increasing Prescribed Fire Application on Federal Lands: Lessons from Case Studies in the U.S. West

COURTNEY SCHULTZ, ANNA SANTO, HEIDI HUBER-STEARNs, AND SARAH MCCAFFREY

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About the authors

Courtney Schultz is the Director of the CSU Public Lands Policy Group and Associate Professor in the Department of Forest and Rangeland Stewardship, Colorado State University.

Anna Santo is a Faculty Research Assistant in the Ecosystem Workforce Program, Institute for a Sustainable Environment, University of Oregon.

Heidi Huber-Stearns is an Assistant Research Professor and Associate Director of the Ecosystem Workforce Program, and Director of the Institute for a Sustainable Environment, University of Oregon. She is the Ecosystem Workforce Program Lead at University of Oregon.

Sarah McCaffrey is a Research Social Scientist with the U.S. Forest Service Rocky Mountain Research Station.

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For more information:

Ecosystem Workforce Program
Institute for a Sustainable Environment
5247 University of Oregon
Eugene, OR 97403-5247-1472
ewp@uoregon.edu
ewp.uoregon.edu

Public Lands Policy Group
Department of Forest and Rangeland Stewardship
Colorado State University
Fort Collins, CO 80523-1472
courtney.schultz@colostate.edu
sites.warnercnr.colostate.edu/courtneyschultz/





Executive summary

We are investigating policies that affect land managers' ability to conduct prescribed fire on US Forest Service and Bureau of Land Management (BLM) lands in the 11 Western states. Our goals are to identify policy constraints, facilitative strategies, and actionable opportunities to improve policies or policy implementation to facilitate greater use of prescribed fire.

Overview and methods

In 2017–2018, Phase One of this research, we investigated policies that affect prescribed fire programs on Forest Service and BLM lands, focusing on policy-related challenges and opportunities to increase application of fire. We interviewed practitioners involved in planning for and implementing prescribed fire across 11 states in the western United States. Interviewees identified lack of workforce capacity and funding as the primary barriers limiting application of prescribed fire, and they did not identify a need to change national policy to facilitate more burning. Instead, interviewees focused on the need to improve leadership, incentives, funding, and availability of resources (e.g., people and equipment) to support more prescribed

fire. They also discussed the importance of collaboration among burners to share resources and between air and land managers to find opportunities to burn while navigating air quality regulatory requirements.

In this second phase of the research, we conducted in-depth case studies of federal land management units that were actively working to increase their application of prescribed fire. We selected four case studies based on interviewee recommendations from our first round of interviews. These cases were: the San Juan National Forest (Colorado), the BLM Socorro Field Office/Cibola National Forest (New Mexico), the Sierra National Forest (California), and the Rogue-River Siskiyou National Forest (Oregon), with a focus on the Ashland Forest Resiliency Project in the Siskiyou Mountains Ranger District. For each case study, we conducted between 11 and 17 interviews with Forest Service or BLM staff members and key external partners. In total, 53 interviews were conducted with 62 interviewees for this phase of the project. Interviews focused on the nature of the prescribed fire program on the unit, key partners, primary challenges, and strategies and opportunities for increasing use of prescribed fire.

Key findings

Findings regarding challenges for increasing the application of prescribed fire were consistent with findings from the 2017-2018 Phase One interviews. Primary challenges identified in the first phase of our work included: insufficient staff capacity and funding to plan and implement prescribed fire; a lack of strong incentives for leaders and fire-qualified personnel to focus on prescribed fire; and challenges specific to each location, such as topography, timing of burn windows, and resource or air quality protection.

Similarly, the most common theme in our case-study interviews was about lack of funding and workforce capacity. People said lack of funding, limited firefighter workforce capacity, and other staffing gaps made it difficult to plan for and conduct prescribed burning. Interviewees across cases also discussed the need for more formalized resource-sharing agreements with partners and among federal agencies. We heard that when line officers or individual fuels program leaders are more risk-averse or less committed to prescribed fire, it can be difficult to implement prescribed fire, particularly due to weak incentives for burning in federal agencies. Interviewees across all case studies cited outreach and communication challenges between the Forest Service and the general public. They also identified administrative challenges that make hiring, resource-sharing, or retaining agency workforce more difficult. In addition, interviewees described place-specific challenges that constrain burn programs, such as state-level smoke regulations, species protection requirements, or limited public tolerance of smoke impacts.

When we asked interviewees from the four case study areas about their strategies for success, they told us that forest- and district-level leadership (i.e., line officers and others in fuels program leadership positions) play a critical role in supporting an active prescribed fire program by: providing general support for staff activities; seeking out partnership opportunities; dedicating time to working on agreements, planning, and clearances; and supporting creative staffing and planning approaches.

Interviewees said that individual fuels program staff members, planners, and Fire Management Officers played critical roles in spearheading establishment of successful burning programs and working to overcome the many challenges associated with conducting prescribed fire. Interviewees also said the support of leadership from the Washington and Regional Offices of the Forest Service and BLM, state partners, and NGO collaborators were critical factors for success.

In light of limited capacity, people said that partnerships were essential to staffing burn teams and facilitating prescribed fire programs in other ways (e.g., participating in collaborative problem-solving or communicating with the general public about the importance of prescribed fire). We heard that fuels staff members who are successful at implementing prescribed burns often find the time and have the expertise to utilize policies that facilitate resource-sharing, cross-boundary work, and partnerships.

Another consistent theme in the case studies was the importance of communication and partnerships. Partnerships took a number of forms including: land managers and air quality regulators working closely together to identify and take advantage of opportunities to increase prescribed burning; collaborative forums in which stakeholders could convene and develop strategies for cooperation; and active public outreach efforts. Interviewees often told us they felt that communication efforts had contributed to more widespread understanding among regulators and the public of the importance of prescribed fire.

Finally, the importance of effective planning documents was a consistent theme throughout interviews. People discussed the importance of forest plans, landscape- and project-level NEPA approaches, and flexible burn plans. Two forests were pursuing district- or forest-wide planning documents, which they believed would bring efficiencies for planning and clearance processes, allow them to conduct more burning without being constrained by project boundaries, and facilitate application of naturally ignited fire to meet resource objectives.

Recommendations

The findings from Phase Two of this research reinforce our earlier findings and shed light on distinct opportunities and challenges that specific units face and that make local collaboration and problem-solving critical for success. In Phase Two, we again did not find any consistent calls for federal policy change. The primary challenge individuals pointed to for increasing prescribed burning was a lack of capacity to conduct burns and to complete required clearance processes.

We identified four interrelated needs that were consistent across the case studies. First, prescribed fire will need to be clearly prioritized and supported by federal agencies with more staff capacity in order to increase burning on federal lands in the West, especially during fire season. Second, individual

fuels program staff members need clear support and incentives from leadership to build and sustain successful programs. Third and relatedly, stronger emphasis on the importance of prescribed fire from line officers and agency leadership at all levels is needed. Fourth, as partners are critical to adding capacity it will be important for agencies to find ways to remove obstacles and increase efficiencies for resource sharing.

Finally, we heard of a variety of useful strategies about a wide range of dynamics, from communicating with the public, to working with regulators and partners, to increasing planning flexibility. Finding ways for staff members and partners to come together and share their strategies in regional or state-wide networks could be an effective way to support creativity and foster effective learning across federal land management units and with partners.



Introduction and methods

We investigated policies that affect land managers' ability to conduct prescribed fire on US Forest Service and Bureau of Land Management (BLM) lands in the 11 Western states.¹ Our goals were to identify policy constraints, facilitative strategies, and actionable opportunities to improve policies or policy implementation to increase the use of prescribed fire.

The project involved two phases of data collection. In Phase One, from 2017-2018, we completed a legal analysis of the laws and policies that affect prescribed fire programs on Forest Service and BLM lands across the West. We also conducted 54 interviews with land managers, air regulators, state agency partners, and NGO partners across the 11 Western states to better understand policy challenges and opportunities related to increasing prescribed fire application. Detailed findings from Phase One are summarized in a working paper² and in a peer-reviewed article.³ Key findings from Phase One work are summarized on page 5.

Phase Two of our investigation—the subject of this report—involved case studies with units that are actively working to increase their application of prescribed fire. Our primary research objective was to understand the challenges faced on these units and what they were doing to overcome them in order to accomplish more prescribed fire. In our Phase One interviews, we asked all interviewees for recommendations of US Forest Service or Bureau of Land Management (BLM) units that might serve as exemplars for other units seeking to expand their prescribed fire programs. We selected the following four case studies for Phase Two based on geographic representation, diverse land management contexts, and recommendations from interviewees:

- **The San Juan National Forest**, Colorado, was selected based on interviewees' description of the unit as a forest that was increasing prescribed fire accomplishments near the wildland-urban interface (WUI) using unique outreach and partnership strategies. They

were also engaging in novel approaches to planning for prescribed fire. The Forest also was partnering with the BLM's Tres Rios district, which was one of the few BLM districts we identified that was actively trying to increase prescribed fire activities at the time of our research. This case study afforded us an opportunity to gain insights about both units and agencies.

- **The Socorro Field Office of the BLM's Albuquerque District and the Cibola National Forest**, New Mexico, were selected because the Albuquerque District was the only BLM district that indicated willingness to participate as a case study following our nationwide request in search of BLM units working to increase application of prescribed fire. The Socorro Field Office engages a broad network of state and federal partners to complete prescribed burning, including a close partnership with the Magdalena Ranger District on the Cibola National Forest. Interviewees in Phase One also suggested we look at the coordination among the Cibola, Carson, and Santa Fe National Forests. Thus, this case study offered opportunities to understand lessons from both BLM and Forest Service management units and perspectives.
- **The Sierra National Forest**, California, was selected because numerous interviewees suggested the Forest could offer lessons learned from their collaborations with the California Department of Forestry and Fire Protection (CAL FIRE) and the Dinkey Collaborative Forest Landscape Restoration Program (CFLRP)⁴ stakeholder group. Interviewees also recommended this Forest because of its unique planning strategies and motivated fire staff members working to increase prescribed fire in a complicated context (i.e., on a national forest that has seen a major drought and associated tree mortality event, and also is adjacent to the San Joaquin Valley, where air quality management is a major challenge).

Phase One findings

Key Phase One findings about prescribed fire challenges and opportunities across the West:

- **Air quality regulations and permitting were not the primary variables limiting the application of prescribed fire in most western states.** The exceptions were in Oregon and Washington, where interviewees said that state-level smoke management programs restrict their ability to burn. Interviewees in the Intermountain West told us that, while air quality was a consideration and potential constraint, other factors were more limiting.
- **A lack of capacity and funding were the most significant barriers to implementing more prescribed fire.** Interviewees described how capacity to burn was limited when burn windows coincided with wildfire season. Outside of wildfire season, the loss of seasonal staff members, scheduled trainings, and other demands limited staff capacity.
- **Resource sharing was considered critical for success, but there were often significant challenges to sharing funding and personnel across units.** Interviewees described how agencies lacked spending flexibility due to budgetary requirements and also discussed challenges in using agreement mechanisms efficiently and effectively.
- **People said supportive leadership is a central factor for expanding prescribed fire in light of professional disincentives and competing priorities.** Interviewees described how successful programs depended on personal investment from line officers and fire management officers. They offered examples of how committed line officers and other key staff members were able to find creative strategies to overcome the multiple challenges to increased burning.
- **Successful strategies across the West commonly relied upon active partnerships and communication.** Examples include: collaborative, place-specific problem solving; active coordination between air regulators and land managers at both the local and state levels; and coordination among burners to share resources, communicate effectively with the public, and manage competition among different entities that want to burn simultaneously in the same airsheds.
- **Phase One did not yield clear indications that legislative or regulatory policy changes at the federal level were needed.** Interviewees instead focused on opportunities to increase the use of prescribed fire that did not require changes to federal law. Internal agency policy changes, however, may be necessary to place greater emphasis on prescribed fire and address capacity limitations. Realizing these opportunities will require creative problem-solving and a commensurate input of staff time, funding, and leadership.

- **The Rogue River-Siskiyou National Forest** and in particular the Ashland Forest Resiliency Project on the Siskiyou Mountains Ranger District, Oregon, was chosen because interviewees suggested that active collaborations in the area were facilitating increased use of prescribed fire. In addition, the suite of challenges on this landscape appeared different from our other cases. For instance, we had indications that funding and workforce were less limiting on this Forest. Further, our Phase One interviews indicated that smoke management had been more of a limiting factor in Oregon than in other states, and the State’s Smoke Management Plan was revised shortly after Phase One was completed.⁵

Recruitment:

For each case study, we identified 15 to 20 target individuals to invite to participate in interviews (see Table 1, below). Typically we began recruitment with a key contact, such as a fuels program leader for the unit. We asked that person for referrals for: a) other people on the Forest or BLM District knowledgeable about the prescribed fire program, and b) key partners involved in land management decisions and efforts in the unit. We compiled a list of line officers, staff officers, fire management officers, and others with the land management agency to interview. We also compiled a list for each unit of individuals outside the agencies who might provide insight into the unit’s approach to prescribed fire. These contacts included key individuals with non-governmental organizations

(NGOs) that the units partner with to accomplish burning or public outreach, and other local, state, tribal, and federal agency partners affecting the burn program (e.g., individuals with air quality regulatory agencies, local wildland fire districts, and state and tribal fire and forestry agencies). We typically began by interviewing a line officer and fuels program leader and expanded our sample from there. In summary, we conducted purposive sampling (i.e., identifying key individuals based on our knowledge and prior interviews) and snowball sampling (i.e., identifying additional interviewees as we proceeded with the case study based on interviewees’ recommendations). On each unit, we interviewed all of the key individuals that we identified who were willing to speak with us, and for each case study we reached a point where we were no longer hearing new themes with regard to our research objective. We then created summaries of our findings for each case study, which we provided to interviewees to give them an opportunity to make corrections and provide feedback, and then we used these case studies to build this report.

This report proceeds as follows: in the next section we summarize our primary cross-case findings, beginning with challenges and strategies for success. We then summarize our overall observations and recommendations from this phase of our research. After this overview, we provide a more detailed summary of findings for each case study individually. Detailed summaries of each case study are available digitally at:

http://ewp.uoregon.edu/RxFire_Policy.

Table 1 Summary of interviewees from each case study

Case studies	Total # interviews	Total # interviewees	# federal agency interviewees	# state agency interviewees	# non-agency interviewees
San Juan National Forest	17	22	14	3	5
Socorro Field Office (of the Bureau of Land Management)	12	15	7	2	6
Sierra National Forest	13	14	9	3	2
Rogue River-Siskiyou National Forest	11	11	7	0	4

Some interviews were conducted with multiple people at once. “Agency” interviewees include personnel from state and federal land management agencies and air regulators. “Non-agency” interviewees include representatives from local government, NGOs, collaborative groups, prescribed fire councils, local fire departments, and contractors.



Findings

I. Common challenges

Findings regarding challenges were consistent with findings from Phase One interviews across the West. Primary challenges included: insufficient capacity and funding to plan and implement prescribed fire; a lack of strong incentives for leaders and fire-qualified personnel to focus on prescribed fire; difficulties sharing resources among partner agencies; and challenges unique to each location, such as topography, timing of burn windows, and resource or air quality protection.

A lack of funding or firefighter workforce capacity available to conduct prescribed burning was the most emphasized challenge. Across cases, interviewees noted that it was especially difficult to conduct burns when fire-qualified personnel were on standby or involved in wildland fire efforts. People also said their units were often understaffed during the shoulder seasons due to the loss of seasonal workforces and the exhaustion of full-time staff members after fire season. Interviewees on the Sierra National Forest, for example, explained

that their internal agency workforce was often unavailable once fire season began as wildland fire suppression was prioritized. They also said they needed to seek outside grant funds and use contractors and partners to accomplish burning. Interviewees for the Socorro Field Office said that the BLM District now relies increasingly on outside contractors and partners because they do not have enough prescribed fire crew staff members to do their own work, and that their fuels budget had decreased substantially following the listing of the Sage-Grouse. Interviewees on the Cibola National Forest said that a lack of resources had caused their units to decrease the size and scope of their projects, leave projects in incomplete states, or drop potentially important restoration efforts. On the San Juan National Forest, interviewees described having to creatively “*scrap together resources*” from other units and with partners to execute burns. Interviewees on the Rogue River-Siskiyou National Forest explained that even when contractors may be available to help burn, federal agencies did not have the funding or administrative capacity to hire them.

Specific staffing gaps created administrative bottlenecks on units. Staffing limitations identified in all cases included personnel for planning, conducting required environmental clearances for wildlife and archaeological resources, working on grants and agreements that could leverage outside resources, and hiring. We heard that federal agency employees are overworked and that forests are often understaffed and face high levels of turnover and vacancies, all of which compromise their ability to successfully implement a fuels program. On the Rogue River-Siskiyou National Forest, interviewees also explained that the shortage of advanced agency administrators who can authorize prescribed burns was a limitation. Some forests have attempted to create staffing efficiencies to address lacking resources. For example, the Cibola National Forest decided to fund contracts instead of filling staffing vacancies, and to centralize many existing district staff members into one office. However, some interviewees said that these attempts ultimately worsened capacity gaps at the district offices, especially in wildlife and archeological resource planning specialists.

Burning programs needed more formalized resource-sharing agreements with partners, especially with other Department of Interior agencies. Across cases, interviewees described “handshake” agreements that made “everyone a little uncomfortable” in which local leaders of neighboring national forests or BLM units agree to share their staff members and equipment across boundaries to support each other. They explained that they made these informal agreements in lieu of formalized resource-sharing agreements because they did not have the administrative capability or authority to share resources among units.

Administrative challenges made hiring, resource sharing, and retaining agency workforce more difficult. Many interviewees across all cases discussed challenges related to federal agencies’ intensive and sometimes time-restricted hiring processes, both for hiring agency staff members and contractors. For instance, interviewees explained that multiple forests compete to hire the

same or similar positions at the same time and that they can only hire during a short window once a year. One interviewee explained that the Cibola National Forest’s requirement for firefighters to have a National Wildfire Coordinating Group Incident Qualification and Certification Systems card (or “red card”) prevents them from engaging otherwise available and experienced firefighters that are available through partner agencies and NGOs. If this requirement were eased, one interviewee said, the agencies could engage additional qualified and much-needed help. Other administrative barriers mentioned in different cases included: high liability insurance requirements that limited contractor interest and receiving money too late in the fiscal year to be able to hire.

Prescribed fire accomplishments were difficult to achieve, particularly in light of weak incentives, when line officers or individual fuels program leaders were more risk-averse or less committed to it. Across cases, interviewees expressed that agency priorities seemed to be strongly focused on wildfire suppression and timber targets at the expense of prescribed fire. Furthermore, interviewees said that the limited fuels treatment dollars tended to be prioritized for new projects over needed maintenance work. As one person put it, “We don’t prioritize ecosystem restoration. We say we do, but our actions speak differently.”

Interviewees noted that for prescribed fire accomplishments to steadily increase, agency leadership would need to more consistently prioritize funding and workforce development for prescribed fire. As one interviewee said, “Where you don’t have [leadership emphasis], people aren’t going to take as much of a risk.” Key aspects of prioritization described by interviewees included making sure staff members were available to conduct prescribed fire, even during wildland fire season, offering leadership direction and support, and providing clear incentives for line officers and staff members to burn, such as offering equal pay for prescribed burning and wildfire suppression, or including prescribed fire accomplishments in performance reviews.

Inadequate communication between the Forest Service or BLM and the general public limited success in some places. Across cases, interviewees explained that it was important to be proactive in providing accurate information to the public to both combat misinformation as well as build basic awareness of the personal and collective benefits of prescribed burning. For instance, interviewees on the Rogue River-Siskiyou National Forest and the Socorro Field Office/Cibola National Forest explained that agency staff members often did not have communication and outreach expertise, and that some agency staff members did not believe it was their responsibility. The agencies' NGO partners, according to interviewees, often have more capacity to manage outreach and may be able to reach more diverse audiences.

Place-specific challenges, such as state-level smoke regulations, species protection, or public tolerance of smoke impacts, also factored into the success of programs. Interviewees from each case study noted challenges specific to their local contexts. For instance, difficulties obtaining smoke permits and variable public tolerance for the impacts of prescribed burning were reported as significant barriers on the Rogue River-Siskiyou National Forest near Ashland, Oregon. On the Sierra National Forest, interviewees described how smoke permitting hurdles, recent tree mortality, and limited resource availability combined to constrain options on the forest. In New Mexico, interviewees said that Mexican Spotted Owl protections have absorbed many of the Cibola National Forest's and Socorro Field Office's resources, limited when and where they can burn, and resulted in litigation that has halted work for long periods of time.





II. Common facilitative strategies

Leadership plays a critical role

Forest- and district-level leadership supported successful prescribed fire programs by: providing general support for staff activities; seeking out partnership opportunities; dedicating time to working on agreements, planning, and clearances; and supporting creative staffing and planning approaches. For instance, three Forest Supervisors in New Mexico decided to pool their staff capacity and targets across their national forests to allow for more flexibility to accomplish work when opportunities are available, build momentum, and improve morale by making targets less daunting. On the San Juan National Forest, interviewees said line officer emphasis on prescribed fire was an important part of their success, as were key staff members who took initiative to enter into numerous agreements to leverage partner capacity. In several cases, interviewees noted that forest-level leadership turnover was an important inflection point for prescribed fire accomplishments, noting that leadership could

cause changes “*overnight.*” One interviewee attributed a doubling of accomplishments from one year to the next to new leadership that expressed higher risk tolerance and had stronger beliefs in the benefits of prescribed burning. However, the opposite also held true. In two cases, interviewees noted nearly immediate decreases in burning when leadership turned over to new leaders who were more conservative about prescribed burning.

Individual staff members were often credited with spearheading a successful prescribed fire program by working to overcome the many challenges associated with conducting prescribed fire. Some success hinged on the efforts of specific individuals, often fire management officers or fuels program leaders, to reach out directly to members of the public, air quality regulators, other units who could offer capacity, or potential local partners. Some motivated individuals spent time applying for grants or turned down opportunities to work on wildland fire events, despite the financial benefits, to implement burns on their units. For instance, interviewees noted:

“I use our Ranger District as an example.... You talk about a district that’s focused in on prescribed burning and getting things done? In a D4 drought in [preparedness levels 4 and 5], with extremely limited resources, they still pull off of the largest landscape burning in the region. It’s really about the individuals that are leading that effort, so I think that’s probably the biggest takeaway I have, [which] is: hire good people that are motivated around prescribed fire.”

“[Our staff member], with the extensive fuels background... helped lead the charge in revitalizing the program, beginning to use new tools like Good Neighbor Authority... and really was the catalyst to get things like our forest-wide NEPA project for prescribed fire rolling down the road.”

“Our partnerships, where we’re successful [are] really just dependent on a few key individuals.... We always have to have someone on the inside that’s willing to champion the effort and put in the extra effort to make it happen.”

The support of leadership from the Regional Office, state partners, and NGO collaborators was also critical. On the Sierra National Forest in California, interviewees explained how the leadership of well-connected partners and the Governor’s office led to substantially increased financial and organizational support for prescribed fire at the state level within both the California Air Resource Board and CAL FIRE. On the Cibola National Forest/Socorro Field Office in New Mexico and the Rogue River-Siskiyou National Forest in Oregon, we heard how NGO partners effected change in multiple ways, including: identifying creative solutions to adding more capacity to burn, often by accessing non-federal partners; building agreement among stakeholders around the importance of prescribed fire; and lobbying for legislative change to support prescribed fire. On the San Juan National Forest, the Regional Office was making strategic investments to support the creation of a bigger fuels program in recognition of the Forest’s good work and to build upon their existing success. Interviewees across all case studies made comments about the importance of high-level agency support to create

enabling conditions for prescribed fire, saying, for example, *“From the Supervisor’s Office to the Regional Office... when you know you have support from above, that helps a lot.”*

Partnerships are essential for leveraging capacity

In light of limited capacity, partnerships were important for staffing burn teams. Across all case studies, interviewees explained the importance of sharing staff members and equipment through either formal or informal agreements. Resource-sharing partnerships tended to be between Forest Service units, between the BLM and the Forest Service, or between the Forest Service and US Fish and Wildlife Service or the National Park Service. State agencies were also critical partners for increasing workforce capacity, especially in California, New Mexico, and Oregon. For instance, interviewees described how CAL FIRE contributed to the workforce on the Sierra National Forest, and how the Oregon Department of Forestry (ODF) and Rogue River-Siskiyou National Forest had a mutual aid agreement to share fuels staff members when needed. The New Mexico Game and Fish Habitat Restoration Program and New Mexico’s State Forestry Division have assisted the Socorro Field Office in hiring contractors to help with thinning, NEPA analyses, archeological surveys, and assisting with on-the-ground burning.

In all cases, diverse partners (e.g., contractors, local wildland fire departments, NGOs, etc.) provided essential workforce capacity to federal units. On the San Juan National Forest, local fire departments, the BLM’s Unaweep Fire Module, and Prescribed Fire Training Exchange (TRES)⁶ trainers/teams offered additional capacity. Interviewees from that case study noted that federal burners also worked to support burning by private landowners and vice versa, creating mutual benefit. The three New Mexico national forests share resources with each other and with the local BLM units, including the Socorro Field Office. They are also assisted by the Forest Stewards Guild, which has worked with funding from the Rio Grande

Water Fund and Nature Conservancy to create an “All-Hands, All-Lands” burn team made up of diverse participants with burn qualifications. Across cases, interviewees explained the benefit of having access to a non-federal workforce crews that could be more flexible, available, and reliable than federal staff members during fire season. Non-federal crews also provided a venue through which federal agencies could engage burners with different levels of availability and experience. One interviewee on the Rogue River-Siskiyou National Forest explained that, *“In southwest Oregon... we have very little of our own resources and we rely heavily on those agreements and those contracted resources to provide the workforce to meet our accomplishments.”* In all cases, interviewees explained that this type of partnership can be mutually beneficial because partner organizations receive training and experience, reciprocal support, or other leverage from the partnership.

Successful fuels staff members found time and had the expertise to utilize policy mechanisms that facilitated resource-sharing and partnerships. Strategies included dedicating staff time to enter into agreements with state partners who brought capacity. In some cases, state partners entered into agreements with entities that the federal agencies could not or did not partner with directly. On multiple cases, we heard that the Good Neighbor Authority (GNA)⁷ was a valuable tool to facilitate state assistance with planning and implementation of work on federal lands, as were statewide master agreements. The Wyden authority⁸ also enabled work to take place on private lands (e.g., having a burn perimeter on private land to support cross-boundary burning). Interviewees said:

“We’re going to expand [our GNA agreement with CAL FIRE] to cover the entire Forest which aligns perfectly with what they’ve been tasked by the Governor to do: to get much more involved in fuel reduction around communities.”

“I think we’ve got all the tools in the toolbox to get more involvement from local, state, and other federal agencies... it’s just taking the right tools and putting them into place.”

Partnerships were also important for leveraging capacity to conduct outreach with landowners and the general public related to prescribed fire.

On the Sierra National Forest, the Dinkey Collaborative group and Central Sierra Historical Society have engaged in outreach and educational programs about fire. On the San Juan National Forest, the Mountain Studies Institute has hosted public meetings about smoke and prescribed fire and undertaken other educational activities. On the Rogue River-Siskiyou National Forest, interviewees named the Ashland Chamber of Commerce, Ashland Fire Department, the city of Ashland, Lomakatsi Restoration, and The Nature Conservancy as organizations that all contributed significantly to the effective public outreach campaigns. Interviewees also said that different partners had positive rapport with different sectors of the public, and that having multiple messengers in their outreach had helped them effectively engage different audiences.



Active collaboration and communication are important for success

A consistent theme in our case studies was that land managers and air quality regulators must work closely together to identify and take advantage of opportunities to burn. When air quality regulation was a constraint, successful units had strong, collaborative relationships with local regulators and participated in collaborative forums that brought air and land managers together.

- On the San Juan National Forest, staff members said they actively reached out to regulators and hosted state air quality agency staff members for field visits. They worked with regional smoke management liaisons to communicate their plans, identify opportunities to improve burn permit flexibility, and clarify where additional monitoring information would be helpful. They also engaged a BLM meteorologist in the state to support their efforts. One interviewee said:

“We are deploying smoke monitoring equipment on a whole host of our burns. We’re being proactive, we’re collecting the data, we’re trying to do analysis. And so [the air quality regulators] see that we’re not just asking for stuff, we’re also investing and trying to lead to better decision-making and better outcomes. And so I think that’s helped build that trust with the regulatory folks.”

- On the Sierra National Forest, staff members indicated they were working more closely with the San Joaquin Air Pollution Control District (APCD) than in the past. Interviewees told us that the San Joaquin APCD was invested in supporting prescribed as a result of direction from the state Governor and California Air Resources Board, and in light of negative impacts on air quality from recent large wildfires. Interviewees also noted that statewide collaborative forums had facilitated problem-solving around: better utilizing available burn days, building mutual understanding among air and land managers, working to improve public outreach

and communication strategies, and investing in monitoring equipment to collect better data and identify more opportunities to permit burning.

- Staff members on the Rogue River-Siskiyou National Forest said they and their partners worked closely with Oregon Department of Forestry for years to increase the number of available burn days. Interviewees described factors that had improved relationships, such as: the Forest sending pictures of smoke impacts to regulators, sharing information via real-time cameras, in-person visits from regulators, weekly partner meetings, and regular phone conversations. One interviewee explained that more frequent interactions among partners and with regulators had led to greater trust, which had enabled ODF to give burners the benefit of the doubt more often. Another interviewee elaborated:

“[In] the early years, [the Ashland Forest Resilience Project] was very limited by approval from the state for smoke.... That’s really changed in that timeframe from then until now. We’ve worked with the state, we’ve invited them down.... Now we have much more flexibility on borderline days to go light a few piles, test, see how we’re doing, and then it’s more of an adaptive management style. And that, like all kinds of relationships, just took some time to build relationships and to build trust. So I would say that is a really, probably one of the biggest factors for our ability to do prescribed fire.”

Some units made extra efforts to conduct public outreach while growing their programs. Interviewees described how the San Juan National Forest was using partners and district-level staff members to actively engage members of the public who were concerned about burning or would be impacted directly by future burning. Staff members utilized a wide variety of tools, including: personal visits, social media, newspapers, radio, tours, and talks hosted by partner NGOs in the area. In New Mexico, the Socorro Field Office hosts public meetings, posts public notices, and sometimes goes door to door requesting feedback about their plans. The Forest Stewards Guild in New Mexico

also provides air filters to vulnerable populations to mitigate potential health impacts from smoke. The City of Ashland and Ashland's Chamber of Commerce collaboration to produce the Smoke-wise Ashland program that teaches local residents how to deal with the adverse impacts of smoke.

One key facilitator that was particularly important in some cases was the increasing public tolerance of fire and smoke. Interviewees in all cases explained that public recognition of the danger of not burning was rapidly increasing. One interviewee explained, *"People kind of get [that prescribed fire is] about the only solution we've got in the toolbox that's going to meet our needs at a landscape scale."* Interviewees told us that recent fires and associated smoke impacts on communities were increasing people's willingness to tolerate more smoke from prescribed fire. One interviewee noted that, *"Having two really bad wildfires, and then being surrounded by fire ever since... has helped change public opinion."*

Successful programs rely on planning approaches that increase efficiency and flexibility

Interviewees discussed the importance of forest plans and different types of NEPA approaches for supporting active prescribed fire programs. Interviewees across cases noted the value of forest plans that were supportive of prescribed fire and the use of wildfires for resource benefit. Multiple interviewees said the NEPA planning process was important for building and articulating strategy and for working with partners to build agreement and leverage capacity. Interviewees from multiple forests indicated they wanted to undertake larger, project-level planning and NEPA compliance documents, including forest- and district-wide plans (discussed below). At least two forests were pursuing programmatic agreements with their State Historic Preservation Offices to streamline needed archeological clearances. Some interviewees discussed particular strategies they were using in their plans to address constraints; approaches

included burning outside of traditional fire seasons when there was more firefighter availability and less risk of fire escape, trying to integrate natural fire barriers, and building cross-boundary fire plans to reduce the amount of resources needed to hold a fire line.

Some units were exploring new approaches to planning and documents to increase prescribed fire use. Two forests were pursuing district- or forest-wide planning documents, which they thought would bring benefits, such as efficiencies for planning and clearance processes. They also anticipated having more ability to conduct prescribed burning as needed and when opportunities arose without being constrained by small project boundaries. On the Sierra National Forest, staff members were preparing a forest-wide categorical exclusion for prescribed fire. Most interviewees were optimistic about its utility, although a couple questioned whether a forest-wide planning document was necessary and would adequately consider environmental effects or allow for broad public input. On the San Juan National Forest, one district had recently completed a district-wide environmental assessment (EA) for prescribed fire, while another was undertaking more site-specific, integrated resource planning for prescribed fire, but at a larger scale than typical in the past. Interviewees saw advantages to both approaches, recognizing tradeoffs between more flexible planning and more site-specific analysis with a clearer strategy for placing fuels treatments across a landscape. Interviewees across cases noted a need to plan at larger scales to find efficiencies. As one explained, *"You need to be efficient. We know that you need to put fire down... in large areas or across the landscape. So we've definitely shifted our NEPA in the last three years to be a lot bigger and broader NEPA."* Interviewees said, for example:

"[The district-wide EA] will open a lot of doors for [the San Juan National Forest]. [It will] allow them to report a lot more acres towards risk mitigation, and it also supports [decision-making] during a wildfire incident. It provides additional documentation and rationale on tactical decisions, and a management strategy in terms of whether we're

going to manage this fire or aggressively suppress. That type of approach is providing them some additional opportunities moving forward... because the more projects you have on the books, the more opportunities you have when it comes to specific environmental windows or resource availability.”

“With the prescribed fire NEPA project that we’re putting together [on the Sierra National Forest], it’ll allow [me] to have a discussion with all the other specialists and to build a program that allows for a fluid flow of our application that will help us to be more effective, more efficient in applying prescribed fire.... With this prescribed fire NEPA, I can set up burn units that create some consistency and tie into other projects.... It’s going to allow us to pick anywhere on the landscape to go burn.”

However, other units suggested that they had tried to implement similar landscape-scale planning efforts but that they were returning to project-level planning strategies because landscape-scale planning was too time- and resource-intensive to be effective. Some individuals on the San Juan also

valued the partner engagement and agreement building that came with more site-specific NEPA analysis. Interviewees from both the Socorro Field Office and Magdalena Ranger District described evolutions in project size on their units, by which they increased and then more recently reduced the size of projects in order to be more efficient:

“Stakeholders were getting frustrated at the length of time that it was taking to actually implement some of these projects on the ground.... we [the Cibola National Forest] kind of started to recognize that and bring it down... [to] projects that we can use the categorical exclusion and get through these things in a timely fashion and keep our partners interested and keep everybody on board and at the table through implementation.”

“Landscape [scale] is not necessarily something we [the Socorro Field Office] accomplish well these days. It tends to cost too much money, takes too much time, and it takes too many resources. So we’re limiting our scope a little bit and not looking at 10,000 acres but getting down one to 3,000 acres.”





Recommendations and summary

The findings from Phase Two of our research reinforce the Phase One findings and provide additional detail about some of the distinct opportunities and challenges faced on specific units. Our findings suggest that different units utilize different strategies to accomplish goals depending on the mix of partners, public tolerance for fire, available state resources, and other local conditions on their landscapes. Thus, local collaboration and problem-solving will be critical for success.

We also found some consistent cross-case requirements for increasing prescribed burning on federal lands. We found that prescribed fire will need to be clearly prioritized by agencies and supported with more staff capacity, especially during fire season, and that stronger incentives and clearer communication about its importance from line officers and agency leadership are needed at all levels. Individuals fuels program staff members are key to overcoming the challenges associated with accomplishing prescribed fire. These individuals often undertake creative outreach, enter into resource-sharing agreements, explore creative planning and staffing strategies, and tolerate short-term professional risks to accomplish prescribed fire. Ongoing support and incentives from leadership to build and sustain successful programs are needed to sustain these efforts. Partnerships are critical to adding capacity; it is therefore important for agencies to find ways to remove obstacles and increase efficiencies in sharing resources. Our previous report included recommendations about how to pursue this, such as increasing the use of state-

wide master agreements and pursuing a national agreement that would streamline resource sharing among federal agencies.

As in Phase One of this research, we again did not find any consistent calls for federal policy change in Phase Two. Interviewees indicated that agencies were finding creative ways to engage in larger or more flexible planning under NEPA requirements. They told us that air quality regulators were working with burners to create more flexibility and pointed to the importance of collaboration among air regulators and land managers. The primary challenge interviewees pointed to was lack of capacity in terms of funding and workforce to conduct burns and to complete clearance processes for wildlife and archaeological resources.

Finally, we heard a variety of strategies that units were using to improve success around a wide range of dynamics, from communicating with the public, to working with regulators and partners, to increasing planning flexibility. Finding ways for staff members and partners to come together and share their strategies in regional or statewide networks could be an effective way to support creativity and foster effective learning across federal land management units and with partners. Although strategies often need to be adapted to local contexts, increased awareness about approaches that have worked in different areas can offer a solid foundation for other units looking to increase prescribed fire on their landscapes.

Endnotes

- 1 "Western states" includes: Arizona, California, Colorado, Idaho, Montana, Nevada, New Mexico, Oregon, Utah, Washington, Wyoming
- 2 Schultz, C., Huber-Stearns, H., McCaffrey, S., Quirke, D., Ricco, G., and Moseley, C. 2018. Prescribed Fire Policy Barriers and Opportunities: A Diversity of Challenges and Strategies Across the West. CSU Public Lands Policy Group Practitioner Paper 2/Ecosystem Workforce Program Working Paper 86, Summer 2018. Available at: <http://ewp.uoregon.edu/publications/working>
- 3 Schultz, C.A., McCaffrey, S., Huber-Stearns, H. 2019. Policy barriers and opportunities for prescribed fire application in the Western United States. *International Journal of Wildland Fire* (online); doi; 10.1071/WF19040
- 4 USDA Forest Service. n.d. Collaborative Forest Landscape Program website. <https://www.fs.fed.us/restoration/CFLRP/>. Last accessed 21 May 2020.

USDA Forest Service. n.d. Dinkey Collaborative websites. <https://www.fs.usda.gov/detailfull/sierra/landmanagement/planning/?cid=stelprdb5351838&width=full>. Last accessed 21 May 2020.
- 5 Oregon Secretary of State. n.d. Department of Forestry Division 48 Smoke Management website. <https://secure.sos.state.or.us/oard/displayDivisionRules.action?selectedDivision=2849>. Last accessed 21 May 2020.
- 6 The Nature Conservancy. n.d. Prescribed Fire Training Exchanges website. <https://www.conservationgateway.org/ConservationPractices/FireLandscapes/HabitatProtectionandRestoration/Training/TrainingExchanges/Pages/fire-training-exchanges.aspx>. Last accessed 21 May 2020.
- 7 The "Good Neighbor Authority" (16 U.S.C § 2113a) allows the U.S. Secretaries of Agriculture and Interior to enter into cooperative agreements or contracts with states pursuant to which state agencies can perform "forest, rangeland, and watershed restoration services" (including "activities to reduce hazardous fuels") on Forest Service, BLM, county, and tribal land.
- 8 The "Wyden Authority" (16 U.S.C. §§ 1011 & 1011a) allows the departments of Agriculture and Interior to enter into "cooperative agreements" with other federal agencies, tribal, state, and local governments, and private and nonprofit entities/landowners for the protection/restoration/enhancement of fish/wildlife habitat "and other resources on public or private land" and for "the reduction of risk from natural disaster where public safety is threatened."

