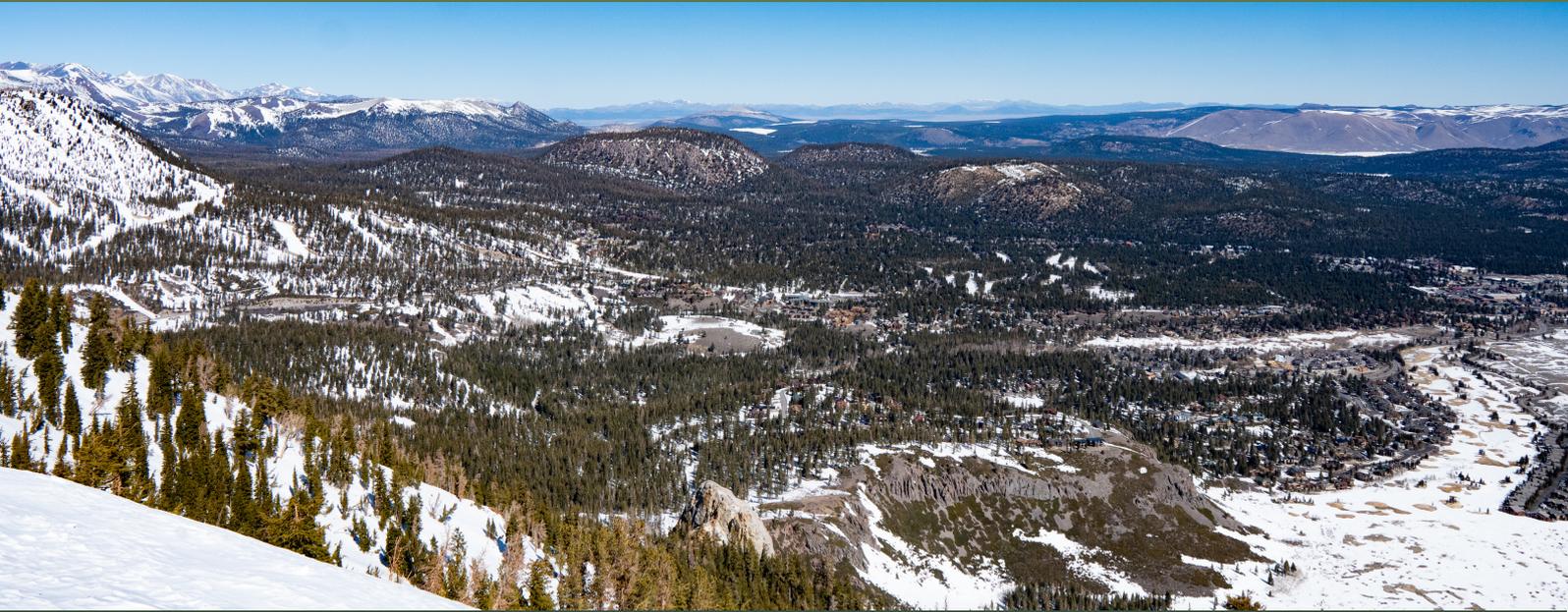


Needs Assessment



DRAFT - APRIL 2022

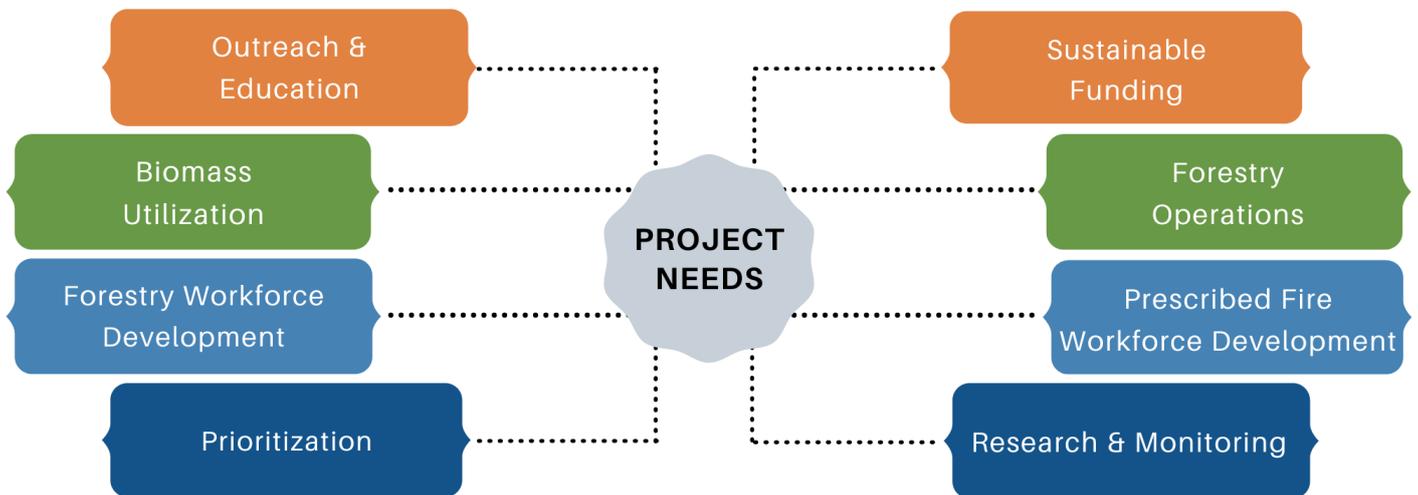


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Introduction

The Eastern Sierra Climate and Communities Resilience Project (ESCCRP) was born out of a brainstorm within a group of forward-thinking land management leaders who were carefully observing trends in fire seasons, fuels conditions, and local climate “anomalies” that together began to paint a picture of the land management challenges to come in the 21st Century. Not coincidentally, in 2019 the Inyo National Forest completed their forest plan revision as one of the early adopters to the 2012 Planning Rule. The ESCCRP aligns precisely with the new land management direction and is the second vegetation management project being planned under the new Forest Plan. To place the significance of this Eastern Sierra Nevada project into perspective, the ESCCRP will demand a near-fivefold increase in the pace and scale of forestry-related activities within the planning area. This project is being planned in a region with no timber industry workforce, no biomass utilization facilities of any scale, and no lumber mill within 300 miles.¹

The Town of Mammoth Lakes is surrounded by Inyo National Forest lands, and positioned on the lee side of Mammoth Mountain, a significant geologic feature that sits at the watershed divide of the Middle Fork San Joaquin River drainage to the west and the Upper Owens headwaters to the east. This landscape positioning at two important headwaters has afforded The Town of Mammoth Lakes the unique opportunity to capitalize on ecosystem services that the Inyo National Forest has to offer, including snowcapped peaks, high mountain lakes, and vast diverse forests that yield unparalleled recreation opportunities that drive the local Eastern Sierra economy.

What began conceptually as a Community Wildfire Protection Project (CWPP), quickly grew to a watershed scale project, encompassing much of the Upper Owens and Middle Fork San Joaquin watersheds, outside of designated wilderness (Figure 1). This expansion acknowledges the vast ecosystem services this landscape provides and the local livelihoods that depend on the health and persistence of these forests.

As the name implies, the project goes far beyond safeguarding a single community, but instead acknowledges the importance of Mammoth Lakes to the Eastern Sierra regional economy more broadly. A high severity wildfire event in the Mammoth area could have severe economic ripple effects in communities along the Highway

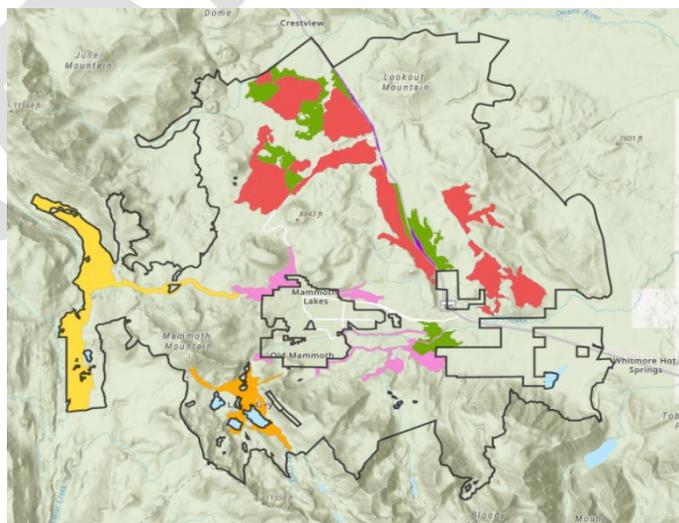


Figure 1: Eastern Sierra Climate & Communities Resilience Project with the Town of Mammoth Lakes in the center. The colored zones show some of the areas with completed NEPA analyses within the project footprint.

395 corridor, for a minimum of 100 miles in either direction. Fortunately, the Sierra Nevada Conservancy understood and shared our concern for the sustainability of the Eastern Sierra Nevada, awarding our initial pre-planning proposal in 2019. Since that initial investment, the momentum we have garnered

¹ During the initial planning phase of this project, news of a new sawmill in Carson City was shared. We continue to work with TSS consultants to understand what this might mean for the ESCCRP.

with our stakeholders has resulted in over \$8.5 million in complementary grants to support additional planning and early *implementation* of NEPA-ready areas within the project.

One early task we recognized as critical was a stakeholder-led **needs assessment**. This task acknowledges the immense work needed for a project like the ESCCRP to be achievable in a region with the aforementioned unique challenges when compared to other rural Sierra Nevada forested communities. Our efforts to perform this needs assessment have been captured in detail in the chapters that follow. Each chapter provides standardized components such as a brief introduction about the goals of the group, importance of each focal area to both the ESCCRP and the Eastern Sierra region, task list, estimated budget, and optimal schedule for completion. The plans also document the contributing team members for each focal area workplan developed. Our hope is that these chapters will serve as a guide for the important work in the next three years to come, will prepare the ESCCRP for success, and that much of the content can be repurposed for future grant opportunities to help us meet this wide array of planning needs.

Above and beyond the focused workplans, we have tried to summarize our experience, so we can share what was learned by having the time to take a deeper dive and really contemplate the complex needs of this project. We hope this work can be valuable to others looking to understand what it means practically speaking to take on a project of this scale in a region with limited resources. At a minimum, we intend to use this report to guide our work with the Inyo National Forest and our partners over the next three years as the NEPA planning for the project is underway, to make this project a success. We owe immense gratitude to the Sierra Nevada Conservancy and the Plumas Corporation in supporting this important planning effort in our region and believing we could do it despite all of the odds.

Addressing Capacity Gaps

In January 2020, Sierra Nevada Conservancy (SNC) recognized the need to build capacity for wildfire mitigation efforts in Alpine, Mono, and Inyo counties by initiating the Regional Forest and Fire Capacity Program (RFFCP) for the Eastern Sierra Nevada. Since then, the RFFCP has evaluated the capacity of various entities in the three counties to plan, develop, and implement programs and projects to reduce the risk of wildfire in communities and ecosystems. The RFFCP team has also built an informal stakeholder group, created a website for regional wildfire mitigation information and resources, obtained grant funding for several projects, and supported ESCCRP planning efforts in a variety of ways. Their most significant contributions to the ESCCRP included assisting in the development of the successful CDFW planning grant application to support NEPA for the project and serving in leadership roles for several ad hoc focal teams assembled from our stakeholders to conduct this needs assessment. These contributions were paramount to ESCCRP early success.

Initial funding for the ESCCRP was awarded by SNC concurrently with the RFFC Program in recognition that the wildfire mitigation needs surrounding the Town of Mammoth Lakes would require a dedicated team to successfully get the project off the ground. SNC also realized the importance of start-up funding for the ESCCRP as a means of surmounting the INF's limited budget and staffing for increasing pace and scale of restoration on Federal lands. Initial funding of the ESCCRP also freed up RFFCP staff to equitably allocate resources to the numerous other Eastern Sierra communities in need of wildfire mitigation planning and implementation assistance. The Plumas Corporation originally served as the grantee for the SNC seed-funding for the ESCCRP, given there was not a local entity with a willingness or capacity to

take on the ESCCRP. Plumas Corp. also had a remote staff member living and working in the eastern Sierra with good working relations with the Inyo National Forest.

Early grant funds awarded to the ESCCRP have helped enhance two organizations in the Eastern Sierra that were in existence but lacked active projects when the ESCCRP initially launched. ESCCRP staff worked closely with RFFCP staff to strategically select grant applicants to “stand-up” latent organizations in the Eastern Sierra that would help considerably with the capacity deficit that have plagued the region for decades. The two organizations selected as grantees include: 1) the Eastern Sierra Council of Governments (ESCOG), which was awarded NEPA Planning funds for the ESCCRP from CDFW for the Eastern Sierra Pace & Scale Accelerator, and 2) the Whitebark Institute of Interdisciplinary Environmental Studies, which served as the grantee for the CAL FIRE Forest Health Directed Grant Funding award that the ESCCRP received an invitation to apply for funding.

These early awards helped to augment each of these organizations and provided them some initial indirect cost recovery and personnel budgets to launch these important components of this large and complex project. The ESCOG and Whitebark are working closely together to ensure the ESCCRP is set up for maximum success and that we leverage the unique scale of the project for maximum regional benefit.

So far, RFFCP has not created a formal organization to serve as a wildfire mitigation “collaborative” in the Eastern Sierra Nevada. Such a structure may become necessary as the state’s regional framework for wildfire mitigation efforts evolves. Conversations with ESCOG SREMP partners and the State are ongoing in an effort to help identify appropriate definitions for collaboratives in our unique regional context. For the time being, our region is focused on expanding and strengthening the capacity of existing jurisdictions, agencies, non-profit organizations, fire departments, and fire safe councils.

ESCCRP Goals & Objectives

One deliverable from the Sierra Nevada Conservancy funding was to work with our stakeholders to identify project Goals & Objectives. The following goals and objectives are a direct outcome of those efforts and were used extensively in our development of the needs assessment. Further, this document will be used to guide future planning and implementation efforts by the Inyo National Forest and its partners. We think clear definitions of the goals and objectives for the project will help focus our work and ensure we stay on task over the decades we intend to work on this project.

Goals

1. **Protect the Town of Mammoth Lakes.** Strengthen the protection of the Town of Mammoth Lakes and its assets from fire by increasing the pace and scale of fuel and vegetation treatments in and around the Town of Mammoth Lakes.
2. **Allow for Safe and Effective Fire Management.** Create vegetation conditions that allow for safe, effective, and efficient fire suppression, use of managed wildland fire, and application of prescribed fire, while protecting public and community health and safety.
3. **Promote Community Fire Resilience.** Manage and respond to fire within its natural range of variation, in an ecologically beneficial and socially acceptable way, that perpetuates landscape

heterogeneity and reduces the threat to human safety or infrastructure from catastrophic wildfire.

4. **Restore Ecosystem Health and Resilience.** Reduce the potential for catastrophic wildfire and other stressors through progressive and proactive forest treatments to return forest structure, function, and composition to the natural range of variation. A healthy ecosystem yields both ecological and community benefits and supports a diverse array of animal and plant species.
5. **Utilize Best Available Science.** Implement restoration based on science, including traditional ecological knowledge, which allows for learning and adaptive management to address changing climate and other environmental stressors.
6. **Create a Fire-Conscious Community.** Increase public understanding of the role of wildland fire on the landscape, and the need for proactive forest management and an increase in pace and scale of restoration to allow fire to play its necessary role.
7. **Cultivate Long-Term, Sustainable Partnerships.** Foster a collaborative approach to landscape-scale restoration. Utilize agreements and other mechanisms to form partnerships between federal, state, local, and tribal governments as well as non-governmental organizations and private entities to accomplish fuels reduction projects on federal and other lands more efficiently.
8. **Build Local Capacity.** Invest in partnerships and technology to help increase the pace and scale of restoration through creative biomass and workforce solutions that contribute to a sustainable wood products market.

Objectives

Though most of these objectives could help meet all goals, the goals most closely addressed by each objective are included in parenthesis.

1. Throughout the life of the project, restore at least 2,000 acres annually, sufficient to allow prescribed fire. Restoration will be prioritized to begin with the Phase 1 area nearest the Town of Mammoth Lakes, and then by using a prioritization framework as a guide to increase community safety, ecological integrity, and economic sustainability. (Goals #1, 2, 3 and 7)
2. By 2022, develop and begin implementation of a comprehensive outreach and education plan, including site identification of a demonstration forest, to improve public understanding of the project purpose and need. (Goals #5, 6 and 7)
3. By 2024, create a science driven, adaptable framework for treatment prioritization that captures USFS and stakeholder interests and leverages experiences from emergency operations personnel to addresses key vulnerabilities and resources sensitivities in an equitable, deliberate, and strategic manner. (Goals #1, 2, 3, 4, 6, 7)
4. By 2022, work with stakeholders and contractors to develop a matrix identifying local workforce entities and their respective capacity to implement work. Renew annually. (Goals #6 and 7)
5. By 2025, have long-term biomass utilization technology in place and operational. (Goal #7)

6. By 2024, implement a demonstration forest as described in outreach and education plan. (Goal #5, 6, 7)
7. Every 3 years, draft adaptive management assessment report to capture lessons learned from project planning, implementation, and monitoring, and adapt to incorporate those lessons for the benefit of the resource and the local Community. (Goal # 4, 5, and 6)
8. By 2030, create a defensible space buffer around the Town of Mammoth Lakes. (Goal # 1, 2, 3)

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Chapter 1: Outreach & Education Work Plan

Executive Summary

The outreach and education work plan presented here is a key component of the implementation of the Eastern Sierra Climate and Communities Resilience Project. Without the support of key constituencies and the general public, the project will not succeed. The work outlined here is targeted at a wide variety of audiences: elected officials, visitors, homeowners, schoolchildren, tribal officials and tribal members, and more. While some of the actions can begin immediately, this work plan is a long-term road map for comprehensive outreach and education to take place throughout the life of the project.

I. Introduction

A central short-term and long-term component of the Eastern Sierra Climate and Communities Resilience Project is a comprehensive outreach and education effort aimed at building understanding of and support for the project. Such understanding and support are critical when considering elements like forest thinning, prescribed fire, and hazard tree removal in the community. There is also a real opportunity to increase the literacy around forest health and fire ecology both among residents and among visitors. This outreach and education work plan is a road map for such activities for the next 15-25 years.

The first step in the development of the outreach and education work plan was to identify the target audiences of such work. These audiences are listed below.

- Youth
- Visitors
- Tribes
- Latinx Community
- Elected officials
- Agency staff
- Homeowners
- Business community
- Recreation community
- ESCCRP stakeholders
- Academic and government scientists
- Media

The task list below was then developed largely based on these audiences.

Work performed through outreach and education tasks will overlap with and have relevance to ESCCRP work specific to recreation, research and monitoring, and workforce development. It will be important for a core group of ESCCRP stakeholders to have involvement in and oversight of content development, design, and messaging. It will also be key to have partners in the community willing to spread the messaging. This is a truly integrated effort.

It is anticipated that this work will merge seamlessly with similar efforts happening through the Regional Forest and Fire Capacity Program, which covers a large swath of the Eastern Sierra.

II. Task List

Task	Task Lead	Task Cost	Completion Date
1	Develop outreach materials and infographics focused on forest/fire ecology & ESCCRP	One-time costs: \$51,600 Annual costs: \$17,000	
1.1	Research information resources that already exist	O&E Lead \$1,000/ year	Ongoing
1.2	Develop communications plan covering target audiences, key messages, and how to deliver them (2015 TSS report may be useful resource: https://ucanr.edu/sites/WoodyBiomass/files/249001.pdf)	O&E Lead with help from Inyo National Forest \$2,500	End of 2023
1.2.1	Enlist graphic designer and PR specialists to develop “look and feel” and messaging	O&E Lead with consultant \$12,000	End of 2023
1.2.2	Provide consistency with messaging in “Camp Like a Pro” campaign	O&E Lead with Consultant \$3,200	End of 2023
1.3	Translate materials into Spanish	Latinx Liaison \$1,000/ year	One time with annual updates
1.4	Design and deploy signage in key parts of the project area	O&E Lead	Ongoing
1.4.1	Portable signage for active implementation areas and ¼ page handouts for Trail Hosts to disseminate and have at key locations in town	O&E Lead with INF staff \$3,000/ year	Ongoing
1.4.2	Permanent signage for high use areas that provide opportunities to inform outdoor recreationalists of the project, perhaps starting in the Lakes Basin	O&E Lead \$30,000	End of 2024
1.5	Develop messaging on social media platforms	O&E Lead \$5,000/ year	Ongoing
1.6	Further develop ESCCRP webpages of ESWA website (or maybe they become their own website?)	O&E Lead \$2,500/ year	Ongoing
1.6.1	Create storymap	O&E Lead \$3,400	End of 2023 + annual updates

Task	Task Lead	Task Cost	Completion Date	
1.7	Periodically update GIS webmap for public to see what areas have been treated and track project progress	O&E Lead	\$500/year	Ongoing
1.8	TOML to develop webpage with information about hazard tree removal, fuels reduction efforts, and general ESCCRP info	O&E Lead with TOML staff	\$500	End of 2022
1.9	Seek out and applying for funding for ongoing outreach and education	O&E Lead	\$4,000/ year	Ongoing
2	Public presentations of information related to ESCCRP and forest health and fire ecology principles		One-time costs: \$0 Annual costs: \$45,150	Ongoing
2.1	Host community conversations	O&E Lead	\$2,000/ year	Ongoing
2.2	Organize presentations with scientists and other experts from Forest Service, academic, etc., on topics such as fire ecology, prescribed burning, and air quality	O&E Lead	\$2,000/ year	Ongoing
2.2.1	Develop Science on Tap seminar series	O&E Lead	\$2,000/ year	Ongoing
2.3	Arrange presentations at various local venues, including SNARL seminar, ESIA talks, Mammoth Voices, Rotary, MMSA, Hospital, School Board, CA Fire Science Consortium, Village, Mammoth Trails public user group meetings	O&E Lead	\$2,000/ year	Ongoing
2.4	Focus on inclusivity in meetings	Latinx liaison		Ongoing
2.4.1	Provide Spanish translation	Latinx liaison	\$10,000/ year	Ongoing
2.4.2	Hold evening meetings (or consider Zoom)	O&E Lead	\$150/ year	Ongoing
2.4.3	Provide childcare with education program	O&E Lead	\$2,000/ year	Ongoing
2.4.4	Provide food	O&E Lead	\$1,000/ year	Ongoing
2.5	Host film series at various venues in Mammoth or virtually	O&E Lead	\$4,000/ year	Ongoing
2.6	Hire bilingual outreach & education Latinx liaison	O&E Lead	\$20,000/ year	Ongoing
3	Workshops for local agency staffs and elected officials		One-time costs: \$20,000 Annual costs: \$2,000	
3.1	Arrange presentations and workshops at public meetings by ESCCRP staff and consultants	O&E Lead	\$2,000/ year	Ongoing
3.2	Organize research and monitoring symposium focused on fire and forest ecology in Eastern Sierra Nevada	O&E Lead	\$20,000	End of 2023, perhaps repeat

Task	Task Lead	Task Cost	Completion Date
4	Targeted tribal outreach & education	One-time costs: \$3,000 Annual costs: \$2,725	
4.1	Invite Tribal councils, staffs, and members to be involved with the project	O&E Lead \$1,000/ year	Ongoing
4.2	Contact Firstbloom Program to learn about its curriculum related to fire ecology and traditional burning practices	O&E Lead \$1,000	End 2023
4.2.1	If needed, work with Firstbloom organizers to develop curriculum related to fire ecology and traditional cultural burning	O&E Lead \$2,000	End 2023
4.3	Host tours of project area for Tribal councils, staffs, and members, including discussion of tribal ecological knowledge	O&E Lead \$1,725/ year	Ongoing
5	Educate homeowners about home protection	One-time costs: \$17,000 Annual costs: \$172,750	
5.1	Conduct defensible space and home hardening demonstrations	O&E Lead	
5.1.1	Identify “model” hardened homes with good defensible space	O&E Lead \$1,000/ year	Ongoing
5.1.2	Working with volunteer homeowners, host workshops at their homes	O&E Lead \$6,000/ year	Ongoing
5.1.3	Host “working from the home outward” fair with vendors displaying products and conducting workshops on the science of why it works	O&E Lead \$5,000/ year	Ongoing
5.2	Build awareness about hazard tree pruning and removal		
5.2.1	Identify good examples and bad examples of hazard tree removal to showcase	O&E Lead \$750/ year	Ongoing
5.2.2	Research urban forestry programs in Lake Tahoe and elsewhere	O&E Lead \$1,000	End 2023
5.2.3	Designate a TOML staff member to contact re: hazard tree removal	O&E Lead \$500	End 2022
5.2.4	Advertise TOML hazard tree removal contact on TOML website and various written outreach materials	TOML staffer	End 2022
5.3	Promote TOML clean-up day focused on yard cleanup, defensible space	O&E Lead \$2,000/ year	Ongoing
5.3.1	Improve guidance and information provided to homeowners for TOML clean-up days	O&E Lead \$1,000/ year	Ongoing

Task	Task Lead	Task Cost	Completion Date	
5.3.2	Expand program of offering vouchers to take green waste to the dump	O&E Lead	\$20,000/ year	Ongoing
5.4	Work with local businesses to make home hardening building materials available in stores	O&E Lead	\$1,000/ year	Ongoing
5.5	Contact local nurseries (including Reno) about stocking fire-resistant species and not to stock invasive species	O&E Lead	\$1,500	End 2023
5.5.1	Procure and distribute the pamphlet on choosing the right plants for the Eastern Sierra's high fire hazard areas	O&E Lead	\$3,000	End 2022
5.6	Include informational pamphlet about home protection and ESCCRP in county assessor's twice-yearly mailing (or maybe MCWD bills instead?) (Town has HOA contact list)	O&E Lead	\$10,500/ mailing	Twice yearly, ongoing
5.7	Emphasize incentives for hardening property			Ongoing
5.7.1	Work with insurance companies to provide incentives to home/property-owners for defensible space/home hardening	O&E Lead	\$2,000	End 2023
5.7.2	Work with TOML to waive building permit fees for defensible space	O&E Lead	\$2,000	End 2024
5.8	Review requirements of HOAs with respect to defensible space; make recommendations for changes; and seek funding opportunities to help homeowners make the changes	O&E Lead	\$2,000	End 2023
5.9	Fund one or more positions at Mammoth Lakes Fire Protection District to conduct defensible space and home hardening inspections and enforce requirements as necessary	O&E Lead	\$115,000/year	End 2024
5.10	Develop training program for youth to assist low-income, elderly, and disabled homeowners with defensible space creation	O&E Lead	\$5,000	End 2024
6	Valentine Eastern Sierra Reserve education events		One-time costs: \$4,800 Annual costs: \$19,680	
6.1	Develop forest & fire ecology curriculum specific to Valentine Eastern Sierra Reserve for K-12 students, in conjunction with local teachers	VESR Education Staff	\$2,600	End 2023

Task	Task Lead	Task Cost	Completion Date	
6.1.1	Host children’s education programs at the reserve, in conjunction with local teachers	VESR Education Staff	\$10,100/ year	Ongoing
6.2	Develop forest/fire ecology programs at the reserve aimed at adults	VESR Education Staff	\$2,200	End 2023
6.2.1	Subsidize adult education programs for low-income residents	O&E Lead	\$3,060/ year	Ongoing
6.2.2	Subsidize Spanish-language adult education programs	Latinx Liaison	\$4,060/ year	Ongoing
6.3	Offer tours of VESR fuels reduction project area	Carol Blanchette	\$980/ year	Ongoing
6.3.1	Offer fuels reduction tours in Spanish	Latinx Liaison	\$1,480/ year	Ongoing
7	Missoula Fire Lab Fireworks Program		One-time costs: \$5,500 Annual costs: \$500	
7.1	Discuss interest and feasibility in implementing the program with local school administration	O&E Lead	\$500	End 2023
7.2	Communicate with Fireworks instructors about consistency with California curriculum standards	O&E Lead	\$500	End 2023
7.3	Communicate with Fireworks instructors about scheduling, including covering travel expenses	O&E Lead	\$2,900	End of 2023
7.4	Purchase and collect supplies for the FireWorks Trunk of Materials	O&E Lead	\$1,600	End 2023
7.5	Coordinate with local teachers about fitting into curriculum and schedule	O&E Lead	\$500/ year	Ongoing
8	Partner with other organizations to extend the reach of education messaging		One-time costs: \$0 Annual costs: \$1,500	
8.1	Train staff and volunteers at the following organizations to incorporate fire ecology, fuels treatment, and smoke education messaging into their programs: ESIA, MLR, Parks & Rec, FOI, MLTPA, Mammoth Mountain Hosts, ESTA, Mammoth Lakes Trail ambassadors, welcome center staff	O&E Lead	\$1,500/ year	Ongoing
9	Demonstration Forest development		One-time costs: \$0 Annual costs: \$12,000	

Task	Task Lead	Task Cost	Completion Date
9.1	Identify appropriate locations in project area to serve as demonstration areas based on such criteria as treatment type and status, forest type (these may change over time)	Inyo National Forest staff with help from O&E Lead	\$1,000/ year Ongoing
9.2	Develop interpretive guide (may be an app) for self-driving tours	O&E Lead	\$5,000 (with annual updates) End of 2024/ Ongoing
9.3	Provide guided tours for specific audiences: ESCCRP stakeholders, tribal groups, Latinx community, students, businesses, media, scientists	O&E lead	\$6,000/ year Ongoing
Total Budget Estimates		One-time costs: \$101,900 Annual costs: \$ 273,305	

III. Deliverables

Task 1: Develop outreach materials and infographics focused on forest/fire ecology & ESCCRP

- Communications plan, signage, printed materials, story map, website, social media content, funding applications

Task 2: Public presentations of information related to ESCCRP and forest health and fire ecology principles

- Publicity for presentations, presentations, other materials

Task 3: Workshops for local agency staffs and elected officials

- Presentations, workshop materials

Task 4: Targeted tribal outreach & education

- Firstbloom curriculum, documentation of outreach

Task 5: Educate homeowners about home protection

- Educational materials produced, photo documentation of workshops, publicity for workshops, HOA recommendations

Task 6: Valentine Eastern Sierra Reserve education events

- K-12 curriculum, publicity for educational events and tours, educational materials produced, photo documentation

Task 7: Missoula Fire Lab Fireworks Program

- Photo documentation, documentation of teacher training

Task 8: Partner with other organizations to extend the reach of education messaging

- Documentation of training, training materials

Task 9: Demonstration Forest development

- Interpretive guide/app, publicity for tours, photo documentation for tours, educational materials provided on tours

IV. Budget

See budget information in Section II. Task List.

V. Outreach & Education Ad Hoc Focal Team Participants

Name	Organization	Email Address
Holly Alpert	Whitebark Institute	holly@whitebarkinstitute.org
Kelsey Glastetter	Whitebark Institute	kelsey@whitebarkinstitute.org
Kim Cooke	Town of Mammoth Lakes	kcooke@townofmammothlakes.ca.gov
Stephen Calkins	Inyo National Forest	stephen.calkins@usda.gov
Stacy Corless	Mono County	stacycorless@gmail.com
Marc Meyer	U.S. Forest Service	marc.meyer@usda.gov
Carol Blanchette	Valentine Eastern Sierra Reserve	blanchet@ucsb.edu
Deb Schweizer	U.S. Forest Service	debra.schweizer@usda.gov

VI. Resources

- TSS Hazardous Fuels Treatment Communications Plan
<https://ucanr.edu/sites/WoodyBiomass/files/249001.pdf>
- USFS infographics: <https://www.fs.fed.us/emc/economics/documents/at-a-glance/benefits-to-people/pacificsw/BTP-Inyo.pdf> and
<https://www.fs.usda.gov/detailfull/r5/landmanagement/?cid=fseprd672862&width=full>
- Janet's email of 6/11/21 has resources for Spanish translation
- Potential firm to work with for outreach services: Environmental Outreach Strategies:
<https://www.eoscal.com/>
- For a website: <https://forestproud.org/2019/03/15/forests-reimagining-our-cities/>
- Infographic: <http://www.calforestfoundation.org/>
- Prescribed fire story map:
<https://storymaps.arcgis.com/stories/310b30b2544e4bc797460e08ba37eb93>
- Alaska's Changing Wildfire Environment publication

Chapter 2: Sustainable Funding Work Plan

Executive Summary

Landscape-scale restoration projects have been historically rare across the Sierra Nevada for a plethora of reasons, one of which is likely the inconsistencies of available funding streams to see a project through beyond a single grant term. The Eastern Sierra Climate & Communities Resilience Project (ESCCRP) is a multi-decadal endeavor that will not be accomplished within the urgent timeline dictated by the increasing risk of wildfire unless a sustainable funding strategy is adopted and implemented by the project's beneficiaries. The project is designed to sustain the Town of Mammoth Lakes and the surrounding forests on which it relies for its economic prosperity well into the twenty-first century and beyond.

The plan below outlines a multi-pronged approach to identifying sustainable funding streams for the project. The tasks include formalizing a partnership of beneficiaries to oversee and advise on the completion of all other tasks as well as identifying an organizational body that can oversee and manage funds raised from these efforts. Other tasks focus on developing a better understanding of real project costs, identifying appropriate metrics by which to measure benefits, and aligning with State efforts to improve our eligibility for State block grant funding, should that funding mechanism become available. Additional tasks include pursuing new payments from ecosystem services markets and innovative partnerships, developing a local program by which community members and businesses can contribute to the cause, and finally tracking upcoming legislation that may also contribute favorably to funding streams that can support forest restoration efforts. As they are completed, these tasks will help us to develop an ongoing Action Plan, which will communicate both continuing needs as well as progress to decision makers throughout the life of the project.

The success of the ESCCRP hinges upon the adoption and implementation of this plan. Doing so will catalyze two other fundamental components necessary for project success: (1) the development of biomass technology infrastructure by ensuring we have the funds to implement the work and, (2) providing confidence to our local workforce capacity team, enabling confidence within small businesses that there will be work if they build their business. These efforts combined will be perhaps the most effective step we can take toward putting the Eastern Sierra on a pathway to regional resilience.

I. Introduction

Goals & Objectives

The goal of this work plan is to identify and assemble a financial advisory team, made up of at least one member from each of the pre-identified project beneficiaries who will benefit from the work to be performed by this project. Together this team will work collaboratively to guide the project management efforts to identify and secure innovative funding opportunities that, when combined, begin to serve as a sustainable funding stream for the project. This funding stream will prove critical to ensure work can be performed, independent from any significant fluctuations in grant funding cycles. Sustainable funding will be critical to providing assurances to a biomass developer that consistent feedstock will be available annually if a facility is built, and to local forestry entrepreneurs who are being asked to invest in expanding their workforce to help meet the pace and scale challenges of this work.

Importance

With the wildfire trajectory becoming undeniable across the Sierra Nevada, the opportunity to intercept the inevitable still exists in the Eastern Sierra. However, we are up against the swiftly advancing clock of climate change that has arrived more rapidly than many of us have anticipated, so time is of the essence. With forecasts of a shifting and highly variable precipitation regime in coming decades, and the resultant implications of potentially longer fire seasons, we have a narrow window of opportunity to adapt to optimize our chances of resilience in a variety of uncertain and challenging future scenarios. Our ability to ensure the future of local economies and communities will hinge upon our willingness to work collaboratively toward the common goal of building climate resilience and fire adapted communities in the Eastern Sierra, with wildfire mitigation as a top priority.

ESCCRP Relevance

The development of a sustainable funding plan will directly benefit the ESCCRP, by ensuring that there is ample funding to treat all pre-identified priority acres, irrespective of price. In the past, these units were often avoided because they were cost prohibitive. The establishment of a committed team that will work collectively to solve for funding needs of the project will also ensure all priority acres can be treated within established timelines to ensure the safety of the Town of Mammoth Lakes and its assets. These assets include built infrastructure and irreplaceable natural capital on which local livelihoods in the region depend.

Regional Application

While this funding mechanism as part of the ESCCRP is intended to focus on the Mammoth Lakes community and the forest immediately surrounding it, the model could be extrapolated to identify beneficiaries in other project geographies. Although it is unclear if more landscape-level forest restoration projects will be pursued by the agencies within the region, this model could work for a variety of other project types where high costs may prohibit successful implementation and where partnerships will be needed to make projects a reality. Simplified, this plan investigates how to quantify the value of forest restoration work to its principal beneficiaries and will prioritize seeking win-win financial mechanisms to their fullest potential as a first step. If we can achieve what we intend through this effort, the work can also serve as inspiration for similar projects.

II. Task List

Task	Completion Date
1	Identify Key project beneficiaries and select a member from each organization to serve on Financial Advisory Team (FAT) for the ESCCRP.
1.1	Identify key project beneficiaries
1.2	Host individualized outreach to learn about partners' willingness and ability to participate
1.3	Confirm commitment to serve on Finance Advisory Team to help guide the sustainable funding planning for the project
1.4	Identify alternate, for instances where the designated representative is not available
1.5	Sign agreement between beneficiaries to formalize partnership

2	Work toward most accurate estimate for project cost to determine overall fundraising goal	
2.1	Perform GIS slope analyses to identify slope percentages by range. Use 10% increments, first cut for mechanical thinning opportunities	July 2022
2.2	Hire timber consultant to help understand units that are more appropriate for equipment, vs. hand thinning operations as well as aerial logging operations	Sept 2022
2.3	Based off CAL FIRE Forest Health grant, INF experience, and consultants experience, estimate average cost per acre by operation type, access type, forest type and slope. Possibly consider generalized categorical cost assignments by unit complexity	Sept 2022
2.4	Assign cost estimates for treatment units priority 10,000 acres	Sept 2022
2.5	Assign general cost estimates for the remainder of the project area, to determine ballpark figures. <i>Emphasize this is an initial estimate.</i>	May 2023
2.6	Understand prevailing wage requirements to anticipate where/when those wages apply to forest restoration work, and how it might impact project costs	March 2023
2.7	Perform budget to actuals on first 10,000 acres once completed and apply better understanding of project costs to remaining acres, adjusting for market increases at the time of cost reevaluation	2029
2.8	Set fundraising targets for 5 year increments of project, beginning with first 10,000 acres	May 2023
3	Identify acres of priority for each beneficiary & incorporate into GIS	
3.1	Gather GIS data of assets from each beneficiary and overlay it with treatment units to identify units that directly benefit each distinct partner	Dec 2022
3.2	Perform intersect GIS analyses to assign relevant units that intersect with assets/acres of interest as appropriate	March 2023
3.3	Overlay unit data from subtask 3.2 with unit cost/acre assigned in subtask 2.4/2.5 to arrive at estimated contribution to complete units of interest	March 2023
3.4	Where two or more beneficiaries' interests overlap, agree upon appropriate shared economic contribution	June 2023
4	Individually work with beneficiaries to identify meaningful metric(s) from which to quantify benefits	
4.1	Work to better understand the economic evaluation of assets within the project area for each beneficiary	Feb 2023
4.2	Identify metrics that constitute success and define how they should be measured with each beneficiary	May 2023
4.3	Using wildfire impact cost analysis from a combined suite of cost-avoidance reports, work to estimate costs of a localized wildfire event (optional)	May 2023
4.4	Identify data, data gaps, and analyses or other needs to begin to contemplate appropriate contributions from each beneficiary	Nov 2022
4.5	Fundraise and initiate studies identified in the task above (4.4)	As needed
5	Identify or build appropriate entity to oversee and manage funds raised for All aspects of ESCCRP related implementation work	
5.1	Evaluate existing organizational capacity to serve as a fiscal agent. If not readily identified, identify necessary components for a new organization to serve in this role.	Jan 2023
5.2	Identify needed financial support to create necessary accounting services for the organization identified above	March 2023

5.3	Set up a financial tracking system to ensure monies from donors are only applied to acres of interest as identified by the donor	March 2024
5.4	Manage financial accounting and provide reports on a quarterly basis to Board	Ongoing
6	Pursue state block grant funding pilot with state agency partners	
6.1	Convene an early meeting with state agency partners to discuss non-standard collaborative eligibility for Eastern Sierra	January 2022
6.2	Take steps necessary to meet “collaborative” eligibility requirements or provide alternative definitions of “collaborative” using the Eastern Sierra Models of the ESCOG SREM Program	March 2022
6.3	Develop Eastern Sierra block grant package to submit to state agencies for consideration	June 2022
6.4	Report back on pros/cons and lessons learned if block grant awarded to improve the program for future recipients	TBD
7	Seek out innovative financial mechanisms and markets to help fund the implementation of ESCCRP	
7.1	Work with The Nature Conservancy and Willis Towers Watson to pilot Wildfire Resilience Insurance (WRI) in the marketplace	February 2022
7.1.1	Provide data and information to TNC for Pilot	
7.1.2	If selected, provide aid to coordinate WRI team for pilot study	TBD
7.1.3	Work with TNC to estimate cost savings to Mammoth Lakes/MMSA that can be applied to ESCCRP	TBD
7.1.4	If the pilot is proven successful, investigate the further application of WRI in ESCCRP area, and associated quantification of insurance savings available to help advance work	TBD
7.2	Investigate the application of Avoided Wildfire Emissions Carbon Trading Programs for ESCCRP	May- Dec 2022
7.2.1	Identify appropriate consultant and carbon markets for ESCCRP	
7.2.2	Project area characterization	
7.2.3	Management scenario development and fuel reduction treatment design	
7.2.4	Forest carbon calculations (growth & sequestration analysis)	
7.2.5	Forest removals life cycle assessment calculation (biomass utilization)	
7.2.6	Fire ignition probability assessment (Fire return interval)	
7.2.7	Weather data integration	
7.2.8	Wildfire emissions calculations	
7.2.9	Delayed regeneration calculations	
7.2.10	Aggregated emissions accounting	
7.3	DWP/NFWF Inyo National Forest Ecosystem Services Pilot Program	
7.3.1	Work with NFWF/INF/LADWP to understand water benefits of forest restoration work	Sept 2022
7.3.2	Work with NFWF/INF/LADWP to understand GHG benefits of forest restoration work.	Sept 2022
7.3.3	Using pilot studies extrapolate water & GHG benefits across ESCCRP	Dec 2022
7.3.4	Work to monetize these services to support ESCCRP	March 2023

7.3.5	Identify optimal disbursement schedule to realize project benefits, consider sustainable funding needs and timelines as identified in Task 2, 3, 4	Dec 2023
7.3.6	Investigate direct funding awards from NFWF for these acres as opposed to proposal development for each round to reduce administrative burden and maximize work on the ground	Dec 2023
7.4	Leverage and expand existing partnerships	Ongoing
7.4.1	Discuss with beneficiary's current partnerships that are in place that can be expanded to aid in the implementation of ESCCRP	
7.4.2	Explore potential match incentive program between beneficiary and current partner to leverage all contributions	
7.4.3	Work with Vibrant Data open-source philanthropic funding search to learn who is investing in climate resilience work to identify new partnerships	
7.5	Pursue funding a Legislative Analyst to work on behalf of Eastern Sierra to increase funding for fuels mitigation to the region	2023
7.5.1	Present case study of TFFT to FAT demonstrate the value of a position of this nature in Eastern Sierra to gauge interest in pursuing this position.	
7.5.2	Identify potential work scope and candidates to serve in this capacity	
7.5.3	Identify funding needs to support this position	
7.5.4	Work with FAT to fundraise to support this role if the concept of this position is supported	
8	Identify other contributing financial mechanisms and build out with appropriate partners that can be marketed locally and to our visitor base	
8.1	Mammoth Lakes Chamber – Local Business Community Contributions	2023
8.1.1	Work with Mammoth Lakes Chamber to Define and Execute a Financial contribution program for businesses to contribute to ESCCRP	
8.1.2	Establish accounts with an organization identified in Task 5 for annual/quarterly contributions	
8.1.3	Create stickers w/ logo or other types of advertisements to give credit to supporters of the ESCCRP that can be readily displayed in storefronts	
8.2	Identify Local Programs or Events that can contribute to Fundraising Goals outside of businesses	2023
8.2.1	Adopt an acre program for philanthropic giving at a wide variety of levels	
8.2.2	Research other successful fundraising approaches from Tahoe Truckee Community Foundation and other successful fundraising efforts to identify potential for similar programs in Mammoth Lakes/ Eastern Sierra	
8.2.3	Other tasks TBD based off FAT feedback	
8.3	Work with Environmental Outreach Strategies to expand local fundraising programs to the greater Los Angeles area to maximize additional private funding investment	TBD
8.3.1	Refine target audiences	
8.3.2	Refine key messages to be used as collateral	
8.3.3	Conduct speaker training for ESCCRP	
8.3.4	Adapt ESCCRP financial contributions programs (Tasks 8.1/8.2) for urban stakeholders	
8.3.5	Contact targets, send collateral and conduct a "listening tour" for ESCCRP reps with LA stakeholder groups	

8.3.6	Fundraising Campaign Year 1- Arrange/facilitate and document initial fundraising meetings for ESCCRP representatives with LA stakeholder groups	
8.3.7	Conduct Owens watershed tours for potential donors	
8.3.8	Form and maintain scientific advisory board to guide messaging using best available science	
8.3.9	Media Campaign Year #1- Commission, write, pitch, and or place op-eds in media to pro-actively address misinformation about ecologic forest restoration and explain its vast array of critically important benefits	
8.3.10	Conduct year 1 synthesis of campaign’s results and critique how it has helped attain fundraising goals	
8.3.11	Year #2- Use results from synthesis to refine fundraising approach as needed for future years	
8.3.12	Continue efforts outlined in Task 8.3.9 with any revisions needed for years #2 & #3 as identified in annual syntheses	
8.3.13	Aid Eastern Sierra partners to develop/adopt Mono Lake Committee organization to continue oversight and management of ongoing fundraising needs. Advise & train staff as needed to set up for success.	
9	Track new and upcoming legislation that can help contribute to project funding and incorporate new funding sources as available	
9.1	Shred Act- Ski Hill Resources for Economic Development Act (\$4M)	Ongoing
9.2	CA-AB-322 CEC Contributions to Wildfire mitigation (\$5M)	Ongoing
9.3	CA-SB-1122- BIOMAT (19cents/kWh) for Forest restoration projects	Ongoing
9.4	CA-AB162 California Economic Resilience Funding (CERF)	Ongoing
9.5	Ongoing Legislative Review of new potential funding opportunities	Ongoing
10	Using outcomes from the tasks above, develop an ACTION Plan for ESCCRP	
10.1	Create concise, professional 2–4-page Action Plan for ESCCRP outlining goals, unique challenges, committed partners, vision and benefits to the region to be used to continue to advocate for sustained funding for the region	2024
10.2	As ESCCRP gets established, expand to include additional Eastern Sierra Funding needs for additional Sustainable Recreation and Ecosystem Management projects on which our regional resilience depends	2025

III. Deliverables

1. List of Project Beneficiaries with signed MOU (or similar agreement), formalizing the partnership and pledging their participation in helping to guide the fundraising efforts for the project
2. Map depicting cost per unit in graduated color and actual unit price estimates in the attribute table
 - Total overall cost for 10,000 priority acres
 - Breakdown of 10,000-acre unit prices
 - Cost estimates by complexity category for the remainder of ESCCRP
3. Map & associated attribute table of beneficiaries that identify assets within project area, and economic evaluation of those assets (if available). Include acres of interest (AOI), shared interest by other partners and cost of those units as a starting point for financial contribution estimates.

4. Table of metrics identified by beneficiary and data gaps or analyses needed to better understand commensurate benefits of forest restoration work, to include entity qualified to carry out any necessary analyses and target timeline for completion, and additional funding needed to complete all requests identified.
5. Identification of appropriate organizations that can be used as a funding receptacle. To include, org charts, financial statements and detailed accounting plan to track funds raised.
6. Table outlining innovative financial strategies to include a forecast of total potential fundraised by efforts identified in Task 6-9 with draft timelines associated with the work.
7. Action Plan for ESCCRP

IV. Budget

Task #	Task Description	Task Total Cost	Task Lead
1	Establish & Lead Financial Advisory Team	\$9,603	Whitebark Institute
2	Identify estimated total project cost	\$13,563	INF/Whitebark/TSS/Sullivan Consulting, etc.
3	Map priority acres for each beneficiary on FAT	\$2240	Whitebark Institute
4	Identify meaningful metrics & how they will be measured for each key beneficiary	\$13,364 (staff time) + Consultants TBD	Whitebark/Headwaters Economics/Blue Forest/ etc. TBD
5	Identify/Establish fiscal agent for fundraising	\$2,721	Whitebark Institute
6	Pursue State block grant funding	\$6,483	Whitebark Institute
7	Seek out and expand innovative partnerships, positions, and emerging markets	\$9,404	Whitebark Institute
8	Build programs to allow financial contributions from local businesses, philanthropists, and the greater LA community	\$12,064 (Staff time) = \$204K annually for EOS	Whitebark Institute, Mono County, TOML, EOS
9	Track existing and future legislation that can contribute to project implementation	\$5,443 + TBD	Legislative Analyst TBD
10	Develop Action Plan for ESCCRP	\$10,643	Whitebark Institute
Total Budget Estimates		\$80,528* + Consultant Compensation TBD	

* Staff time budgeted to complete this work has been funded by CDFW under the NEPA Planning grant under the Implementation Preparation task. Funding to support additional consultants will be raised in cooperation and consultation with the FAT.

V. Sustainable Funding Ad Hoc Focal Team Participants

Name	Organization	Email Address
Janet Hatfield	Whitebark Institute	janet@whitebarkinstitute.org
*1 Ron Cohen	MMSA	rcohen@mammothresorts.com
2 Tom Hodges	MMSA	thodges@mammothresorts.com
1 Dan Holler	TOML	dholler@townofmammothlakes.ca.gov
2 Rob Patterson	TOML	rpatterson@townofmammothlakes.ca.gov
1 Stacy Corless	Mono County	scorless@mono.ca.gov
2 Bob Gardner	Mono County	bgardner@mono.ca.gov
1 Mark Busby	MCWD	mbusby@mcwd.dst.ca.us
2 Betty Hylton	MCWD	bhylton@mcwd.dst.ca.us
1 Fred Wong	Inyo National Forest	winfred.wong@usda.gov
2 Nathan Sill	Inyo National Forest	nathan.sill@usda.gov
1 Steve Baule	Los Angeles Dept of Water & Power	steven.baule@ladwp.com
2 LADWP alternate	Los Angeles Dept of Water & Power	
TBD	Southern California Edison	
TBD	Southern California Edison	

*Note two participants representing each beneficiary have been identified as an early planning strategy to ensure we have representation for each member at meetings and the group is able to move swiftly through its tasks to ensure we have funding identified in alignment with NEPA decision. Our inability to identify and secure funding, will leave us selecting the least expensive acres instead of most important acres, an issue that has plagued the Sierra Nevada for decades, and one that mandates a remedy if we hope to reverse the community recovery cycle.

Chapter 3: Biomass Utilization Work Plan

Executive Summary

The Eastern Sierra is remote by nature, making a variety of public services difficult to access that are commonplace in other parts of the state. This holds true for facilities that utilize and wood products and biomass that result from forestry-related operations. Past common disposal practices of unmerchantable forest products on the Inyo National Forest have relied heavily on pile burning and fuel wood collection. Former biomass feasibility studies have been conducted in Mono County but are now antiquated and no longer reflect current pace and scale demands on the forest, nor account for emerging technologies and updated policies that support ecological forest restoration work.

With planned increases in pace and scale of forest restoration efforts on the Inyo National Forest, a more environmentally and economically sound biomass solution is needed. The tasks outlined below are intended to solve for immediate biomass needs on existing projects, analyze future forest restoration needs, make recommendations for longer-term biomass solutions. The work also includes a pilot project to quantify both water and carbon benefits of forest restoration work to better understand the benefits of the work, help attract funders and aids both the State and the Region in helping to meet priorities *for both Climate & Community Resilience*.

I. Introduction

Purpose & Goals

The Purpose of the Biomass Ad Hoc Focal Team is to identify biomass technology needs through a thorough technical analyses of current and future forest restoration projects in the Eastern Sierra. Analyses will focus on forest restoration needs on the Inyo National Forest. From this assessment, the Team identified here will help perform tasks associated with the selection, acquisition, and development of recommended technologies.

- ❖ Understand current and future needs of Biomass utilization in the Eastern Sierra with a focus on forest restoration work on the Inyo National Forest under both immediate and long-term planning horizons.
- ❖ Analyze environmental, economic, and logistical realities of various biomass technologies.
- ❖ Select and facilitate the acquisition and implement of recommended technologies or combinations of technologies to meet current and future demands of forest restoration work on the Inyo National Forest.
- ❖ Work together to help streamline development of fully operational facility (or combination of technologies) by 2025.

Importance

With increasing competition for public funds for forest restoration work, the Inyo National Forest is at a competitive disadvantage. Operating costs in the Eastern Sierra routinely come in over double what is seen on neighboring National forests. This is due to a combination of factors including but not limited to 1) Lack of timber operators to perform work due to lack of timber industry in the area, 2) No mill or biomass facility to offset costs, 3) High travel and per diem costs for outside contractors

who are required to travel to this remote region, 4) High fuel and other operating costs locally (including cost of living). To enable us to be more competitive with implementation costs, we desperately need to find ways to bring costs down, one way of doing that is through locally based, appropriately sized biomass facilities.

ESCCRP Relevance

The launch of the ESCCRP has emphasized the need for a longer-term biomass technology solution in the Eastern Sierra. With early estimates of 300,000 BDT of material that needs to be thinned from local forests, the ESCCRP allows for additional possibilities for small scale bioenergy facility, or equivalent technologies, to help us utilize byproducts of the work.

Regional Benefit

Beyond the ESCCRP, green waste utilization needs persist within local governments across the region for smaller scale projects and parcel level needs. A facility located in the region, would provide options for future work beyond the current planning horizon, and may help to sustain jobs and the viability of a facility beyond the ESCCRP.

II. Task List

Task	Completion Date	Status
1	Define Workgroup Purpose and Participants	
1.1	Identify workgroup leads and process for progress	June 2021 Completed
1.2	Define Goals and Objectives	July 2021 Draft Complete
2	Perform feasibility analysis for short-term removal of biomass generated during fuels reduction-June Mtn.	
2.1	Draft and final technical report for the technical, economic and environmental analysis of woody biomass removal for June Mountain Phase 1 and 2 fuels reduction projects. This will include an analytical matrix (variables and result of analysis performed) for each technology, with underlying assumptions and calculations, and references.	Nov 2021 In Progress
2.2	Discussion of combination of solutions to address biomass disposal on June Mountain, and recommendation for optimal solution.	Feb 2022 In Progress
2.3	Final report will be provided electronically and will include all material and data collection used in the preparation of the report such as spreadsheets, maps, GIS materials, and other technical information.	March 2022 In Progress
3	Improve planning for long-term biomass removal and processing of cut wood from Sierra fuels reduction efforts	
3.1	Update the Mono County Biomass Feasibility Study	Nov. 2021
3.1.1	Biomass Feedstock Availability and Cost Analysis	Jan. 2022 Completed

3.1.2	Renewable Energy Technology Selection and Assessment	March 2022	In Progress
3.1.3	Economic and Financial Feasibility Analysis	March 2022	
3.2	Determine logistics, scalability and cost for short-term solutions on broader scale in the Eastern Sierra region.	May 2022	
4	Based off 3.1.b, 3.1.c, Perform Pre-Development tasks based off recommended biomass infrastructure needs. (Assuming bioenergy otherwise revise as appropriate)		
4.1	Select potential bioenergy developer and working with developer conduct the following activities	TBD	
4.2	Develop site control - Working the site's landowner/manager, to secure site. If federal land, conduct the necessary steps to garner a long-term lease and NEPA review	TBD	
4.3	Develop feedstock procurement plan and implement - Agreements/contracts with feedstock suppliers	TBD	
4.4	Conduct electrical grid interconnection process - Using the utility's Rule 21 interconnection process	TBD	
4.5	Prepare and submit application for interconnect and System Impact Study (SIS - conducted by the utility)	TBD	
4.6	Develop enough information to be able to apply for a BioMAT Power Purchase Agreement (PPA)	TBD	
4.7	Conduct BioMAT Program Participation Request to receive BioMAT PPA	TBD	
4.8	NEPA review for project if sited on federal land, CEQA review if sited on non-federal land	TBD	
4.9	Secure air quality permit from Great Basin Air Pollution Control District	TBD	
5	Oversee the coordination, development and application of Biomass Technologies & Infrastructure as identified in Tasks 3 (Short term) and Task 5 (long term)		
5.1	TBD		
5.2	TBD		

III. Deliverables

Task 1: Define Workgroup Purpose & Goals

- Table of participants, listing name, affiliation, contact information and role in project.
- Ad Hoc Team goals statement

Task 2: Perform feasibility analysis for short-term removal of biomass generated during fuels reduction-June Mtn.

- **Draft and final technical report** for the technical, economic and environmental analysis of woody biomass removal for June Mountain Phase 1 and 2 fuels reduction projects. This will include an analytical matrix (variables and result of analysis performed) for each technology, with underlying assumptions and calculations, and references.

- **Final report** will be provided electronically and will include all material and data collection used in the preparation of the report such as spreadsheets, maps, GIS materials, and other technical information.

Task 3: Long Term Biomass Planning Eastern Sierra Fuels Reduction Efforts

- **Updated 2014 Mono County Biomass Feasibility Study report**, including Town of Mammoth current efforts.
- **Draft and final technical report** on logistics, scalability, and cost for short-term solutions for the Eastern Sierra.
- **Final report** will be provided electronically and will include all material and data collection used in the preparation of the report such as spreadsheets, maps, GIS materials, and other technical information.

Task 4: Bioenergy Pre-Development

- **Maps for Secure Site Control:** Working the site’s land owner/manager, whether it be public or private to secured the site, which is necessary for a variety of next steps, such as utility interconnect for the BioMAT program, land use permitting, and financing. If federal land, conduct the necessary steps to garner a long-term lease. Will involve NEPA review.
- **Develop feedstock procurement plan and implement:** Agreements/contracts with feedstock suppliers, whether public or private. For public suppliers, a Stewardship Agreement will likely have to be developed.
- **Applications for BioMAT and SCE interconnect** Conduct electrical grid interconnection process - Using the utility’s Rule 21 interconnection process, prepare and submit application for interconnect and System Impact Study (SIS - conducted by the utility), develop enough information to be able to apply for a BioMAT Power Purchase Agreement (PPA).
- **Environmental Review Decision:** NEPA review for project if sited on federal land, CEQA review if sited on non-federal land.
- **Air Quality Permit:** Acquisition of air quality permit from Great Basin Unified Air Pollution Control District in compliance with State regulations.

Task 5: Oversee the coordination, development and application of Biomass Technologies & Infrastructure

- TBD based off outcomes of Task 3 & 5

IV. Budget

Task #	Task Description	Task Total Cost	Task Lead	Funding Source
1	Assemble Biomass Focal Team	Funded	Plumas Corp	SNC
1	Identification of Biomass Team Goals	Funded	Plumas Corp, et al.	SNC
	Task 1 Budget	\$1200		
2	Short term feasibility study for June Mtn.	Funded	TSS/ Cal Trout/ Plumas Corp	NFWF

3	Long Term Biomass Planning	Funded	TSS	NFWF/ CAL FIRE
Task 2 & 3 Budget		\$230 ,000		
4.1	Select Bioenergy Developer	\$14,000	TSS	Wood Utilization Grants
4.2	Develop Site Control	\$19,000	TSS	Wood Utilization Grants
4.3	Develop Feedstock Procurement Plan	\$25,000	TSS	Wood Utilization Grants
4.4	Rule 21 Grid Interconnect pre work	\$15,000		Wood Utilization Grants
4.5	Rule 21 Report	\$25,000	Electric Power Systems Inc.	Wood Utilization Grants
4.6	Conduct BioMAT PPA Acquisition	\$17,000	Mukumoto Consultancy	Wood Utilization Grants
4.7	NEPA/CEQA Environmental Compliance	\$53,000	TSS	Wood Utilization Grants
4.8	Acquire Air Quality Permit	\$18,000	TSS	Wood Utilization Grants
Task 4 Budget		\$200,000		
5	Construct Biomass Facility	Developer	Developer	TBD- Climate Catalyst Program?
Task 5 Budget		TBD		
Total Cost to Project		\$431,200		

V. Biomass Utilization Focal Team Participants

Name	Organization	Email Address
Sandi Jacobson	California Trout	sandra@caltrout.org
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Jill Kearney	Mono County	jkearney@mono.ca.gov
Fred Wong	Inyo National Forest- Mammoth District Ranger	fred.wong@usda.gov
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Mark Busby	MCWD	mbusby@mcwd.dst.ca.us
Clay Murray	MCWD	cmurray@mcwd.dst.ca.us
Ron Cohen	MMSA	ron@mammothresorts.com
Tom Hodges	MMSA	tom@mammothresorts.com

DRAFT

Chapter 4: Implementation Operations Work Plan

I. Introduction

Goals & Objectives

The goal of the Operations work plan is to consider how to optimize operational efficiencies within the ESCCRP through preemptive collaborative planning with USFS staff and project partners.

Importance

Taking on the Eastern Sierra Climate & Communities Resilience Project will require a significant change to daily business practices of the Inyo National Forest, if we hope to commit to our goal of treating a minimum of 2,000 acres annually, a fourfold increase in pace from past restoration projects. Collaborative planning with our implementation partners can increase our ability to accomplish more with the same level of staff in a more time and cost-efficient manner, thereby reducing overall project costs. While we will never be able to foresee all issues that may arise, careful and collaborative planning can help alleviate many uncertainties and create a more efficient team of partners who can help accomplish the new pace and scale of forest restoration needed.

ESCCRP Relevance

This workplan is intended for planning the implementation of treatments within the ESCCRP at the desired pace as outlined in the stakeholder derived Goals & Objectives.

Regional Application

Lessons learned here can easily translate to other forested units in the eastern Sierra in need of scaling up forest restoration in this remote region of the State. This work plan can also serve as a template to other districts, forests, and partners who are contemplating an increase in pace and scale of forest restoration and offer an example of some of the considerations needed to tackle 21st Century era restoration needs.

II. Task List:

Task	Completion Date
1	Identify ESCCRP Treatment Units & Optimal Treatment methods
1.1	Conduct GIS slope analysis to determine where mechanical equipment is prohibited, and where other timber removal methods may be appropriate
1.2	Overlay resource and cultural GIS data to exclude units/portions of units where mechanical operations are not suitable
1.3	Perform access analysis to characterize access into categories of difficulty or distance (both metrics impact cost)
1.4	Identify optimal treatment for each unit
1.5	Assign potential treatment options for each unit (use tiered hierarchy of preferred treatments)
1.6	Develop an implementation plan for the project area

2	Consult INF LMP and resource specialists to derive list of optimal equipment for approved use on the INF, that results in a list for contractors interested in expanding business opportunities.	
2.1	Analyze project area for mechanical operations scenarios (production, forest type, resource restriction)	Jan 2023
2.2	Develop portfolio of key pieces of mechanical equipment for efficient logging / harvest / mechanical removal of tree operations	Jan 2023
2.3	Develop portfolio of mechanical equipment that meet resource protection measures (low ground pressure, over-snow operations)	Jan 2023
3	Evaluate INF Road System for problem areas that may restrict removal of forests products	
3.1	Conduct site visits/reconnaissance and review INFRA and OHV database and get data from fire prevention/suppression staff for most recent road evaluations to highlight potential problem areas	Summer 2023
3.1.1	Using results of task 3.1, ground truth roads and GPS areas of actual concern	Summer 2023
3.2	Determine where alternate vehicle or equipment use could be used for transport of forest products to suitable roads as an alternative to road improvements.	Fall 2023
3.3	Based on 3.1.2 identify where road improvements may be needed to allow work to proceed.	Summer 2023
3.4	Work with INF Engineering staff to develop road improvement packages to facilitate work.	Fall 2023
3.5	Work with local Line Officer and INF Engineering and Resources staff to evaluate where road decommissioning would be desired once treatments are completed to limit cross country travel by the public and mitigate further damage to forest resources (consult LMP for relevant desired conditions)	Fall 2023
4	Perform generalized cost analysis beginning with priority units (10,000 acres) based on optimal timber removal method and unit complexity.	
4.1	Review USFS, and other partners records to develop a government cost estimate (using a weighted average of the last 5 similar contracts)	Fall 2023
4.2	Develop operating cost forecasting models to incorporate inflation, fuel costs, labor costs, or other cost affecting factors into cost estimate	Fall 2023
4.3	Assign generalized cost for low, med, high, very high unit complexity for hand thinning	Winter 2023
4.4	Assign generalized cost for low, med, high, very high unit complexity for mechanical thinning	Winter 2023
4.5	Define complexity parameters and additive costs that impact timber removal and add to generalized cost estimate	Winter 2023
	Evaluate efficiency and value of high-cost logging operations such as skyline or helicopter logging	Winter 2023
4.6	Evaluate the following biomass disposal methods for potential to result in cost savings while achieving restoration goals	Winter 2023
4.6.1	Lop & scatter- firewood collection	
4.6.2	Lop & scatter broadcast burn	
4.6.3	On site pile & burn	
4.6.4	On site chipping limbs/tops	

4.6.5	Broadcast burn, limited line prep	
4.7	Assign unit costs for priority 10,000 acres to test categorical cost estimates derived in task 4.2-4.6	Winter 2023
4.8	Compare cost estimates after implementation and revise using actual costs of priority units	Spring / Summer 2025-2029
4.9	Apply revised cost to entire ESCCRP Project Area to give estimate of total project cost to Financial Advisory Team	Summer / Fall 2030
5	Seek out opportunities for cost reduction measures (where possible)	
5.1	Shared diesel mechanics (MMSA vs Brit's)	Winter / Fall 2023
5.2	In-kind equipment storage opportunities	Winter / Fall 2023
5.3	Supply chain troubleshooting (contracts with local vendors?)	Winter / Fall 2023
5.4	Tax exemption or local discount (%) for purchases that go toward implementing ESCCRP	Winter / Fall 2023
5.5	Continued investigation of cost reduction measures annually	Ongoing
6	Evaluate on-forest decking locations to optimize log transport to longer-term off-forest biomass decking locations	
6.1	Identify site parameters needed for storing logs on-forest for 2-4 months	Winter 2023
6.2	Identify biomass mid-term/seasonal decking locations for seasonal supply and early treatment storage	Winter 2023
6.3	Negotiate landowner agreements to store log decks for 1-3 years before biomass plant is fully operational	Spring 2023
7	Update Project Activity Level (PAL) operating day estimates	
7.1	Using contemporary climate data, update PAL for inclusion in new RFPs for work on the INF	Dec 2022
8	Consider data, information and technology needs to implement ESCCRP treatments in accordance with contemporary GTR's and INF LMP	
8.1	Identify LIDAR or similar data needs for ease of planning ICO patterns into forestry treatments	Nov 2022
8.2	Seek out technical trainings to incorporate use of new Apps that help contractors achieve ICO pattern treatments without extensive knowledge of the science.	Nov 2022
8.3	Identify LiDAR data collection and processing opportunities and funding sources for payment	Dec 2022
8.4	Develop workflow for translating proposed actions and prescriptions into maps or other designation by prescription products for contractors.	Winter 2023
8.5	Organize field trainings for contractors and loggers to practice using LiDAR developed designation by prescription contracts	Winter 2023
9	Contract Prep and contractor selection	
9.1	Identify optimal sizes for single and multi-year contracts to reduce the administrative burden to oversight of implementation and to attract bids from a wide range of contractor sizes and tenures	Summer - Fall 2024

9.2	Prepare contracting packages of differing unit complexities, size, estimated biomass to be removed, and seasonality of work to fit contracting budget needs and local workforce contractor capabilities	Summer - Fall 2024
9.3	Federal Service Contracting Planning/Preparation	
9.3.1	COR specialists develop contract specifications/package from Task 6.3 and submit to PPS on an annual basis. (Working at least one year out – preferably two)	Fall 2024
9.3.2	COR works with engineering staff to include road development/improvement/maintenance package where operation may damage road system or impact problem areas identified in Task 3 to include in bid solicitation	Fall 2024
9.3.3	COR works with budget staff to commit funds to this contract package, and once funds are committed, submits the complete package to PPS.	Fall 2024 – Spring 2025
9.3.4	PPS Contracting Officer reviews contracting package, approves package and solicits bids from contractors.	Fall 2024 – Spring 2025
9.4	Partner Led Contracting	
9.4.1	Work with project partners to assign units identified as more appropriate to advertise outside of the Government Service Contracts	
9.4.2	Aid in unit specification and RFP development with partners to ensure NEPA compliance and other Federal contractual components are met.	
9.5	FS staff and partners review, rate and make recommendations for bid selection for bid packages from potential contractors	Spring 2025 – Summer 2025
9.6	Contracting Officer works with local staff to make selection of the ‘best value’ contractor and awards the contract.	Summer 2025
10	Unit preparation for treatment	
10.1	Prepare units for treatment	
10.1.1	Foresters & partners prepare units to be treated in FY 25, FY 26, and FY 27 (flag boundaries, identify landings, paint trees, etc.), starting with priority 10,000 acres.	Spring 2025
10.1.2	Subsequent years, foresters & partners prioritize and prepare units for treatment with input from resource specialists.	Spring 2028
10.1.3	Utilize ACCEL tool to assist with unit prioritization across entire project footprint	Fall – Winter 2022
10.2	Conduct survey work	
10.2.1	Resource specialists (excluding botany and heritage) conduct survey work to identify where resource concerns may be present for subsequent year treatments	Spring 2025
10.2.2	Botany survey work for subsequent year treatments	Spring 2025
10.2.3	Heritage survey work for subsequent year treatments	Spring 2025
10.3	Resource specialists review appropriate NEPA decision and implement environmental protection measures such as flagging sites for avoidance where applicable.	Spring 2025
10.4	Foresters, COR, and specialists provide documentation such as maps, identifying exclusion zones and other relevant resource and operational	Spring 2025

	concerns for contractors and are reviewed during the pre-operational meeting.	
11	Contract oversight	
11.1	COR inspects, or works with partners to inspect, contracted work throughout life of contract (single year contract from Task 6.3)	Winter 2025
11.2	Certification, final payment, and contract closeout	Winter 2025
12	Developing Agreements (Stewardship/Participating/Challenge Cost Share)	
12.1	Potential partners work with INF Staff/Line Officers to identify if an agreement is needed to conduct work/manage contracts for future work.	Fall 2024
12.2	INF staff coordinate with USFS grants and agreements staff to identify the correct agreement instrument and legal authority for the agreement.	Fall 2024
12.3	INF staff work in coordination with potential partners to draft agreement documents, determine budget and match requirements.	Fall 2024
12.4	INF staff submit to G&A staff for processing of agreement documents.	Winter 2024
12.5	G&A staff process agreement documents and execute final agreement.	Spring 2025
12.6	As needed – modify agreements annually or semi-annually depending on work and funding. Modifications require all of the same steps as identified above.	Spring 2026
13	Data Reporting, Data Entry, Year-end Reporting	
13.1	Report contracted activities in appropriate databases	Ongoing
14	Developing Incident Command Structure for Implementation Operations	
14.1	Examine relevant examples of organizational structures for implementing at our desired pace and scale	Winter 2024 – Spring 2025
14.2	Determine organizational structure for implementing the ESCCRP	Winter 2024 – Spring 2025
14.3	Develop flowchart of roles, responsibilities, and points of contact, specific to the ESCCRP	Spring 2025

III. Deliverables

Task 1: Map of ESCCRP with symbolized optimal treatments on a per unit basis

Task 2: Official approved equipment list for timber operations on the INF

Task 3: Map of INF road system, showing problem area in need of alternative transport modes or consideration of other treatment options. Action plan on how we plan to address any issues identified.

Task 4: Generalized costs table for units by treatment type, to include additive and subtractive costs. Cost assessment of 10,000 priority acres. Total ESCCRP Project cost estimates, to be refined once priority 10,000 have been completed and real costs incurred.

Task 5: Short summary plan outlining various ways to help reduce operational cost in eastern Sierra, or justification provided that demonstrates we have exhausted options toward cost reduction measures.

Task 6: Bid progression table outlining optimal contract progression for different levels of contractors.

Task 7: Map with decking locations that serve for various implementation phases and size requirements for each

Task 8: Updated PAL table for future Proposal Solicitation Packages

Task 9: List of data and technology needs with associated funding needed to support implementation

IV: Budget

Task	Task Description	Task Total Cost (INF Staff Time)	Task Total Cost (INF Partners)	Task Lead
1	Identify ESCCRP Treatment Units & Optimal Treatment methods	\$10,830		INF Forester-Planning
2	Consult INF LMP and resource specialists to derive list of optimal equipment for approved use on the INF, that results in a list for contractors interested in expanding business opportunities.	\$1,995		INF Forester-Planning
3	Evaluate INF Road System for problem areas that may restrict removal of forests products	\$14,820		INF Forester-Planning
4	Perform generalized cost analysis beginning with priority units (10,000 acres) based on optimal timber removal method and unit complexity.	\$6,840	\$5,000	INF Forester-Planning, Industry consultant, Whitebark
Sub Total		\$34,485		
5	Seek out opportunities for cost reduction measures	\$3,135		INF Forester-Planning
6	Evaluate on-forest decking locations to optimize log transport to longer-term off-forest biomass decking locations	\$4,845		INF Forester-Planning
7	Update Project Activity Level (PAL) operating day estimates	\$285		INF Forester-Planning
8	Consider data, information and technology needs to implement ESCCRP treatments in accordance with contemporary GTR's and INF LMP	\$10,260		INF Forester-Planning
Sub Total		\$53,010		
9	Contract Prep and contractor selection	\$53,295		INF Forester-Planning
10	Unit preparation for treatment	\$310,450		INF Specialists
11	Contract oversight	\$9,405		INF Forester-Planning
12	Developing Agreements (Stewardship/Participating/Challenge Cost Share)	\$15,675		INF Forester-Planning

Sub Total		\$179,835	
13	Data Reporting, Data Entry, Year-end Reporting	\$1,425	INF Forester-Planning
14	Developing Incident Command Structure for Implementation and Operations	\$12,825	INF Forester-Planning
Grand Total		\$194,085	

V. Implementation Operations Ad Hoc Focal Team Participants

Name	Organization	Email Address
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Chapter 5: Forestry Workforce Development Work Plan

Executive Summary

The need for local contractors to perform work on the Eastern Sierra Climate & Communities Resilience Project far outweighs the current capacity of the few local contractors with the technical capacity to perform this industry-specific work. The availability of a local workforce that is willing and able to perform forestry contractual services is critical to solving numerous challenges to accomplishing forestry-related work in the Eastern Sierra, while simultaneously providing new economic opportunities in the region. The work plan below defines a route to follow over the next three years to prepare for the work that is to come from the Eastern Sierra Climate & Communities Resilience Project and other vegetation management projects that follow in the region. The end product of this work will be a matrix of local contractors with estimates of each contractor's capacity to perform work, at present, and the desired capacity to be reached at various time steps into the future. This capacity assessment will help inform the Inyo National Forest and ESCCRP Project Managers, on the level of outside assistance that is likely to be required to complete the scheduled work of the ESCCRP, which will, in turn, have impacts on the overall cost of the project due travel and per diem related costs that are customary when using contractors outside of the area.

I. Introduction

Purpose and Goals

The purpose of the Forestry Workforce Development Work Plan is to improve understanding of current barriers and uncertainties relevant to forestry sector workforce needs in the Eastern Sierra and work with partners to seek solutions that incentivize local forestry sector business development.

Through the development of the Work Plan, the Team strives to achieve the following goals:

- ❖ Recognize and address key uncertainties about future of work in Eastern Sierra
- ❖ Understand barriers to expanding and maintaining forestry sector business in Eastern Sierra
- ❖ Identify programs, pathways and incentives that support forestry sector workforce development
- ❖ Acknowledge specific Tribal workforce opportunities and needs
- ❖ Assess current and desired future local capacity
- ❖ Build and foster relationships with reputable contractors outside of the region to fill gaps in local workforce capacity

Importance

At present, there are limited contractors who work at very small scales in the forestry sector in the Eastern Sierra. An investment in local contractors will help perform work on the ESCCRP and on similar future projects with vegetation management needs in and around communities. Given the scale of the ESCCRP, it is likely the only project with the duration and scale necessary to incentivize investment from local businesses in the region. We hope this incentive will pay dividends far beyond the ESCCRP as we work to identify other local communities' vegetation management needs. By having local contractors perform work, we also anticipate it will encourage a higher quality of work given

those that perform the work, also live and recreate in the project area. A priority investment in local businesses will also help gain public support for the project and promote a newfound stewardship ethos that can grow in the region.

ESCCRP Relevance

The ESCCRP is the first landscape-scale forest restoration project and arguably will remain the largest forest health project in the Eastern Sierra. As such, it will absolutely stretch both the Inyo National Forest and the local community to adapt to a new pace and scale of work that is commensurate with growing forest restoration needs under the pressures of climate change. To date, some smaller projects are being conducted by out-of-area contractors and yield high operating costs due to expensive mobilization fees and high travel and per diem reimbursements for extended periods of time. These added costs make it challenging to compete with other areas in the state, which have a local workforce available that effectively eliminates or greatly reduces these additional costs.

Regional Benefit

Through the Regional Fire and Forest Capacity Program (RFFCP), a pipeline of community wildfire protection projects will begin to create additional projects among Eastern Sierra communities aimed at building wildfire resilience. These projects will be significantly smaller scale, which can make attracting outside bids difficult, particularly with an increase in competition for fuels mitigation work across California. These smaller projects could ideally provide off-peak-season work for smaller contractors, making their operations more economically sustainable. Several smaller projects are shovel ready and have been identified by NFWF as part of their Targeted Headwaters Resilience funding that demonstrates further utility of a local workforce in the region.

II. Task List

Task		Completion Date
1	Identify Workforce Team Members and Establish Goals & Objectives	
1.1	Identify Focal Team Participants (Group A) Various levels of governments Economic Development staff	Aug 2021
1.2	Identify Focal Team Participants (Group B) Prospective Business Owners	Oct 2021
1.3	Convene meeting w/ Group (A) to identify current programs & incentives & identify preliminary tasks	Aug 2021
1.4	Convene meetings with Group (B) to identify needs & barriers to local business owners	Oct 2021
1.5	Schedule joint Group A+B meeting to open lines of communication and hear from one another	May 2022
1.6	Identify & Convene Tribal Workforce Development Team (Group C)	July 2022
2	Eliminate key uncertainties about future of work in Eastern Sierra	
2.1	Secure Commitment from USFS for Pace & Scale of Work- Feedstock Stewardship Contract with INF	Oct 2022
2.2	Long Term Biomass Technology Identification and secure predevelopment funding	Nov 2022
2.3	Sign contract with developer to build biomass facility selected in task above	Jan 2023

Task		Completion Date
2.4	Buy in and adoption of a sustainable funding plan that assures ability to work annually, and thus feedstock supply will remain uninterrupted	Dec 2022
2.5	Work to better understand probable management action after stochastic mortality events within the project area.	Dec 2022
2.6	Investigate challenges and opportunities of long-term contracts for implementation services	June 2023
3	Identify barriers to building a sustainable forestry sector workforce in Eastern Sierra	
3.1	Technical Barriers	
3.1.1	Improve understanding of INF future bidding processes for timber contracting outside of the government procurement process	
a	Develop & host annual workshops for RFP interpretation and bid development assistance in coordination with Eastern Sierra Business Resource Center	April 2024
b	Encourage participation in INF New Contractor Pilot Program (Task 4.x)	
3.1.2	Provide baseline requirements for forestry businesses to qualify to work on Federal lands using State or Federal funding and distribute to workforce development partners via a public webpage	Dec 2022
a	Fire Prevention Equipment- USFS Standard Fire Prevention Plan	
b	CA Licensed Timber Operator (LTO) Requirements	
c	Workers' compensation class code requirements	
d	Insurance licensing requirements	
e	Registration in the Government procurement system (SAMS, DUNS)	
f	NWCG Course qualifications/requirements	
g	Prevailing wage rules	
h	Other requirements TBD	
3.1.3	Work toward solutions for logistical challenges of working in a remote geography	
a	Diesel mechanic limitations/ availability	May 2024
b	Supply chain interruptions/ delays in transit times	
3.1.4	Track changing requirements as the forestry sector grows for shifting regulations and priorities and provide webpage to help inform local workforce	Ongoing
a	Work to understand AB1346 impacts to forest restoration operations	
b	Help improve understanding among policymakers to better understand impacts on the ground of forestry-related policy decisions	
3.2	Financial Barriers	
3.2.1	Forecast and solve for cashflow bottlenecks to achieve prompt payment to contractors from grant-funded programs	
3.2.2	Seek out financial incentives/offsets to promote investments in specialized forestry equipment (no-interest loans, tax exemptions, etc.)	
3.2.3	Consolidate and clarify liability insurance requirements for Licensed Timber Operations	
3.2.4	Explore suitable locations and agreements needed for equipment storage given land constraints in Eastern Sierra.	

Task		Completion Date
3.2.5	Seek balance between Cost of Living & affordability (living wages vs competitive bids)	
3.2.6	Volatile fuel prices, shifting fuel markets, future uncertainties	
3.3	Managerial Barriers	
3.3.1	Recruitment and retainment of skilled workforce	Ongoing
a	Provide training programs to improve the limited talent pool and build a skilled workforce capable of qualifying for local jobs	
b	Investigate, pool resources, and pursue exemption for current COLA barriers for Federal employees in Eastern Sierra Counties	
c	Address affordable housing needs through long term agreements and housing subsidies with project partners and willing local businesses	
d	Seek policies/practices that promote better work/life balance to avoid employee burnout	
e	Work with employers to identify promotional track opportunities to incentivize employee retention	
f	Continue local presentations about the ESCCRP and the economic opportunity it will provide to encourage new business growth in the forestry sector	
3.3.2	Recognize increased human resources burden for organizations stepping up to meet pace and scale workloads and seek supporting services	Oct 2023
a	Work with Small Business Development Center to understand forestry sector workforce needs and connect local businesses with their services	
b	Partner with SBDC to attract funding to support local forestry efforts business development	
3.3.3	Recognize and build Project Management workforce	Ongoing
a	Work with INF & ESCCRP Operations Team to better understand project management needs using the Shared Stewardship model	
b	Utilize future implementation funding to continue to build capable project managers until desired operational staffing numbers are reached	
c	Explore transition plan improvements when Federal staff changes are imminent to aid in partner/USFS communications. To include established workflows, communication channels, etc.	
3.3.4	Language barriers with growing Hispanic workforce	Dec 2023
a	Work with Inyo County Office of Education to promote Job Spot services that help meet local workforce language barrier needs (ESL, GED, etc.)	
b	Investigate opportunities for Spanish/English forestry technical language classes to improve field communications between project managers and foreman	
3.3.5	Recognize growing forestry opportunity in Eastern Sierra and incorporate into local government economic development programs	Ongoing
a	Ensure local economic development staff have necessary information to support forestry related business development	
3.3.6	Demystify prevailing wage requirements for forest restoration work	April 2023
a	Seek authoritative guidance on prevailing wage to clarify when it is required and provide findings to partners/contractors as needed	

Task		Completion Date
3.3.7	Analyze ESCCRP units to better understand optimal treatment types and equipment preferences	Nov 2022
a	Identify ratio of mechanical to hand thinning acreages within ESCCRP	
b	Ascertain optimal types of equipment for mechanical operations	
4	Identify Programs & Pathways that support forestry sector workforce development	
4.1	Sierra Forestry Entrepreneur's Program- Sierra Institute	
4.1.1	Circulate opportunity to local interested businesses	Annually
4.1.2	To the extent possible, capture lessons learned and resources gained from this program to share with other prospective interested parties (weblinks, videos, printed resources, etc.)	2023
4.2	CA Employee Training Panel (https://etp.ca.gov/)	2023
4.2.1	Collaborate with partners to identify steps necessary to bring ETP to Small Business Development Center in Bishop	
4.2.2	Other tasks TBD	
4.3	Explore Opportunities through CA Workforce Board's High Road Training Partnerships	2023
4.3.1	Work with project partners to investigate the future potential of working with High Road Training Partnerships for Forestry sector workforce development.	
4.3.2	Identify partners, program goals, appropriate work scopes, and budget needs to apply for High Roads Training Partnership funding	
4.3.3	Work collaboratively with partners to implement any funding secured to launch High Roads Training Partnership program in Eastern Sierra.	
4.4	Cerro Coso Community College Forestry/Wildfire Certification	2022-2023
4.4.1	Work with CA Community College Staff with Forestry programs to better understand currently available curriculum in the State	
4.4.2	Meet with CCCC leadership to convey technical expertise needed for graduates of new certificate program & review current curricula in use	
4.4.3	Work in partnership with CCCC to identify funding programs to help support the development and implementation of a technical certificate program in the Eastern Sierra	
4.5	Develop New Contractor Workforce Entry Pilot Program	2022-2023
4.5.1	Identify potential partners who can assist with hands-on training (likely local business owners) & other partners statewide as applied continuation program once CCCC programs are completed	
4.5.2	Identify training units within the ESCCRP and other local projects to provide hands on experience for students and/or new contractors	
4.5.3	Recognized new contractor limitations and work to develop entry level program for first time bidders (small units, single season, time & materials, with intensive oversight and feedback opportunities)	
4.5.4	Use pilot to facilitate job placement by providing contractors to work with newly certified students.	
4.5.5	Iterate and improve on pilot program annually to meet Eastern Sierra workforce needs.	
4.6	Bishop High School Wildland Firefighter Program	2023

Task		Completion Date
4.6.1	Provide information to BUHS on continuation programs to for students that are specific to local forestry sector job opportunities, outside of Wildland Fire positions	
4.6.2	Designate appropriate partner to attend job fairs with information about local opportunities for forestry sector work beyond firefighting, to include fuels management and Rx fire	
4.7	Explore Opportunities for Incarcerated Citizens to obtain technical skills necessary to aid in forestry sector workforce needs	2023-2024
4.7.1	Provide information for future conversations between CCCC and Owens Valley Conservation Camp on specialized program needs for coursework and skills development of conservation camp crews to support workforce needs in Eastern Sierra	
4.7.2	Provide Owens Valley Conservation Camp crews information on locally available training via CCCC as alternative to Ventura Training Center (VTC) continuation programs	
5	Acknowledge specific Tribal workforce opportunities and needs	
5.1	Work with Owens Valley Career Development Center (OVCCDC) to identify Tribal workforce interests that can support a wide variety of vegetation management needs in Eastern Sierra	2022-2023
5.1.1	Explore funding opportunities to support Tribal Workforce Development as identified in task 5.1	
5.1.2	Review current tribal partnerships that work and consider applicability to Eastern Sierra	
5.1.3	Collaborate with Tribes and appropriate partners to include forestry sector training as part of California Indian Manpower Consortium training and job placement programs	
6	Develop business owner Matrix, to document current and desired future capacity 2024	
6.1	Document current forestry sector business and identify permanent staff	
6.2	Document current seasonal staff for each business identified above	
6.3	Document current list of equipment, skill, positions	
6.4	Document current capability of acres treatment per season/week/etc.	
6.5	Document desired future staff, equipment needs	
6.6	Document goal future capacity acres treated per season/week/etc.	
6.6.1	Identify milestones that help assess if progress is on track against targets	
7	Identify capacity gaps and continue to build relationships with reputable contractors 2024	
7.1	Identify gaps in capacity and begin to foster new partnerships with businesses outside of the region to meet project implementation targets	

III. Deliverables

Task 1: Identify and Schedule Workforce Focal Team Meetings

- Subgroup participants lists with names and affiliate organization information
- Calendar of meeting dates and associated agendas

Task 2: Eliminate key uncertainties about future of work in Eastern Sierra

- Stewardship contract INF
- Biomass developer contract (ESCOG?)
- Approved and adopted sustainable funding plan
- Contingency planning brief
- Summary overview of long-term contract pros/cons

Task 3: Identify barriers to building a sustainable forestry sector workforce in Eastern Sierra

- Paired list of common barriers and potential solutions for Eastern Sierra forestry-based businesses
- Workshop/course curriculum for identified training needs
- Informational materials webpage- to include standard timber contractor requirements, current training opportunities and incentive programs, local resources available and coming soon, language improvement opportunities, etc.

Task 4: Identify programs and pathways that support forestry sector workforce development

- List of incentive and training programs in chronological order, posted to Eastern Sierra Wildfire Alliance website, complete with active links informing where, when and how to apply

Task 5: Acknowledge specific Tribal workforce opportunities and needs

- TBD- Deliverables will be fleshed out by RFFCP Tribal Liaison once further conversations have advanced and Tribal needs and opportunities are clearer.

Task 6: Develop business owner matrix, to document current and desired future capacity

- Local workforce matrix, to include, current staff, equipment, technical expertise and training including average projected output on a seasonal basis (For Example: Joe’s Timber can treat 50 acres/ week, they have 20 crew and 5 chainsaws)

Task 7: Identify capacity gaps and continue to build relationships with reputable contractors

- Contractor database with fields to document performance records

IV. Budget*

Task #	Task Description	Task Total Cost	Task Lead
1	Assemble Teams	\$2,425	Whitebark Institute
2	Eliminate Uncertainties	\$5,335	Whitebark/ INF/ESCOG
3	Identify and solve for current barriers	\$7,275	Whitebark/ INF/RISE Partners
4	Identify and build programs, pathways, incentives	\$14,550 One Time \$85,923 Annual	Inyo County- RISE Partners**
5	Acknowledge tribal workforce needs	TBD	RFFCP- Whitebark Institute
6	Assess current and future desired capacity	\$2,425	Whitebark Institute

7	Fill capacity gaps	TBD	Whitebark/ INF
Budget Total		\$	

* Budget figures for this workplan cover staff time for Whitebark Institute’s time to drive each of these planning needs. Partner funding needs are not known at this time.

** At the time of writing this document, Inyo County is leading a USDA RISE grant proposal that includes Cerro Coso Community College, Owens Valley Community Development Center, Inyo County Office of Education, and the Whitebark Institute. The focus of the RISE grant will be a jobs accelerator focused around the climate industry cluster, using the ESCCRP as their chief employment opportunity.

V. Forestry Workforce Development Ad Hoc Focal Team Participants

Name	Organization	Email Address
Group A: Economic Development Experts		
Allan Pietrasanta	Sierra Business Council	pietrasanta@verizon.net
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Jim Wilcox	Plumas Corporation	jim@plumascorporation.org
Kelly Bearden	Small Business Development Center Director (Eastern Sierra Region)	kbearden@csub.edu
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Sandra Moberly	Town of Mammoth Lakes Economic Development	smoberly@townofmammothlakes.ca.gov
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Leslie Chapman	Inyo County CAO	lchapman@inyocounty.us
Peter Fulks	Cerro Coso Community College	peter.fulks@cerrocoso.edu
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Group B: Local Business Owners		
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Gavin Delmas		gavin@eastsideiron@yahoo.com
Greg Cook	GC Forest Products	greg@gcforestproducts.com
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	Others TBD	
Group C: Native American Tribes		
Heather Stone	BLM, Bishop Paiute Tribal Advocate	hstone@blm.gov

Monty Bengochia	Bishop Paiute Tribe THPO, Retired Mammoth District FMO	monty.Bengochia@bishoppaiute.org
Kendall Weisenburg	Kendall Construction & Engineering (tribal contractor)	TBD
Ryan Howard	Owens Valley Community Development Center	rhoward@ovcdc.com
TBD	RFFCP Tribal Liaison	TBD

DRAFT

Chapter 6: Prescribed Fire Workforce Development Plan

Executive Summary

This Work Plan seeks to identify necessary steps to develop an Inyo National Forest (INF) prescribed fire workforce capable of implementing prescribed fire treatments identified in the Eastern Sierra Climate & Communities Resilience Project² (ESCCRP) project goals & objectives, the 2019 Inyo National Forest Land Management Plan³ (LMP) and forthcoming forest-wide mixed conifer prescribed fire NEPA categorical exclusion (Rx CE). ESCCRP seeks to build resilience to catastrophic wildfire impacts in and around Mammoth Lakes, CA and restore ecosystem health through increased pace and scale of science-based forest restoration treatments as indicated in the LMP best management practices. To be most effective, a suite of treatments should be considered and utilized including restoration and maintenance thinning followed by proactive prescribed fire on regularly scheduled intervals. This strategy is intended to mimic frequent historic, naturally occurring lightning caused fires, under more moderate burning conditions compared to catastrophic wildfire. The majority of the project occurs on INF land; however, INF has no dedicated operational prescribed fire workforce and would greatly benefit from additional capacity to conduct frequent and or large-scale, complex prescribed fires. This Work Plan outlines the tasks required to develop an interagency operational prescribed fire workforce that may include federal, state (CAL FIRE), local government (LG), private contracts and other resources

I. Introduction

Purpose & Goals

The purpose of this prescribed fire workforce Work Plan is to develop a planning and operational interagency workforce to meet the needs of ESCCRP and other regional forest health and community protection projects in the Eastern Sierra. The Plan will define actions needed in order to increase the pace and scale of prescribed fire treatments on the INF, and neighboring jurisdictions as desired, in alignment with the INF 2019 Land Management Plan and forthcoming Rx CE and other local planning documents, a critical step to building local community and climate resilience. Initial treatments will focus on areas proximate to significant wildland urban interface, built environments and communities, infrastructure, recreation, wildlife and high values at risk; with the potential to further expand to meet a variety of other natural resource objectives. The goals of this Work Plan are:

- ❖ Determine INF prescribed fire planning and operational needs to meet objectives identified in the ESCCRP, INF LMP and Rx CE.
- ❖ Determine INF's current planning and operational prescribed fire capacity.
- ❖ Outline the steps necessary to build an interagency prescribed fire workforce to meet workload needs.
- ❖ Develop a team to carry out the steps identified in this Work Plan to increase prescribed fire treatments on INF.
- ❖ Identify funding and monitoring needs to support a robust and sustainable prescribed fire program into the future.

² <https://www.eswildfirealliance.org/esccrp>

³ <https://www.fs.usda.gov/main/inyo/landmanagement/planning>

Importance

Because of aggressive fire suppression over the last 50-75 years, the majority of ESCCRP's 55,000 acres are severely departed from a natural fire regime, and consequently far outside the natural range of variation of a healthy forest system. This unnatural, overly dense forest structure combined with significant, drought induced overstory mortality in and around the community of Mammoth Lakes is highly susceptible to large-scale high-severity wildfire. Restoration thinning combined with prescribed fire is vital for the protection of infrastructure and the long-term, science base management strategy for these forests. Prescribed fire ecological benefits are unparalleled compared to other treatment types, and allow over time, our ability to regain heterogeneity and forest complexity, components uniquely valuable to sustain forest ecosystem health. The use of prescribed fire as a forest maintenance tool is also the most economically efficient restoration tool available to land managers, making it the environmental and economic preferred alternative for long term treatment. This underscores the need to increase the pace and scale of prescribed fire treatments through a capable, interagency prescribed fire planning and operational organization.

ESCCRP Relevance

The scale of the ESCCRP mandates that we address fundamental root causes of current forest health issues and solve for them at a higher level. The need for restoration using prescribed fire is not unique to the ESCCRP. However, the substantial investment to reduce fuels using mechanical or hand thinning restoration practices within the project area is only ethical and environmentally sound if we make the commitment to maintaining these landscapes after initial restoration treatments have been made. The most ecologically beneficial and economically viable way to maintain these treatments is through prescribed fire. The additional prescribed fire workforce identified here will serve as an insurance policy to investments made by ESCCRP, INF and stakeholders to ensure a sound investment. A prescribed fire workforce will also aid the land management agency to comply with their new land management planning directives to increase pace and scale of work on public lands, and ensure that we maintain healthy, sustainable forests, recreation, and natural and cultural values into the future.

Regional Benefit

To date, the increased planning efforts of both the Regional Fire and Forest Capacity (RFFC) program as well as the ESCCRP have highlighted the need for added workforce capacity to maintain resilient landscapes, create fire adapted communities and provide for safe and more effective wildfire response. Developing an interagency prescribed fire workforce could benefit the region in multiple ways, by increasing our ability to follow-up and maintain vegetation treatments in a cost effective and ecologically beneficial manner. Historically there has been a stigma and lack of motivation or incentive to conducting prescribed fire locally and regionally at the levels determined by the best available science. The reasons for this include challenging and often-changing political climate, overall lack of funding and support, aversion to risk at multiple levels, air quality/smoke concerns and regulations and a lack of qualified operational prescribed fire personnel. The fortunate and timely alignment of state and federal government wildfire priorities, and funding streams to support them, have demonstrated that many of these obstacles are beginning to be addressed. The new memorandum of understanding (MOU) for shared stewardship between R5 USFS and California has committed to treating one million acres annually, which is only achievable by the aggressive use of *both* mechanical fuel reduction *and* prescribed fire. A workforce developed in the Eastern Sierra would allow INF and partner agencies and entities to do their part in meeting that commitment.

II. Task List

Task		Completion Date
1	Convene prescribed fire workforce planning team, define goals and objectives	January 2023
1.1	Determine primary USFS workgroup leads, define goals and objectives	
1.1.1	INF	
1.1.2	South Central Sierra Zone ⁴	
1.1.3	Pacific southwest regional office (RO)	
1.2	Determine <i>potential future</i> partners, define goals and objectives	
1.2.1	BLM central California district, Bishop field office (BFO) ⁵	
1.2.2	CAL FIRE/State	
1.2.3	Tribes	
1.2.4	Local government agencies/fire departments	
1.2.5	Private organizations, contractors, Los Angeles Department of Water and Power, Southern California Edison	
2	Determine current INF LMP prescribed fire LMP and future LMP/ESCCRP prescribed fire goals	January 2023
2.1	Consider reconvening the INF Veg/Fuels Board of Directors (Veg BoD) or equivalent ⁶	
2.1.1	Identify current LMP Prescribed treatments/targets under the 5-year program of work (POW) ⁷	
2.1.2	Identify future LMP, ESCCRP, Rx CE and statewide MOU goals ⁸	
2.1.3	Determine difference between current and future treatment goals and targets	
2.2	Identify INF fire preparedness requirements and prescribed fire limitations	
2.2.1	Assess current preparedness (fire suppression) positions, primary duties and expectations	
2.2.2	Identify historic prescribed fire limitations ⁹	
2.2.3	Identify possible solutions for limitations	
3	Determine additional capacity needs to meet LMP/ESCCRP prescribed fire goals	June 2023
3.1	Ascertain USFS concurrence and support for additional prescribed fire capacity	

⁴ INF falls within USFS Region 5's *Southern Sierra Fuels Zone* including Stanislaus, Sierra and Sequoia NF's. Annual fuels budgets are allocated by Zone.

⁵ INF and BLM Bishop share the same headquarters and operate under an *Interagency, Service First agreement*. BLM Bishop falls under the BLM Central California District.

⁶ The defunct INF '*Veg Fuels BoD*' was comprised of INF/BFO Line Officers, Forest FMO, veg/fuels program manager, forester, fire funded archeologist and key fire operational personnel.

⁷ The INF *5-year Treatment POW* identifies all vegetation/fuels/timber/prescribed planning and operational treatments, timelines, tasks, budget, responsibility, etc.

⁸ MOU between CAL FIRE and USFS – treat 1,000,000 acres annually statewide.

⁹ To include risk aversion, liability, funding and air quality/smoke

3.1.1	INF personnel ¹⁰	
3.1.2	Regional Office personnel ¹¹	
3.2	Develop expansion plan to increase federal prescribed fire capacity – INF (primary priority)	
3.2.1	Develop tiered prescribed fire organization chart options to include specialists ¹²	
3.2.2	Identify potential federal permanent/term/AD-Hire positions ¹³	
3.3	Identify potential state, local government and private sector additional prescribed fire capacity (secondary priority)	
3.3.1	Ascertain state/CAL FIRE prescribed fire support ¹⁴	
3.3.2	Ascertain local government/Mammoth Lakes fire department prescribed fire support	
3.3.3	Ascertain contract/private sector prescribed fire support	
4	Supplement prescribed fire workforce using non-traditional sources and positions	November 2023
4.1	Hire federal permanent/term/not to exceed (NTE)/AD-hire positions	
4.1.1	Utilize standard federal hiring procedures	
4.2	Hire state and or local government prescribed fire qualified personnel	
4.2.1	Develop and initiate interagency agreements with agreements specialist ¹⁵	
4.3	Hire private/contract prescribed fire qualified personnel	
4.3.1	Develop contract specifications and contract with contracting officer (CO) ¹⁶	
4.3.2	Solicit contract bids and select contractor(s)	
5	Review, update and write new prescribed fire burn plans	June 2024
5.1	Identify the currency of existing prescribed fire burn plans	
5.1.1	Update and revise existing prescribed burn plans as needed	
5.1.2	Determine need for additional prescribed burn plans	
5.1.3	Develop new prescribed burn plans as needed	
6	Develop sustainable future prescribed fire plans and actions	January 2025
6.1	Determine and pursue sustainable prescribed fire funding	
6.1.1	Identify and pursue additional federal base prescribed fire funding	

¹⁰ Forest supervisor, forest FMO, leadership team, district ranger, district FMO, fire ecologist, fire planner

¹¹ Fuels and fire and aviation management leads

¹² *Specialists* identify and help facilitate mitigation for T&E, sensitive species, pre-historic, heritage and other values at risk from wildland fire and may include archeologists, biologists, botanists etc.

¹³ Federal *term* positions are temporary or soft funded, reviewed/renewed annually and either terminated or converted to permanent status within four years. Administratively Determined ‘AD-Hires’ are wildland fire qualified government contractors hired for specific wildland and or prescribed fire tasks.

¹⁴ INF and CAL FIRE San Bernardino, Inyo, Mono Unit (under a Unit Chief) work cooperatively on wildland fires and an interagency agreement is required to exchange funds for prescribed fire operations.

¹⁵ An interagency agreement administered by a federal agreements specialist is required to exchange prescribed fire work and funds between federal and non-fed entities.

¹⁶ A CO is required to oversee contracts to exchange prescribed fire funds between federal and private entities.

6.1.2	Implement USFS <i>One Region One Program of Work</i> concept ¹⁷	
6.1.3	Identify and pursue additional federal and state grant funding	
6.1.4	Identify and pursue additional private funding ¹⁸	
6.2	Mobilize incident management organizations or teams on prescribed fires	
6.2.1	Utilize INF's <i>Type 3 Organization</i> on moderately complex (Type 1 or 2) prescribed fires ¹⁹	
6.2.2	Utilize 1 or 2 Incident Management Teams (IMT's) on higher complexity prescribed fires	
6.3	Provide incentives and reduce the risk to prescribed fire implementers	
6.3.1	Offer equivalent suppression incident hours and pay for prescribed fires	
6.3.2	Provide 2:1 work ratio shifts (i.e., 16 hours on/8 hours off) and hazard pay (or equivalent) for prescribed fires	
6.3.3	Develop performance-based awards to line officers, burn bosses and prescribed fire implementers	
6.3.4	Seek equivalent liability coverage for burn bosses as wildfire suppression incident commanders	
6.4	Pursue prescribed fire education, training and associations in the Eastern Sierra	
6.4.1	Pursue a wildland/prescribed fire program and curriculum with Cerro Coso Community College ²⁰	
6.4.2	Develop an Eastern Sierra prescribed fire council through collaboration with existing prescribed fire councils and associations	
7	Monitor, evaluate, refine and adapt prescribed fire treatments	January 2026
7.1	Consider options to monitor, evaluate and refine prescribed fire treatments	
7.1.1	Utilize a fire effects monitor (FEMO) or equivalent on all prescribed fires ²¹	
7.1.2	Install National Park Service <i>Fire Monitoring Handbook</i> (FMH) fixed-radius plots ²² , or equivalent	
7.1.3	Develop fixed radius <i>rapid assessment</i> plots ²³	
7.1.4	Solicit input and added capacity from multiple sources and specialists ²⁴	
7.2.5	Adaptively manage future prescribed fire treatments	

¹⁷ USFS R5 uses OROPoW concept to focus limited funding to units/zones that are able to accomplish target treatment acres. INF R5 zone mates are Stanislaus, Sierra and Sequoia NF's.

¹⁸ This may include LADWP, SCE and private investors (impact investing/conservation finance)

¹⁹ INF's Type 3 Org. is composed of regular and AD-hire employees and typically mobilized for full suppression wildfire incidents.

²⁰ Cerro Coso Community College has three campuses in the Eastern Sierra in Mammoth Lakes, Bishop and Ridgecrest.

²¹ FEMO's are wildland fire qualified personnel assigned to prescribed fires to monitor fire behavior and effects and write a post-burn report that determines if objectives were met

²² A method to ensure prescribed fire management objectives are being met that includes measuring species composition and surface fuel loading. Link: [FMH Handbook](#)

²³ This could include ocular estimates of vegetation and fuels composition and density and utilization of Brown's Planar intercepts.

²⁴ Federal, State, and private entities including ecologists, educators, researchers, scientists, Whitebark Pine, etc.

III. Deliverables

Task 1: Convene prescribed fire planning team, define goals and objectives

- 1.1 Table with list of USFS/INF ad hoc members and contact information. Goals and objectives statement.
- 1.2 Table of potential interagency, tribal, inter-jurisdictional and private sector partner contact information and their roles in the project.

Task 2: Determine current INF LMP prescribed fire LMP and future LMP/ESCCRP goals

- 2.1 Re-establishment of INF fuels management team. Gap analysis of current vs. future Rx treatment targets.
- 2.2 Report on preparedness requirements, lack of fuels positions and capacity and potential solutions.

Task 3: Determine additional capacity needs to meet LMP/ESCCRP prescribed fire goals

- 3.1 INF and RO concurrence on additional capacity need.
- 3.2 Revised expandable organization chart based on current and future funding scenarios. Optimal organization²⁵:
 - (1) GS-401-11/12 prescribed fire/fuels manager
 - (2) GS-401-11 zoned (north and south) prescribed fire specialists (RXB2 and TFLD/CRWB qualified)
 - (2) GS401/462-9 zoned assistant fuels specialists (RXB2 and CRWB qualified)
 - (2) GS-462-8 fuels zoned captains (RXB2/CRWB qualified)
 - (2) GS-462-6/7 zoned district fuels technicians
 - (1) 10-person fuels crew
- 3.3 Potential interagency organization chart to include state (CAL FIRE), local government (VFD's) and private/contractor.

Task 4: Supplement prescribed workforce with non-traditional sources and positions

- 4.1 New INF federal perm/term/NTE/AD prescribed fire/fuels position(s).
- 4.2 Interagency agreement. New state/local government prescribed fire/fuels position(s) or resources.
- 4.3 Private sector contract. New prescribed fire fuels positions or resources.

Task 5: Review and revise or renew prescribed fire burn plans as needed

- 5.1 Existing burn plan assessment. New burn plan needs assessment. Write new burn plans as needed to align with and meet ESCCRP, LMP and forest-wideRx CE goals.

Task 6: Implement sustainable future prescribed fire plans and actions

- 6.1 Additional federal, State/grant and private sector prescribed fire funding.
- 6.2 Type 1, 2 or 3 IMT's or organization utilization on prescribed fires.
- 6.3 Earmarked prescribed fire implementer award funding and incentives. Authorized 2:1 work ratio shifts and hazard pay on prescribed fires. Equivalent liability assurances for prescribed fire implementers (as suppression incident commanders).
- 6.4 Feasibility and scoping of wildland/prescribed fire curriculum with Cerro Coso college. Collaboration with Eastern Sierra stakeholders on a prescribed fire council.

²⁵ Input by INF fire ecologist Chance Traub

Task 7: Monitor, evaluate, refine and adapt prescribed fire treatments

7.1 Prescribed fire monitoring and evaluation reports. Minimal – fire effects monitor; Robust – multiple-disciplinary FMH plots and reports. Treatment adaptation to meet LMP/ESCCRP/Rx CE goals.

IV. Budget

Task #	Task Description	Task Total Cost	Task Lead	Funding Source
1	Assemble team, define goals and objectives	\$22,000	INF/Whitebark/Consultant TBD	Grants/Federal TBD
2	Determine current and future LMP/ESCCRP prescribed fire goals	\$28,000	INF/Whitebark/Consultant TBD	Grants/Federal TBD
3	Determine additional capacity needs to meet future goals	\$34,000	INF/Whitebark/Consultant TBD	Grants/Federal TBD
4	Supplement prescribed fire workforce	\$56,000 TBD	INF/State/Consultant TBD	Grants/Federal/State/ TBD
5	Review, revise and write prescribed fire burn plans	\$70,000 TBD	INF/AD-Hire/Consultant TBD	Grants/Federal TBD
6	Develop sustainable future prescribed fire plans and actions	\$140,000 TBD	INF/State/Consultant TBD	Grants/Federal/State/ Private/TBD
7	Monitor, refine and adapt prescribed fire treatments	\$75,000 TBD	INF/State/Consultant TBD	Grants/Federal/ Private TBD
Total Cost		\$425,000		

V. Prescribed Fire Workforce Ad Hoc Focal Team Participants

Name	Organization	Email Address
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Chapter 7: ESCCRP Prioritization Framework

Executive Summary

The ESCCRP prioritization framework employs a tiered methodology to create a science-driven, adaptable framework for treatment prioritization of ecological forest restoration actions within the ESCCRP project area. Work Plans for Tiers 1 and 2 were developed as a part of the ESCCRP Needs Assessment, and the USFS is currently developing Tier 3 at the Pacific Southwest Research Station and anticipated to be available in Fall 2022. The prioritization framework is designed to assess high-value assets and locally high valued resources through modeling, expertise, local insight, and remote-sensing to provide rationale to priority and timing of ecological forest restoration activities.

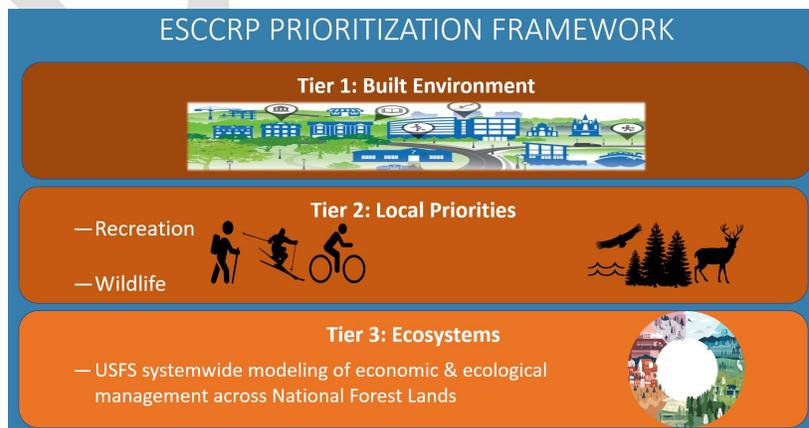
Tier 1 of the framework is designed to analyze the high-risk areas of the community and its highest value assets with a sole focus on the built environment. Tier 2 of the framework is designed to understand local priorities of recreation and wildlife. Tier 3 of the framework will focus on ecosystem prioritization utilizing the USFS landscape scale modeling of ecological restoration opportunities. Through the tiered approach, the framework aims to prioritize high-value assets and resources of value for a timely implementation of ecological forest restoration to protect the built environment, the landscape, and critical ecosystem services of the region from high severity wildfire.

I. Introduction

Purpose & Goals

ESCCRP stakeholders have committed to the development of a science-based prioritization framework to be in place by 2024 ([Objective #3](#)). The purpose of the prioritization framework will be to achieve Objective #3 from the Eastern Sierra Climate & Community Resilience Project Goals and Objectives document as developed by ESCCRP stakeholders, “To create a science-driven, adaptable framework for treatment prioritization that captures USFS and stakeholder interests and leverages experiences from emergency operations personnel to address key vulnerabilities and resources sensitivities in an equitable, deliberate, and strategic manner (Goals #1, 2, 3, 4, 6, 7).”

The prioritization framework adopts a three-tiered approach. Work Plans for Tiers 1 and 2 were developed as a part of the ESCCRP Needs Assessment Prioritization. Tier 3 is currently under development at the USFS Pacific Southwest Research Station.



Tier 1: Built Environment

Built Environment— The purpose of the Built Environment tier is to analyze the high-risk areas of the community and its highest value assets with a sole focus on the built environment. The team will lean on existing plans that identify fire hazards, critical assets, and recommended mitigation measures specific to wildfire risk. Utilizing local emergency services personnel expertise, the team will run fire modeling outputs and cross-reference those outputs with high-value resource assets, and community safety elements (access/egress) to identify the highest priority treatment areas with a focus on the built environment in alignment with [ESCCRP Goals #1,2,3,5](#).

Through the development of the Work Plan, the Team strives to achieve the following goal:

- ❖ Protect critical community infrastructure and the built environment within the project area from wildfire through strategic prioritization of ecological forest restoration actions.

Tier 2: Local Priorities

Recreation— The purpose of the Recreation tier is to understand the vulnerability of recreation assets/infrastructure to wildfire and document recreation concerns associated with the implementation of ecological forest restoration activities. The team developed an Excel table, which assigned numerical values to evaluate implementation concerns and wildfire vulnerabilities for each category of recreation asset. The table will serve as a valuable tool to demonstrate local recreational assets that are a priority for treatment.

Through the development of the Work Plan, the Team strives to achieve the following goals:

- ❖ Protect existing recreation infrastructure. Identify infrastructure most at risk to wildfire, document recreation-specific concerns, and identify possible opportunities to improve recreation infrastructure sustainability and user safety.
- ❖ Optimize restoration of recreation assets. Develop a strategy to ensure recreation assets quality post-treatment meets or exceeds pre-treatments conditions.
- ❖ Minimize impacts to recreation users throughout the implementation process.

Wildlife— The purpose of the Wildlife tier is to identify priority areas for treatment in which we can improve wildlife habitat within the ESCCRP planning area and outside of existing NEPA-ready units. This effort will help to improve habitat that has vegetation conditions departed from historic ranges, improve specialized habitats which support high biodiversity, and improve the habitat of at-risk species. The Team compiled data on wildlife species of importance and specialized habitats within the ESCCRP to help inform prioritization of ecological forest restoration actions in a timely manner with input from local experts.

Through the development of the Work Plan, the Team strives to achieve the following goal:

- ❖ Improve wildlife habitat by targeting habitats of importance that are highly departed from historic conditions for priority treatment

Tier 3: Ecosystems

The ecosystems prioritization will lean on the USFS landscape scale modeling of ecological restoration opportunities across National Forest lands, currently under development by the Pacific Southwest Research Station and Region 5 staff, labeled ACCEL and FORSYS. The tools are not anticipated to be available until Fall of 2022. These tools will augment Tier 1 & 2 prioritization needs

for the project area. Current metrics that feed into these models are currently being solicited from USFS personnel and project partners and the ESCCRP staff are actively contributing to this effort. There is interest in piloting this tool on the ESCCRP once an early version of this tool is available, expected in Fall 2022. Given the inputs to this prioritization tool will be generated largely from remotely sourced data, we feel prioritization tiers 1 and 2 will be important early on as a means by which to ground truth the remotely derived prioritization tool.

Importance

Overstocked forest conditions threaten the community's livelihood, wildlife habitat, and ways in which people interact with the landscape. The built environment is comprised of critical community infrastructure that provides the community with power, telecommunications, health care, food, water, and other basic vital community operations. People interact with the landscape through various recreation activities, and passion for the region is derived from engaging with the landscape. Many habitats which support high biodiversity, at-risk species, and species of interest have departed from historic ranges of variation, putting these areas at risk. At present, these high-value assets and resources of value are threatened by a changing climate and increased wildfire trajectory. Ecological forest restoration is imperative to safeguard the landscape, the built environment, and ecosystem services of the region from destructive high severity wildfire.

Landscape-scale restoration projects possess a unique challenge when considering the priority and timing of restoration implementation, given the abundance of acreage in need of treatment. The priority given to each individual unit needs to be carefully considered to assess high-value assets and resources of value to the stakeholders. The prioritization framework will also provide a scientifically robust rationale as to why one unit is of higher priority than the next, given funding will limit how many acres are treated in any given year. Given the high-profile nature of the project, this framework will provide critical justification for land management actions throughout the duration of the project.

ESCCRP Relevance

The prioritization framework developed here will be designed to reflect the priorities of the stakeholders in the Mammoth Lakes area given the Town is the focal point of the Eastern Sierra Climate & Communities Resilience Project.

As explained above, Tier 3 is currently under development at the Pacific Southwest Research Station is not anticipated to be available until Fall 2022. Due to this delay, it was recognized that more timely priority-unit identification was needed for the ESCCRP. For this reason, as well as recognition of the importance of local input on prioritization needs, a tiered prioritization concept was adopted. The input from each of the tiered prioritization teams will help identify the first 10,000 acres for survey work funded by CDFW beginning in 2022 as we await the Tier 3 results.

Regional Benefit

This prioritization framework developed for the ESCCRP can be used as a model for other projects that occur on Inyo National Forest and Region 5 so that other projects in need of addressing prioritization concerns do not have to begin from scratch. Instead, other groups can look to the ESCCRP framework and adopt concepts and ideas that work across other geographies and then work to customize the inputs to fit differing project needs.

Tier 1: Built Environment

II. Built Environment Prioritization Task List

Task		Completion Date
1	Assemble & Convene Tier 1 Prioritization Planning Team	
1.1	Identify key players and convene to help guide prioritization efforts using local knowledge and understanding of assets	January 2022
2	High-Value Assets and Resources Data (HVAR) Collection and Processing	
2.1	Gather HVAR data from various sources.	February 2022
2.2	Determine priority for treating each HVAR.	February 2022
2.3	Apply optimal fuel treatment buffers to HVAR data.	February 2022
3	Fire Behavior Modeling	
3.1	Assemble and update wildfire simulation inputs.	January 2022
3.2	Produce initial 90 th , 97 th and maximum wildfire simulation outputs.	January 2022
3.3	Review/finalize initial wildfire simulation output.	
4	Overlay Analysis	
4.1	Add together the outputs from tasks 2 & 3 to create a prioritization layer.	March 2022
4.2	Review/finalize initial prioritization raster.	March 2022
4.3	Determine priority level for proposed treatments.	March 2022
5	Incorporate Tier 2 Prioritization	April/May 2022

III. Built Environment Prioritization Deliverables

Task 1: Assemble & Convene Tier 1 Prioritization Planning Team

1.1 **Identify key players.** Team members may be comprised of line officers/decision makers, natural resource managers, facilities managers, fire suppression, fuels and prevention specialists, cultural resources specialists, recreation managers, and other stakeholders deemed appropriate (e.g., adjacent land managers/owners – those with expertise and are possibly impacted by analysis results).

Task 2: High-Value Assets & Resources Data (HVAR) Collection and Processing

HVRAs are identified based on their importance within the landscape to resource managers and stakeholders. The number of HVRAs should be constrained to a manageable number and each HVRA must be susceptible to wildfire in some way. ‘Resources’ are natural (e.g., clean water, special status species, cultural resources) while ‘assets’ are typically man-made infrastructure (e.g., structures, power/communication line, cell towers). This tier of the prioritization will focus on built infrastructure beginning with TOML, MMSA, access/egress, powerlines and other infrastructure.

Deliverable of this task will include maps of HVAR locations and buffer extents and a geodatabase containing all vector and raster HVAR data used in the project, including new field indicating priority rank.

2.1 Gather HVAR data from various sources. ESCCRP has created a table listing the GIS data needs for the prioritization as well as contact information for obtaining the data. Some data has already been collected and should be assessed for completeness.

2.2 Determine priority for treating each HVAR. Each HVAR will be classified by type and each type will be ranked in order of importance. This ranking will be used in Task 4, Overlay analysis. In order to determine the level of priority for each HVAR type a review of the 2019 Mono County Community Wildfire Protection Plan (CWPP), the 2019 Mono County and the Town of Mammoth Lakes Multi-Jurisdictional Hazard Mitigation Plan, and the 2019 Resilient Mammoth Lakes Climate Change Vulnerability Assessment, as well as expert opinion input from project team members will be used.

2.3 Apply optimal fuel treatment buffers to HVAR Data. Apply optimal fuel treatment buffers to HVAR data. Optimal fuel treatment buffers will be determined by reviewing current scientific literature and eliciting the input of team members.

Task 3: Fire Behavior Modeling.

An understanding of the spatial variation in wildfire likelihood and intensity is necessary to estimate wildfire risk across a landscape. Although there is no way to know with certainty where, when, and how intensely future wildfires will burn, reasonable estimates can be obtained with the help of wildfire simulation software and local fire behavior expertise. A critical first step in estimating wildfire risk across a landscape is to identify the study area boundary and to gather and prepare relevant information on historical ignitions, fuels, weather, and topography.

Deliverables of this task will include maps of fire behavior modeling outputs (Rate of Spread, Flame Length, Fire Type) and raster layers of fire behavior outputs.

3.1 Assemble and update wildfire simulation inputs. Wildfire modeling inputs will be downloaded from <https://landfire.gov/> and crossed referenced with current disturbance data. A disturbance is anything that effects the model inputs. For example, a fuel treatment or wildfire will change the type and loading of fuels on the landscape and therefore the input fuels layer needs to be modified to reflect these disturbances before it can be used to accurately model fire behavior.

3.2 Produce 90th, 97th and maximum percentile wildfire simulation outputs. Once the modeling inputs have been downloaded and modified to reflect current conditions the wildfire simulation will be run using FlamMap 6.1. Other fire spread and behavior models may also be utilized including Behave, FSPro and Pyregence/Pyrecast.

3.3 Review/finalize initial wildfire simulation output. Once an initial set of wildfire simulation output has been obtained, the next step is to determine whether the simulation results are reasonable. This process can be completed by comparing simulation output with observations from recent fires that burned under similar conditions. Specifically, the rate-of-spread output produced by FlamMap can be compared to estimates of maximum daily rates of spread for recent fires that burned under similar conditions, estimated from incident fire perimeter maps. Observations of fire type (possibly derived from fire severity maps) and flame length (if possible) can also be used for comparison with FlamMap outputs. If the stock LANDFIRE fuels data is deemed reasonably accurate, then wildfire simulations can proceed with the updated LANDFIRE fuels. If, however, areas are identified where

LANDFIRE fuels data are inadequate, then the updated LANDFIRE fuels data need to be modified accordingly before finalizing model outputs.

Task 4: Overlay Analysis

Deliverables of this task will include a map of final tier 1 prioritization raster, a map of proposed treatments with tier 1 prioritization level, and tier 1 prioritization raster data.

4.1 Add together the outputs from tasks 2 & 3 to create a prioritization layer. Once all the HVAR and fire behavior layers are finalized, they are converted into 30m grids and added together. The cell values of the resulting layer represent that cells priority level. Higher priority cells will have higher values.

4.2 Review/finalize initial prioritization raster.

4.3 Determine priority level for proposed treatments. Once the final prioritization layer has been obtained the next step is to prioritize proposed treatments. At this point the boundary of each proposed treatment area is overlaid on the prioritization layer and given a score based on the average value of the cells that fall within it.

Task 5: Incorporate Tier 2 Prioritization

Deliverables of this task will include a map of final tier 1 & 2 prioritization raster, a map of proposed treatments with tier 1 & 2 prioritization level, and tier 1 & 2 prioritization raster data.

There are currently two teams working to identify the tier 2 priorities for recreation and wildlife. The data from these efforts will be incorporated into the overlay analysis described in task 4, resulting in a prioritization ranking which includes tier 1 and 2 priorities for infrastructure/built environment, recreation, and wildlife.

IV. Built Environment Prioritization Budget

Task #	Task Description	Task Total Cost	Task Lead
1	Assemble Team	0	Whitebark Institute
2	High Value Assets and Resources Data (HVAR) Collection and Processing	\$15,000	SIG
3	Fire Behavior Modeling	\$3,600	SIG
4	Overlay Analysis	\$10,000	SIG
5	Incorporate Tier 2 Priorities	\$3,600	SIG
	TOTAL	\$32,200	

Tier 2: Local Priorities

V. Recreation Prioritization Task List

Task	Completion Date
1	Define Team purpose, participants, and goals
1.1	Identify team members and process for progress
1.2	Define Purpose & Goals
2	Identify key concerns and opportunities related to ecological forest restoration
2.1	Define desired visual characteristics through the lens of recreation
2.2	Document recreation landscape aesthetic concerns
2.3	Document recreation use concerns
2.4	Identify opportunities for possible infrastructure improvement
3	Understand recreation assets vulnerability
3.1	Understand MLTPA recreation asset GIS data
3.2	Rank priorities for treatment
3.2.1	Create an inventory list of existing infrastructure
3.2.2	Rank each asset's susceptibility to inadvertent human ignition and the potential impact to infrastructure in the case of wildfire
3.2.3	Integrate rankings of inventory list into the recreation asset GIS data
3.3	Document implementation concerns
3.3.1	Identify management considerations for recreation infrastructure requiring special consideration
3.4	Consider additional recreation assets to add to the GIS geodatabase that warrants LOC and prioritization rankings
4	Ensure proper restoration of recreation assets post-treatment
4.1	Evaluate recreation assets in areas scheduled for treatment
4.1.1	Consult the inventory list/GIS data to identify recreation assets within areas slated for treatment and document concerns/mitigation measures identified by the data
4.1.2	Identify potential opportunities for improvement to recreation assets in areas scheduled for treatment
4.1.3	Convey concerns/mitigation measures/opportunities for improvement to ESCCRP team to write the special considerations into RFPs/contracts
4.2	Address post-restoration concerns
4.2.1	Work with trails community to identify the associated cost of restoration efforts
4.2.2	Work with recreation community to coordinate volunteer crews to aid with touch up restoration activities
5	Promote education and safety of recreation users
5.1	Promote public safety of recreation users
5.1.1	Collaborate with existing trail host programs to implement trail guards for restoration activities in high use recreation areas not subject to closure

5.2	Collaborate with the ESCCRP Outreach and Education Team	December 2023
5.2.1	Develop outreach material targeted to the recreation community	
5.2.2	Create on-site portable signage for active implementation areas	
5.2.3	Assist with demonstration forest development and implementation	

VI. Recreation Prioritization Deliverables

Task 1: Define Team purpose, participants, and goals

1.1 Identify Team.

1.2 Define Purpose and Goals.

Task 2: Identify key concerns and opportunities specific to ecological forest restoration

2.1 Desired visual characteristics. Desired visual characteristics include a mosaic of natural features essential for forest diversity and ecologically thinning to protect large, old trees. The Team understands current forest conditions are unnaturally dense and supports ecological forest restoration aiming to return the forest to historic densities, which will inevitably benefit the future of recreation in the region.

2.2 Landscape aesthetic concerns. The visual concerns expressed by the Team are stumps and paint on trees. The concern with stumps is height and quality of cut with a desire trending toward a flush-cut within the visual impact area from recreation assets. For paint on trees, the Team requests that if trees are painted, it be done in a reasonable amount of time before treatment so that painted trees are not left in the public eye for extended periods.

2.3 Recreation use concerns. Use concerns involve the timing of implementation and minimizing impact to recreation users. Understandably, there will inevitably be temporary displacement to recreation users at times. Adequate information should be conveyed to impacted recreation users when recreation activities are displaced due to temporary closures. Information is available on Mammoth Lakes Trail System Traffic to be considered for the timing of treatment in high-use areas where possible (See [Appendix A: Mammoth Lakes Trail System Traffic Study](#)).

2.4 Opportunities for asset/infrastructure improvement. Through the implementation of ecological forest restoration, the ESCCRP presents opportunities to improve certain recreation assets, including campgrounds, trailheads, and various types of trails (See [Appendix B: Opportunities for Asset/Infrastructure Improvement](#)).

Additionally, improvements to recreation infrastructure could include strategic trail reroutes to increase trail sustainability, mitigate riparian impacts, and appropriate new connector trails and extensions. Other possible improvements could include strategic non-mechanical glading in backcountry ski and snowboard terrain. These recreation improvement/new development opportunities would not directly result from the ESCCRP. Still, recreation organizations could utilize the synergy of the ESCCRP to demonstrate wildfire protection when proposing improvements/new developments in units that have received ecological forest treatment through the ESCCRP. The efforts could work in parallel, with the recreation infrastructure improvements/new developments headed by a recreation organization of the region, to develop recreation opportunities enhancement and sustainability through planning and implementation of the project.

Task 3: Understand recreation assets vulnerability

3.1 Understand MLTPA recreation data. MLTPA has an existing geodatabase of recreation assets. Team members met to discuss MLTPA recreation asset GIS data in summer 2021. MLTPA GIS Manager clipped the database to the extent of the ESCCRP has assigned descriptions to each layer. This spatial database will be used in the future to understand recreation concerns, prioritize treatment units, and implement management considerations.

3.2 Rank priorities for treatment. Using the refined MLTPA recreation geodatabase, the Team assessed the recreation assets in an excel file to rank each asset's susceptibility to inadvertent human ignition and the potential impacts to infrastructure in the case of wildfire. Combined, these rankings provide information on which recreation assets are most vulnerable to these aspects of fire and can help inform prioritization for the treatment of recreation assets. The excel file can be integrated into the GIS geodatabase within ArcGIS for project planning and implementation purposes. A table is available to visualize the vulnerability of recreation assets to fire (See [Appendix C: Asset/Infrastructure Vulnerability to Fire](#)).

3.3 Document implementation concerns. Special considerations during implementation of ecological forest restoration activities are necessary to avoid adverse impact to certain recreation assets/infrastructure. A table is provided to document assets/infrastructure requiring special consideration and provides information to be considered to mitigate adverse effects to recreation assets during implementation. (See [Appendix D: Asset/Infrastructure Implementation Concerns](#))

3.4 Consider additional recreation assets. Review additional recreation assets in the project area that are currently not represented in the MLTPA geodatabase. If asset warrants prioritization rankings, assign ranking values on the inventory list and digitize the asset to be included in the geodatabase. Additionally, document special considerations needed to be taken into account during implementation.

Task 4: Ensure proper restoration of recreation assets post-treatment

4.1 Evaluate recreation assets in areas scheduled for treatment. Once units have been identified and funding received for treatment within the ESCCRP, consult the recreation asset-specific concerns table and GIS data to help inform the development of treatment specifications. Doing so will ensure recreation assets vulnerabilities within the treatment area will be considered. This will provide an opportunity to incorporate the concerns, asset mitigation, and user sensitivities.

4.2 Post-treatment restoration. To ensure that the quality of recreation assets meets or exceeds pre-treatment conditions after implementation, the Team proposes utilizing recreation volunteer forces to designate a recreation crew lead and coordinated by recreation stakeholders to provide follow-up boutique additional rehabilitation in high profile areas to reach industry standards. The level of restoration required by contractors will be written into RFPs/contracts and should include base rehab, slash scatter, water bars, etc., with stipulations identified in task 4.1 (i.e., not piling within X ft from certain rec assets). After the contractor complete base rehab, the recreation crew can follow up using their detailed knowledge of specific recreation resources and terrain to ensure the recreation asset is properly restored.

Task 5: Promote education and safety of recreation users

5.1 Promote public safety of recreation users. The ESCCRP will inevitably benefit recreation users. In an attempt to minimize the impact of unavoidable temporary displacement at various times and

locations, collaboration with the current trail hosts program is essential. These hosts can serve as trail guards to ensure public safety during active timber operations in high-profile areas when implementation will impact recreation. Also, the trail guards can interact with the public to explain project importance, support opportunities, and provide alternative routes/opportunities for recreation if an area is temporarily closed.

Additionally, providing portable informational signage at trailheads or other strategic locations which will be impacted by implementation. Doing so will inform the recreation users of work occurring and will be a valuable tool in lower-use recreation areas or on days when trail guards are unavailable.

The purpose of the above is to prioritize public safety, minimize impacts to recreation users, and help the recreation community better understand the importance of this work and the lasting benefits to recreation interests. Emphasizing we are working to create sustainable forests that provide recreational opportunities for generations to come, Forests for the Future.

5.2 Collaborate with the ESCCRP Outreach and Education Team. Work with the Outreach and Education Team to develop outreach materials targeted to the recreation community. Develop material/strategies to reach various subsets of the recreation community (i.e., multi-use trail users, campers, MMSA recreationists, backcountry recreationists). Create portable signage to inform recreation users and promote public safety in active implementation areas. Engage the recreation stakeholders in developing the demonstration forest to encourage opportunities to educate the recreation community on the importance of the restoration work to sustainable recreation.

VII. Recreation Prioritization Budget

Task #	Task Description	Task Total Cost
1	Define Team purpose, participants, and goals	\$1,295
2	Identify key concerns and opportunities specific to ecological forest restoration	\$1,295
3	Understand recreation assets vulnerability	\$3,885*
4	Ensure proper restoration of recreation assets post-treatment	TBD**
5	Promote education and safety of recreation users	\$ captured in O&E plan***
	Sub Total	\$6,475 + TBD****

*Task 3: MLTPA has an existing recreation geodatabase for recreation assets. Without this existing dataset, this task would have taken many more hours to complete due to the time required to compile and digitize recreation assets.

** Task 4: This task is anticipated to take 6 hours/year for ESCCRP to evaluate recreation assets in areas scheduled for treatment (4a). Addressing post-treatment concerns (4b) will be assessed and updated once we better understand the post-treatment restoration efforts required after thinning.

*** Task 5: The Recreation Team and Outreach & Education Team collaborated on developing this task. The task is documented in both plans; however, the cost for this task is captured in the Outreach & Education workplan.

**** The recreation prioritization planning effort was led by a Sierra Corps Forestry Fellow working on the ESCCRP. This information is being included as a disclaimer since the hourly billable rate associated with the Fellow is less than the cost of a full-time employee or consultant costs and should be taken into consideration when extrapolating the application of this work plan.

VIII. Wildlife Prioritization Task List

Task		Completion Date
1	Define workgroup purpose, participants, and goals	
1.1	Identify team members	November 2021
1.2	Define Purpose and Goals	November 2021
2	Identify species and habitats of concern within the project area	
2.1	Identify federally and state-listed threatened and proposed species under the Endangered Species Act (ESA) and species of conservation concern that occur in the project area	December 2021
2.2	Identify specialized habitats, modeled habitats, and monitoring zones	December 2021
3	Obtain appropriate geospatial datasets and generate maps	
3.1	Compile data on species and habitat of concerns identified in Task 2	December 2021
3.2	Assess if there are data gaps for species and/or habitat	December 2021
3.3	Overlay Fire Return Interval Data (FRID) over habitat and monitoring zones to understand the departure from desired vegetation conditions	December 2021
3.4	Consult appropriate personnel as necessary regarding specific datasets/planning tools	December 2021
3.5	Clip data to the ESCCRP project boundary and compile into a ESCCRP wildlife geodatabase	December 2021
3.6	Generate maps to capture habitats of concern	January 2022

IX. Wildlife Prioritization Deliverables

Task 1: Define workgroup purpose, participants, and goals

1.1 Identify Team.

1.2 Define Goals and Objectives.

Task 2: Identify species and habitats of concern within the project area

2.1 Identify at-risk species in the project area.

The table below provides a species listed under federal and state Endangered Species Act.

Scientific Name	Common Name	Federal Status	State Status
<i>Pekania pennanti</i>	Pacific Fisher	Endangered	Threatened
<i>Anaxyrus canorus</i>	Yosemite toad	Threatened	
<i>Vulpes vulpes necator</i>	Sierra Nevada Red Fox	Endangered	Threatened
<i>Gila bicolor ssp. snyderi</i>	Owens tui chub*	Endangered	Threatened

Species of conservation concern identified in the Inyo National Forest 2019 Land Management Plan are as follows:

- *Martes caurina sierra*, Sierra Marten
- *Centrocercus urophasianus*, Bi-State Sage-grouse (BSSG)

Other at-risk species identified in the Inyo National Forest 2019 Land Management Plan:

- General raptors

2.2 Identify specialized habitats within the project area.

- Aspens stands

- Mule Deer migratory corridors and holding areas**
- Sage Grouse modeled habitat
- Raptor territories
- Mesocarnivore habitat
- Riparian corridors
- Meadows

*CDFW personnel investigated the Owens tui chub habitat and confirmed there are two genetically pure refuges, both of which are not in the project area. No habitat restoration opportunities were identified for this species with regards to the ESCCRP scope of work

**Mule Deer migratory corridors and holding areas are included in existing NEPA and therefore are not included in the prioritization habitat of concern maps

Task 3: Obtain appropriate geospatial datasets and generate maps

3.1 Compile data on species and habitat of concerns identified in Task 2. All data has been compiled into a geodatabase and delivered to ESCCRP staff.

3.2 Assess if there are data gaps for species and/or habitat. Data gaps included not having a clear understanding of meadow prioritization and bi-state sage grouse prioritization. These gaps in data led to the steps identified in 3.4.

3.3 Overlay [Fire Return Interval Data \(FRID\)](#) over habitat and monitoring zones to understand the departure from desired vegetation conditions. The FRID highlights how long it has been since an area has experienced fire. There is a strong association between fire departure and increased in biomass and fuel loads, which makes an area more susceptible to stressors and high severity wildfire.

3.4 Consult appropriate personnel as necessary regarding specific datasets/planning tools.

- Meeting with USFS Region 5 Ecologist, Dr. Michèle Slaton, to discuss BSSG Habitat Model dataset. Meeting occurred on 11/9/2021.
 - Discussed dataset and confirmed that the attribute to be most useful in identifying BSSG habitat is 'R_3': "Areas where pinyon-juniper encroachment has affected sagebrush production potential."
- Meet with USGS Biologist, Cali Roth, to discuss Bi-State sage grouse habitat and Conservation Planning Tool (CPT). Meeting occurred on 11/9/2021.
 - Provided Cali with R3 Polygon shapefile and she ran the polygon through the CPT to provide a ranking of polygons based on which will provide the most benefit by removing conifer
- Meet with USFS Region 5 Fire Ecologist, Chance Traub, to discuss Fire Return Interval Departures (FRID). Meeting occurred on 11/10/2021.
 - Discussed dataset and agreed that the attribute 'Mean_F1_03' (FRID03) is most appropriate for this project. Mean_F1_03" – Highly departed from return interval
- Acquire meadow prioritization data through online request from Data Basin

3.5 Clip data to the ESCCRP project boundary and compile into a ESCCRP wildlife geodatabase.

3.6 Generate maps to capture habitats of concern. See [Appendix E: Wildlife Map](#).

X. Wildlife Prioritization Budget

Task #	Task Description	Task Total Cost
1	Define workgroup purpose, participants, and goals	\$800
2	Identify species and habitats of concern within the project area	\$500
3	Obtain appropriate geospatial datasets and generate maps	\$1,600
	Sub Total	\$2,900

DRAFT

XI. Ad Hoc Focal Teams Participants

Built Environment Prioritization Team

Name	Organization	Email Address
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Kelsey Glastetter	Plumas Corporation	kelsey@whitebarkinstitute.org
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Wildlife Prioritization Team

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Nathan Sill	USFS — Inyo National Forest	nathan.sill@usda.gov
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Kelsey Glastetter	Plumas Corporation	kelsey@whitebarkinstitute.org

Chapter 8: ESCCRP Research and Monitoring Work Plan

Executive Summary

After reviewing recent scientific literature and canvassing a sample of experts in forest ecology and fire science, we do not believe there are any significant scientific unknowns that should delay implementation of the ESCCRP. Current scientific understanding of wildfire behavior and forest-fuels management is believed to be sufficient to proceed with substantially reducing fuels as proposed in the ESCCRP. Nevertheless, there are a few important questions specific to forest landscapes in the Eastern Sierra Nevada that could be addressed by current and future studies and contribute to improved operations and understanding effects. Better knowledge of potential benefits of the project may also open new opportunities for financing the work.

Implementation of the project provides opportunities to gain knowledge in a variety of scientific fields that could inform later stages of this project and broadly benefit forest restoration and management elsewhere in the Sierra Nevada. The landscape scale of the ESCCRP allows research projects to be conducted that are not feasible at more typical plot, forest stand, or small watershed scales.

The Inyo National Forest's new (2019) Land Management Plan was one of the first forest plans in the nation completed under the Forest Service Planning Rule of 2012, which requires the forest to use the "best available scientific information" to inform the development of the forest plan. To that end, the Inyo National Forest, the Region 5 office of the Forest Service, and the Pacific Southwest Research Station created a "science-synthesis" and the Inyo National Forest Assessment in 2014. These detailed reports compiled and summarized the state of scientific knowledge about the environment and natural resources of the Inyo National Forest. The Inyo's Land Management Plan requires the Forest to consider and utilize this and subsequent scientific knowledge in designing projects and making decisions and to monitor the implementation and results of its activities.

I. Introduction

Purpose & Goals

The Research and Monitoring Ad Hoc Focal Team seeks to identify monitoring needs and research opportunities brought about by the ESCCRP. The team will compile ideas and concepts for administrative monitoring (e.g., implementation monitoring), long-term monitoring with scientific objectives (e.g., effectiveness monitoring), and experimental research (e.g., validation monitoring) within the context of the ESCCRP.

Importance

Documentation of management effectiveness and progress towards achieving or maintaining forest plan desired conditions and objectives is necessary under the Inyo National Forest Plan and the associated Monitoring Guide. The ESCCRP project area and its forest have not yet been intensively studied, so there is potential to generate new knowledge. The landscape scale of the ESCCRP provides research opportunities that cannot be accomplished in projects of smaller geographic extent. Knowledge gained here can be applied to future forest management in the project area as well as other areas of the Sierra Nevada and the Western U.S.

ESCCRP Relevance

The ESCCRP will use the “best available scientific information” to design the treatments and associated work. In turn, reducing fuel loads in the project area with a variety of treatments offers opportunities to learn about the effects and impacts of this work and improve the knowledge base for similar projects in the future. Project monitoring and adaptive management that use information gained from monitoring are essential pieces of the Inyo National Forest Land Management Plan. However, the Inyo is challenged by fiscal and staffing constraints, and partners may need to help perform some monitoring tasks.

Regional Application

Knowledge gained from the ESCCRP should be applicable to a variety of forest conditions within the Inyo National Forest and elsewhere in the Sierra Nevada and possibly the western U.S.

II. Task List

Task	Completion Date
1	Define workgroup purpose and participants
1.1	Identify initial team and draft work plan
1.2	Assess state of knowledge and identify if critical gaps exist
2	Coordinate monitoring plans with Inyo National Forest
2.1	Determine applicability of INF & Region 5 monitoring requirements
2.2	Develop monitoring plan & performance measures for ESCCRP
2.2.1	Identify solutions to capacity shortages for monitoring
2.2.2	Identify sustainable funding for long term monitoring not covered by the USFS
2.3	Develop monitoring protocols and collect appropriate data to address specific research questions of interest to ESCCRP
2.4	Collect information from ongoing effectiveness monitoring efforts within and around the ESCCRP project area conducted by partners
2.5	Develop data management plan for ESCCRP
3	Pursue initial studies that do not depend on starting implementation of fuels treatments
3.1	Estimate greenhouse gas benefits from ESCCRP fuels reduction
3.2	Estimate water yield benefits from ESCCRP fuels reduction
3.3	Compile and synthesize past studies and existing data sets applicable to the project area
3.4	Review literature about effectiveness and impacts of biomass chipping
3.5	Propose case study of risk reduction and insurance savings for key project beneficiaries with insured assets within project boundary
3.6	Evaluate forest structural characteristics of ESCCRP area using LiDAR and other available high-resolution spatial imagery
3.7	Hold workshop or symposium about monitoring protocols and initial results of monitoring and early research projects conducted in the ESCCRP area – in association with education/outreach team
4	Plan research activities that are coordinated with implementation of fuels treatments

4.1	Plan research that informs desired conditions, ecological departure from desired conditions, or other useful information	TBD
4.2	Design monitoring that would be useful for understanding the long-term impacts of the treatments and their potential application elsewhere	TBD
4.3	Plan studies of impacts of treatments where the treatments (and controls, if applicable) are designed with a research objective	TBD
4.4	Plan “incidental” studies that take advantage of this landscape-scale project without altering the operational treatments	TBD
4.5	Identify potential group project(s) for MS-level students at UCSB Bren School	TBD
4.6	Coordinate funding ideas and concepts for research activities that do not compromise funding for operational activities	TBD

III. Deliverables

Task 1: Define workgroup purpose and participants

1.1 & 1.2 Draft work plan

Task 2: Coordinate monitoring plans with Inyo National Forest

2.1 Report describing applicability of INF & Region 5 monitoring requirements including prescription compliance and implementation accomplishment, effectiveness monitoring, and unintended consequences. We anticipate that the status of most resources of concern (e.g., watershed conditions, key characteristics of terrestrial and aquatic ecosystems, focal and T&E species, visitor use, productivity of the land, etc.) and impacts of climate change will be adequately monitored within the project area to meet the requirements of the new Inyo National Forest Land Management Plan (esp. Chapter 4). This task will build off the baseline monitoring requirements from that plan and the INF Monitoring Guide v1 and work with key partners to continue to maximize the learning opportunity the ESCCRP provides. Realistically, monitoring may be rather minimal under current INF funding and staffing.

2.2 Monitoring plan for ESCCRP including performance measures (which also need to meet CDFW grant requirements), description of capacity (personnel, technical abilities, and funding) to support monitoring, budget and funding plan for monitoring (including coordination with other Ad Hoc Teams to include monitoring support in future grant solicitations). The monitoring plan will primarily attempt to assess effects of project implementation on forest resources.

2.3 Report describing monitoring protocols that would support research studies that in part could identify environmental changes and impacts on targeted resources resulting from implementation of treatments. Reports and published papers describing specific research results of interest to ESCCRP.

2.4 Compilation of information from ongoing effectiveness monitoring efforts within and around the ESCCRP project area conducted by partners

2.5 Data management plan for ESCCRP

Task 3: Pursue initial studies that do not depend on starting implementation of fuels treatments

3.1 Report on estimation of greenhouse gas benefits from ESCCRP fuels reduction. This work may include a report on improvements to modeling of avoided wildfire emissions using environmental conditions of the ESCCRP area (or that may become a standalone task).

3.2 Report on estimation of water yield benefits from ESCCRP fuels reduction

3.3 Report on compilation and synthesis of past studies and existing data sets applicable to the project area to aid treatment design and environmental review, particularly those that address restoration treatment effectiveness/effects or ecological departure. This work would build upon the southern Sierra Nevada “science-synthesis” and Inyo National Forest Assessment completed in 2014. A web portal to digital information resources is also anticipated.

3.4 Report on literature review about effectiveness and impacts of biomass chipping. If chipping of cut trees and other fuels is employed as a short-term or partial solution to the biomass problem, more knowledge is certainly desirable about particle size, depth, and spatial continuity with respect to fire risk, decay rates, carbon cycling, effects on soils, ecological impacts, and engineering optimal distribution of material.

3.5 If proposal is successful, report on case study of risk reduction and insurance savings for ESCCRP. This potential project would be a follow-up pilot study to some recently completed work by The Nature Conservancy and Willis-Tower-Watson (insurance company).

3.6 Report evaluating forest structural characteristics of ESCCRP area using LiDAR and other available high-resolution spatial imagery

3.7 Proceedings or other record of a workshop or symposium about monitoring protocols and initial results of monitoring and the early research projects conducted in the ESCCRP area. Workshop would be coordinated with the education and outreach group.

Task 4: Plan research activities that are coordinated with implementation of fuels treatments

- 4.1 Plan of research that informs desired conditions, ecological departure from desired conditions, or other useful information
- 4.2 Plan of monitoring that would be useful for understanding the long-term impacts of the treatments and their potential application elsewhere
- 4.3 Web portal of proposals, completion reports, and published papers of studies of impacts of treatments where the treatments (and controls, if applicable) are designed with a research objective
- 4.4 Web portal of proposals, completion reports, and published papers of “incidental” studies that take advantage of this landscape-scale project without altering the operational treatments
- 4.5 If successful, report from group project(s) for students at UCSB Bren School in Masters of Environmental Science and/or Masters of Environmental Data Science programs
- 4.6 Occasional reports from ad hoc group describing on-going funding ideas and concepts for research activities that do not compromise funding for operational activities. This group would work with other ad hoc teams to align proposal needs with future grant solicitations outside of solely academic grant opportunities (both CAL FIRE and CDFW fund small portions of projects as research).

IV. Budget

Task #	Task Description (abbreviated)	Task Total Cost	Task Lead
1.1	Identify initial team and draft work plan	Completed	Plumas Corp
1.2	Assess state of knowledge	Completed	Plumas Corp
2.1	Applicability of monitoring requirements	<\$1,000	Inyo National Forest
2.2	Develop monitoring plan & perf. measures	CDFW Partially Funded \$9,000	Inyo National Forest
2.3	Develop monitoring protocols for research	TBD	TBD
2.4	Effectiveness monitoring by partners	TBD	TBD
2.5	Develop data management plan for ESCCRP	\$9,000 CDFW Funded	TBD
3.1	Estimate greenhouse gas benefits	NFWF Funded \$25,000	SIG
3.2	Estimate water yield benefits	NFWF Funded \$40,000	TSS
3.3	Compile and synthesize past studies & data	TBD	Whitebark & INF
3.4	Review lit. about biomass chipping		
3.5	Case study of risk reduction and insurance		Whitebark (+ TNC & WTW?)
3.6	Forest structure from LiDAR & other r.s.	\$65,000	PSW Region & Remote Sensing Lab
3.7	Workshop on monitoring and early studies	\$2,500	Whitebark & INF
4.1	Research informing desired conditions etc.	TBD	TBD
4.2	Monitor long-term impacts of treatments	TBD	TBD
4.3	Studies of treatments designed for research	TBD	TBD
4.4	Studies of operational treatments	TBD	TBD
4.5	Group project(s) for UCSB Bren School	TBD	TBD
4.6	Funding independent of operations	TBD	TBD
Total Cost Estimate		\$151,500 + TBD	

V. Research & Monitoring Ad Hoc Focal Team Participants

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Next Steps

This needs assessment creates a clear path with tasks and timelines outlined for the team of partners working to implement the ESCCRP. While the comprehensive document outlines our work for the next two to three years, there are several immediate tasks that are highlighted below that are already underway and offer a clear example of the utility of supporting such a planning exercise for collaboratives considering taking on this new scale of work. The listed items below are in progress and will be fully underway or completed by early summer 2022.

- Establish Financial Advisory Team of committed partners to help solve for anticipated challenges of the Project
- Complete Tier 1 of Prioritization Tool and combine with Tier 2 to identify 10,000 priority acres
- Select environmental planning consultant, to begin to build local environmental planning capacity via ESCOG's funded planning grant titled: Eastern Sierra Pace & Scale Accelerator
- Attract and retain local talent by offering living-wage jobs commensurate with responsibilities and technical expertise required to complete the work
- Identify long-term biomass technology that meets local pace and scale needs
- Begin immediate implementation of the workplans contained herein, beginning with the Outreach & Education plan to prepare the ESCCRP the best we can for success
- Collaborate with partners on workforce development grant opportunities, currently being led by Inyo County
- Begin immediate implementation of NEPA-ready units at a pace that funding and capacity allow using CAL FIRE forest health funds

Immediate Opportunities

Given projects of this scale are still relatively scarce in the West, there is immense interest in using this particular project to advance a number of policy, scientific and funding pilot opportunities. We have included the initial list below with a succinct brief about each of the various efforts.

- **Parametric wildfire resilience insurance pilot-** The Nature Conservancy and partners at Willis Towers Watson are working on new products in the insurance market aimed to help Californian's stay insured. Although NorthStar at Tahoe has been identified as the site to pilot the indemnification Wildfire Resilience Insurance, they are still shopping for a parametric insurance customer. Mammoth Mountain Ski area is one candidate of interest and current discussions are underway between MMSA and the TNC/WTW teams to ascertain the viability of piloting the parametric insurance product in Mammoth Lakes.
- **Avoided wildfire emissions pilot-** The [Spatial Informatics Group](#) is working on the development of a new quantification methodology for avoided wildfire emissions (AWE) to make those avoided emission available for trade in voluntary carbon markets. The research is in its final stages, and they will be seeking early customers for this new market opportunity. SIG is interested in piloting this work on the ESCCRP. Approximate timelines are expected in late Spring 2022.

- **ACCEL Landscape Prioritization Pilot**- The USFS Pacific Southwest Region is leading the development of a more cost-effective prioritization planning tool to be used for broader landscape level prioritization of work across agency lands. Given the planning status of the ESCCRP, there is interest in using the ESCCRP to beta test this tool. Given the local prioritization efforts that we have invested in with our stakeholders, we feel our Tier 1 and Tier 2 prioritization efforts at the local level will provide a useful ground-truthing component as we test out this new tool. In the fall of 2022, we expect the beta version of the tool to be ready for application and feedback from the ESCCRP.
- **Workforce development** - Currently Inyo County Economic Development has initiated a forestry sector workforce development partnership between the County, Cerro Coso Community College, [Owens Valley Community Development Center](#), Inyo County Office of Education and the Whitebark Institute with assistance from the Sierra Business Council in preparation for an application to the [USDA RISE Grant](#) opportunity. The grant application will focus on creating multiple pathways for training and professional development as part of a jobs accelerator focused around the forestry sector. A pilot program for new timber contractors is also being proposed to aid new businesses in getting experience working on the INF with oversight and guidance from industry experts.
- **LADWP/Inyo National Forest Pilot expansion**- The current Pilot Project established between the Inyo National Forest and Los Angeles Department of Water and Power is a significant step in building a mutually beneficial relationship with headwaters land management agencies and their downstream beneficiaries. With an initial investment of \$1 million granted to the Inyo National Forest, via the National Fish and Wildlife Foundation's [Targeted Headwaters Resilience Implementation & Monitoring Program](#), INF partners are actively working to refine both water and GHG benefits of fuels reduction and forest restoration work using several small projects as a pilot. Anticipated benefits would then be extrapolated across the ESCCRP to gain a better understanding of the ecosystem service benefits that could be captured as part of NFWF's continuing Headwaters program.
- **Environmental Planning Capacity building** (environmental planning, project management, outreach & education)-- At the onset, the INF made clear they held no capacity to perform environmental analyses for the ESCCRP. We also came to understand the hesitancy from the agency to hand over vegetation management projects to third-party consulting firms, given past experiences resulting in less-than-ideal outcomes when using this approach. These two facts required some creative problem solving that yielded the CDFW grant application, titled *The Eastern Sierra Pace & Scale Accelerator, awarded in summer 2021*. The planning grant will fund the development of a third-party IDT, with a focus on locally hired staff to perform the work and be available for future similar projects. This unorthodox concept was a huge risk but was widely and quickly adopted by the Inyo National Forest and ESCOG Sustainable Recreation & Ecosystem Management Program partners, as a proactive way to begin to solve for capacity deficits for environmental planning and permitting in the region.

- **State block grant funding** – With the State of California flush with funds and with a real focus on wildfire resilience through its California Wildfire & Forest Resilience Action Plan and Task Force, nascent conversations of establishing State Block Grant funding are underway. The State is looking to expand its current understanding of regional collaborative capacities and the specific needs of differing and unique geographies as the State will be reliant on regional collaboratives for implementation efforts. ESCCRP staff are working with CALREC Vision leadership to help the State acknowledge and better understand the new and evolving types of “bottom up” collaboratives that can provide critical capacity for the State’s on the ground goals and objectives while serving as responsible administrators of State funds. The ESCOG is a prime candidate for responsible regionalized administrative capacity for such funds should they come available, and offers yet another added utility of this newly established regional Joint Powers Authority.
- **New Education Opportunities** – THE USFS has worked with the Missoula Fire Sciences Lab for a number of years to develop their K-12 [FireWorks](#) School curriculum. The program provides students with interactive, hands-on materials to study wildland fire, which we believe to be an integral component of all rural Sierra Nevada communities. Their curriculum has multiple different modules, recognizing fire’s role differs in different ecosystems and include both Sierra Nevada and sagebrush ecosystems. Funding awarded from our first CAL FIRE CCI grant will support bringing this program to Mono County Schools, beginning in the Town of Mammoth Lakes. Our aim is to ensure the next generation has a clear understanding of the need for fire in our forested Eastern Sierra landscapes, and an opportunity to transform the political nature of managed and prescribed natural fire in future generations.
- **Citizens Wildfire Academy**-- In winter 2022, Mono County approached both ESCCRP and RFFCP staff to ask for our assistance to launch the Citizens’ Wildfire Academy. The program is being sponsored by the Eastern Sierra Council of Governments and consists of seven monthly virtual sessions for the public to learn about wildfire and how to prepare for it. It is aimed at reducing the anxiety about wildfire and responding to the multitude of questions that residents and visitors have about this topic. Each session will be 60 to 90 minutes starting at 6:00 PM on the third Monday of every month.

The sessions have been tentatively set as follows:

- April 18 – Introduction and the History of Wildfire in the Eastern Sierra
- May 16 – Fire Ecology
- June 20 – Current USFS, BLM, and CAL FIRE 2022 Wildfire Management Plans and Policies
- July 18 – Current Eastern Sierra Fuels Reduction Treatment and Other Projects
- August 15 – Home Hardening and Defensible Space Projects
- Sept. 19 – Smoke, Evacuation and Other Preparation Procedures
- Oct. 17 – Insurance Concerns, Local Fire Depts., and Fire Safe Councils

The list above provides a snapshot of opportunities that have arisen out of the initial investment to develop a collaborative early in the planning process to support the ESCCRP. While always more work,

the real benefit of collaborating transparently with a wide variety of diverse partners can be clearly demonstrated above and represents the very beginning of what we hope will be a continued partnership with broad support and unique perspectives that can help us solve for the many challenges that lay ahead. We are hopeful that in-person meetings can resume this summer, which will further help us begin to build real human relationships around this common goal.

Current Funding Synopsis

From the Sierra Nevada Conservancy’s initial seed funding investment in this project, we have successfully secured an additional \$8.5 million in funding to continue planning and begin implementation of NEPA ready acres as well as launch a robust outreach and education campaign. Our early grant portfolio includes:

Eastern Sierra Climate & Communities Resilience Project Early Investments						
Project Title	Project Type	Project Lead	Project Partners	Cost	Funder	Program Priority
*Lakes Basin Hazardous Fuels Reduction Project	Implementation	MLFSC	MCWD, MLFD, TOML, SCE, Mono County	\$1,200,000.00	SNC	Prop. 1 Watershed Improvement Program
Eastern Sierra Climate & Communities Resilience Project	Planning	Plumas Corp	INF, RFFCP	\$339,534.00	SNC	Resilient Communities
Sierra Fuels Reduction Impact: Biomass Planning	Planning	Cal Trout	TSS, Kattelmann, McGurk, Plumas, SIG)	\$205,000.00	NFWF	Southwest Strategic Fuels Partnership
ESCCRP: Phase I Implementation	Implementation	Inyo National Forest	Whitebark Institute, NFF, TSS, SCE, Cal Trans, Others TBD	\$4,913,000.00	CAL FIRE	Forest Health
Eastern Sierra Pace & Scale Accelerator	Planning	Eastern Sierra Council of Governments	INF, Whitebark Institute, Others	\$3,384,269.00	CDFW	Managing Headwaters for Multiple Benefits
Working from the Home Outward	Planning	Whitebark Institute	MLFSC, Whitebark Institute, MLFD	\$20,000.00	SCE	Resilient Communities
				\$8,522,269.00		
				\$10,061,803.00		

*Lakes Basin project was funded prior to the launch of the ESCCRP, but is within the project area and is considered a critical component of early priority acres.

The opportunity to leverage significant future funding is ripe for the ESCCRP, and early efforts have proved successful in harnessing the long overdue momentum needed for this time sensitive work. The table below was prepared in an effort to succinctly communicate additional planning funding needed to complete all of the various tasks as outlined and budgeted in the work plans in this needs assessment as described in detail in the chapters above.

Eastern Sierra Climate & Communities Resilience Project - Needs Assessment Budget Summary					
Work Plan Focus	Funding Estimate		Funding Secured	Additional Funding Needed	Funding Sources
	One-Time	Annual 3-yr			
Outreach & Education	\$ 101,900.00	\$ 273,305.00	\$123,000.00	\$ 252,205.00	CDFW/CAL FIRE/ SNC/ SCE
Sustainable Funding	\$ 85,528.00	\$ 229,000.00	\$ 85,528.00	\$ 229,000.00	TBD-Highly dependent on Team guidance
Biomass Utilization	\$ 431,200.00	\$ -	\$ 231,200.00	\$ 200,000.00	Wood Innovations Grants (CAL FIRE/USFS)
Implementation Operations	\$ 97,135.00	\$ 778,470.00	\$ 80,635.00	\$ 794,970.00	USFS/ CAL FIRE/ SNC/ WCB/FEMA/NFWF/NFF Private Investments/ Payment for Ecosystem Services
Workforce Development (Forestry)	\$ 17,460.00	\$ 85,000.00	\$ 17,460.00	\$ 85,000.00	SNC/CDFW/CAL FIRE/USDA/ CWDB
Workforce Development (Rx Fire)	\$ 425,000.00		\$ -	\$ 425,000.00	CAL FIRE Workforce Development
Prioritization	\$ 42,275.00	\$ -	\$ 9,375.00	\$ 32,900.00	SNC/ CAL FIRE/ USFS
Research & Monitoring	\$ 156,500.00	\$ -	\$ 89,000.00	\$ 67,500.00	SNC/CDFW/NFWF/TBD
Budget Summary Totals	\$1,356,998.00	\$1,365,775.00	\$636,198.00	\$2,086,575.00	TBD

* Values given for additional funding needs are estimates only, based off what we know at the present time, but also include substantial funding needs that can only be determined at a later date, thus we have elected the TBD to indicate where we will need time to determine funding needs more conclusively once we are deeper into the work.

** See specific workplan budget details for any additional disclaimers about budget uncertainty.

Although thrilled at the early momentum this project has harnessed, a long road is ahead to secure comprehensive funding for this project to implement on our desired schedule. There are also several contingent pieces that remain precarious at the time of this report that will have significant impact to the overall success and our ability to meet the desired Goals & Objectives of the project. These challenges are discussed in more depth in the Challenges/Lessons Learned portion of this report. The sustainable funding plan in [Chapter 2](#), outlines the steps necessary to solve for more comprehensive fundraising needs for the project.

Challenges/ Lessons Learned

- There was significantly less pushback from stakeholders when the project was introduced than originally anticipated, likely due to the 2020 and 2021 record-breaking fire seasons that blanketed the region in thick oppressive smoke for several weeks each season.
- An immense gap in public understanding around forests/fire and their interdependence on one another for ecological nutrient cycling and other dynamic ecosystem processes necessary for maintaining forest health over time.
- Even among conflicting media reports, the mainstream science is clear in supporting ecological forest restoration as a tool to achieving forest resilience, yet there is substantial work needed to provide facts surrounding media misinformation to improve public understanding of the work.
- Covid 19 virtual meetings added numerous challenges to relationship and trust building between partners, but also allowed for broader participation, especially from remote stakeholders.
- Meeting partners where they are at is crucial to gaining buy in and support for a project that is otherwise normally outside of their area of focus/interest.

- Workloads of our partners are immense, so providing ways to keep them updated without overburdening them was something we struggled with. Moving forward, we hope to provide updates on the project in a number of different ways so stakeholders can opt for an appropriate level of information they need to feel like they are being included and heard. This will range from a newly developed project dashboard on our website, to quarterly electronic media updates, to in-person and Zoom meetings and summer field trips.
- There was some initial resentment from many other stakeholders who have focused on other regional needs for quite some time when all the budget support for wildfires arrived in the wake of the 2020 and 2021 fire seasons. Working with them, our mantra has been that forest health projects absolutely should be considered watershed restoration, sustainable recreation, and smart regional economic projects, because maintaining that all those things are inextricable from one another. That consistent messaging has helped to build support for this work.
- Initial focus on win-win concepts and ideals also helped to bring a community ethos to our stakeholder building effort, we will continue to pursue all win-win funding opportunities.
- Given the impending closure of the Mono County landfill at Benton Crossing, there is enormous interest in biomass utilization technologies in the Eastern Sierra. Perhaps more so than other regions, for their potential to utilize forest waste and a variety of other problematic waste streams in the region. When the selection of a technology is here, It will be important to communicate why the technology was chosen and back that decision with solid environmental and economic data.
- Collaboration takes more time than working in an organizational silo, but it yields greater public support and buy in in the long run. We offered stakeholder opportunity for their involvement throughout the planning process and in reality, only a few regular participants actively participated in the planning. That said, all appreciated the transparency of having the opportunity to participate and being kept informed of project progress, and many of the opportunities we have been given are absolutely from a transparent planning process.
- Time commitments needed to attend public meetings to update various boards and councils on project progress were underestimated but equaled out given virtual meetings were widely available. Future planning will need to account for the time needed to attend these various meetings in person to continue to provide updates and education for local decision makers.
- Trust in any relationship is fundamental to making progress. The fact that those helping lead the ESCCRP were longstanding members of the local community and had been involved in numerous other restoration projects with a wide variety of USFS partners helped the agency to trust that we could solve for many of the complex issues that this project brings with it. This gave the agency the courage to think outside of the normal box in which they operate and take much needed unorthodox approaches to seeking solutions to the many challenges of this work.
- In rural communities, there is an enormous amount of institutional baggage that lies behind a thinly veiled curtain. One key to achieving success will be to unearth some of these issues and put forward suggested solutions to remedy where we can, with a focus on the notion that wildfires care not about political divides or priorities, and if we don't work toward novel ways of collaborating to solve for the wildfire crisis, we will all lose.

- A single act of generosity is behind most successful collaboration, typically including significant sacrifice from the initiating party, and optimally including compromise by each active member. In this case, the Plumas Corporation willingly gave a job and total freedom to a long-time Eastern Sierra resident to take on this initial planning grant that led to the launch of this project. The only instruction was to “find the need”, and never did either party think this would be the outcome. Although ultimately this meant losing a valued employee, Plumas Corp. understood the importance of local capacity building across the Sierra Nevada for the greater good. This act of generosity was game changing for the Eastern Sierra and all affected project partners and is the first noteworthy glimpse at tangible capacity building for forest restoration in the Eastern Sierra.

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Conclusion

Although the Eastern Sierra Climate & Communities Resilience Project has had early success in gaining much needed momentum, we have a long way to go before this project becomes capable of achieving its main goals. Three interdependent foundational pieces rest at the base of this project, all of them critical to achieving real success on the ESCCRP (Figure 2). They are sustainable funding, biomass utilization technology, and a local workforce. Without any one of these pieces, the entire project is at risk of being unachievable.

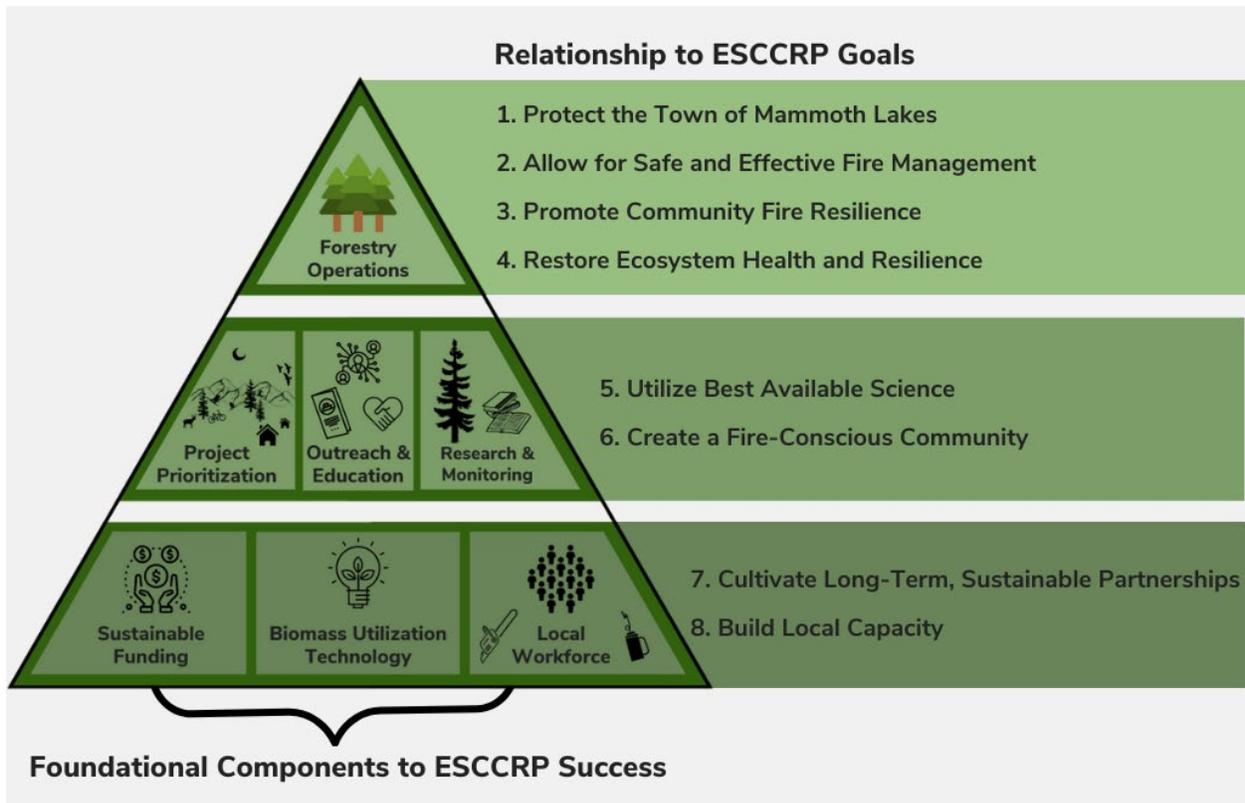


Figure 2: Interdependent foundational pieces critical to ESCCRP success.

A commitment by partners to help secure funding over the long term will give confidence to local business owners interested in growing their business to support forestry-sector work, signaling that the work will steadily be there if they invest in growing their businesses to meet these pace and scale needs. A local workforce also helps to convince any potential biomass developers that their facility will have a continuous supply of feedstock on which to operate. If the region fails to create a biomass facility capable of solving the issue around forest biomass, project costs may climb out of reach, making work at this pace/scale unfeasible, or force us to rely on pile burning, which is quickly becoming socially unacceptable if not legally omitted as an option in the future, as the climate crisis continues to worsen. Either option lacking a proactive biomass solution leaves the community and surrounding forests at imminent risk.

Given the flush of funding across the state, contractors will soon be able to take their pick of projects closer to home, which could result in fewer or no bids in our remote region, which historically has been an issue. Our ability to incentivize local entrepreneurs will help build in securities that we will have contractors to bid on the work, while simultaneously creating local jobs in a region where living wage jobs are difficult to come by.

This trifecta of interdependent components is fundamental to understand, and until all three components are secured, the ESCCRP hangs precariously in the balance, an admirable idea but perhaps not attainable of its intended potential. While this paints a somewhat grim reality, it is important to keep in mind as we continue to grind through the work outlined in this needs assessment and keep focused on the significance of it all coming together for the greater good of the Eastern Sierra. We remain optimistic given the support from our many partners to date, yet we must remain vigilant so that none of the critical pieces are dropped, and we do everything in our power to leave past grievances behind and work together toward a common goal that benefits us all as Californians and global citizens alike.

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Appendix A

Mammoth Lakes Trail System Traffic Study End of Season Staff Report 2020

November 2020

Prepared by

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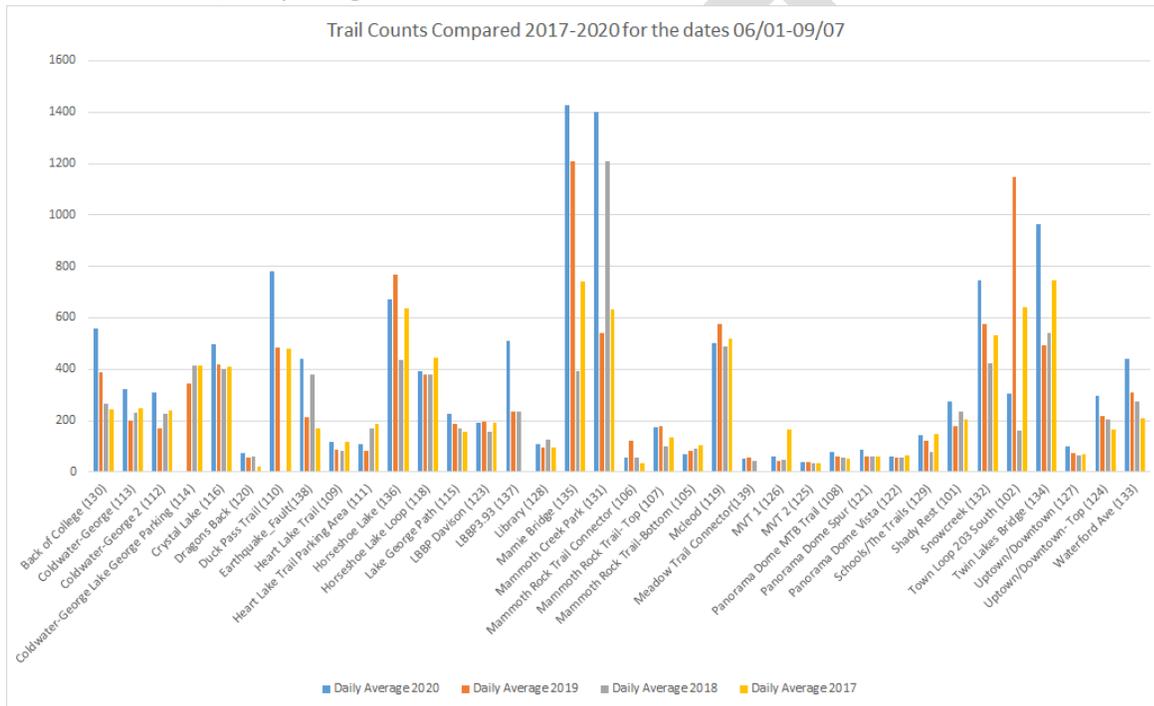


Figure 3

The Summer season of 2020 marked the fourth consecutive season collecting trail counts at the same 38 locations. The above chart shows average daily traffic between June 1 and September 7 compared over the last 4 summer seasons. The data shows consistent high levels of traffic for each summer season. The data has been analyzed to identify spikes in traffic counts that may have been caused by faulty equipment or interference in the data collection. Any such spikes have been omitted from the above chart.

Visitation and trail use have likely been affected by some major environmental factors over the last 4 years. The winter of 2016/2017 brought record amounts of snowfall with Mammoth Mountain reporting a 608-inch season total. This above average snowpack persisted into the summer months with many higher elevation trails not melting out until July. The following

winter of 2017/2018 was relatively mild, dropping 277 inches on Mammoth Mountain and snowpack melted out much sooner with higher elevation trails becoming accessible in late May or early June. The Summer of 2018 was extremely smoky, with the nearby Lions Fire igniting on June 11th and persisting through late August. The Lions fire, only 7 miles southwest of Mammoth Lakes, and other fires throughout the state contributed to very poor air quality throughout the summer hiking season on the Mammoth Lakes Trail System. The winter of 2018/2019 was another big one with Mammoth Mountain reporting a snowfall total of 495 inches, with much of this snow coming in late winter and early spring. This led to another late start to the hiking season with most higher elevation trails not becoming accessible until sometime in July. The 2019 summer season was notably smoke free and trail users could enjoy some of the best air quality exhibited in recent years.

The summer 2020 recreation season in Mammoth Lakes was unprecedented in its erratic, busy, and unpredictable nature. Beginning March 14th with the unplanned Covid-19 related closure of Mammoth Mountain Ski Area, the season was off to a strange start. We received the bulk of the winter's snowfall in the following weeks and visitors and locals began their struggle to adapt to recreation during a pandemic. As things melted out it became clear that this summer would be a busy one on local trails and paths. During the initial weeks of Governor Newsom's statewide stay at home order traffic on multi-use paths around town was higher than normal, while trail traffic remained subdued as the snowpack receded.

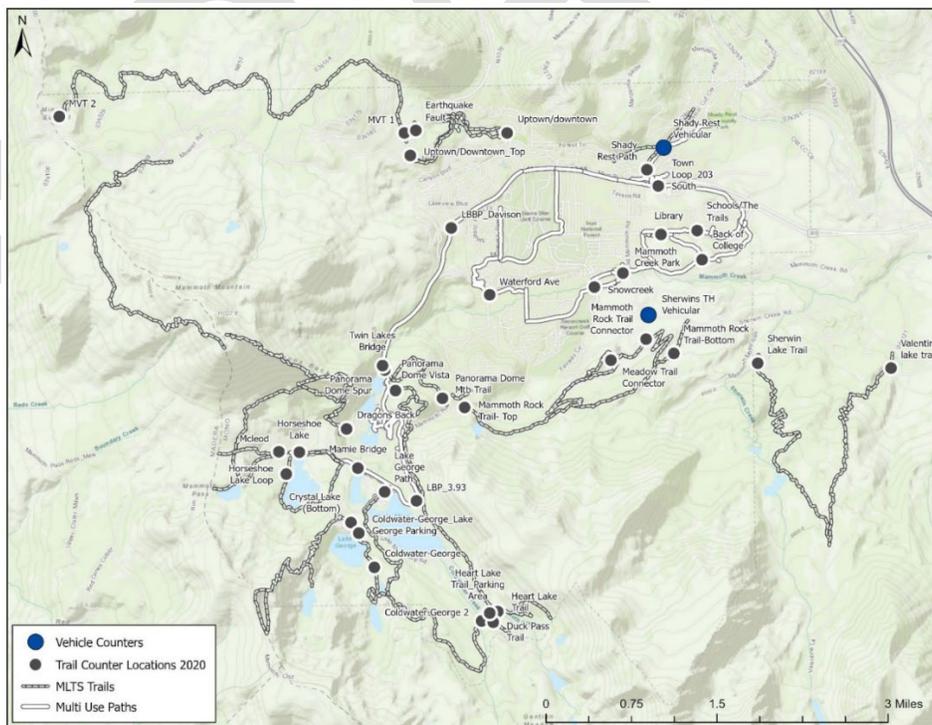


Figure 4

The above map (Figure 2) shows all 38 summer trail counter locations for the 2020 season, as well as the two year-round vehicle counters. Figure 3, below shows average daily traffic at each counter site for the 2020 season between the dates of 06/01 and 09/07 as proportionally sized symbols.

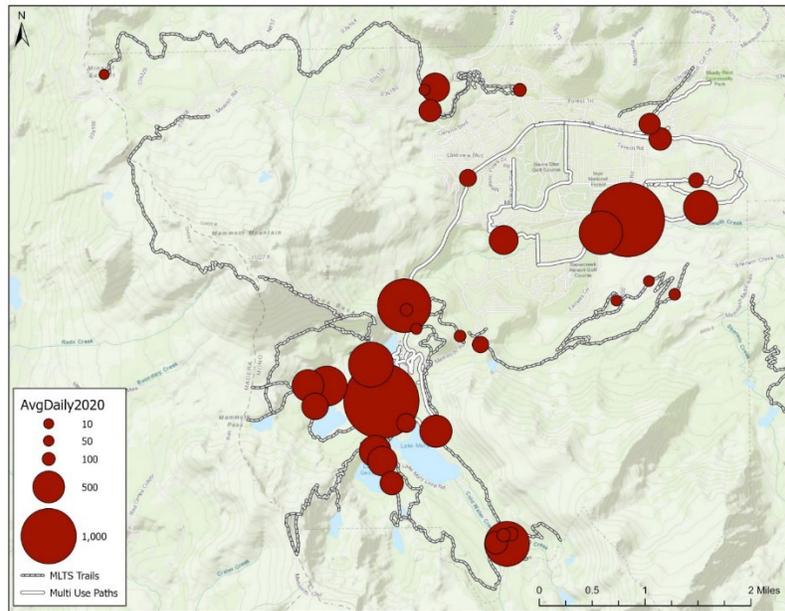


Figure 5

Figure 4 shows daily total counts for all locations throughout the 2020 season. Two noticeable spikes in data bookend the busy season, the first is 4th of July weekend and the second Labor Day weekend.

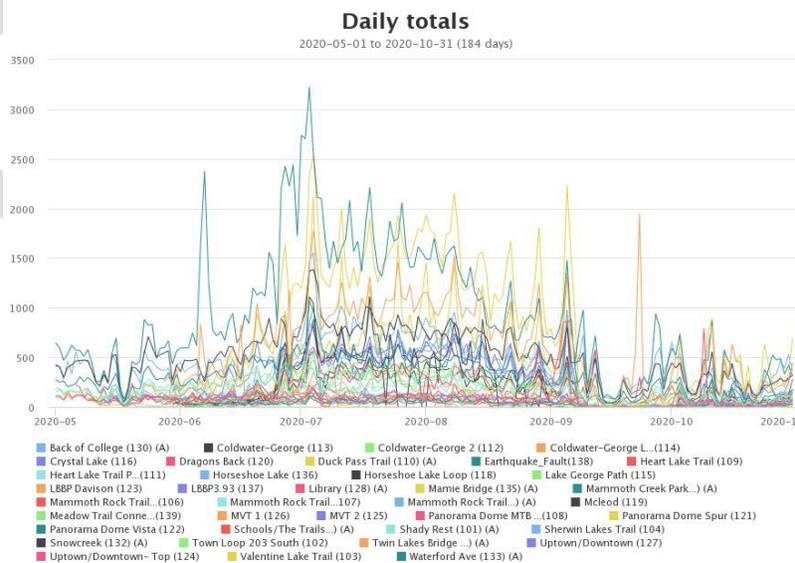


Figure 4

The Creek Fire ignited on September 4th (Labor Day weekend) and saw rapid growth. This new blaze along with many other fires in the region prompted a closure of all southern California National Forests on September 7th. The Inyo National Forest remained completely closed until October 3rd when restrictions were lessened. This forest closure, and accompanying period of severe smoke is represented clearly in the trail count data.

Figure 5 shows traffic on the Duck Pass Trail for the entire summer 2020 season. Average Daily traffic on this trail for the 2020 season between the dates 06/01-09/07 was 779. That is a 60 % increase from the 2019 daily average of 486 for the same dates. Traffic on the Duck Pass Trail picked up for the season as the snow melted right around 07/01/20, and remained busy through labor day. The forest closure on 09/07/20 is represented very clearly in the data and traffic counts remained extremely low even following the 10/03/20 partial reopening of the Inyo National Forest.

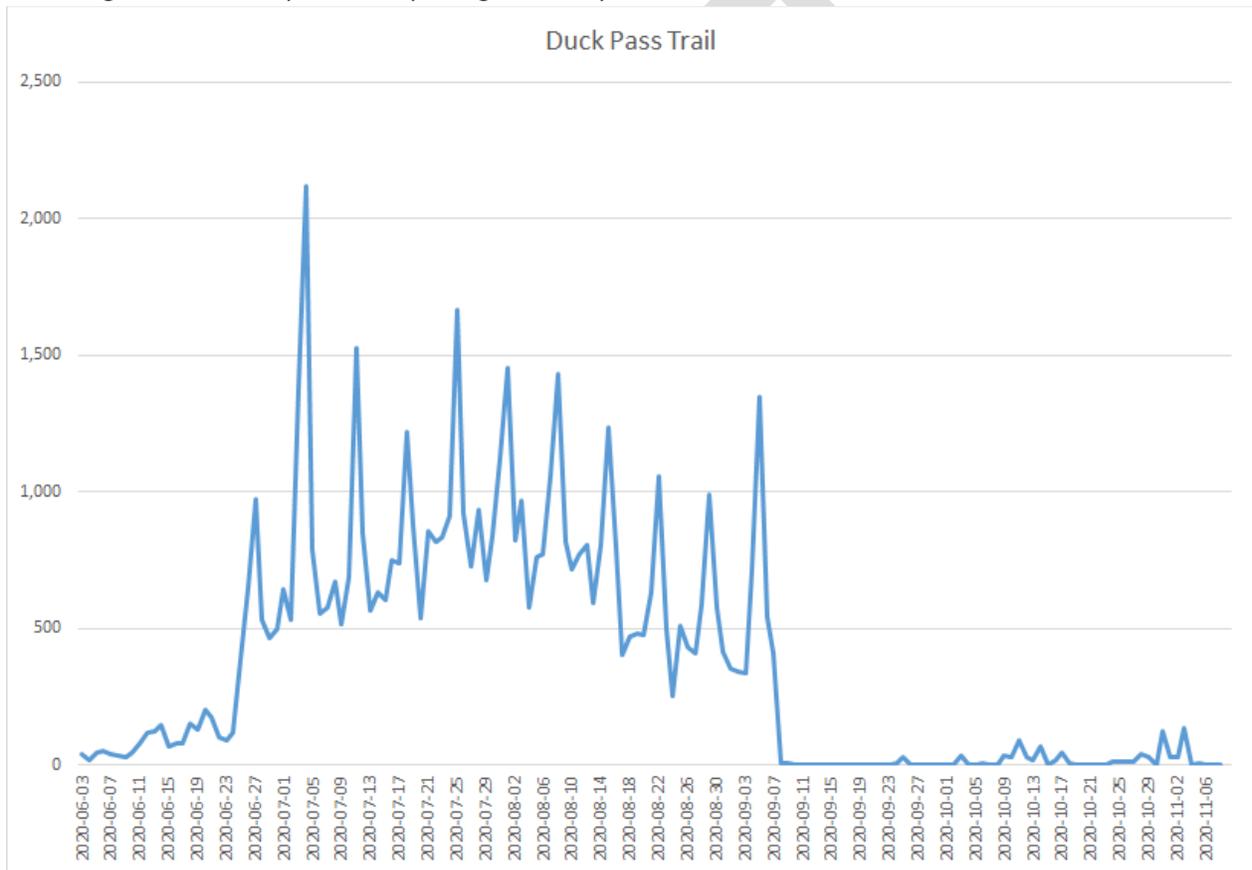


Figure 5

The Multi Use Path network has had trail counters established in 10 locations since 2014. Figure 6, below, shows the location of these counters.

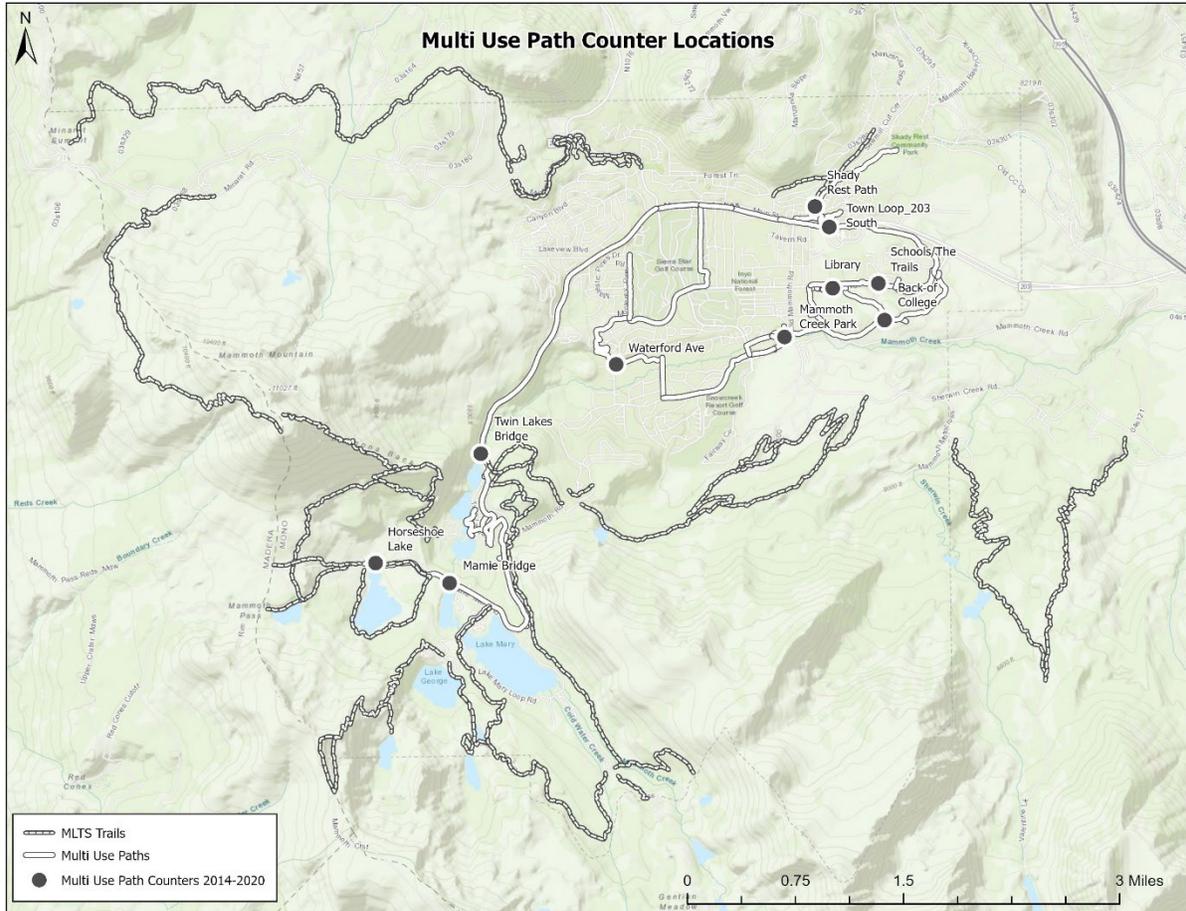


Figure 6

Here is a graph showing the average daily traffic at these 10 locations between the dates of 07/01 and 09/01.

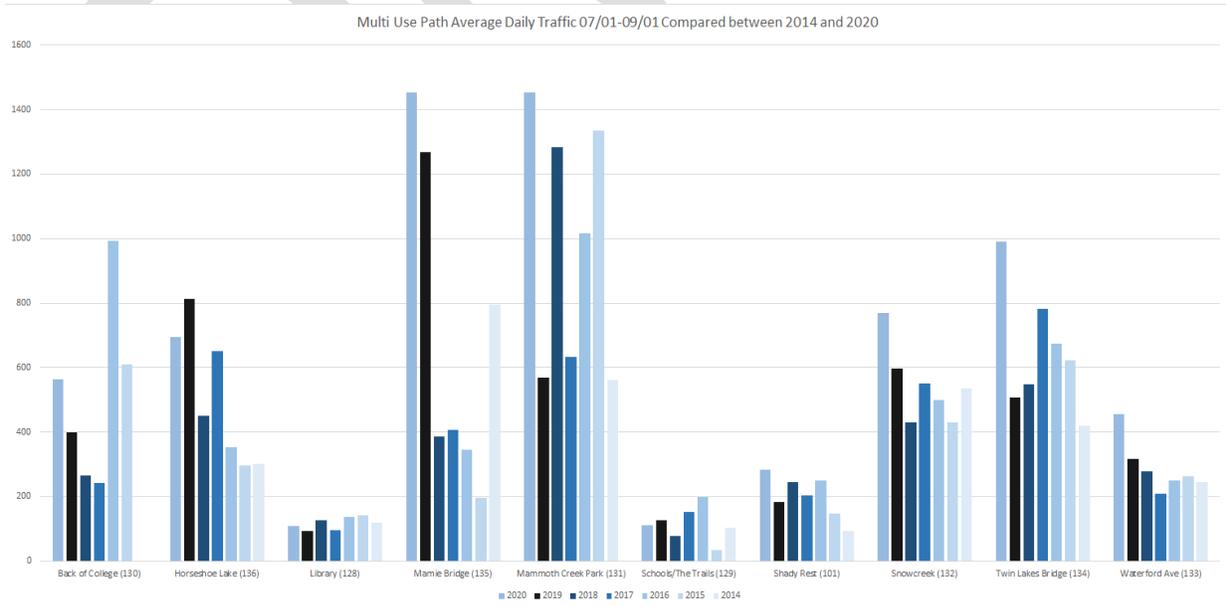


Figure 7

In October of this year, we purchased one additional infrared trail counter and installed it at the Mammoth Lakes Welcome Center Plaza. This installation was done at the request of Mammoth Lakes Tourism. Traffic counts for the Welcome Center Plaza will help to inform staffing decisions at the welcome center as well as bathroom servicing schedules. Here is a map and snapshot of the data that has come in so far. This counter will remain in place year-round.



Figure 8

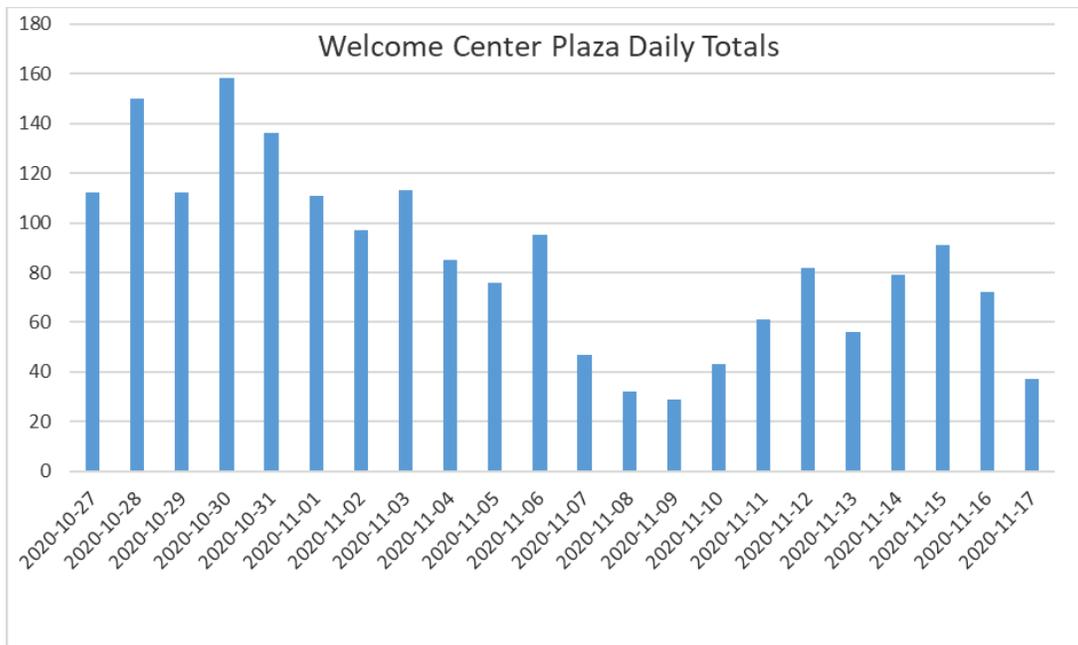


Figure 9

Two vehicle counters have been deployed since 2/11/2020. One on Sawmill rd entering Shady Rest Park and the second at the paved parking area on Sherwin Creek Rd, known locally as the propane tanks. See figure 2 for a map of these locations. Below in figure 10 are the daily counts at these vehicle counter locations.

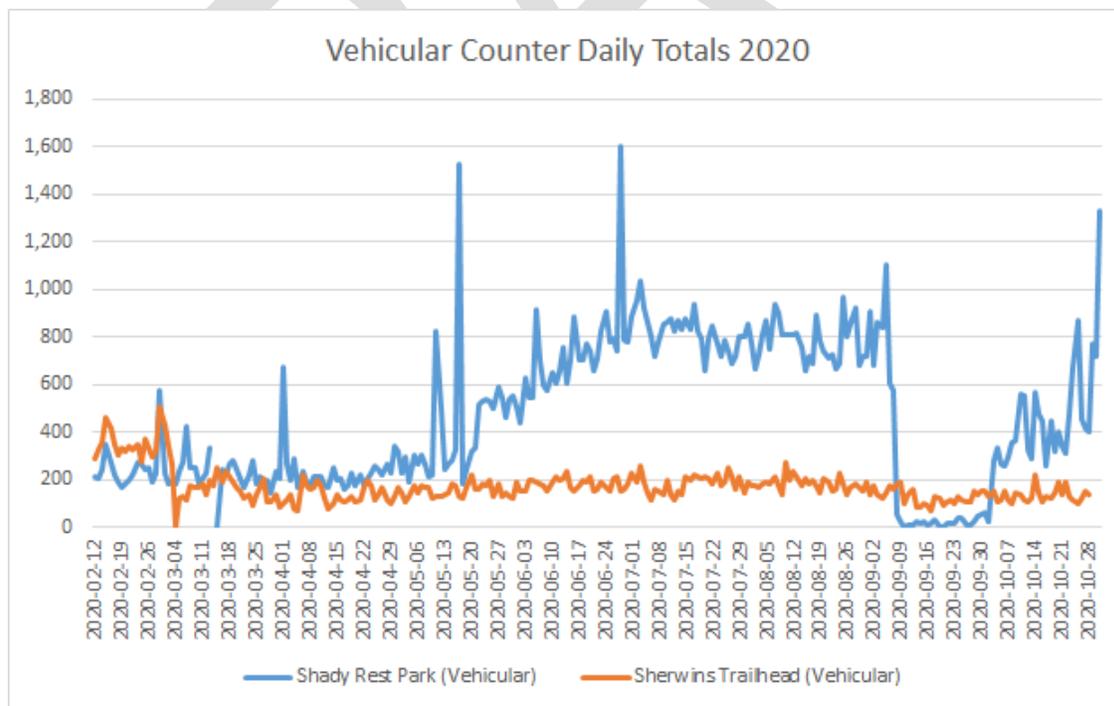


Figure 10

Appendix B

Opportunities for Recreation Infrastructure Improvement

Some existing recreation assets/infrastructure pose potential opportunities for recreation asset/infrastructure improvements through ESCCRP fuels reduction treatments.

Asset/Infrastructure	Opportunity for Improvement
Campgrounds / Trailheads	Utilize felled timber for fencing and barriers
Trails	Improving line of sight on trails and improve safety by removing trees that obstruct view of trail or recreationist traveling the opposite direction. Improve safety by eliminating trees that are a hazard to trail users.
Over Snow Vehicle (OSV) Trails	Strategically implement Individual, Clumps, and Openings (ICO) method to improve high use OSV play areas. Delineate some high-use areas and using the opening method to remove new growth.
Blue Diamond Ski Trails	Cut back new growth and re-establish the ski route corridors where trail system has been overgrown.

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Appendix C

Recreation Infrastructure Vulnerability to Fire

Susceptibility to inadvertent human ignitions from recreation users: According to the U.S. Department of the Interior, as many as 90 percent of wildland fires in the United States are caused by people. Assessment of the likelihood of the possibility of a human unintentionally starting a fire at the recreation asset. The intent of including vulnerability to unplanned human ignition is to put these areas on a higher priority for treatment to reduce the fuel loads surrounding the asset so that in the instance of an unplanned ignition, the forest will allow for safe, effective, and efficient fire suppression.

Impacts to recreation infrastructure in the case of wildfire: Assessment of the potential impacts to recreation asset/infrastructure in the case of wildfire. The intent of including potential impacts to infrastructure in the case of wildfire is to understand the damage that would occur in the case of wildfire and target areas that would require costly repair or replacement to be ranked as a higher priority for treatment.

Combined, these rankings provide information on which recreation assets are most vulnerable to these aspects of fire and can help inform prioritization for the treatment of recreation assets.

	Susceptibility to inadvertent human ignitions from recreation users	Impacts to recreation infrastructure in the case of wildfire
1	High susceptibility to unplanned human ignited fire. Probability of human ignitions high due to the type of recreation use in these areas (i.e., campfires and charcoal BBQs.)	Severe impact to infrastructure/recreation asset in the case of wildfire. Potential for fire to cause significant damage to infrastructure requiring costly repair or replacement.
2	Moderate susceptibility to unplanned human ignited fire. Recreational shooting or motorized vehicles present at asset location pose a fire threat due to mechanical failures/malfunctions, electrical failures/malfunctions, or improper use.	Moderate impact to infrastructure/recreation asset in the case of wildfire. Potential for fire to cause some damage to the recreation infrastructure.
3	Low susceptibility to unplanned human ignited fire. No evident mechanisms that pose threat of unplanned ignitions fire at asset location.	Low impact to infrastructure/recreation asset in the case of wildfire. In the instance of fire, there will likely be minimal impact to infrastructure.

Asset/Infrastructure	Susceptibility of inadvertent human ignitions from recreation users	Impacts to recreation infrastructure in the case of wildfire
INF Campgrounds	1	1
Panorama points/trails/area	3	3
INF roads	2	3
INF non-motorized trails	3	2
INF motorized trails	2	3
OSV groomed routes	3	3
Multi-use paved pathways	3	3
Blue diamond routes	3	3
MMSA bike park trails	2	2
Tamarack cross country ski area	3	3
Disc golf course/fairways	3	2
Shady Rest groomed ski trails	3	3
MMSA permit area	1	1
TOML parks	1	1

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Appendix D

Recreation Infrastructure Implementation Concerns

Special considerations during the implementation of ecological forest restoration activities are necessary to avoid adverse impacts to particular recreation assets/infrastructure. The Team documents assets/infrastructure requiring special consideration and provides information to be considered to mitigate adverse impacts to recreation assets during implementation in the table below.

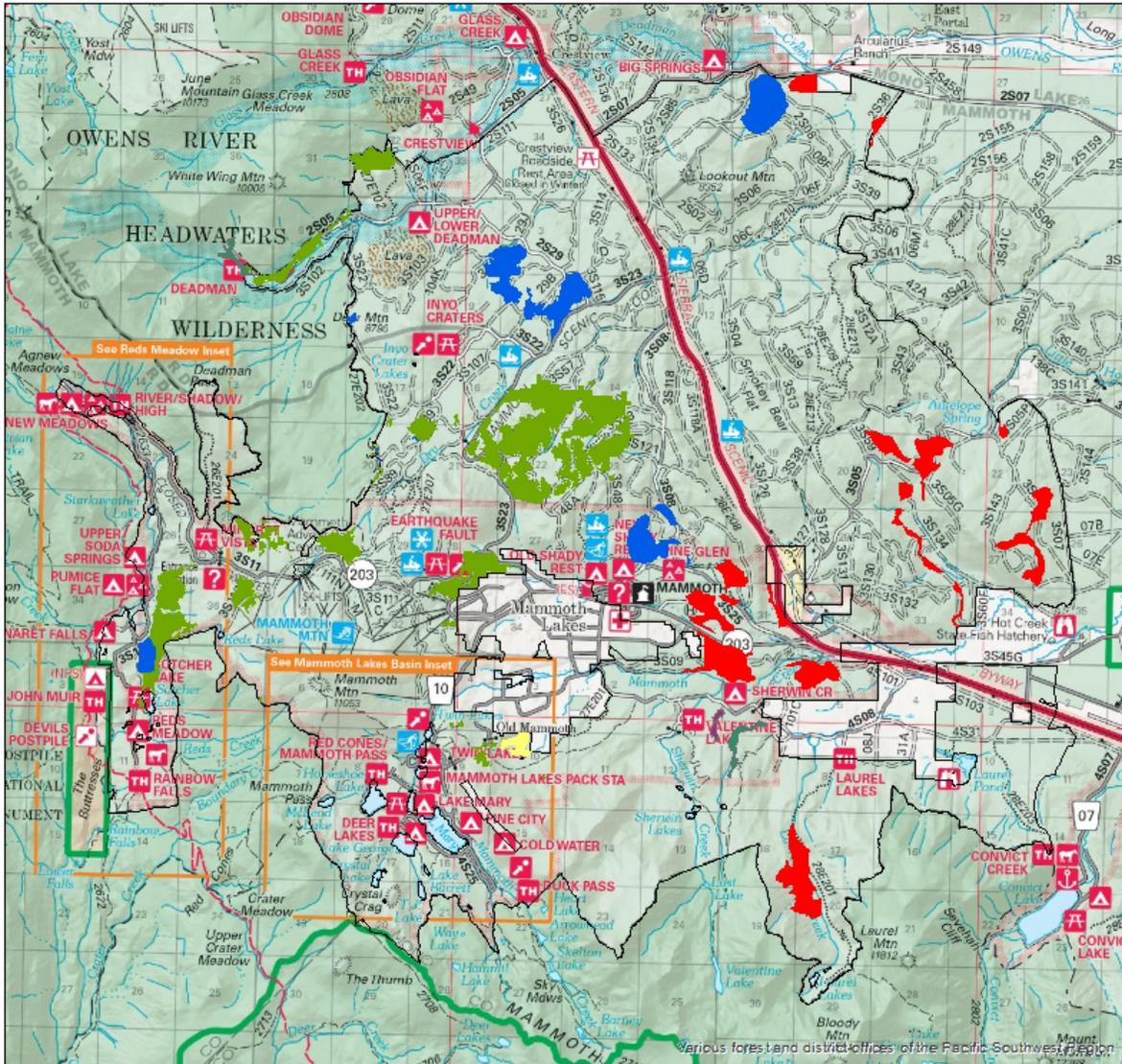
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Infrastructure	Concerns with fuels treatment	Mitigation measures
Campgrounds/ Parks	Removing too many trees in campground therefore eliminating shade for rec users (i.e., the campsites near the entrance to Sherwin Creek Campground)	Take into consideration shade availability when marking/cutting trees to leave adequate shade for rec users' post-treatment.
	Pile placement obstructing campground amenities and trail access points	Avoid piles being placed in front of campground amenities and trail access points in established campgrounds. Use caution when place piles near high use dispersed camping areas as fuelwood collection may occur from piles and would require costly pile rebuilding.
Trails	Damage to trail infrastructure such as retaining walls and bridges from tree felling	Where necessary, mark the features pre-treatment to avoid damage during operations.
	Piles construction on trails/ in close proximity to trails	Construct piles at least 15 ft from trail and trail infrastructure. Also consider proposed trails, if any in area scheduled for treatment, to avoid obstruction to new trail development (i.e., piles in proposed trails may not be burnt before the construction of new trail resulting in the need to relocate pile or reroute trail).
	Mechanical treatment damaging trails	If necessary for mechanical equipment to cross trails, try to minimize crossing points and ensure base rehab is conducted by the contractors. Follow up with additional rehabilitation by volunteer recreation crew.
Over Snow Vehicle (OSV) Trails/ Tamarack Cross Country Trails	Stump height/slash on OSV trail system has potential to cause damage to expensive snow grooming equipment	Most of the OSV trail system follows roads and can extend to 17 ft wide. Along the OSV trail system, cut stumps as low to the ground as possible and do not pile or scatter slash on the trail system to avoid damage to snow grooming equipment.
Blue Diamond Ski Trails	Trees with trail marker signs being cut	If a signed tree is cut, ensure the blue diamond sign is relocated to a nearby tree that follows the designated route.
Disc Golf Course	Pile construction interfering with the game	Do not build piles on the disc golf fairways or within 25 feet of basket locations.
Panorama points, trails, & area	Pile placement obstructing biathlon shooting sites (points)	Do not pile where would obstruct shooting sites.
	Stump height obstructing grooming trail	Along the trail system, cut stumps as low to the ground as possible and do not pile or scatter slash on the trail system to avoid damage to snow grooming equipment.

Appendix E

Wildlife Prioritization Map

ESCCRP - Priority Wildlife Habitat Treatment Areas

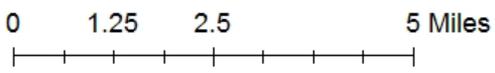


Multi-Benefits Meadow Prioritization
 Raptor Territory Prioritization
 Bi-state Sage Grouse Habitat Prioritization
 Mesocarnivore Habitat Prioritization

Aspen Priorities

Loss_Risk

HIGH
 HIGHEST



Meadow Habitat Prioritization	56.0 Acres
Mesocarnivore Habitat Prioritization	2085.5 Acres
Raptor Territory Prioritization	782.5 Acres
Aspen Stand Prioritization	71.1 Acres
Bi-state Sage Grouse Prioritization	1092.7 Acres
TOTAL	4087.8 Acres