Priorities for Sonoma County's Wildfire Settlement Vegetation Management Funds

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A report to the Sonoma County Board of Supervisors

Center for Law, Energy and the Environment (CLEE)
UC Berkeley School of Law

Berkeley Law

Center for Law, Energy, & the Environment

About this Report

This policy report is the result of two convenings organized by UC Berkeley School of Law's Center for Law, Energy & the Environment (CLEE) in February 2021, both preceded and followed by additional outreach with select stakeholders. The convenings included experts in climate science, natural resource management, and public finance from across California and a range of Sonoma County ecosystem management, forest protection, fire mitigation, and government stakeholders to identify priority uses for the funds to provide input on Sonoma County's expenditure of PG&E wildfire settlement funds designated for vegetation management purposes.

About the Center for Law, Energy & the Environment

The Center for Law, Energy & the Environment (CLEE) channels the expertise and creativity of the Berkeley Law community into pragmatic policy solutions to environmental and energy challenges. CLEE works with government, business, and the nonprofit sector to help solve urgent problems requiring innovative, often interdisciplinary approaches. Drawing on the combined expertise of faculty, staff and students across University of California, Berkeley, CLEE strives to translate empirical findings into smart public policy solutions to better environmental and energy governance systems.

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This report and its recommendations are solely a product of UC Berkeley School of Law and do not necessarily reflect the views of all individual convening participants or Sonoma County.

I. Executive Summary

In October 2017, three major wildfires simultaneously ravaged Sonoma County. The Sonoma Complex Fires collectively burned over 110,000 acres, destroying over 5,000 homes and businesses, taking 24 lives, and forcing hundreds of thousands of residents to evacuate. In February 2018, following emergence of evidence that Pacific Gas & Electric (PG&E) electrical equipment caused the 2017 fires, Sonoma County agencies filed a lawsuit against PG&E seeking recovery for these damages. The parties reached a settlement agreement in 2020 allocating $149 million to Sonoma County entities. Major fires again devastated the County in 2019 and 2020.

In October 2020, following extensive community and stakeholder outreach, the Sonoma County Board of Supervisors voted to allocate a minimum of $25 million of the PG&E settlement funds toward vegetation management activities, broadly encompassing the intentional alteration of vegetation to reduce wildfire risk, promote safety, and support ecosystems and agriculture, along with associated governance, education, funding/financing, and workforce development efforts.

To gather input on how best to spend these vegetation management funds, Sonoma County contracted with UC Berkeley School of Law's Center for Law, Energy and the Environment (CLEE) to organize and facilitate two expert convenings to identify top priorities for the $25 million in PG&E settlement funds allocated for vegetation management activities. The process included preliminary outreach with Sonoma County staff and stakeholders; a convening of state experts on February 17, 2021; a convening of local experts on February 24, 2021; and participant surveys and outreach before and after both events. Participants are listed in Appendix A.

Overview of Findings

Participants identified top priorities for the funds, including targets for immediate spending on high-priority vegetation management activities and objectives for long-term program development and sustained spending. Priorities and recommendations coalesced into the following categories (see Section IV of this report for detailed discussion of each, and Appendix C for a proposed budget allocation framework and concept proposal):

- **Centralizing stakeholder coordination and governance.** Funds should support a centralized vegetation management governance structure to coordinate stakeholder participation and communication, scale up treatment planning, streamline permitting and approval authorities, attract funding, and integrate relevant research and information. As one option, the Board of Supervisors could immediately create and oversee a short-term governance group to distribute early action funds ahead of and during the 2021 fire season. This governance group would be comprised of representatives from key County departments. The County could then consider revisiting and expanding the organizational structure after the current fire season to

include local and state resilience authorities, private landholders, business groups, and technical experts. The governance group will need at least one full-time staff member to support their activities. The group could be a new entity modeled on the East Bay Hills Emergency Forum or could be housed within existing bodies like Sonoma County Ag + Open Space.

- **Expanding community outreach and education.** A portion of funds should support immediate, targeted community outreach, education, and coordination to support outstanding planning and implementation needs. This option can be a cost-effective means of building public support, motivating private action, and aggregating projects to reach the scale needed to attract resilience investments. The impact of this outreach may be maximized when coupled with a direct pathway to site-specific treatment planning and implementation at a neighborhood or watershed scale to accelerate the pace and scale of action across the county as a whole in a coordinated fashion with stakeholder buy-in. Outreach is also important to educate residents about existing programs, tools, or research efforts that could help them make informed decisions. This capacity could be housed within the new governance/coordination function and/or implemented via grants to nonprofits and community organizations. Equity should be a central focus of these efforts and given a dedicated budget allocation. In addition, the grants for near-term activities outlined in the bullet below can include outreach and education efforts.

- **Conducting immediate vegetation management activities.** Roughly one-third of the funds should be allocated to high-priority, near-term vegetation management activities in high-risk areas and near key ecosystems. These immediate activities should focus on:
    - Project zones: High-fire risk areas to the northeast of communities and defensible space in densely populated areas to the west and south of east-west canyons; areas that burned in recent fires; and other boundary areas between large public and private lands and dense developments.
    - Project types: Re-treatment and maintenance of recently burned areas; maintenance burn of completed thinning projects; understory thinning of woodlands and forests; prescribed grazing; defensible space near homes; creation of “calming zone” vegetation removal buffers and strategic fuel breaks; and associated outreach and education efforts.
    - Process and criteria for funding: Applicants would submit simple proposals to the governance group, which would award funds based on meeting key criteria such as ability to implement in advance of the next fire season, alignment with priority project zones and types, benefits for lower-income communities, and organizational track record, among others (or, if the County declines to fast-track the governance group, the Board of Supervisors could review 2021 project applications based on robust application of the criteria and input from relevant experts).

- **Maintaining relevant and up-to-date data sources for planning and evaluation**. A portion of settlement funds should support ongoing data collection to inform wildfire risk mapping, treatment planning, implementation tracking, and evaluations of treatment effectiveness. For example, resources like Permit Sonoma's Community Wildfire Protection Plan (CWPP) and Pepperwood's forthcoming Wildfire Fuel Mapper presently rely on 2013 (pre-fire) data to inform project designs and prioritization. Updating Ag + Open Space's Sonoma Vegetation Map products to reflect 2021 conditions should be a priority, with regularly scheduled updates moving forward to ensure implementation is effectively tracked to ensure transparency and accountability.

- **Leveraging long-term financial sustainability**. A portion of settlement funds should support the development of sustainable financing and funding mechanisms to promote long-term resilience and risk management, including:
    - Revolving fund to provide upfront funding for small landowners, nonprofits and resource conservation districts (RCDs) to pay one-time costs that will be reimbursed or will generate revenue to repay the fund.
    - Financing districts such as Mello-Roos or new zones within the existing County Service Area to fund ongoing vegetation management and fire resilience work.
    - Forest Resilience Bond or an equivalent instrument that finances sustainable forestry and water quality protection.
    - New local sales or parcel tax revenue to help fund vegetation management activity and support associated grant-writing activity by local organizations and agencies.
    - Biomass or other wood product facility development, beginning with a feasibility study to identify best-fit locations that balance vegetation supply/access and environmental justice considerations.
    - Contract grazing opportunity development to manage high-fire risk zones through livestock grazing.

- **Building the local workforce**. A portion of funds should be dedicated to three to five years of career training programs, in order to launch a self-sustaining skilled and dedicated workforce equipped to meet immediate and long-term vegetation management needs, ordinance compliance, evacuation route planning, access trails and land management, and animal use to mitigate fire risk, among other training opportunities. Vegetation management jobs can offer a pathway to a high-quality, well-paying, local career, provide workforce training and long-term career growth opportunities to disadvantaged communities, and staff vital capacities for future resilience, particularly when they are part of a larger effort to develop a skilled workforce such as with degrees in planning, landscape architecture or biology. In addition, investments in contract grazing can help build a robust grazing and sustainable meat economy in Sonoma County, creating more business and employment opportunities for existing and new farmers and herd managers.

Participants also outlined a multi-faceted set of principles to guide future fund allocations. Foremost (but not alone) among these principles were:

- **Prioritizing vulnerable communities** (including lower-income residents, elders, renters, and those most affected by air quality impacts), critical infrastructure, and special assets
- **Incorporating and supporting robust public outreach**, engagement, and education at every step
- **Accomplishing multiple forest and ecosystem health objectives** by performing and monitoring high-quality, science-based treatments
- Recognizing effective vegetation management requires **continuous, dedicated implementation** in an adaptive management framework
- **Leveraging** by seeking other funding opportunities and creating sustainable funding mechanisms

These and other points are expanded below. See Section IV for a detailed discussion of priorities for fund allocation.

II. Background and Overview

A. The 2017 Sonoma Complex Fires

California has long experienced and sought to manage the risk of wildfire, and in recent years climate change—coupled with long-term drought, development in the wildland-urban interface (WUI), buildup of forest biomass, and other factors—has greatly expanded the scope, severity, and complexity of wildfire events.[1] All seven of the largest wildfires since state recordkeeping began, as well as 12 of the 20 most destructive, have occurred since 2017.[2]

In October 2017, three major wildfires simultaneously ravaged Sonoma County. The Sonoma Complex Fires (also known as the Central LNU Complex) collectively burned over 110,000 acres, destroying over 5,000 homes and businesses, taking 24 lives, and forcing hundreds of thousands of residents to evacuate.[3] The most destructive of these, the Tubbs Fire, burned in and around Santa Rosa, destroying nearly five percent of the city's housing stock. A County assessment estimated that the cost of the 2017 fires to Sonoma County government agencies and assets exceeded $244 million, including over $110 million in lost or damaged County assets and over $85 million in lost revenue and staff time.[4] This estimate did not include private costs to residents and businesses. The 2019 Kincade and 2020 Glass, Walbridge, and Meyers fires burned more than one hundred thousand additional acres and destroyed thousands more structures in the county, further highlighting the need for coordinated action.

B. The PG&E Wildfire Settlement

In February 2018, following emergence of evidence that PG&E electrical equipment caused the 2017 fires, the Sonoma County Board of Supervisors (the Board), Agricultural Preservation and Open Space District (Ag + Open Space), Water Agency (Sonoma Water), Valley Sanitation District, and Community Development Commission filed a lawsuit against PG&E seeking recovery for these damages. After PG&E filed for Chapter 11 bankruptcy in January 2019, the

[1] See, e.g., A. Park Williams et al., "Observed Impacts of Anthropogenic Climate Change on Wildfire in California," Earth's Future, Vol. 7, No. 8, pp. 892-910 (August 2019), available at https://agupubs.onlinelibrary.wiley.com/doi/full/10.1029/2019EF001210.

[2] California Department of Forestry and Fire Protection (Cal Fire), "Top 20 Largest California Wildfires" (February 2021), available at https://www.fire.ca.gov/media/4jandlhh/top20_acres.pdf; "Top 20 Most Destructive California Wildfires" (February 2021), available at https://www.fire.ca.gov/media/t1rdhizr/top20_destruction.pdf.

[3] Sonoma County Office of Recovery and Resiliency (ORR), *Sonoma County Recovery and Resiliency Framework* (December 2018), pp. 17-20, available at https://sonomacounty.ca.gov/Office-of-Recovery-and-Resiliency/Recovery-Framework/.

[4] Sonoma County Administrator, "PG&E Settlement Funds Preliminary Discussion – Summary Report" (August 11, 2018), pp. 2-4, available at https://sonomacounty.ca.gov/CAO/BOS-Items-of-Significant-Public-Interest/PGandE-Settlement-Funds-Preliminary-Discussion/.

parties reached a settlement agreement in 2020 resulting in an allocation of $149 million to Sonoma County entities.[5] (Individuals reached separate settlements with the utility.)

In October 2020, following extensive community and stakeholder outreach, the Sonoma County Board of Supervisors voted to allocate a minimum of $25 million of the PG&E settlement funds toward vegetation management activities, broadly encompassing the intentional alteration of vegetation to reduce wildfire risk, promote safety, and support ecosystems and agriculture, along with associated governance, education, funding/financing, and workforce development efforts.[6] This allocation was premised on a number of key factors:

- Over half of the county's land area is occupied by forest and woodlands;
- The county faces more frequent droughts and longer fire seasons;
- Historical and continued development in the WUI and adjacent areas places hundreds of thousands of residents at risk of wildfire; and
- Ongoing investment in vegetation management is needed to help manage this risk.[7]

Following the allocation, County staff met with hundreds of stakeholders and reviewed existing efforts and initiatives throughout the county to identify preliminary priorities for the vegetation management funds. These included:

- Developing a programmatic, county-wide Environmental Impact Report (EIR) to assess the environmental implications of a systematic vegetation management program under the California Environmental Quality Act (CEQA).
- Implementing vegetation management projects in recently burned areas to take advantage of reduced vegetation.
- Expanding the County's chipping capacity (through equipment and staff) to meet property owner demand for chipping services.
- Funding youth crews to conduct vegetation management, especially those 18-25 years old, as this age group is both capable and allowed to operate chainsaws and other hazardous equipment.
- Conducting community-level outreach on vegetation management practices.
- Providing direct assistance to disabled and elderly property owners.
- Purchasing land parcels for fire-preventive trails and green breaks.
- Making grants to community organizations engaged in vegetation management.
- Establishing a single point of coordination for vegetation management activities/resources and supporting staffing needs.[8]

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[5] Id. at pp. 1-3; J.D. Morris, "On anniversary of Tubbs Fire, PG&E settlement shapes Sonoma County debate on future," San Francisco Chronicle (October 8, 2020), available at https://www.sfchronicle.com/california-wildfires/article/PG-E-settlement-reshapes-Sonoma-County-s-2017-15629692.php.

[6] Sonoma County Administrator, "PG&E Settlement Funds Vegetation Management Allocation Update and Initial Recommendations – Summary Report" (December 15, 2020), p. 1, available at https://sonomacounty.ca.gov/Office-of-Recovery-and-Resiliency/.

[7] Id. at pp. 1-3.

[8] Id. at pp. 11-12.

However, County staff recognized that effective use of the limited funding will require balancing among priorities and leveraging of additional funding sources, noting that "identifying how to prioritize this limited one-time funding for a never-ending need like vegetation management will require consideration of near-term implementation projects versus a measured approach to future projects."[9] In addition, while an effective vegetation management spending program will incorporate both direct spending on treatment activities and investment in planning, research, and future projects, robust community risk reduction relies on a range of long-term, resilient urban design and land-use development decision-making that may need to be sustained beyond the time horizon for allocation of settlement funds.[10]

To help identify the long-term vegetation management activities and priorities that will inform settlement fund allocation decisions, the Board engaged CLEE to organize and facilitate expert stakeholder convenings and develop this report. The Board also allocated $1.6 million of settlement funds to expand the fuel mapping decision support tool in development by Sonoma Water and UC Cooperative Extension. The expansion included $600,000 for county-wide outreach and technical assistance for the existing parcel-scale tool intended to provide landowners of 2 or more acres with vegetation modeling, recommended mitigation actions, and connections to training and resources; and $1 million to create in parallel a landscape-level tool and web-based multi-benefit mapping resource. These tools will be designed to complement the Sonoma County Community Wildfire Protection Plan (CWPP) and to inform agency and land manager decision-making.[11] Additional non-vegetation management settlement funds were allocated to transportation, communications, and utility infrastructure and emergency preparedness ($59 million); County budget needs ($27 million); and housing recovery and development ($10 million); as of March 2021, approximately $27 million of the settlement funds remain to be allocated.

C. CLEE Convening Process

Following the Board's allocation of funds for policy planning support in December 2020, CLEE organized and facilitated two expert convenings to identify top priorities for the $25 million in vegetation management settlement funds. CLEE consulted with County staff to help identify key experts and stakeholders who could inform this analysis and to conduct advance outreach and analysis of County efforts and needs to date. CLEE determined that two stakeholder convenings—the first with state experts in climate and wildfire science, natural resource and ecosystem management, and public finance; and the second with county stakeholders and experts in ecosystem management, fire mitigation, workforce and community development, and local government—would yield the most useful combination of spending principles and implementation specifics given the tight timeline for outreach. Participants are listed in

[9] Id. at p. 1.

[10] See, e.g., Max Moritz and Van Bustic, University of California Agriculture and Natural Resources, *Building to Coexist with Fire: Community Risk Reduction Measures for New Development in California* (April 2020), available at https://anrcatalog.ucanr.edu/pdf/8680_PRINT.pdf.

[11] Sonoma County Administrator, "PG&E Settlement Funds Vegetation Management Allocation Update and Initial Recommendations," supra, pp. 10-11.

Appendix A. CLEE convened state experts on February 17, 2021 and local experts and stakeholders on February 24, 2021; conducted participant surveys before both events; and solicited participant review and comment on a draft of this report prior to finalization.

D. Sonoma County Lands and Vegetation Management Needs

Sonoma County includes a highly diverse set of lands, ecosystems, and communities with a varied set of vegetation management needs that are becoming increasingly urgent as wildfire trends become more complex and widespread. The county has over 1 million total acres of land, and approximately one-third of this total area has burned in recent years, leaving vast areas of land charred. Forest land—primarily Douglas fir, redwood, and oak—represents over half of the county's total land area, grassland and shrubland constitutes another third of the total, and urban/suburban land comprises less than one tenth.[12] These diverse forest, grass, and shrublands include a range of native species that can beneficially interact with fire but become highly vulnerable when faced with colonization by non-native species (e.g., eucalyptus), invasion by pests and pathogens, decades of fire suppression, and limited or no mechanical treatment of overgrowth.[13] Climate change and long-term drought accelerate this vulnerability.

The ownership structure of county lands is similarly diverse. Nearly 90 percent of forested land in the county is privately owned.[14] Ag + Open Space stewards over 116,000 acres of conservation easements over public and privately owned land, and directly owns and manages an additional 4,000 acres.[15] Federal, state, and local government owners are also responsible for tens of thousands of acres each.

In addition, a high proportion of Sonoma County's residents face wildfire risk. Of the county's 500,000 residents, approximately two thirds reside in about 50,000 acres of incorporated cities and towns located primarily along the Highway 101 corridor.[16] The remaining third of residents reside in one of the three types of wildland-urban interface (WUI) designated by the California Department of Forestry and Fire Protection (CAL FIRE):

- Wildland-urban interface: dense housing adjacent to vegetation that can burn in a wildfire
- Wildland-urban intermix: housing interspersed in an area dominated by wildland vegetation subject to wildfire

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[12] ORR, *Guidance for Recovery and Resiliency Planning in Sonoma County Forest Ecosystems* (2019) (prepared by EB Alive), pp. 28-29, available at https://sonomacounty.ca.gov/Office-of-Recovery-and-Resiliency/ (attachment to December 15, 2020 Board meeting summary).

[13] Permit Sonoma and Fire Safe Sonoma, *Sonoma County Community Wildfire Protection Plan* (2016), pp. 19-24, available at https://www.firesafesonoma.org/wp-content/uploads/cwpp-final.pdf.

[14] ORR *Guidance for Recovery and Resiliency Planning in Sonoma County Forest Ecosystems,* supra, p. 29.

[15] Sonoma County Agricultural Preservation and Open Space District, *The Vital Lands Initiative* (2021), pp. 46-49, available at https://www.sonomaopenspace.org/wp-content/uploads/FINAL-VLI-FULL-REPORT-01.26.2021_-ADA.pdf

[16] Permit Sonoma and Fire Safe Sonoma, *Sonoma County Community Wildfire Protection Plan* supra, p. 8.

- Wildfire influence zone: wildfire-susceptible land up to 1.5 miles from interface or intermix[17]

Many of these residents live on small, forested or forest-adjacent properties and possess limited capacity to conduct vegetation thinning, timber harvesting, or restoration projects to reduce wildfire risk.[18] Sonoma County residents who do not own property (e.g., renters and people lacking housing security) also face significant physical and health risks from wildfires but lack the ability to make direct vegetation management decisions. Continued development in the WUI, driven in part by long-term housing availability and affordability shortages (both of which were exacerbated by the loss of over 5,000 homes in recent fires), ensures that tens of thousands of county residents and homes will stand at high risk of wildfire exposure for years to come without comprehensive vegetation management action.[19] And as the 2017 Sonoma Complex Fires demonstrated, residents and businesses in non-WUI urban areas will also face significant vulnerability as climate change continues to dry out forests and grasslands.[20] Furthermore, recent fires have highlighted the extent to which Sonoma County's risk and response capacity are dependent on vegetation management in—and workers from—neighboring counties, adding yet another layer to the vulnerability equation.

This diverse set of vegetated land types, constellation of owners, and range of community exposures, plus a long history of fire suppression, creates a variety of wildfire-prone fuels and potential vulnerabilities, with a high proportion of overly dense and poorly maintained vegetation and limited ability to coordinate effective treatments.[21] County leaders and a range of stakeholders have identified accelerated and long-term vegetation management—including both property-level defensible space measures and large-scale strategic fuel breaks—as a top priority to build Sonoma's wildfire and climate resilience.[22] But despite the ongoing and increasing risks and needs, Sonoma has not successfully established the capacity for sustained design, funding/financing, permitting, or implementation of county-wide vegetation management at scale. Given the sheer number of acres in need of near-term and ongoing action, and the lack of coordinated management over those acres, County leaders will likely have to consider new coordination structures and support new market mechanisms in order to achieve sustainable risk reduction.[23]

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[17] Sonoma County Administrator, "PG&E Settlement Funds Vegetation Management Allocation Update and Initial Recommendations," supra, p. 15.
[18] ORR, *Guidance for Recovery and Resiliency Planning in Sonoma County Forest Ecosystems*, supra, p. 12.
[19] See Sonoma County Economic Development Board, *Sonoma County Complex Fires: Housing and Fiscal Impact Report* (February 2018), available at http://sonomaedb.org/Data-Center/Special-Reports/; Permit Sonoma and Fire Safe Sonoma, *Sonoma County Community Wildfire Protection Plan*, supra, p. 16.
[20] ORR, *Sonoma County Recovery and Resiliency Framework*, supra, p. 18; Fire Safe Sonoma, *Sonoma County Community Wildfire Protection Plan*, supra, pp. 14-15.
[21] Permit Sonoma and Fire Safe Sonoma, *Sonoma County Community Wildfire Protection Plan*, supra, pp. 10-11, 19-24;
[22] Id. at pp. 46-50.
[23] ORR, *Guidance for Recovery and Resiliency Planning in Sonoma County Forest Ecosystems*, supra, pp. 17-27.

E. Existing Vegetation Management Research and Initiatives

Sonoma County is currently home to several innovative wildfire resilience and vegetation management planning and research initiatives, involving a range of public, nonprofit, and educational partners. These efforts can inform and support future vegetation management programs, including expenditure of settlement funds. The table below is a partial overview of key ongoing initiatives in the county.

	Project Lead and Partners	Description
Sonoma County Vegetation Mapping & LiDAR Program[24]	Sonoma Ag + Open Space, Sonoma Water, and several contributing partners	• SonomaVegMap datasets produced – "including countywide LiDAR data and a fine scale vegetation and habitat map – provide an accurate, up-to-date inventory of the county's landscape features, ecological communities and habitats. These foundational data sets are key to facilitating good planning and management for watershed protection, flood control, fire and fuels management and wildlife habitat conservation." • Features include: vegetation map and fuels model, built infrastructure, high resolution topography. and constitute the primary inputs for mapping and decision support tools (below) • Foundational LiDAR data set last updated 2013: need for post-fires update
Advance Assistance – Wildfire Adapted Sonoma County[25]	Permit Sonoma	• Funded through FEMA HGMP • Goal is to educate WUI residents about defensible space and structural hardening • Targeted outreach, inspections, voluntary evaluations

[24] Sonoma Veg Map, "Vegetation, Habitat & LIDAR Data for Sonoma County" (webpage), available at http://sonomavegmap.org/.
[25] County of Sonoma, "SoCo Adapts: Wildfire Adapted Communities Grant Program" (webpage), available at https://sonomacounty.ca.gov/PRMD/Fire-Prevention/SoCoAdapts/.

Wildfire Fuel Mapper[26]	Pepperwood, Tukman Geospatial, UC Extension	• "An online application that supports forest management efforts, with a focus on reducing hazardous wildland fuels that threaten lives and homes in the wildland-urban interface."[27] • Designed for use by private landowners, registered foresters, and land managers for parcel-scale planning and prioritization utilizing SonomaVegMap inputs • PG&E Better Together and CAL FIRE support • Forthcoming in 2021
Community Wildfire Protection Plans (CWPP)[28]	Permit Sonoma and Fire Safe Sonoma	• Characterizes spatial risk and identifies priority actions for specific areas with communities • Update with new fire and seismic data is in progress • Sonoma County plan update kickoff meeting held Feb. 16, 2021
Multi-Jurisdictional Hazard Mitigation Plan Update[29]	City, town, and County agencies as well as Resource Conservation Districts (RCDs) and Fire Districts	• Held first public meeting Feb. 2021 • Funded through Federal Emergency Management Agency's Hazard Mitigation Grant Program (FEMA HMGP) • Regional approach to characterizing risk • Includes new Fire Hazard Index Model generated by Pepperwood and Tukman Geospatial presently under review
North Bay Forest Improvement Program[30]	Rebuild NorthBay Foundation; Five RCDs of Sonoma, Mendocino, Lake, and Napa Counties; Clear Lake Environmental Research Center,	• Financial incentive program for vegetation management by landowners backed by Rebuild NorthBay revolving fund • Three-year CAL FIRE grant funded pilot program • Prioritizes funding for disadvantaged communities

[26] Pepperwood, "Wildfire Fuel Mapper" (webpage), available at https://www.pepperwoodpreserve.org/project/wildfire-fuel-mapper/.
[27] Id.
[28] Permit Sonoma and Fire Safe Sonoma, "Community Wildfire Protection Plans (CWPP)" (webpage), available at https://www.firesafesonoma.org/documents/.
[29] County of Sonoma, "Hazard Mitigation Plan Update" (webpage), available at https://sonomacounty.ca.gov/PRMD/Long-Range-Plans/Hazard-Mitigation-Update/.
[30] Rebuild NorthBay Foundation, "North Bay Forest Improvement Program" (webpage), available at https://rebuildnorthbay.org/innovate/nbfip/.

Decision Support Tools for Fire Risk Reduction	Sonoma Water, UC Cooperative Extension, Conservation Biology Institute, Pepperwood, Tukman Geospatial	• $1.6 M funded by separate PG&E settlement source to Sonoma Water and UCCE for linked Parcel- and Landscape-scale Decision Support Tools, including a stakeholder training and outreach process • Tools can be used to identify highest priority areas by diverse stakeholders
RCD Project Tracker[31]	19 California RCDs	• Aims to track and report data on RCDs' conservation work
Forest Landowner Stewardship Directory[32]	Sonoma County Forest Conservation Working Group (a collaborative of Gold Ridge RCD, Sonoma RCD, Sonoma Land Trust, Pepperwood and Ag + Open Space)	• Landowner-facing website provides an overview of management actions appropriate at different parcel sizes, as well as a list of resources available to facilitate responsible management
Diamond Mountain-Mark West Watershed "Natural Enterprise Complex" capacity building[33]	Taking Action for Living Systems with Mark West Watershed landowners and neighbors	• A volunteer-led process to identify a community-based treatment plan for vegetation management and sustainable revenue models in Tubbs/Glass Fire footprints
North Bay Wildfire Cameras Project[34]	Sonoma County, neighboring counties, PG&E, CAL FIRE, Cal Parks and Recreation, Cal OES	• Provides camera-based tracking of fire ignition and behavior to inform local decision-making
Sonoma Valley Wildlands Collaborative	Sonoma Land Trust, California Department of Parks and Recreation, Sonoma County Regional Parks, Sonoma County Ag + Open Space, Audubon Canyon Ranch, Sonoma Mountain Ranch	• "Maintain[s] and improve[s] ecosystem health, increase[s] resilience to wildfires and climate change, and reduce[s] future impacts of wildfire to communities in the Sonoma Valley."[35]

[31] RCD Project Tracker, "Resource Conservation District Project Tracker" (webpage), available at https://www.rcdprojects.org/.
[32] Sonoma County Forest Conservation Working Group, "Forest Landowner Stewardship Directory," available at https://sonomaforests.org/wp-content/uploads/2020/05/Sonoma-County-Landowner-Stewardship-Directory_PRINT-1.pdf.
[33] Inquiring Systems Inc., "Taking Action for Living Systems" (webpage), available at https://www.inquiringsystems.org/project/taking-action-for-living-systems/.
[34] Alert Wildfire, "North Bay Cameras" (webpage), available at http://www.alertwildfire.org/northbay/.
[35] Sonoma Valley Wildlands Collaborative, "Sonoma Valley Wildlands Collaborative" (webpage), available at https://www.svwildlandscollaborative.com/.

Resilient Landscapes Coalition	UC Master Gardener Program of Sonoma County, Sonoma Ecology Center, Habitat Corridor Project	• Promotes preservation of biodiversity and wildlife habitat while meeting defensible space guidelines. Offers plant selection suggestions for near-home landscaping. Conducts community outreach and collaborates with fire-protection organizations.[36]
Natural Enterprise Complexes/Pilots	Taking Action for Living Systems	• Uses Nature Enterprise Complexes to balance landscape health and wildfire mitigation.[37]

[36] Resilient Landscapes Coalition, "Resilient Landscapes Coalition" (webpage), available at https://www.sonomaresilientlandscapes.com/.
[37] Living Systems, "Natural Enterprise Complexes" (webpage), available at https://www.livingsystemsalliance.org/about.

III. Principles for Vegetation Management Fund Allocation

Participants outlined a multi-faceted set of principles to guide allocation of vegetation management funds, recognizing that the limited pot of money will require prioritization between near-term and long-term priorities and identification of supplementary or matching opportunities to maximize effectiveness, efficiency, and equity. While no single project or allocation will be able to satisfy all of the principles, as a group the principles should inform and shape the structure of the overall spending program.

A. Investment Priorities

- **Prioritize vulnerable communities** (such as lower-income residents, renters, and those most affected by air quality impacts), critical infrastructure, and special assets
- Accomplish **multiple forest, ecosystem, and community health objectives** (including risk management, carbon sequestration, and employment) by performing high-quality, science-based treatments
- Clearly identify **the goals of vegetation management**, including protection of life, property, public health, ecosystem health, and resilience of built and natural assets, when allocating funds
- Conduct risk reduction at the **landscape and/or community level** rather than parcel level
- Fund **sustainable rebuilding, lasting benefits, and nature-based solutions** wherever feasible
- Provide **technical assistance and financial support** for Resource Conservation Districts (RCDs) and other local/community organizations
- Support **local capacity, training, skill building, and employment**
- Incorporate **mechanisms to support home/community hardening and rebuilding**

B. Stakeholder Engagement

- Incorporate robust **public engagement, outreach, and education**, explaining to residents what the county's vegetation management goals are; why vegetation management is needed; and how they can participate as property owners, renters, businesses, workers, and members of the public
- Focus on outreach to, engagement of, and direct project support for **lower-income and disadvantaged communities**
- Coordinate with resilience leaders in **neighboring counties** to address shared/cross-county wildfire risks and risk management needs
- Convene **local, state, and national partners** in long-term planning and implementation processes

C. Decision-Making Process

- Recognize that effective vegetation management requires **continuous, dedicated implementation** in an adaptive management framework
- Take an **interdisciplinary, science-based approach** incorporating not just wildfire and climate resilience but also public health, social services, emergency management, and other priorities
- Work simultaneously to identify **near-term spending** for high-priority projects and investments for **long-term resilience** in the county
- Establish a **transparent 10-year business plan** with a budget and forward-looking metrics to measure success and facilitate adaptive management in changing conditions
- Assess the **scale of the county's total vegetation management need and cost**, integrate future climate risks into assessments, and use pilots to iterate for long-term success
- Expand community outreach and education efforts
- Acknowledge, incorporate, and **build on the extensive work already done** by county leaders, nonprofit partners, private landowners, and CAL FIRE on data collection, risk assessment, mapping, and more
- Identify **barriers in land-use and environmental permitting processes** that can inhibit action by smaller landowners and develop cooperative solutions to overcome them

D. Sustainable Funding

- **Leverage the initial allocation** to increase the total funding available
- Focus on **opportunities to replenish funding**, such as revolving funds, matches or other outside funds, and savings generated through averted impacts
- Target expenditures on projects and initiatives that **maximize return on investment**
- Fund only **activities not covered by other funding sources** (unless a match is needed)
- **Monitor implementation and track spending** for success, benefits, and lessons learned
- Track and incorporate federal, state, and philanthropic **matching fund timelines and requirements**

Participants used these priorities to guide their priority fund allocation recommendations, detailed in the following section.

IV. Priorities for Vegetation Management Fund Allocation

Participants provided specific suggestions of funding allocations in terms of both categories of spending and specific projects and initiatives. Suggestions first were solicited through pre-convening surveys and a voting exercise during both convenings; while there was often broad agreement on principles and categories of expenditure, there were few areas of group consensus on specific expenditures (although participants did generally agree that approximately one-third of the funds should be spent directly on near-term projects, as discussed in Section IV.B below). The CLEE team conducted individual follow-up with some participants to narrow the recommended funding allocations and provide the County with the clearest possible recommendations at this phase of the process. The six categories below—governance; outreach and education; near-term projects; data and planning; long-term financial sustainability; and workforce development—represent the core priorities developed by participants. See Appendix C for budget allocation framework and concept proposal for each category.

A. Centralizing governance and project coordination

The settlement funds should first and foremost support a centralized vegetation management governance structure to perform threshold tasks and County coordination, with an immediate focus on vetting and supporting "shovel ready" projects in time for coming fire seasons. Most prominently, these involve:

- Assisting with administration of settlement funds and future funding sources
- Coordinating County efforts and stakeholder participation to avoid duplication and harness efficiencies
- Communicating with the public to ensure equity and public buy-in
- Spearheading outreach and education initiatives
- Streamlining permitting and approval authorities
- Compiling research and information-gathering to incorporate the latest science into decision-making
- Leading future funding and grant-writing efforts (particularly in light of potential upcoming funding opportunities such as the Wildfire Risk Reduction grant program under recently proposed Senate Bill 12 [McGuire])

Creating this governance capacity—and centralizing these functions under a single team—is a prerequisite to efficient use of funds and effective long-term implementation.

Governance options entail three primary pathways:

- **Centralized representation among key agencies and implementers at an existing entity** As perhaps the most promising option, the Board of Supervisors could immediately "deputize" and oversee a governance group comprised of representatives from key County departments (such as Sonoma County Regional Parks, Sonoma Water, Permit

Sonoma, Sonoma Ag. + Open Space, the County Counsel, and the County Administrator's Office), along with one representative each from CAL FIRE, UC Cooperative Extension, Fire Safe Sonoma, and the Regional Climate Protection Authority (RCPA). The group could focus on vetting simple applications to fund "shovel ready" project in the 2021 fire season, based on the criteria outlined below. Its term of authority could expire by January 1, 2022, so the County can revisit the governance structure and make any changes, such as adding seats for nonprofits or RCDs in future years. Some participants preferred that the governance structure involve more stakeholders, including affected cities, tribes, business and industry, professional foresters, private property owners, and nonprofits, to function as a public-private partnership (the Taking Action for Living Systems [TALS] approach may offer valuable examples of public-private coordination[38]). Regardless of long-term structure, the governance group will likely require staff support from at least one full-time equivalent employee to coordinate meetings and tasks. Some participants recommended the entity be housed within an existing body like Ag. + Open Space, which has grant and funding disbursement expertise and coordinates already with other departments and local nonprofits.

- **New governing forum among multiple jurisdictions**
  The governing entity could be modeled on the East Bay Hills Emergency Forum, a multi-jurisdictional fire resilience and response group formed by East Bay governments in the wake of the 1991 Oakland Hills fire. Forum members include local government representatives, fire districts, parks departments, academics and researchers, and CAL FIRE—indicating the scope that a new Sonoma forum might take.[39]

- **Joint powers authority or public-private community development corporation**
  The governing entity could be a joint powers authority, as currently used in Marin County, or a community development corporation, incorporated by the County as a nonprofit. Participants did not prefer these options due to complexity and political challenges.

Ultimately, any governance structure should incorporate participation by all relevant stakeholders and tribal government representatives. The Board of Supervisors could appoint an outside advisory committee to advise the governance entity to ensure representation of relevant stakeholder views and input on funding decisions in 2021 and beyond.

Regardless of the form, the governance lead could develop a transparent and accessible 10-year business plan for settlement fund expenditures, as well as administer distribution and coordinate activities. Staffer(s) could also dedicate time to grant writing to replenish and expand vegetation management funding countywide. In addition, the staffer(s) could help identify and address implementation challenges, such as permitting and other logistical barriers

[38] See https://www.livingsystemsalliance.org/ for more information.
[39] For more information including organizational structure, visit http://www.hillsemergencyforum.org/.

(discussed below). The fund allocation to create a new governance capacity should reflect these staffing, outreach, and engagement needs.

- **Regulatory alignment and permitting**

Participants noted that regulatory misalignment and conflicting policies at multiple levels of government can hinder deployment and permitting of vegetation management programs and projects. The governance group could identify these barriers, such as existing land use regulations, permitting, and environmental clearances, and offer recommendations for addressing them to ensure vegetation management projects can be achieved in a timely and cost-effective manner. Needed regulatory actions could cover updates to general plans, development codes, and the countywide environmental impact report for these activities under the California Environmental Quality Act (CEQA), as well as for programmatic approaches to align with federal and state environmental regulations. The governance lead could also ensure ongoing monitoring to track progress and additional needs.

B. Community Outreach and Education

Participants consistently identified the need for additional outreach, information sharing and exchanges with residents and workers on wildfire safety and vegetation management. Many identified community and landowner outreach as the most cost-effective and necessary approach, particularly given the large amount of vegetation on private property and the need for home hardening investment. This outreach could also include sharing information gathered through existing planning and mapping activities.

A portion of settlement funds should be directed to dedicated staff time/capacity to support immediate, targeted community outreach, education, and coordination to bolster outstanding planning and implementation needs, beginning immediately and continuing for multiple years (these staff funds could also be replenished if the County introduces new taxes or financing districts for vegetation management or via new grants). This option can be a cost-effective means of building public support, motivating private action, and aggregating projects to reach the scale needed to attract resilience investments. Outreach is also necessary to educate the public about the existence and use of planning tools, including research or maps available to inform science-based decision making. Furthermore, the impact of this outreach may be maximized when coupled with a direct pathway to site-specific treatment planning and implementation at a neighborhood or watershed scale to accelerate the pace and scale of action countywide in a coordinated fashion with stakeholder buy-in.

A distinct but related portion of funds could be directed to staff time/capacity dedicated specifically to equity-focused, bilingual outreach, education, and workforce development efforts. Broad outreach both to private landowners and renters should be a priority. For example, parcel-level actions that center on landowners, while critical, may fail to incorporate renters, multi-lingual populations who may not be able to access English-only tools, residents of unpermitted housing units, or bunkhouses that tend to house large numbers of migrant or

seasonal farm workers. Additionally, staff should focus on incorporating traditional ecological knowledge (TEK) in partnerships with tribes and other indigenous organizations. Tribal governments are essential partners and should be consulted and engaged as such in vegetation management planning efforts. Tribes often hold important TEK that can help shape a robust wildfire management approach. In addition, the outreach should involve communicating and addressing implementation challenges for decision makers, such as permitting and other logistical barriers (discussed above).

In both cases, the funds dedicated to outreach and education could be directed to full-time staff within the new governance entity described above (which could also serve as a stakeholder coordinator and assist with nonprofit/community organization grant-seeking activities) or it could be directed to existing county groups with robust outreach networks and programs.

C. Immediate vegetation management activities

Participants broadly agreed that a substantial portion of settlement funds—approximately one third, or $8 million of the initial $25 million allocation—should be directed to high-priority, near-term vegetation management activities in high-risk areas and near key ecosystems. At least $2 million, and up to $4 million, of this amount should be committed to immediate-term activities in advance of the 2021 fire season, including outreach. The County could initiate an immediate competitive grant process (with simple, easy-to-draft proposals or letters of interest) and invite County departments, local fire districts, city governments and communities with CWPPs in place, RCDs, community groups, nonprofit organizations, foresters and technical advisors, and private landowners/operators to apply for one-time funding for forest treatment, thinning, and health projects. In addition, projects and initiatives to conduct community outreach and education in connection with vegetation management priorities should qualify for these early action funds.

To ensure the most efficient use of funds and highest return on investment, the County should prioritize support for County departments, nonprofits, Fire Safe councils, and landowner organizations with a strong record of implementing and communicating on vegetation management in Sonoma.[40] The County should also prioritize projects that have already been planned and permitted (e.g., covered by an existing vegetation or forest management plan in concert with CAL FIRE and local fire agencies) but were not funded due to lack of resources, by accepting proposals that county departments and others already prepared for CAL FIRE's Fire Prevention and Forest Health and related programs – thus helping to address the backlog of

[40] Examples of nonprofit candidates include, but are not limited to, Sonoma Ecology Center, Audubon Canyon Ranch, Circuit Rider, Conservation Corps North Bay, and Fire Safe Sonoma, local Fire Safe Councils, Citizens Organized to Prepare for Emergencies organizations, and Community Emergency Response Teams. Examples of landowners/timber companies and landowner/timber coalitions include, but are not limited to, Calforests, Forest Landowners of California, California Licensed Foresters Association, Sonoma County Farm Bureau, Cattlemen's Association, large landowners like Redwood Empire, Mendocino Redwood Company, Gualala Redwoods Timber, and Soper Wheeler, and Berry's Sawmill.

projects and provide a rapid implementation boost for well-formulated projects that can reduce risk in advance of the coming fire seasons.

Funds should be allocated based on the following award criteria, project zones, and project types:

- **Award criteria**. Projects meeting the following criteria should be prioritized:
    - Potential to reduce fire risk in advance of the 2021 and 2022 fire seasons
    - Location in/proximity to priority project zones described below
    - Use of priority project types/activities described below
    - Focus on multi-benefit, whole-ecosystem, and landscape-level management actions (including alignment with priorities outlined in the County's 2016 CWPP and best management practices developed by Fire Safe Sonoma and Sonoma Ecology Center)
    - Benefits for and participation of lower-income and highest-vulnerability communities
    - Organizational capacity to complete proposed work (preference for community organizations, NGOs, and County agencies with a proven track record in the field)
    - Opportunity to deliver multi-year benefits and/or leverage third-party funding (including direct funding for matching grant opportunities)
    - Advancement of local workforce development and training goals
    - Engagement of multiple communities and/or neighboring counties
    - Inclusion of highly visible demonstration/pilot projects to advance public education and outreach and prove scalability of innovative and affordable techniques

- **Project zones**. Projects should focus on the following high-risk areas with high potential for return on investment:
    - High-fire risk areas to the northeast of developed communities
    - Defensible space within 100 feet of homes in densely populated areas to the west and south of east-west canyons
    - Areas that burned in recent fires and/or have high fire return interval
    - Boundary areas between large public and private lands and dense developments
    - Areas surrounding primary evacuation routes and key infrastructure
    - Specific regions:
        - Guerneville/Camp Meeker/Occidental area
        - Mark West and the Tubbs and Glass Fire corridors
        - Lake Sonoma
        - Sonoma Valley (including Mayacama Ridge, Sonoma Mountain/Bennett Ridge, and adjoining communities)
        - Timber Cove/Sea Ranch area to Cazadero

- **Project types**. Projects should focus on high-quality, sustainable vegetation management activities and outreach, including:
    - Creation of "calming zone" vegetation removal buffers and strategic fuel breaks along the wildland-urban interface
    - Re-treatment and maintenance of recently burned areas (particularly near the WUI or vulnerable watershed areas that will be more difficult to treat once vegetation gets reestablished)
    - Prescribed (maintenance) burn of completed thinning projects
    - Understory thinning of woodlands and forests
    - Prescribed grazing where feasible
    - Communication and creation/maintenance of defensible space within 100 feet of homes

The County should aim to create the governance entity described in Section IV.A above in order to administer the first allocation of near-term funds ($2-4 million) for 2021 fire season projects. However, if this proves infeasible given the tight timeframe, the Board of Supervisors could review and approve initial fund applications based on robust application of these criteria (potentially with project selection input from Fire Safe Sonoma and/or the North Bay Forest Improvement Program) until the governance entity is constituted.

D. Data, planning, and mapping

Many participants identified that there is a backlog of project implementation mainly due to inadequate or time-limited funding, rather than a lack of information or technical feasibility. Members of the expert panel noted, however, that the effectiveness of vegetation management to mitigate fire hazards in the Sonoma County region is not well-characterized in the scientific literature and may therefore merit targeted monitoring of a subset of projects. Others pointed to the need for larger-scale treatment planning and implementation efforts (pilots), leveraging the best data available, to increase the pace and scale of implementation and to qualify for investments at scale via mechanisms like Forest Resilience Bonds and carbon credits, among others. Several organizations already are managing data collection and mapping efforts to inform wildfire risk (see Section II.E) or have previously conducted applied research to inform decision making. Yet the core data set (SonomaVegMap) that implementers use to inform the majority of these efforts was collected in 2013, prior to recent fire seasons, and is arguably due for an update to accurately reflect 2021 post-fire conditions.

A portion of the initial funds should facilitate priority data, planning, and mapping efforts. Ongoing and predictable funding for consistent data collection would enable development of an implementation tracking system for these efforts to measure progress towards meeting Sonoma County's vegetation management needs. It should be noted that convening participants did not achieve consensus on this topic. Some participants expressed that Sonoma County is an established leader in data collection and already has characterized risks more extensively than many if not most other counties, and therefore the County should prioritize allocation of settlement funds for implementation. Others pointed out, as mentioned above,

that these foundational datasets are now due for an update to accurately guide 2021 and beyond priority-setting.

As described in Section II, $1.6 million of settlement funds—separate from the $25 million allocated to vegetation management—has been dedicated to expanding the fuel mapping decision support tools to be developed by Sonoma Water and UC Cooperative Extension. This funding will boost community outreach and technical assistance for an online parcel-scale vegetation management tool and will also aid the development of a landscape-scale tool.[41] These two decision support tools will create a shared platform for science-based decision making and help to inform consistent prioritization of vegetation management efforts across jurisdictions.

The shared data sources of the SonomaVegMap, maintained in a publicly facing archive stewarded by Ag + Open Space and the County GIS departments, are used to fill data gaps, support detailed spatial analysis, and inform wildfire mitigation efforts. Sonoma County's Community Wildfire Protection Plan (CWPP) and Pepperwood's forthcoming Wildfire Fuel Mapper, as well as other organizations' resources, all tap into these shared resources. But these efforts have limited bandwidth to share results for community education purposes.

In terms of planning, local-level CWPPs and action plans could fill important gaps in project planning and pilot development but would require funding additional stakeholder facilitation. The county-wide CWPP taps into the Sonoma VegMap and Hazard Mitigation Plan mapping, fuel models, and hazard characterizations, and community engagement to inform vegetation management efforts based on existing data. Some participants suggested that the CWPP could benefit from additional resources to acquire new data to update modeling efforts.[42] Plans could also benefit from additional specificity to inform implementation and access additional resources.

Existing research efforts have gathered substantial amounts of data; however, participants identified several areas where funding towards more research, more comprehensive data, or more collaborative engagement could be valuable.

- **Focusing on repeat, periodic, and comprehensive data collection**
  An effort to collect and synthesize periodic, regular data and conduct ongoing analysis on Sonoma's forests and other vegetation areas using ground-based and remote sensing tools will be crucial to inform long-term strategies including repeated vegetation management treatments. Regularly updated risk assessments will also be necessary to capture changes in forest structure, fire history, population, housing density, infrastructure, and other variables that affect fire risk and vegetation management

[41] Sonoma County Administrator, "PG&E Settlement Funds Vegetation Management Allocation Update and Initial Recommendations," supra, pp. 10-11.
[42] Permit Sonoma and Fire Safe Sonoma, *Sonoma County Community Wildfire Protection Plan,* (2016), available at https://www.firesafesonoma.org/wp-content/uploads/cwpp-final.pdf.

approaches. Projects should also ensure that data collection and analysis focuses on equity. The County should consider what—and who—is and is not covered in the scope of existing and future efforts, especially with regards to disadvantaged populations.

- **Monitoring and evaluating progress**
  A tool to track completed vegetation management projects and their effectiveness would be helpful in assessing county-wide progress while also illuminating approaches that have the greatest positive benefit over time. Additionally, some participants identified a need for the creation of Best Management Practices for vegetation management work to ensure project quality and consistency. Sonoma County should provide funds for development of a monitoring tool and a defined set of best practices and tracking metrics. The proposed governance group could oversee the development of both the metrics and the monitoring tool. Metrics could include social and environmental impacts as well as economic impacts. Measuring project outcomes is necessary to inform adaptive management strategies, especially as conditions in Sonoma County evolve over the coming years and decades because of climate change and population shifts. Quantifying ecosystem services derived from the program may also be a necessary element for sustainable funding strategies.

- **Coordinating efforts to reduce redundancy**
  To facilitate strategic, landscape-scale data efforts, some participants suggested dedicating funding towards the creation of a centralized data hub. This would avoid potential duplication of efforts by allowing interested parties to access the latest available data and receive timely updates about tools and resources. A team of community organizations and researchers, with the support and oversight of the proposed vegetation management governance group, could manage this hub and guide project prioritization. Additionally, the central team could receive metrics from project monitoring and evaluation, as described above, and revise approaches accordingly in consultation with stakeholders.

E. Long-term financial sustainability

Participants broadly agreed that vegetation management funds should be directed as much as possible toward initiatives and investments that support the availability of sustained funding for ongoing vegetation management and resilience. Ensuring long-term financial sustainability—both as a core element of other funding recommendations, such as governance structures that can obtain and manage grant funds, and through creation of stand-alone funding and financing mechanisms—is vital to refilling the pot of money available for vegetation management and meet recurring needs. New financing mechanisms could achieve two of the participants' top funding priorities—leveraging settlement funds to increase total funding available, and creating opportunities to replenish funding for long-term use—with relatively minimal outlays of initial funding. Potential opportunities for investment of settlement funds include:

- **Revolving fund**
  Participants emphasized that many small landowners, nonprofits, and resource conservation districts (public nonprofit entities created under state law to provide technical, financial, and educational resources for regional natural resource conservation efforts[43]) can often lack the upfront capital needed to start many high-priority grant applications and public-private efforts. A County-administered revolving fund, seeded with settlement funds, could provide financial support to RCDs and local nonprofits seeking to participate in state or federal wildfire risk and vegetation management programs that provide reimbursement of project costs, and to small landowners who need assistance with the initial application fees or upfront costs of participating in fuel reduction programs. The County could dedicate a small portion of settlement funds to this revolving fund and direct the new vegetation management governance entity described above to administer it. The availability of the fund would allow Sonoma County effectively to issue small loans to local partners that have the capacity to carry out vegetation management projects and the ability to obtain additional third-party funding, and continual replenishment by the loan recipients (after their own reimbursement) would ensure that the principal funds remain available for future projects.

  The Biomass Utilization Fund organized by RCAC and the Sierra Nevada Conservancy to finance biomass businesses in Tuolumne County offers a strong example of a county-scale revolving fund focused on vegetation management, with funds going to a range of revenue-generating energy and wood product businesses.[44] Similarly, a vegetation management revolving fund would need to be limited to applicants that are capable of loan repayment, such as through anticipated reimbursement or refund of upfront fees, expected real-world cost savings, or revenue generation through collection of fees or generation of saleable products. In addition to likelihood of repayment, the County could also use prioritization criteria based on an applicant's capacity to carry out the project and recent history of resilience work, and the project's total projected acreage and connection to low-income and disadvantaged communities. The County could also direct a portion of the funds generated by the financing district and sales tax measures described below (or federal grant funds, which were used to seed the Biomass Utilization Fund) to build the revolving fund's principal and expand the number and scale of projects supported.

- **Financing district**
  The County could invest funds to create a financing district (or new zones of benefit within the existing County Service Area) to fund ongoing vegetation management and fire resilience work, targeting properties in key risk and resilience corridors. With a one-time outlay of near-term funds, the County could retain legal counsel and public finance consultants to craft a financing district plan and carry the process through public

[43] See Cal. Pub. Res. Code §§ 9001 et seq. Sonoma and Gold Ridge RCDs are the local districts for Sonoma County.
[44] For more information, visit https://www.rcac.org/lending/biomass-utilization-fund/.

approval. District revenues from a special property tax would fund vegetation management activities and County staff time needed to manage district operations. A successfully formed, sufficiently large district could potentially generate millions of dollars per year for decades, supporting sustained vegetation management activities with a limited upfront investment of settlement funds.

Multiple options exist under California law to finance local projects with secure property tax funding streams (such as traditional assessment districts, Enhanced Infrastructure Financing Districts, and Annexation Development Plans for unincorporated disadvantaged communities[45]). The Mello-Roos Community Facilities District (CFD) offers a potentially strong fit to fund long-term vegetation management activities, since it allows for funding of public services (rather than specific built infrastructure[46]) and the creation of different districts to address different needs.[47] Importantly, the public services that a CFD may fund specifically include fire protection and suppression services, maintenance of parks and open space, and maintenance of publicly owned real property with a useful life over five years.[48]

The County Board of Supervisors (or another County agency or a joint powers authority) could create a CFD to fund vegetation management activities on public lands and private properties, conducting advance outreach to identify portions of the county that overlay a) key fire resilience and ecosystem protection zones/corridors and b) properties willing to take on incremental tax burdens, shaping the district boundaries accordingly.[49] Property owners or voters (depending on the size of the district) within the boundaries would need to approve the CFD by a two-thirds vote; additional regions or communities could later be annexed into the district.[50] Within the boundaries, multiple improvement areas could be designated for regions/communities with different development, forest, and risk profiles.[51] The method of apportionment of the special tax could be based on a combination of property size and fire risk. Revenue generated by the special tax could be used to obtain bond financing to directly fund vegetation management activities (varied according to improvement area) and/or to refill a revolving fund as described earlier. County costs to create the district would likely be around $200,000-500,000, with a return of millions of dollars in annual revenues if the vote is successful. The long-term revenue stream could also potentially be used to attract philanthropic match

[45] See Cal. Govt. Code § 53753 (assessment districts), Cal. Govt. Code §§ 53398.50 et seq. (EIFDs), Cal. Rev. & Taxation Code § 99.3 (ADPs); California Association for Local Economic Development, *Primer on California's New Tax Increment Financing Tools* (2017), available at https://www.cacities.org/Resources-Documents/Policy-Advocacy-Section/Hot-Issues/New-Tax-Increment-Tools/CALED-TIF-Primer-3-17-FINAL.aspx.
[46] See Cal. Streets & Highways Code § 5101, Cal. Govt. Code § 53398.52(a)(3) regarding infrastructure-specific funding requirements.
[47] Cal. Govt. Code §§ 53311 et seq.
[48] Cal. Govt. Code §§ 53313(b), (d), (g).
[49] Cal. Govt. Code § 53321(a).
[50] Cal. Govt. Code §§ 53328, 53339.
[51] Cal. Govt. Code § 53328.1(f).

funding, particularly given the innovative use of a time-tested financing approach (such as a community facilities district) to support wildfire resilience.

As another potential option to create a financing district, the Board of Supervisors could create a new "zone of benefit" within the existing County Service Area 41 (or multiple zones of benefit to address regions with different ecosystems and risks), which the County created pursuant to state law in 1993.[52] The Board could use this existing legal authority to seek approval from residents in the zones of benefit of a special parcel tax to finance vegetation management (subject to 2/3 voter approval requirements). Alternatively, the County could seek approval from voters throughout the unincorporated area for vegetation management and other fire resilience work countywide. Reliance on CSA 41 could avoid most of the high start-up costs of a Mello-Roos district. While CSA 41's authority does not specifically reference vegetation management—it currently includes "structural fire protection"—the Board, County Administrator, and County Counsel could make appropriate factual findings establishing the clear link between vegetation management and protection of homes and businesses in order to carry out the new work.

- **Forest Resilience Bond**
  Similarly, the County could use a small portion of near-term settlement funds to develop an innovative resilience-focused financing mechanism, leveraging county funds to attract outside investment and build an innovative multi-stakeholder model. This financing mechanism can incorporate some of the other funding suggestions, like the financing district or sales tax revenues described elsewhere, and bring future funding forward to enable large-scale resilience more quickly.

  Forest Resilience Bonds, a type of green bond, finance multi-benefit forest restoration projects through a combination of market-rate investment from traditional financial institutions and concessionary capital from mission-driven foundation investors.[53] In 2018, Blue Forest Conservation piloted the model in California's North Yuba Watershed, raising $4 million from financial institutions and foundations, which are repaid by the state and the local water utility (which project long-term water supply benefits) for a 15,000-acre restoration project.[54] The second financing is being launched this year, with $20-25 million in commitments from stakeholders enabling restoration of more than

[52] See Cal. Govt. Code § 25217 (authority of CSAs); Sonoma Co. Board of Supervisors Res. No. 93-1589 (October 19, 1993) (creating CSA 41).
[53] Nathalie Woolworth and Zach Knight, "Forest Finance Unlocks Opportunities for Rural Communities: Exploring the Triple Bottom Line Impacts of the Forest Resilience Bond Model," Federal Reserve Bank of San Francisco Community Development Innovation Review, Strategies to Address Climate Change Risk in Low- and Moderate-income Communities, Vol. 14, Issue 1 (October 2019), available at https://www.frbsf.org/community-development/publications/community-development-investment-review/2019/october/forest-finance-unlocks-opportunities-for-rural-communities-exploring-the-triple-bottom-line-impacts-of-the-forest-resilience-bond-model/.
[54] See Convergence, *Case Study: The Forest Resilience Bond* (June 2020), available at https://www.convergence.finance/resource/213755b7-2d09-4e41-8ed1-e9a0087b64eb/view.

41,000 additional acres and potential opportunities to leverage additional state and federal grants.[55] This model can therefore facilitate near-term investment in sustainable forestry activities, simultaneously reducing wildfire risk through thinning and controlled burns, generating timber income and employment, improving forest health, and supporting broader ecosystem resilience and water quality protection for regional stakeholders. The mixture of market-rate and concessionary capital finances the project at a lower, blended rate of return while building a coalition of public and private stakeholders.

The County could direct a small portion of settlement funds to engage consultants to identify an optimal location for a pilot resilience bond project (for example, the Mark West watershed or the Lake Sonoma drainage area) and convene a public/private stakeholder group. County costs for initial scoping would be approximately $50,000-$100,000; if a pilot location were successfully identified, planning and permitting the pilot (by a registered professional forester and environmental consulting firm) would cost an additional $100,000-$500,000. The County would then invest an appropriate amount to attract matching funds depending on the size of the project. A pilot could potentially utilize a "pay for success" model that increases or decreases payments from the project stakeholders to the investors if the project over- or under-performs compared to anticipated environmental outcomes.[56] This model would rely on rigorous project management, monitoring of expected environmental benefits, and a mutually agreed-upon method of measurement.

While the resilience bond model could be applicable to Sonoma County's forest ecosystem and wildfire resilience needs, and successful in aligning disparate stakeholders, it has not been implemented on this type of landscape. One challenge is that Sonoma's forests are characterized by multiple land parcels with fragmented ownership—indicating that the County or a trusted local organization would likely need to first identify a large single-owner parcel or set of parcels and/or to develop one of the governance arrangements identified above to help coordinate individual landowner participation and engagement.

- **Sales or parcel tax revenue measure**
  As a complement to (or in place of) a financing district based on property taxes, the County could dedicate a small portion of settlement funds to structuring and building support for a new vegetation management sales or parcel tax ballot measure. Sonoma County Measure G would have instituted a 1/2-cent sales tax to fund fire warning systems, vegetation management, firefighter recruitment, fire facility improvements, and other fire-related needs. Of the anticipated $51 million in annual revenue,

[55] See Yuba Water Agency, "Yuba Water commits $6.5 million to improving forest health and reducing wildfire risk" (press release) (February 16, 2021), available at https://www.yubawater.org/CivicAlerts.aspx?AID=130.
[56] See US EPA, "DC Water's Environmental Impact Bond: A First of its Kind" (April 2017), available at https://www.epa.gov/sites/production/files/2017-04/documents/dc_waters_environmental_impact_bond_a_first_of_its_kind_final2.pdf.

approximately $2 million would have gone to regional vegetation management efforts, and $600,000 to county efforts to consolidate fire agencies.[57] While the measure was introduced via unanimous vote of the Board of Supervisors and had support from a number of fire and emergency response agencies, it narrowly failed (by less than two percent) to receive the required two-thirds public vote.[58]

The new measure (potentially placed on a June 2022 primary ballot) could propose a smaller sales tax with revenues focused on ongoing vegetation management. For example, a 1/8-cent sales tax could raise approximately $12 million per year; by comparison, the County estimated its one-time damages from the 2017 fires at $244 million. Alternatively, the Board could consider a parcel tax similar to Marin County's Measure C, approved by 70 percent of voters in March 2020, which will generate approximately $19 million per year for wildfire prevention needs through a 10-cent/building square foot assessment with low-income exemptions (a potentially more equitable option than a sales tax with equal application to all residents).

Funds could potentially be split between three uses. The majority of funds (75-85 percent, or approximately $9-$10 million per year) could support direct vegetation management efforts, with the funds allocated among cities/fire districts (and/or RCDs) and the Board of Supervisors (for regional efforts) in the same manner as provided in 2020 Measure G. Alternatively, this block of funds could be split between vegetation management efforts and support for firefighting services. The second portion of funds (10-15 percent) could contribute funds to grow the revolving fund for local use described earlier, and/or provide grant-writing support to local organizations and RCDs seeking to develop long-term vegetation management, mapping, or similar programs. And the final portion of funds (5-10 percent) could provide continuing funds for staff and operations of the new consolidated vegetation management governance entity described earlier. This sales tax revenue would serve as a rapid multiplier for the settlement funds, providing a secure, long-term funding stream to achieve the county-wide scale of treatment that participants identified as necessary, based on a small initial outlay of one-time funds.

- **Biomass facility/use feasibility study**
  Participants emphasized the necessity of a viable market for biomass—for energy, fuels, and/or wood products end uses—to ensure the long-term financial sustainability of

[57] Sonoma County Measure G (March 2020), available at https://sonomacounty.ca.gov/CRA/Registrar-of-Voters/Elections/03-03-2020/Measures-on-Ballot/; see Sonoma County Administrator, "PG&E Settlement Funds Vegetation Management Allocation Update and Initial Recommendations," supra, p. 4.
[58] Id.; see Sonoma County, March 3, 2020 Presidential Primary Final Official Results, available at https://results.enr.clarityelections.com/CA/Sonoma/102792/web.241347/#/summary. While Art. XIII A of the California Constitution has generally been understood to require a two-thirds vote for imposition of most local taxes and fees, recent decisions in San Francisco superior and appellate courts have indicated that a simple majority may be sufficient for voter-approved measures. See *Howard Jarvis Taxpayers Assn. v. City and County of San Francisco*, Cal. App. 5th No. A157983 (Jan. 27, 2021).

smaller-scale fuel removal operations. While the majority of Sonoma's hundreds of thousands of acres of forest and woodlands can produce valuable wood products or biomass feedstock, the county currently lacks an active market to exchange or even price these resources.[59] In particular, full-scale mechanical thinning produces significant quantities of smaller woody material unsuitable for use in wood products but potentially appropriate for use in low-carbon biomass energy production, but there is limited infrastructure to collect and transport this material and no local facility to use it.[60] As a result, much of this material is either not thinned or is thinned and left on-site, and increasingly burned on-site, since dry downed slash is itself a fire hazard. While direct development of a biomass energy facility is likely beyond the scale of the settlement funds, the other governance and long-term funding structures initiated with settlement funds could provide the consistent flow of biomass from vegetation management projects needed to support a facility and/or market.

To facilitate future development of a biomass facility, the County could dedicate a small portion of settlement funds to preparing a pre-feasibility study to identify best-fit sites and energy input/market needs for such a facility. This study could select best-fit locations based on road and utility access, proximity to feed stocks, and minimizing air quality and environmental justice impacts, building on input from local timber and energy leaders, community members, and forest management experts. The study could highlight feasible project options for potential developers, assess the viability of already-proposed sites such as Berry's Mill, and conduct preliminary steps for a future environmental review process. The study could also assess whether smaller-scale alternatives to a single large facility, such as mobile biochar kilns, are preferable for the economic and geographic contours of Sonoma County.[61] Potential examples include a Sierra Institute-led effort to develop a wood products campus in Crescent Mills in Plumas County, and a biomass facility pre-feasibility study prepared for Fort Bragg in Mendocino County.[62] In addition, the Board could express support for Assembly Bill 843 (Aguiar-Curry) to allow Sonoma Clean Power to procure bioenergy using state subsidies (existing state law only permits investor-owned utilities to do so), potentially boosting the local market for feedstocks.

- **Contract grazing**
  Contract grazing of goats, sheep, and cattle in high-fire risk zones can provide no- or very low-cost vegetation management for landowners with limited capacity to arrange mechanical thinning or controlled burn activities and economically valuable activity for

[59] ORR, *Guidance for Recovery and Resiliency Planning in Sonoma County Forest Ecosystems*, supra, pp. 23-24.
[60] Id. at 26.
[61] See description and use cases at https://sonomaecologycenter.org/mobile-kilns-bring-biochar-production-to-forest-farm-and-ranch/.
[62] See Sierra Institute, "Indian Valley Wood Products Campus" (webpage), available at https://sierrainstitute.us/program/ivwpc/; Philip Giles, North Coast Resource Conservation & Development Council, *Pre-feasibility study: Biomass Power Plant, Fort Bragg, Mendocino County, California* (2007), available at http://cemendocino.ucanr.edu/files/17412.pdf.

farmers, ranchers, and dairies. The County could help accelerate adoption by developing/expanding online grazing opportunity portals (such as Match.Graze) to connect Sonoma landowners to qualified contract grazing; and by providing educational workshops for landowners and farmers to become familiar with opportunities and certification requirements. These limited investments could support self-sustaining vegetation management activity and local economic and workforce development. The County could also consider providing access to County lands to serve as "home ranches" for livestock operations engaged in managed grazing activity, or small loans to help rent property for this purpose.

F. Labor and workforce development

In addition to the immediate funding devoted to vegetation management actions, settlement funds should be allocated towards workforce development. The County will need a skilled and dedicated workforce equipped to meet the immediate and long-term vegetation management need—rather than relying on solely volunteer labor—because many tasks associated with vegetation management require focused training, licensing, and proper insurance coverage. For example, individuals must undergo several years of training and complete an examination to become a Registered Professional Forester.[63] Similarly, individuals must complete 5 years of work and an exam to become a Certified Ecological Restoration Practitioner.[64] Sonoma County needs a bigger pipeline of certified arborists, biologists, crew members trained to recognize desirable native plant species versus invasive plants, wildland firefighters, ecological restoration certifications, and landscape designers. Targeted funding can catalyze the development of local workforce capacity through skill-building, training, and experience.

Vegetation management jobs cover a variety of skill sets and sectors—such as animal science, landscape management, firefighting, landscape design, ecological restoration, or horticulture—offering a pathway to a high-quality, well-paying, local career. There is an important opportunity to link workforce development with the advancement of equity, including by providing workforce training and long-term career growth opportunities to disadvantaged communities in and around Sonoma County. Additionally, County leaders need to plan for sustained vegetation management activities, rather than only funding one-off actions, and developing a local workforce can help the County meet future priorities.

- **3- to 5-year program at Santa Rosa Junior College**
  Several local institutions are instrumental in regional workforce training, including Santa Rosa Junior College (SRJC), which has proposed a vegetation management and wildfire

[63] California Licensed Foresters Association, "What We Do" (webpage), available at https://www.clfa.org/what-we-do#:~:text=In%20California%20foresters%20are%20licensed%20by%20the%20state,years%20of%20training%20and%20pass%20a%20comprehensive%20examination.
[64] Society for Ecological Restoration, "Certified Ecological Restoration Practitioner Program" (webpage), available at https://www.ser.org/page/certification.

mitigation workforce development program.[65] Settlement funding used to jumpstart this program could help build stable, external funding sources in the long-term.

Funds for this program development should require that SRJC integrate equity throughout. For example, in addition to a commitment to recruiting students from underserved populations, Santa Rosa Junior College's proposal includes a full-time bilingual student outreach coordinator to advance equity-focused outreach.[66]

- **Paid apprenticeship program**
  Scaling up certain vegetation management activities will be cost prohibitive in the short term due to the expensive insurance policies and equipment needed. Therefore, the County should leverage the expertise and resources of existing organizations or companies wherever possible, especially in the immediate future. One way to leverage existing expertise while building a future workforce is through a paid apprenticeship program. For example, there is need for additional Licensed Timber Operators (LTOs) in Sonoma County, but the upfront capital costs are quite high. A paid apprenticeship program could pair LTO apprentices with existing LTO operations to provide hands-on vocational training, and this model could be applied to several relevant trades. Apprentices could gain experience rotating through several on-site roles during their apprenticeship period.

  An apprenticeship program could be an immediate funding priority, beginning this fall and continuing over the next two years or more. The amount of funding directed towards this effort would vary by the number and types of sectors selected, but a minimum hourly wage of at least $20 per hour for internship would provide a competitive incentive for people to explore this work opportunity. Formal apprenticeship programs require partnership with a local educational agency for the Related Supplemental Instruction portion, so the County will need to identify potential partners early. Santa Rosa Junior College is one example of a potential partner.

- **Labor share program**
  Combining the skill sets and expertise of related industries could allow work to scale up more quickly and more efficiently. To maximize existing local workforce knowledge and provide opportunities, the County could fund and lead the formation of a labor-share program. The program could utilize the skill sets of trades like cattlemen, farmers, or sawmill workers—among several other options—to allow their workers to contribute to vegetation management efforts with minimal or no extra training required. The County also may have an opportunity to create a comparable program for equipment sharing. For example, increasing access to County property for livestock to use as "home

[65] Santa Rosa Junior College, "Vegetation Management/Wildfire Mitigation Workforce Development Proposal," (February 2021), available at https://shonefarm.santarosa.edu/sites/shonefarm.santarosa.edu/files/documents/SRJC%20Wildfire%20Mitigation_Vegetation%20Management%20Workforce%20Proposal%203_2021.pdf.
[66] Id.

ranches" could help livestock grazing expand fuel reduction reach. Labor and equipment share programs would take time and participant input to plan and actualize.

The success of workforce development hinges on linkages with other community organizations, such as Sonoma County's Youth Ecology Corps Career Pathways Program, the nonprofit Circuit Rider, the North Bay Conservation Corps, the California Conservation Corps, UC's Grizzly Corps, and other similar workforce training programs.[67] Tribes and nonprofits have also demonstrated interest in workforce development and apprenticeship programs specifically designed for indigenous youth. Additional partners include certain companies in landscape design, watershed management, and ecological restoration with a long investment in Sonoma County, such as Prunuske Chatham Inc, Environmental Science Associates, WRA, AECOM, and Hanford ARC, which has a workforce initiative through its foundation.[68]

[67] County of Sonoma, "Employment and Training Division" (webpage), available at https://sonomacounty.ca.gov/Human-Services/Employment-and-Training/; Sonoma County Job Link, "Career Pathways Program: Sonoma County Youth Ecology Corps Career Pathways Program" (webpage), available at https://sonomawib.org/cpp/.

[68] Hanford Fund, "Ecological Restoration Workforce" (webpage), available at https://www.hanfordarcfund.org/workforce.

V. Conclusion

Sonoma County has a tremendous opportunity to utilize these vegetation management funds for immediate wildfire resilience and to leverage them for long-term sustainability. This leveraging will be critical, as the initial funds will not be sufficient by themselves to address either the short-term needs or the long-term requirement for consistent, frequent management of lands. County leaders will need to balance the need for immediate action with the need to extend the benefits to address the long-term challenges of wildfire resilience in a changing climate, incorporating equity concerns so that no resident is left behind, particularly the most disadvantaged and vulnerable.

At the same time, Sonoma County can demonstrate a successful program from which other counties and the State of California can learn. How the County plans for the use of these funds, tracks their efficacy, governs decision-making, and utilizes existing funding and financing opportunities to leverage them will greatly benefit decision makers across the Western United States who are unfortunately dealing with similar wildfire risks and looking for models for how to act. While these other jurisdictions may not have settlement funds to employ, success in Sonoma County can potentially encourage them to dedicate other resources to what will be a long-term effort to achieve wildfire and climate resilience. Our quality of life, economic health, and most importantly, our health and safety will depend on that success.

Appendix A: Convening Participant Roster

Convening 1 – State Experts	**Convening 2 – Local Experts**
• **David Ackerly**, UC Berkeley • **Newsha Ajami**, Stanford University • **Greg Aplet**, The Wilderness Society • **Louise Bedsworth**, Strategic Growth Council • **Jonathan Birdsong**, National Fish and Wildlife Foundation • **Susan Jane Brown**, Western Environmental Law Center • **Anthony Brunello**, CalStrat • **Deborah Halberstadt**, California Department of Insurance • **Nuin-Tara Key**, Governor's Office of Planning and Research • **Jennee Kuang**, Hewlett Foundation • **Lara Kueppers**, UC Berkeley • **David Marvin**, Salo Sciences • **Dan McDonald**, Community Vision • **Max Moritz**, UC Santa Barbara • **Jessica Morse**, California Natural Resources Agency • **Sarah Newkirk**, Nature Conservancy • **Mark Northcross**, NHA Associates • **Mike Paparian**, Climate Bonds Initiative • **Lenya Quinn-Davidson**, Fire Adapted Communities Network • **Phil Saksa**, Blue Forest Conservation • **Tim Schaefer**, California Treasurer's office • **Scott Stephens**, UC Berkeley • **Albert Straus**, Straus Family Creamery • **Alan Talhelm**, California Air Resources Board • **Patrick Wright**, Governor's Forest Management Task Force	• **Sasha Berleman**, Audubon Canyon Ranch • **Ellie Cohen**, The Climate Center • **Caitlin Cornwall**, Sonoma Ecology Center • **Jeff Creque**, Carbon Cycle Institute • **Alegría De La Cruz**, Office of Equity, Sonoma County • **Bob Doyle**, East Bay Regional Parks (retired) • **Bob Ewing**, EB Alive • **Lauren Fety**, Conservation Fund • **Benjamin Goldstein**, Santa Rosa Junior College • **Matt Greene**, Matt Greene Forestry & Biological Consulting • **Jay Jasperse**, Sonoma Water • **Brittany Jensen**, Gold Ridge RCD • **Chris Kelly**, Conservation Fund • **Vern Losh**, Fire Safe Sonoma • **John Mack**, County of Sonoma • **Clint McKay,** Pepperwood • **Lisa Micheli**, Pepperwood • **Ben Nicholls**, CAL FIRE • **James Williams**, Sonoma County Fire Marshal • **Dan Winterson**, Moore Foundation

Appendix B: Resources

Bay Area Council Economic Institute, *North Bay Fire Recovery: Building a More Resilient and Inclusive Economy* (January 2020), available at http://www.bayareaeconomy.org/files/pdf/NorthBayFireRecovery_FinalReport_January2020.pdf.

Fire Safe Sonoma, *Sonoma County Community Wildfire Protection Plan* (2016), available at https://www.firesafesonoma.org/wp-content/uploads/cwpp-final.pdf.

Pepperwood's Dwight Center for Conservation Science , *Adaptive Management Plan for Pepperwood Preserve* (March 2017), available at https://www.pepperwoodpreserve.org/wp-content/uploads/2016/10/Adaptive-Management-Plan-for-Pepperwood-Preserve-2017-03-10.pdf.

Regional Climate Protection Authority, *Sonoma Climate Mobilization Strategy* (December 2020 draft), available at https://rcpa.ca.gov/wp-content/uploads/2020/12/Sonoma-Climate-Mobilization-Strategy_Admin-Draft_12-3-20.pdf.

Sonoma County, *Sonoma County Recovery and Resiliency Framework* (2018), available at https://sonomacounty.ca.gov/Office-of-Recovery-and-Resiliency/Recovery-Framework/.

Sonoma County Agricultural Preservation and Open Space District, *The Vital Lands Initiative* (2021), available at https://www.sonomaopenspace.org/wp-content/uploads/FINAL-VLI-FULL-REPORT-01.26.2021_-ADA.pdf.

Sonoma County Economic Development Board, *Sonoma County Complex Fires: Housing and Fiscal Impact Report* (February 2018), available at http://sonomaedb.org/Data-Center/Special-Reports/.

Sonoma County Office of Recovery and Resiliency, *Guidance for Recovery and Resiliency Planning in Sonoma County Forest Ecosystems* (2019) (prepared by EB Alive), available at https://sonomacounty.ca.gov/Office-of-Recovery-and-Resiliency/ (attachment to December 15, 2020 Board meeting summary).

Sonoma County Water Agency, *Climate Vulnerability Assessment and Adaptation Work Plan* (October 2015) (prepared by CH2M), available at https://evogov.s3.amazonaws.com/185/media/159712.pdf.

Appendix C: Concept Budget

[To come]