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Central Sierra Woody Biomass Aggregation Pilot Project: Organizational Study

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Executive Summary

Background and Purpose

Nine out of California's 10 most severe wildfires occurred in the last decade, with 2020 breaking state records for the most severe fire year period for acres burned and severity of the burn. The increased abundance of fuels in forests, coupled with a changing climate that is increasing the severity of drought and heat conditions, is causing fires to burn at a higher severity than historical fires, posing increased risk to communities and ecosystems. Several efforts are underway in California to reduce hazardous forest fuels and support fire-resilient forest ecosystems. One outcome of increased forest management is an increase in woody biomass, which could have beneficial uses (e.g., through converting it into marketable wood products or selling it to bioenergy facilities). The use of excess woody biomass provides multiple benefits to forests and communities, including reduced wildfire risks, increased forest health, useful services for landowners and land managers, and increased economic activity and small business development in forested regions of California.

A comprehensive approach is needed to support the removal and beneficial use of woody biomass at the scale required to reduce wildfire risks and increase forest health. In response to this need in the Central Sierra region, the Mariposa County Resource Conservation District is leading a project to identify opportunities to facilitate and advance beneficial uses of forest biomass to support wildfire risk reduction, forest health, and economic development. This project is one of five pilots funded by a grant from the California Office of Land Use and Climate Innovation (formerly the Office of Planning and Research) through the state's 2021 Wildfire and Forest Resilience Action Plan Objective (Addressing Feedstock Barriers through Pilot Projects).

Due to the need to coordinate actions and funding for this important work, a key focus of the pilot projects is to assess possible organizational structures—such as special districts, regional authorities, Joint Powers Authorities (JPAs), or Joint Powers Agreements—and funding sources and mechanisms that would be most effective to advance beneficial uses of woody biomass. The Central Sierra pilot project comprises the counties of Alpine, Amador, Tuolumne, Calaveras, and Mariposa and covers over 3.9 million acres.[1] This study recommends either developing a new JPA in the region or expanding an existing JPA to lead a program that:

- Increases resilience to wildfire by removing woody biomass and providing a more sustainable alternative to fuels management than open pile burning.
- Improves forest health by facilitating coordination across multiple landowners, managers, and businesses in the region (e.g., private, local, regional, Tribal, state, and federal) to remove woody biomass for beneficial utilization.

[1] Note that the pilot project is currently considering expanding the region slightly to encompass the eastern portion of Madera County, given the forested land in this area and the contextual similarities in terms of biomass removal and forest resilience needs and opportunities.

- Improves economic development by increasing beneficial woody biomass utilization to create jobs and help create or improve support for small businesses, including Licensed Timber Operators.

Key Findings

This report summarizes data and findings of several studies conducted in support of this pilot project. The studies assessed the market feasibility, challenges and barriers, and financial viability of advancing the beneficial use of woody biomass, including the key step of establishing a new JPA or expanding an existing JPA in the Central Sierra region. These studies found the following:

- **Many barriers limit the effective use of biomass.** While the Central Sierra region produces excess biomass, due to current regulations, costs, and standard practices, most of this woody biomass is unlikely to be processed in a sustainable or economically feasible manner. Additional challenges include a lack of a stable and skilled workforce, the cost of transporting biomass from forests to processing facilities, the difficulty of removing biomass from private lands at a cost-effective rate, and inconsistent and short-term contracts that prevent current businesses from expanding their operations. New businesses also struggle to enter the market, unable to get financing for equipment or payroll without long-term guarantees of stable work and biomass supply. The region also suffers from a lack of skilled drivers and transportation infrastructure.

- **The region needs a comprehensive approach to increase economic opportunities and promote forest health and resilience in response to forest fuels reduction projects.** Increased funding for forest fuels reduction projects will increase the amount of woody biomass, underscoring the need for a comprehensive approach to beneficial use at a scale that meets the needs of the region and the goals of the state, while also promoting economic growth opportunities.

- **A new or expanded Central Sierra JPA could help address many of these barriers.** A new or expanded JPA could provide many services to help facilitate the flow of biomass from suppliers to buyers and help catalyze efficient processes to remove hazardous forest fuels. A new or expanded JPA could facilitate longer term service contracts; seek and manage grant, philanthropic, and foundation funds to help reduce fuels reduction and utilize biomass; provide services that are needed by small businesses, landowners, and land managers; support workforce development programs; manage Good Neighbor Authority agreements with the U.S. Department of Agriculture's Forest Service; and provide technical support to small businesses.

- **The financial viability of a program to advance this work will depend on ongoing state funding.** According to conversations with staff, the Office of Land Use and Climate Innovation expects to provide the next round of funding ($1,000,000 per pilot) for the woody biomass aggregation pilot projects in 2027. This funding, along with charging fees for

services, can provide some of the initial revenue needed for a new or expanded Central Sierra JPA. As the JPA progresses and expands its services, it will likely become less reliant on grant funding and be able to move toward a more balanced economic model. While the exact balance of revenue sources will shift depending on the regional needs for services, the capacity of the JPA to provide those services, and how much revenue those services can generate, the JPA will likely become more stable over time.

If California is committed to supporting biomass reduction as a tool to strengthen forest health, increase forest resilience, and catalyze economic development, it needs to continue funding the counties and Resource Conservation Districts to do this work and consider how to allocate ongoing funds to promote their success. By continuing the work started through this pilot project—and with continued support from the state—the new program could serve a critical role in the region. A new or expanded Central Sierra JPA has the opportunity to restore the health of the region's forests, decrease wildfire risk, provide key services to landowners and land managers, and provide important economic development opportunities for existing and new businesses in the region.

1. Background and Study Purpose

1.1. The Central Sierra Context and Need for Biomass Removal

California has faced unprecedented impacts from wildfires over the past several decades. The increased abundance of fuels across millions of acres of forestland—coupled with a changing climate that is increasing the severity of drought and heat conditions—is causing fires to burn at a higher severity and larger scale than historical fires, posing increased risk to forests and the communities that live in or near these resources. Throughout California, current forest management practices are not sufficiently reducing woody biomass at the pace and scale required to effectively address unnatural concentrations of woody biomass, thus presenting an increased risk of high-intensity wildfires to communities, natural resources, upland watersheds, and physical assets such as homes, businesses, and property.

Several efforts are underway in California to reduce hazardous forest fuels and support fire-resilient forest ecosystems. The state of California has allocated $1 billion over five years to fund Fire Safe Councils, Resource Conservation Districts (RCDs), and National Forests to administer landscape-scale forest fuels reduction projects (TSS Consultants, 2023a). Federal funding from the Bipartisan Infrastructure Law and the Inflation Reduction Act provide a combined $3 billion for fuels reduction and community wildfire defense grants (TSS Consultants, 2023a). The U.S. Department of Agriculture's Forest Service (UFSF) and the state of California signed a Shared Stewardship Agreement in 2020 to accelerate the pace and scale of forest fuels treatment activities throughout federal, state, and private lands in California. Additionally, the California Governor's Wildfire and Forest Resilience Task Force and its partner agencies are working to accelerate forest fuels treatment activities, with the goal of treating 1 million acres annually by 2025 (California Wildfire and Forest Resilience Task Force, 2022). A biproduct of many of these efforts will be more available woody biomass, which could have beneficial uses (e.g., through converting it into marketable wood products or selling it to bioenergy facilities) and spur economic development opportunities in forested regions of the state.

1.2. Central Sierra Pilot Project

A comprehensive approach is needed to support the removal and beneficial use of woody biomass at the scale needed to reduce wildfire risks and increase forest health. The Mariposa County Resource Conservation District (MCRCD) is currently leading a project to identify opportunities to facilitate and advance the beneficial use of forest biomass in the Central Sierra region to support wildfire risk reduction, forest health, and economic development. This project is one of five pilots funded by a grant from the California Office of Land Use and Climate Innovation (formerly the Office of Planning and Research) through the state's 2021 Wildfire and Forest Resilience Action Plan Objective (Addressing Feedstock Barriers through Pilot Projects). All pilot projects assess biomass availability, identify opportunities and challenges associated with the beneficial use of

woody biomass, and analyze the economic and ecological benefits associated with better managing woody biomass.

A key focus of this work is to assess the range of possible organizational structures—such as special districts, regional authorities, Joint Powers Authorities (JPAs) or Joint Powers Agreements—and funding sources and mechanisms that would be most effective in reducing or removing barriers to beneficial use of woody biomass. The pilot projects are also focused on promoting more collaborative approaches throughout the selected regions. The Central Sierra pilot project comprises the counties of Alpine, Amador, Tuolumne, Calaveras, and Mariposa and covers over 3.9 million acres.[2] Within the study region, a new entity could implement a wildfire resilience program that focuses on the following objectives:

- Increasing resilience to wildfire in the region by removing forest biomass and providing a more sustainable alternative to fuels management than open pile burning.
- Improving forest health in the region by facilitating coordination across multiple landowners, managers, and businesses in the region (e.g., private, local, regional, Tribal, state, and federal) to remove woody biomass for beneficial utilization.
- Improving economic development in the region by increasing beneficial woody biomass utilization to create jobs and provide support for small businesses, including Licensed Timber Operators (LTOs).

This report evaluates potential organizational structures, considerations, and recommendations for program implementation, while considering the unique characteristics of the Central Sierra region. The following sections provide a description of the region—including available woody biomass and needs for removal—and highlight the key characteristics of an entity that could spearhead a coordinated approach to increase wildfire resilience. These sections also stress the need for developing a forestry services workforce, issues and barriers with current forest products markets, and the need for coordinated multijurisdictional efforts and sustainable funding mechanisms for stable program support, thus bolstering economic development. This report summarizes data and findings of several studies conducted in support of this pilot project:

- *Biomass Feedstock Supply Availability and Cost Analysis for the Central Sierra Region of California* by TSS Consultants assesses current woody biomass feedstock supply and costs within the region.
- *Central Sierra Woody Biomass Aggregation Pilot Project: Financial Analysis Report* by Eastern Research Group, Inc. (ERG), assesses potential revenue streams for funding a new or expanded Central Sierra JPA. The study is based on interviews, a review of key studies on the region and its biomass removal needs, discussions with potential JPA members and others involved in the pilot project, and a review of the foundational and financial documents of other JPAs.

[2] Note that the pilot project is currently considering expanding the region slightly to encompass the eastern portion of Madera County, given the area of forested land in this area and the contextual similarities in terms of biomass removal and forest resilience needs and opportunities.

- *Feasibility Study for a Value-Added Wood Products Campus Within the Central Sierra Region of California* by TSS Consultants assesses the feasibility of four value-added opportunities for a wood products campus within the study region.
- *Forest Feedstock Sampling and Testing for the Central Sierra Nevada Region* by TSS Consultants provides information on the moisture content, ash content, and high heat value of key forest and urban biomass material available within the study area.
- *Forest Fuels Reduction and Forest Restoration Workforce Infrastructure Review for the Central Sierra Region of California* by TSS Consultants reviews the status of the forest fuels reduction and the forest restoration workforce within the five-county study area and provides recommendations to support infrastructure expansion.
- *Local Public Entity Solutions for the Forest Biomass Markets in the South Central Sierra* by CLERE, Inc., summarizes the challenges in utilizing low-value woody biomass in the region and proposes several actions that an aggregation entity, such as a new or expanded JPA, could take to address these challenges.

1.3. Study Area

As previously stated, the Central Sierra region comprises five counties—Alpine, Amador, Tuolumne, Calaveras, and Mariposa—which cover over 3.9 million acres and have a population of 165,608 (Lightcast, 2023). This five-county region has a mix of woody biomass feedstock sources. Nearly 1.6 million acres of the study area are covered by conifer-dominated forestland and around 908,000 acres are covered by hardwood-dominated woodland (TSS Consultants, 2023a). See Figure 1 below for more details on land cover and vegetation types.

The region's population is expected to grow, increasing by 5.3 percent from 2022 to 2027 (Lightcast, 2023). The region's average job earnings are $64,800 per year, which is $16,000 below the national average of $80,800 per year (Lightcast, 2023). Recent job growth rates are slower than the national average (0.6 percent for the region between 2017 and 2022 compared to 3.8 percent nationally during the same period). Even with this slight increase in jobs, labor force participation decreased from 50.4 percent to 48.1 percent in the region between 2017 and 2022. One reason may be because the region has an aging population. Over 70,000 people are expected to retire soon, which is about 22,000 people more than the national average for a population of the same size. As of April 2023, unemployment was at 4.57 percent (Lightcast, 2023). The highest percentage of unemployed population by age are people between 25 and 34 years old, making up just over 25 percent of the unemployed population (Lightcast, 2023).

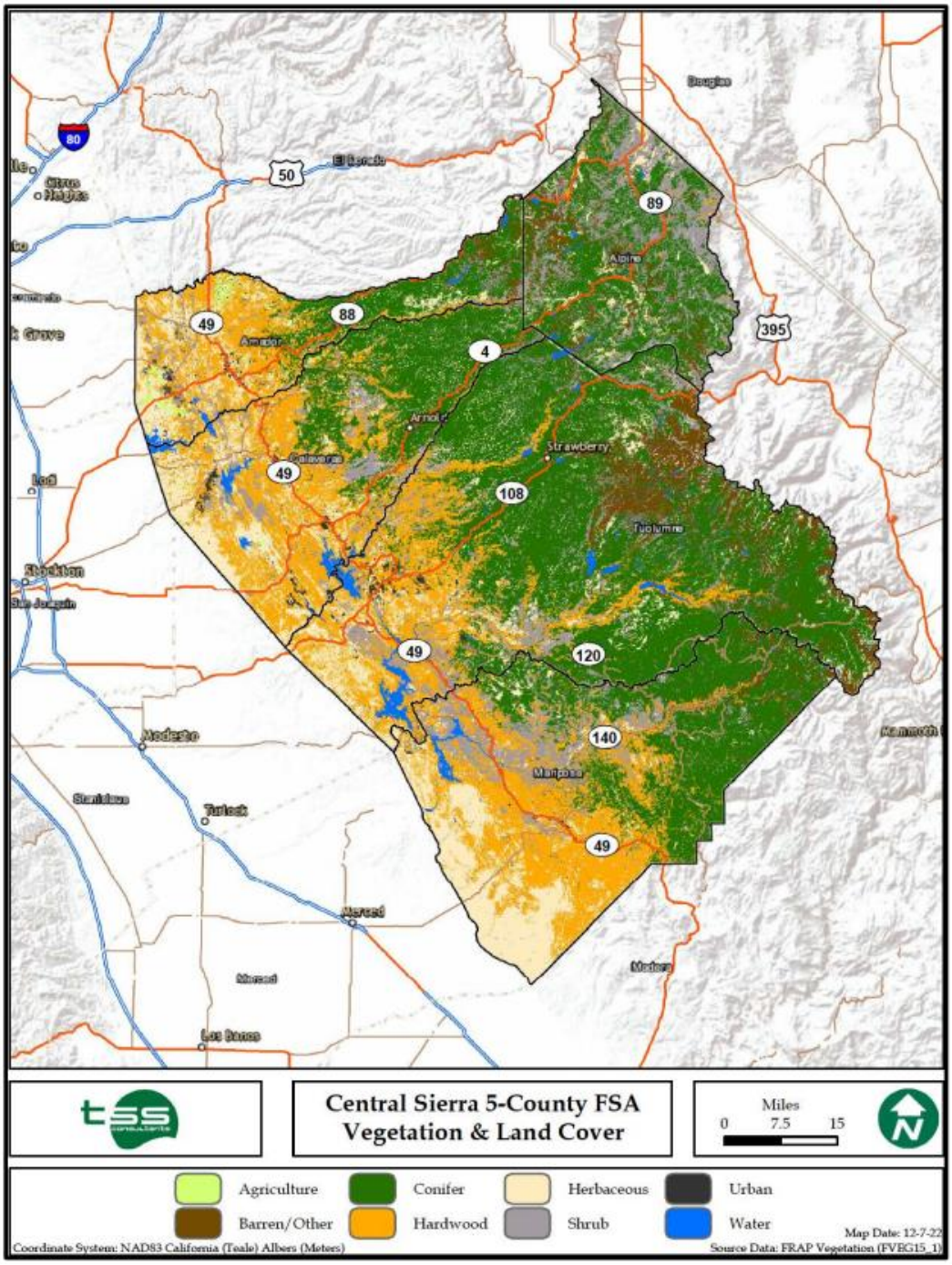

Figure 1. Map of study area land cover and vegetation types.

Source: TSS Consultants, 2023a.

2. Feasibility of Woody Biomass Products Market

This section summarizes the available woody biomass in the Central Sierra region and the feasibility of beneficially using this biomass, focusing on forest biomass and urban wood. The information described below draws from the TSS Consultants studies conducted as part of this pilot project. The TSS studies were developed based on existing data sets, geospatial analysis, and interviews conducted with private and public land managers, foresters, logging contractors, and commercial transport companies operating within the study area.

The forests and woodlands within the study region are owned and managed by a mix of federal, state, and local governments, as well as private owners, each of which has its own management objectives. The region contains Stanislaus National Forest, as well as portions of Yosemite National Park, Eldorado National Forest, Sierra National Forest, and Humboldt-Toiyabe National Forest. As a result, 43 percent (868,787 acres) of the forestland within this region is managed by USFS, and nearly 3 percent (58,586 acres) of forestland is managed by the National Park Service (TSS Consultants, 2023a).[3] Most of the publicly owned and managed lands in this region currently produce relatively little forest biomass feedstock because they are managed for a variety of uses, including conservation and recreation. Private entities own 48 percent (976,772 acres) of the forestland. Non-industrial private owners manage their land for long-term revenue, which may include producing sawlogs. Industrial private owners actively manage their forestland for outputs like sawtimber. The remaining 6 percent (120,444 acres) of forestland is owned and managed by other federal, state, local, and nonprofit entities.

2.1. Forest Feedstock Availability

Forest feedstock availability in the study area is primarily provided by three main activities:

- **Timber harvests.** Timber harvests occur within the study area on private and public lands. Commercial harvest activities regularly produce residuals (i.e., treetops and limbs) that can be used as feedstock. Commercial harvests typically occur from April to November, weather permitting.
- **Forest fuels reduction.** Efforts to increase wildfire resilience and restore forests on public and private lands affected by wildfires produce forest biomass and sawlogs. Several efforts are underway within the study area to increase forest fuels reduction activities, which typically occur from April to November, weather permitting.
- **Sawmill operations.** The study area contains two privately owned, commercial-scale sawmills, which produce chips, bark, shavings, sawdust, and hog fuel as a byproduct of lumber and fencing production.

There are several efforts within the study area to increase the pace and scale of forest fuels reduction activities across public and private lands to improve wildfire resilience. For example,

[3] Wilderness acreage considered forest (160,496 USFS acres and 442,906 National Park Service acres) is not included in these percentages.

Yosemite National Park has recently partnered with MCRCD to remove tens of thousands of bone-dry tons (BDT)[4] of dead and downed trees covering hundreds of acres and transport them to biomass facilities for beneficial use. Additionally, the Bipartisan Infrastructure Law provided USFS with funding to treat two large landscapes within the study area, amounting to 285,000 acres across the Stanislaus and Humboldt-Toiyabe national forests.

Due to these efforts and additional funding for wildfire resilience, TSS Consultants estimates that USFS forest thinning activities will increase over the next five years, producing on average 73,150 BDT per year (TSS Consultants, 2023a). Additionally, TSS estimates about 5,000 acres/year are currently being treated on private lands, which produce about 60,000 BDT/year (TSS Consultants, 2023a). Private forestland treatments are expected to remain similar over the next five years. Combined, forestland thinning residuals provide approximately 133,150 BDT/year within the study area. Not every acre treated can accommodate the recovery and transport of the biomass; TSS estimates that about 65 percent of residuals will be recoverable, leading to an estimated 86,548 BDT/year of available forest thinning residuals (TSS Consultants, 2023a). The total cost to harvest, collect, process, load, and transport these residuals is currently estimated at $115/BDT (TSS Consultants, 2023a). However, due to the willingness of forest managers, power utilities, and state and federal agencies to offset these costs, biomass power plants in California currently pay between $35 to $55/BDT for residuals delivered to their facilities.

Post-fire restoration activities often include biomass removal efforts. Restoration and salvage activities typically include biomass removal efforts, which could increase available biomass. Timber harvests can vary seasonally and mostly occur on privately owned land in the region. Based on recent timber harvests on public and privately managed lands within the study area, TSS Consultants estimates the study area will produce 94,981 BDT/year of timber harvest residuals (i.e., processed limbs and treetops). Assuming only 65 percent of residuals are accessible for processing and transport, the study area would produce about 63,603 BDT/year of practically available biomass. TSS Consultants estimates the total cost of processing, loading, and transporting these residuals at about $103/BDT; however, as noted previously, biomass power plants pay much less to obtain these residuals.

The study area currently has two commercial sawmills, both owned by Sierra Pacific Industries, which produce lumber and fencing. Based on the recent lumber production of these two sawmills, it is estimated they produce 153,940 BDT/year (TSS Consultants, 2023a). Prices vary between $35–$65/BDT depending on the type of sawmill residual. Most of these residuals are currently sold to biomass power plants, while the tree bark is sold as landscape cover.

2.2. Urban Wood Feedstock Availability

There are 40,000 acres of developed urban areas within the study area. These areas produce woody feedstock primarily through two main activities:

[4] A bone-dry ton equals 2,000 lbs of woody material dried to zero-percent moisture.

- **Construction and demolition (C&D).** Wood waste from C&D activities is proportional to population. The total C&D wood waste produced within the study area is estimated at 17,358 BDT/year. Assuming about 65 percent of this waste would be practically available, a total of 11,283 BDT/year could be used as feedstock.
- **Tree trimming.** Also proportional to population, trimming produces an estimated 7,194 BDT/year. About 80 percent of these residuals are recoverable as feedstock, resulting in 5,756 BDT/year.

Neither of these sources are currently considered to be a consistent feedstock source within the study area. To utilize wood waste as a feedstock, the region would need to invest significant capital in equipment to sort and process it. The sparsely populated counties within the study area produce a relatively small and dispersed amount of these feedstocks each year, which make them less economically viable to collect and costly to transport. Additionally, many residents in the area utilize tree trimmings for firewood.

2.3. Current Feedstock Uses

Biomass feedstock currently produced within the study area is used by biomass power plants, as landscape products (including compost and soil amendment), and for firewood and animal bedding.

There are two biomass power facilities (Pacific Ultrapower Chinese Station and Rio Bravo Rocklin) with BioRAM power purchase agreements (PPAs) to source feedstock from the study area.[5] Both PPAs require 60 percent of forest biomass to be sourced from High Hazard Zones and 80 percent of forest biomass be sourced from sustainable forest management operations (TSS Consultants, 2023b). If the facilities cannot secure sufficient feedstock each month that complies with these PPA requirements, they are allowed to purchase a blend of urban and agricultural fuels. These two facilities source a total of 138,500 BDT of feedstock a year from the study area, across all feedstock sources (TSS Consultants, 2023b).

Two additional biomass power plants purchase feedstock from the study area. Rio Bravo Fresno, which has a PPA that focuses procurement efforts on urban and agricultural residuals, sources 2,000 BDT of urban wood and tree trimming per year from the study area. Additionally, the Sierra Pacific Standard facility utilizes 40,000 BDT of sawmill residuals per year from their own facility. The remainder of sawmill residuals produced within the study area are used for landscape cover or soil amendment (59,940 BDT/year) and livestock bedding (14,000 BDT/year) (TSS Consultants, 2023b).

Table 1 summarizes current feedstock supply and demand. An estimated 62,282 BDT of feedstock is expected to be available and feasible to use within the study area each year. This large amount of feedstock highlights the need to consider ways of incentivizing increased use of the feedstock. A

[5] For more information on BioRAM, see: https://www.cpuc.ca.gov/industries-and-topics/electrical-energy/electric-power-procurement/rps/rps-procurement-programs/rps-bioram

coordinating entity—such as a new or expanded Central Sierra JPA—could help create connections between suppliers and users of biomass and provide services (e.g., by facilitating long-term contracts and agreements) to ensure this additional feedstock is used.

Table 1. Summary of Study Area Current Feedstock Supply and Markets (from TSS, 2023a)

	Timber Harvest Residuals	Forest Fuels Residuals	Sawmill Residuals	Urban Wood	Tree Trimmings	Total
Potentially Available	98,764	133,150	153,940	17,358	7,194	410,406
Practically Available	64,196	86,548	153,940	11,283	5,756	321,722
Current Market Demand	33,000	66,500	153,930	6,000 (urban wood and trimmings combined)		259,440
Economically Available	31,196	20,048	0	11,039 (urban wood and trimmings combined)		62,282

Table 2 summarizes the current costs and prices to process and deliver feedstock to end users in the study area. The high cost of transporting biomass almost always results in costs that are higher than the value of the feedstock. To support biomass utilization, California subsidizes some biomass transport costs, usually through fuels reduction program grants. A JPA could facilitate long-term feedstock contracts and set price caps to make harvesting, collecting, processing, and transporting forest biomass more economically sustainable and reduce the risks of these efforts.

Table 2. Estimated Current Total Delivered Cost and Prices for Feedstocks (from TSS, 2023a)

	Timber Harvest Residuals	Forest Fuels Residuals	Sawmill Residuals	Urban Wood	Tree Trimmings
Current Delivered Costs	$103/BDT	$115/BDT	Not provided	No provided	
Current Delivered Prices	$35–55/BDT	$35–55/BDT	$35–65/BDT	$14–24/BDT	

2.4. Future Demand for Feedstock

The study region contains three idle biomass power plants that, if repurposed, could source feedstock. Additionally, there are eight greenfield[6] facilities in early development that could compete for feedstock. These projects include three potential BioMAT[7] program bioenergy facilities that would be required to utilize a minimum of 80 percent of fuel from sustainable forest management operations. Other projects include small log utilization, production of ethanol or

[6] Greenfield sites are previously undeveloped sites for commercial development.
[7] For more information on BioMAT, see: https://www.cpuc.ca.gov/industries-and-topics/electrical-energy/electric-power-procurement/rps/rps-procurement-programs/rps-sb-1122-biomat

hydrogen from biomass, and a commercial-scale fuel pellet facility. While not all these projects are certain, and they currently face significant barriers to operation, they demonstrate significant interest in the marketplace to develop value-added utilization initiatives.

Due to the interest in value-added biomass utilization projects, TSS Consultants conducted a feasibility study of a new wood products campus in the Central Sierra region. The analysis considered a range of economically viable opportunities that would use small-diameter sawlogs and hazard trees from forest restoration and fuel reduction activities. Local forestry service contractors noted that they inevitably end up with decks of logs in their own yards and expressed interest in either a sawmill operation or firewood processor to use their remaining roundwood (TSS Consultants, 2024). The feasibility study found that a commercial-scale firewood processing facility could cost-effectively serve local and regional firewood markets. While the lumber market in the region is highly competitive, a small sawmill co-located at a firewood processing facility could effectively serve the local market by creating several efficiencies, including cross-training employees and sharing equipment. Any residual biomass fibers from these operations could be sold to biomass power plants or landscaping companies in the area, which indicated they need new suppliers.

The Centra Sierra pilot project is currently conducting additional research—lead by Wildephor Consulting Services, LLC, and Tukman Geospatial—to better understand the feasibility of a developing a wood products campus at various priority sites within the region's five counties. This effort will develop risk-adjusted pro forma financial analyses with Monte Carlo simulation modeling that will explicitly capture the impacts of numerous cost and revenue uncertainties. This work will yield more robust estimates of project financial performance compared with "worst case" sensitivity analyses provided in the wood products campus feasibility study. Further, this analysis will identify and rank of the highest impact drivers of financial performance for the proposed firewood business and small-scale sawmill. These analyses could influence the viability of some of the financial scenarios outlined in this report.

A new or expanded Central Sierra JPA could help facilitate a wood products campus in many ways, depending on the JPA's charter. For instance, it could secure long-term contracts for forest materials for a wood products facility, provide technical assistance for small businesses, or buy and then lease manufacturing infrastructure and equipment. These coordinating activities could provide needed support and capacity for establishing the new campus, increase the viability of small businesses that could operate on the campus, and provide the JPA with revenue to support this business model.

2.5. Workforce Capacity and Development

Within the Central Sierra region, additional funding for forest fuels reduction has increased the demand for licensed operators that conduct this work and the subcontractors that support them. Forest treatments, including timber falling and fuels reductions, are undertaken by contractors who possess a state-issued LTO license. While in the past, LTO businesses provided traditional

timber harvests, many have transitioned to focus on fuels reduction work. The majority of LTOs within the Central Sierra region run small crews of about three to five employees (TSS Consultants, 2023b). They will often subcontract out for larger landscape projects that require additional services like herbicide applications and seedling planting. The demand for Central Sierra contractors currently outweighs supply. However, LTO businesses face several challenges for expanding their workforce, which are described in more detail below.

Trucking and transportation services are also in high demand within the region. LTO businesses often rely on local trucking companies to transport equipment from site to site or haul biomass from the forest to the end user. Within the Central Sierra region, there are more operators treating the forest than companies that can transport equipment. The shortage of both trucks and drivers creates additional scheduling challenges within the operating season.

While demand for forestry workers is rising in the area, the region's population is aging. Over 70,000 people in the region nearing retirement age are expected to retire soon, which is about 22,000 people higher than the national average for a population of this size (Lightcast, 2023). Sierra Pacific Industries, the owner of both sawmills in the study area, recently hired staff to focus on outreach and recruiting to address this trend. New workers will be essential for the region to ensure operations continue as the workforce transitions to retirement age.

While the demand for forestry services within the region is high, several barriers have prevented forestry businesses from growing or entering the market:

- **Inconsistent workflow.** The seasonal nature of the work and predominance of short-term contracts, as well as the dependency on grant funding, create inconsistent demand for workers that results. Small business owners struggle to plan for these workflows, and contractors are reluctant to recruit employees without a guarantee of consistent work.
- **Equipment and financing challenges.** Specialized forestry equipment is expensive. A lack of financing options for new businesses makes it difficult to obtain startup capital, and the upfront costs of the grant reimbursement system are prohibitive for small businesses.
- **Accessing bid opportunities.** The federal bidding process is complex and often requires bidders to address multiple contracting mechanisms and secure additional partners to cover all bidding requirements. It can be time consuming to search and identify possible opportunities. Many times, small businesses rely on subcontracts with larger prime contractors to secure work.
- **Transportation difficulties.** California frequently must subsidize costs for transporting forest residuals, which may not be economically sustainable. The region also lacks enough trained drivers.
- **Recruitment and retainment.** Many forestry jobs require specialized education or training. Contractors are struggling to find interested and qualified candidates. Wage stagnation within the industry has also caused skilled equipment operators to move to industries that

offer higher wages. Seasonal wildfire suppression work pays skilled equipment operators at a much higher rate, meaning fuels reduction projects can lose their contractors at the height of the short working season.

To address these challenges and facilitate workforce development within the forestry sector in the Central Sierra region, TSS Consultants recommended the following:

- **Longer-term service contracts.** Longer-term service contracts would allow contractors to obtain a steady stream of work so they can secure capital investment for equipment and capacity to maintain a workforce payroll. A new or expanded Central Sierra JPA could play a role in facilitating these types of contracts, which would promote workforce growth opportunities, ensure stable contracts, and provide consistent employment in the industry.
- **Expanded education and training opportunities.** Several efforts are underway to increase the Central Sierra forestry workforce. Many Native American Tribes in the region have their own forestry projects, which provide training and employment opportunities to Tribal members. The federal government also provides forestry-related funds and programs that support forest management, fire management, and economic development for Tribes. Columbia Community College has entered a public-private partnership with Mother Lode Job Training and several other forest management entities to create the Greater Sierra Forestry Corps. This program, funded by the California Workforce Development Board, is designed to provide 22 weeks of classroom and field-based training that covers a wide range of forestry sector skills. While these efforts are promising, these types of training programs will need long-term funding and expansion to meet industry needs.
- **Increased wage standard.** Compensation for forestry workers needs to rise to be competitive with other professional workforce sectors to attract qualified and motivated workers.

2.6. Summary of Woody Biomass Market Needs

The Central Sierra region produces excess biomass. Due to current regulations, costs, and standard practices, most of this woody biomass is unlikely to be processed in a sustainable or economically feasible manner. With increased funding for forest fuels reduction projects, biomass residuals from these activities are expected to increase. However, there are several barriers that currently prevent this biomass from being utilized. A lack of a stable and skilled workforce, the cost of transporting biomass from forests to processing facilities, and inconsistent and short-term contracts prevent current businesses from expanding their operations. Additionally, new businesses struggle to enter the market, unable to get financing for equipment or payroll without long-term guarantees of stable work and biomass supply. The region also suffers from a lack of skilled drivers and transportation infrastructure. A new or expanded Central Sierra JPA could help address these barriers through a variety of actions, including facilitating contracts, supporting workforce development programs, and providing technical support to small businesses. Details on

the opportunities that could be realized through the developing a new or expanded JPA focused on supporting the beneficial use of biomass are discussed in the following section.

3. Creating a New Entity in the Central Sierra: Governance Options and Financial Needs

This section summarizes the reports developed by CLERE (2023) and ERG (2024) in support of the Central Sierra pilot project. CLERE (2023) considered the potential benefits and drawbacks of a variety of organizational structures. ERG (2024) highlighted the financial needs of the governance structure identified as being the most feasible for the region: establishing a new JPA that covers the five counties in the Central Sierra region or expanding an existing JPA in the region that could take on a new program to address beneficial utilization of woody biomass.

3.1. Potential of a JPA

As summarized in CLERE (2023), the three largest barriers in California's supply chain for woody biomass are:

1) High cost of biomass removal coupled with the low value of end use products.
2) Lack of guaranteed feedstock supply to support a new wood-based business.
3) Lack of skilled workforce in rural areas.

Additional challenges to setting up feedstock agreements and supporting a stable woody biomass supply chain include declining USFS capacity and budgets and the administrative challenges of managing contracts.

To address these challenges, a new or expanded JPA or special district could operate as a biomass supply entity to provide a centralized, public organization that facilitates the flow of biomass from suppliers to buyers. In the Central Sierra region, a new or expanded JPA is envisioned to include members from MCRCD, Tuolumne County, and the Upper Mokelumne River Watershed Authority (UMWRA). Members of the pilot project are also currently in discussions with partners in eastern Madera County to assess its viability in becoming a member of a new or expanded Central Sierra JPA.

In establishing a new JPA or expanding the programmatic focus of an existing JPA, the member entities must agree on what they wish to accomplish, determine the breadth of their overlapping authorities, and then decide which member agency's administrative rules will govern how the JPA will implement its objectives. JPAs provide flexibility in how to address the excess woody biomass and wildfire risk of their communities and how that may change over time. This flexibility is balanced by the authority of JPA member agencies, as the powers defined in a JPA agreement must already be held by the member agencies. JPAs are also subject to several public interest laws that ensure political transparency.

JPAs can be established as a separate legal entity, or they can choose to share responsibilities among already-established partner agencies. If the latter is chosen, the JPA member agencies are limited to the finance and bonding mechanisms they have within their own agency powers. However, if the JPA creates a legally separate entity, it can enter contracts, sue or be sued, and be required to conduct annual audits. JPAs (whether a new JPA or an existing JPA) can also hire staff, engage consultants, obtain financing to build public facilities, manage property and issue bonds.

There are four ways a new or expanded Central Sierra JPA could be structured to support the removal and beneficial use of biomass residuals:

- **Public infrastructure JPA.** The JPA would own or manage public infrastructure, such as biomass conversion or utilization facilities. This JPA would enter into contracts with feedstock providers. The property for a facility would come from one of the JPA members or could be a lease of private lands through a public-private partnership. Funding for this type of JPA could come from renewable energy–related credits through the Inflation Reduction Act, tax increment financing, bonds, grants, or a public-private partnership with investors and businesses.
- **Services JPA.** This option would provide a menu of services to existing and new businesses and the community, such as environmental review under the California Environmental Quality Act (CEQA) or National Environmental Policy Act, green waste program management, facilitation of connections to commercial lenders, support of workforce development, and even ownership and leasing of equipment or facilities. Costs for this type of JPA could be covered in part by fees for services provided. There would likely still need to be financial support from the state of California, as well as general funds of the member agencies and grant funding for special projects and programs. A parcel tax could also help finance a services JPA. A services model is currently the most viable option for a potential new Central Sierra JPA.
- **Wildfire prevention JPA.** This JPA could primarily focus on fuels treatment while also requiring associated biomass waste from these activities be utilized. The JPA would be eligible to apply for many wildfire prevention grant programs that help fund biomass removal and management. Fees, assessments, or a parcel tax could also finance the JPA's activities.
- **Joint Powers Agreement only.** A Joint Powers **Agreement** is a less binding option than a Joint Powers **Authority.** Member agencies can form these contracted agreements between for the specific purpose of helping organizations coordinate on specific projects or programs. A Joint Powers Agreement would also have more limited financing options, likely requiring a state or even federal partnership to help local agencies pay for this work. The entities that have been identified as potential members of a new Central Sierra JPA are currently considering if a Joint Powers Agreement could be a feasible option to pilot rather

than forming a new Central Sierra JPA or as an interim step prior to forming a new Central Sierra JPA.

Once the scope of a JPA is established, members then decide how to fund administrative costs, which usually include staff, insurance, equipment, any brick-and-mortar-related expenses, online services or software, and any general fees collected by the state or county. These administrative costs are typically a small portion of the overall budget. For more details on the financial needs and budget of the JPA, see Section 3.4 below.

3.2. Proposed Actions to Support Woody Biomass Removal and Use

Once a JPA is established or expanded and funding mechanisms are in place (also described further in Section 3.4 below), a new or expanded Central Sierra JPA could help address the barriers to forest biomass markets within its jurisdiction. CLERE (2023) proposed the following actions to address price and insurance barriers and improve coordination among all parties involved:

- **Formula Rate Contract with Collar (FRCWC).** To address the price problem for forest biomass markets, a JPA or other entity could function as a regulatory body for a FRCWC. The FRCWC would be designed to control the price offered on 60–90 percent of the biomass produced over a 10-year contract using a formula determined in negotiations between the feedstock supplier and buyer. The remaining percent of the feedstock price would be left uncontrolled. The "collar" of the formula would set a ceiling and floor for various values such as interest rates, market value adjustments, and risk levels. This longer-term contract would provide price stability for both feedstock suppliers and buyers, mitigating the financial risk associated with many biomass projects by guaranteeing a stable revenue for debt repayment. A new Central Sierra JPA or special district's role would be to oversee the FRCWC, including approving possible updates to formula inputs and ensuring updated rates are adopted.

- **Manage grant, philanthropic, and foundation funds.** Donors and grant programs that are focused on forest health and fire risk reduction could provide funds to the JPA or a nonprofit formed alongside the JPA. The JPA could serve as a coordinating entity and use a transparently and publicly accountable process to manage and distribute funds to local organizations working on forest health and wildfire resilience projects—thus streamlining the distribution of funding and reducing the burden of grant applications and reporting for local organizations.

- **Insurance pooling.** Businesses looking to execute a long-term feedstock supply contract also face barriers due to indemnification requirements. A JPA or other entity could use insurance pooling techniques in conjunction with or separately from the formula rate contract to address these requirements and reduce the price of insurance to businesses.

- **Manage new Good Neighbor Authority agreements.** A Good Neighbor Authority agreement is a contracting mechanism available under federal law that allows for USFS to

rely on local agencies to do fuel reductions work on federal lands. One potential use of a JPA could be to manage the associated contracts and hire contractors to conduct the forest treatments; in turn, this process could be a revenue source for these entities.

- **Technical and administrative support.** A JPA or special district could provide additional administrative and technical support to contractors working on forest health improvement and biomass removal and utilization projects within their jurisdiction. The entity could charge a fee for these services to help support its operating costs and provide key capacity and technical assistance where needed by existing and new businesses. Examples of these services include environmental review, grant support, feedstock analysis, financial modeling, financial or legal counsel, equipment leasing, assistance for workforce training, and software services that can facilitate biomass removal planning and workflow estimations. These services could improve coordination among those working on forest health and biomass removal, reduce business costs, and build capacity to address forest health.

3.3. Other Potential Organizational Structures

Other organizational structures could be used to address barriers to woody biomass markets. One option is to create a Community Service District (CSD), which is often established in rural communities to offer specialized services tailored to a specific community and its environmental needs. A CSD operates as a local government agency and provides services and facilities to communities within its jurisdiction. A CSD is authorized to provide a wide range of specific services, such as wastewater management, fire protection, and public recreation. CSDs must be established through a petition process by residents, a county board of supervisors, or a city council. They also require approval from the Local Agency Formation Commission (LAFCO). CSDs have financing options similar to JPAs, including issuing bonds; imposing property taxes, parcel taxes, and user fees from services provided; and conducting special assessments. The funding mechanism for each CSD is determined by its board of directors. CSDs are also required to have an elected board of directors when the district's population reaches 500 or more registered voters or 10 years after its formation, unless otherwise specified by the LAFCO.

Similar to a CSD, a Community Facilities District (CFD) is a type of special tax district that is able to finance community improvements. To form a CFD, there must be two-thirds approval from either property owners (if the district has 12 or fewer registered voters) or registered voters (if the district has more than 12 registered voters). Once formed, a CFD has the power to sell bonds for community improvements as well as taxing authority on district residents to pay off bond principal, interest, and administration fees.

A Climate Resilience District (CRD) provides another potential organizational structure. CRDs are designed to finance initiatives for climate change mitigation, adaptation, and resilience efforts that prioritize local needs. CRDs can be formed by cities, counties, special districts, or a combination of these entities. CRDs are primarily funded by tax increment financing (TIF) but can be funded by a

variety of sources, including special taxes, property-related fees, public and private grants, service charges, revenue from infrastructure projects, and a share of the local sales tax. They can also issue revenue and general obligation bonds. CRDs prioritize projects that utilize nature-based approaches and advance ecosystem and economic resilience in underfunded or vulnerable communities.

A final option the Central Sierra pilot is considering is to integrate its proposed services into an existing JPA or district that includes the region's counties and has an aligned mission. For instance, instead of forming a new JPA, a new program could be created within UMWRA to focus more explicitly on biomass removal and supply chain development. As an existing JPA, UMWRA has organizational capacity that could support a new program, though it would need to hire additional full-time employees (FTEs) or contracted staff to provide the additional services required. Notably, UMWRA does not currently include Mariposa and Tuolumne counties and may not be interested in expanding its service area. Members of the Central Sierra pilot are having ongoing discussions with UMRWA about potential integration under UMWRA's existing framework.

Another option is integrating the work into the Central Sierra Economic Development District (CSEDD). The economic development district encompasses the five counties in the study region, in addition to the cities of Sonora and Angels Camp. While CSEDD does not currently have a strong focus on biomass-related activities or forest health or resilience, the Central Sierra pilot's focus on workforce and economic development aligns well with CSEDD's mission and programming. Pilot project members are currently conducting further scoping (including discussions with and presentations to CSEDD members and a planned joint meeting with CSEDD in February 2025) to better understand the potential viability of establishing a new program within CSEDD.

3.4. Financial Assessment of the Range of Finance Strategies

The following section summarizes the findings of ERG's *Central Sierra Woody Biomass Aggregation Pilot Project: Financial Analysis* study (2024). The study is based on literature reviews, interviews, and discussions with potential JPA members and others involved in the pilot project.

The potential revenue options that the new or expanded JPA could consider include:

- **Fees and assessments.** The JPA could charge fees for services it provides (e.g., fuels reduction services, feedstock contract support, environmental document support, geographic information system [GIS] mapping), and it has the authority to establish special assessments to address needs in the service area. Assessments are used for one-time costs, whereas fees are recurring. The types of fees for services and assessments depend on the needs of the region and the capabilities and capacities of participating agencies. Examples of services include management of long-term feedstock contracts and insurance, GIS mapping and CEQA support, coordination support for wood products facilities, private landowner support for biomass removal, and Good Neighbor Authority agreements.

- **Dues.** The JPA may raise revenue by having member agencies pay dues to help with the ongoing operational costs of the JPA, including administration costs and capital improvements. These dues often represent an investment by the member agencies to ensure the JPA can execute its mission and objectives. Depending on the organizational structure and objectives of the JPA, the JPA may also allow in-kind services from member agencies, including staffing or other contributions (e.g., infrastructure, assets, equipment, building space).

- **Bonds.** If a JPA has been formed for the purpose of providing infrastructure improvements, it can sell revenue bonds. Typically, local governments need voter approval to issue a bond, but JPAs can do so without a vote, if the JPA member agencies adopt a local ordinance that allows the JPA to issue bonds.

- **Taxes.** Taxes are a direct revenue mechanism for government entities. For the JPA, taxes would likely include special taxes and would require voter approval. Such taxes would be paid by residents within the region to support the wildfire resilience program. Taxes may take the form of an increase in sales tax, parcel tax, or TIF. TIFs are used to finance infrastructure improvements and raise funding based on future property tax increases for 10 years into the future.

- **Grants.** The new or expanded JPA would be able to apply for state and federal grants that fund their objectives, such as forest health improvement, wildfire risk reduction, and workforce development. The JPA could seek and use state and federal grants to support projects and programs, as well as contributions from foundations and other nongovernmental organization and nonprofit funding. Additionally, as stated above, the JPA could consider managing grant funds (as well as philanthropic and foundation funds) for other entities.

- **Endowments and gifts.** The new or expanded JPA could seek out private endowments from individuals or organizations who are interested in supporting the JPA's mission.

Based on input from regional partners, each of these revenue options were ranked on likelihood and priority. Table 3 presents the results of this ranking, with specific notes on feasibility ranked as low, medium, and high, which are defined as:

- **Low.** The likelihood of the Central Sierra JPA securing funding from this revenue option is considered "low" due to the current organizational structure, capacity, and desire of potential members, as well as the need for additional infrastructure investments to support the revenue stream.
- **Medium.** The likelihood of the Central Sierra JPA securing funding from this revenue option is considered "medium" due to the anticipated ease of overcoming specific structural, capacity, and infrastructure needs to make the revenue stream feasible.
- **High.** The likelihood of the Central Sierra JPA securing funding from this revenue option is considered "high" if it is already a secured source of funding for the Central Sierra pilot or if

the funding stream could become feasible given minimal initial investments in structural organization, additional capacity, and infrastructure.

In addition, Table 3 presents the priority of the potential revenue option as low, medium, and high. The level assigned to the priority scores is based on discussions regarding the importance of the revenue option for the new or expanded Central Sierra JPA with potential JPA members and others involved in the pilot.

Table 3. Potential JPA Revenue Options

	Revenue Option	Likelihood Level	Priority Level	Notes on Feasibility
Fees for Services	**Managing long-term feedstock contracts**	Medium	High	The pilot partners have identified this service as a key priority for the JPA to provide. The JPA would need a structure and support staff for managing feedstock contracts, an investor or other coordinating entity with connections to insurance companies to share risks, and operational local biomass facilities to increase the feasibility of the revenue stream.
	GIS mapping and CEQA support	Medium	High	The JPA would need additional technical expertise and capacity to increase the feasibility of this revenue stream; however, the JPA could plan on contracting with technical experts to provide this service.
	Wood product facility support	Medium	Medium	The JPA would need to have clear linkages to potential wood products businesses that they could support and would need to develop a service delivery model suited to the needs of these businesses.
	Private landowner support for biomass reduction	Medium	Medium	The JPA would need staff support to serve in the coordinating role and connect landowners to haulers and processing facilities. Transportation costs in the rural service area are challenging, and constituents are unlikely to support bonds, taxes, or fees to fund local government green waste programs; however, they may be more amenable to tailored support provided by the JPA serving as a matchmaker rather than a green waste program.
Dues		Low	Medium	The feasibility of this revenue stream depends on the overall organizational

Revenue Option	Likelihood Level	Priority Level	Notes on Feasibility
			structure of the JPA, which will ultimately determine if dues are a revenue stream or cost. If a new JPA is formed, then it may require members to pay dues. Alternatively, members may be more amenable to providing in-kind staff support (e.g., 10–25 percent of one FTE) to the JPA.
Bonds	Low	Low	The Central Sierra counties' residents are not currently in support of raising taxes to support this measure.
Taxes	Low	Low	The Central Sierra counties' residents are not currently in support of raising taxes to support this measure.
Grants	High	High	Current member organizations of the potential JPA, such as MCRCD, receive funding through grants, and the Office of Land Use and Planning provided initial grants funds for the pilots. Grants and other sources of program funding—particularly state funding—are likely to continue being an important source of funding to help initiate and allow for the ongoing operations of the JPA.
Endowments or gifts	Medium	Medium	Although most members do not currently receive endowments or gifts to support their operations, the new JPA could pursue potential endowments once a contracted executive director is on board.
Good Neighbor Authority agreement management	Medium	Medium	This nascent opportunity could be feasible depending on the entities that are part of the JPA, agreements formed with USFS, and demand for these services. (*Note that given the nascent nature of these services and the unknown financial benefits, these services are not currently included in the financial model outlined below, though they could be explored in more detail in the future.*)

Based on this assessment, the three funding mechanisms considered in the financial analysis include grants, fees for services, and endowments or gifts:

- **Grants.** Per discussion with the Office of Land Use and Climate Innovation staff, they expect to provide the next round of seed funding ($1,000,000 per pilot) in 2027 for the woody biomass aggregation pilot projects. These funds are likely to provide the most substantial source of funding for the JPA during its startup period. The amount of grant funding secured by the JPA will vary year by year, depending on funding availability and the projects and programs the JPA is prioritizing to best support within the Central Sierra region. In addition to the grant funding from the Office of Land Use and Climate Innovation, the JPA should pursue grant funding from federal and other state entities to advance specific objectives and regional priorities related to woody biomass use, forest health, wildfire risk reduction, and workforce development. The specific grants the JPA pursues will depend on how it frames its mission, goals, and services. For example, MCRCD has received over $29 million in grant funding over the last five years through a variety of California agencies, including California's Department of Forestry and Fire Protection, Wildlife Conservation Board, Department of Water Resources, and California Energy Commission. The JPA will benefit from clearly identifying its objectives and priorities, including reducing wildfire risk and supporting economic development in the region through the beneficial use of woody biomass. Initial investment and stable funding from the state will be critical, given how much the JPA will rely on grant funding during its initial phase.

- **Fees for services.** In addition to grants, fees for services are likely to be the most viable option for providing revenue streams to the JPA and also have the potential to provide long-term sustainable financing, particularly if the JPA is able to expand its services over time. The two most likely services the JPA could initially provide are to coordinate long-term contracts and provide technical support for GIS mapping and CEQA. The JPA may also explore the feasibility of providing additional services in the future. The JPA must secure several key components of its service model for the revenue streams to be viable and provide long-term financing for the JPA.

- **Endowments or gifts.** While the region currently does not have as much philanthropic support as some other regions in the state, a variety of foundations and other donors in California are interested in supporting projects that contribute to forest health and wildfire resilience. A new or expanded JPA with additional agencies and an extended list of partners should consider developing outreach and engagement materials to inform organizations and entities of the mission and objectives of the JPA and seek to attract funding in the form of endowments and gifts. Funding from endowments or gifts can range in duration from a one-time, small amount to a larger, ongoing source of revenue. This funding can be provided to apply broadly to the JPA's mission or be focused on a specific program or objective.

ERG estimated the potential revenue and costs for a new JPA or a revised and expanded JPA over a five-year period, as summarized in Table 4. The analysis assumes the new or expanded JPA will phase services over time, member agencies will not pay annual dues and will instead provide in-

kind staff support, that all employees work remotely, and that a physical office is not needed at this time.

Costs include 3 percent salary increases per year, and salaries and consulting fees constitute the greatest cost to the JPA. As shown in the budget, the JPA will make a modest income that will increase each year; in Year 1, the expected total income will be $72,040, increasing to $158,877.54 in Year 5. With 75 percent of profits allocated into the operational reserve fund, the JPA will have between $18,010 (Year 1) to $39,719.38 (Year 5) in net income.

For revenue, in Year 1, grants will form the majority (83 percent) of the JPA's revenue stream, with a much smaller percentage (17 percent) coming from fees for JPA services. This imbalance of revenue streams underscores the importance of state funding (through the existing seed money that will come from the Office of Land Use and Climate Innovation) to support the startup phases of the new or expanded JPA. The dedicated seed funding is projected to constitute over half of the JPA's budget through Year 2; without this funding, the JPA will not be economically solvent unless it provides an incredibly limited set of services, if any.

As the JPA progresses and expands its services, it will become less reliant on grant funding and be able to move toward a more balanced economic model. By Year 5, fees for service will constitute the largest percentage of the revenue stream (47 percent), with the remaining revenue coming from grants (43 percent) and endowments and gifts (10 percent). While the exact balance of revenue sources will shift depending on how the JPA chooses to pursue both services and grants, this revenue balance demonstrates the increasing economic viability of the JPA over time.

Table 4. Proposed Five-Year JPA Budget

	Year 1 (2027)	Year 2 (2028)	Year 3 (2029)	Year 4 (2030)	Year 5 (2031)
Revenue					
Fees for Services					
Long-term feedstock contracts & insurance (large business)	$0.00	$0.00	$16,000.00	$32,000.00	$32,000.00
Long-term feedstock contracts & insurance (medium business)	$0.00	$12,000.00	$12,000.00	$24,000.00	$24,000.00
Long-term feedstock contracts & insurance (small business & landowners	$16,000.00	$16,000.00	$24,000.00	$24,000.00	$32,000.00
Wood products support and coordination	$0.00	$30,000.00	$30,000.00	$30,000.00	$30,000.00
GIS Mapping Support	$16,000.00	$16,000.00	$24,000.00	$24,000.00	$32,000.00
CEQA Support	$0.00	$20,000.00	$40,000.00	$40,000.00	$60,000.00
Private landowner support for biomass reduction	$22,500.00	$22,500.00	$22,500.00	$22,500.00	$22,500.00
Subtotal	**$54,500.00**	**$116,500.00**	**$168,500.00**	**$196,500.00**	**$232,500.00**
Dues					
Member Agency Contributions	$0.00	$0.00	$0.00	$0.00	$0.00
Subtotal	**$0.00**	**$0.00**	**$0.00**	**$0.00**	**$0.00**
Grants					
Grants - local	$0.00	$0.00	$10,000.00	$10,000.00	$10,000.00
Grants - state	$250,000.00	$200,000.00	$200,000.00	$200,000.00	$150,000.00
Grants - federal	$15,000.00	$20,000.00	$20,000.00	$40,000.00	$40,000.00
Grants - other (e.g., philanthropic)	$0.00	$0.00	$10,000.00	$10,000.00	$10,000.00
Subtotal	**$265,000.00**	**$220,000.00**	**$240,000.00**	**$260,000.00**	**$210,000.00**
Endowments and gifts					
	$0.00	$0.00	$30,000.00	$40,000.00	$50,000.00
Subtotal	**$0.00**	**$0.00**	**$30,000.00**	**$40,000.00**	**$50,000.00**
Total Revenue	**$319,500.00**	**$336,500.00**	**$438,500.00**	**$496,500.00**	**$492,500.00**
Costs					
General business and operational expenses					
JPA Local Agency Formation Commissions and state filing fees	$30,000.00	$0.00	$0.00	$0.00	$0.00
Fundraising expenses	$500.00	$515.00	$530.45	$546.36	$562.75
Accounting fees	$3,000.00	$3,090.00	$3,182.70	$3,278.18	$3,376.53
Banking fees	$250.00	$257.50	$265.23	$273.18	$281.38
Computer and Internet Expenses	$2,500.00	$2,575.00	$2,652.25	$2,731.82	$2,813.77
Office Supplies	$400.00	$412.00	$424.36	$437.09	$450.20
Postage and Delivery	$200.00	$206.00	$212.18	$218.55	$225.10
Telephone Expense	$2,500.00	$2,575.00	$2,652.25	$2,731.82	$2,813.77
Website and Promotion	$2,500.00	$2,575.00	$2,652.25	$2,731.82	$2,813.77
General business expenses - Other	$5,000.00	$5,150.00	$5,304.50	$5,463.64	$5,627.54
Subtotal	**$46,850.00**	**$17,355.50**	**$17,876.17**	**$18,412.45**	**$18,964.82**
Insurance					
Directors Insurance	$1,125.00	$1,158.75	$1,193.51	$1,229.32	$1,266.20
Disability insurance	$3,000.00	$3,090.00	$3,182.70	$3,278.18	$3,376.53
General & Professional Liability Insurance	$10,000.00	$10,300.00	$10,609.00	$10,927.27	$11,255.09
Worker's Compensation	$10,010.00	$10,310.30	$10,619.61	$10,938.20	$11,266.34
Insurance Expense - Other	$1,000.00	$1,000.00	$1,000.00	$1,000.00	$1,000.00
Subtotal	**$25,135.00**	**$25,859.05**	**$26,604.82**	**$27,372.97**	**$28,164.16**
Salary and benefits					
Contracted staff (1 Exec Director; other staff support from members)	$130,000.00	$133,900.00	$137,917.00	$142,054.51	$146,316.15
Consulting fees (support to assist with services)	$40,875.00	$48,000.00	$87,000.00	$108,000.00	$135,000.00
Subtotal	**$170,875.00**	**$181,900.00**	**$224,917.00**	**$250,054.51**	**$281,316.15**
Travel (non-project related)					
Gas	$3,000.00	$3,090.00	$3,182.70	$3,278.18	$3,376.53
Parking	$100.00	$103.00	$106.09	$109.27	$112.55
Per diem	$1,500.00	$1,545.00	$1,591.35	$1,639.09	$1,688.26
Subtotal	**$4,600.00**	**$4,738.00**	**$4,880.14**	**$5,026.54**	**$5,177.34**
Total expenses	**$247,460.00**	**$229,852.55**	**$274,278.13**	**$300,866.47**	**$333,622.46**
Number of FTEs	1	1	1	1	1
Grand Total Revenue	**$319,500.00**	**$336,500.00**	**$438,500.00**	**$496,500.00**	**$492,500.00**
Grand Total Costs	**$247,460.00**	**$229,852.55**	**$274,278.13**	**$300,866.47**	**$333,622.46**
Total Income (prior to allocation to reserve fund)	**$72,040.00**	**$106,647.45**	**$164,221.87**	**$195,633.53**	**$158,877.54**
Annual Operational Reserve Fund Allocation	**$54,030.00**	**$79,985.59**	**$123,166.41**	**$146,725.15**	**$119,158.15**
Total Net Income (after allocation to reserve fund)	**$18,010.00**	**$26,661.86**	**$41,055.47**	**$48,908.38**	**$39,719.38**

4. Conclusions and Recommendations

Developing a new JPA or expanding an existing JPA in the Central Sierra region is in the early stages of development. The prospective JPA members are discussing how to best approach the work needed to expand the beneficial use of woody biomass, and research is ongoing related to the needs of the region and the most appropriate services and functions for the JPA. Additionally, partners are still exploring the preferred governance arrangement. While the prospective budget presented in the previous section demonstrates a preliminary concept for financing, the budget could change or adapt to better meet the needs of the region and the capacities of the member organizations.

The potential participating organizations continue to meet to identify the region's needs, the capacity to provide the services and functions identified, and the best approach to advancing the beneficial use of woody biomass.[8] To determine the desired path forward and settle on an agreed-upon organizational structure, members who will participate in the new or expanded JPA should do the following:

- **Continue ongoing research.** Partners in the Central Sierra project are still conducting research related to several topics, including the logistics of setting up arrangements for long-term feedstock contracts and the insurance needed to guarantee these contracts; the viability of sites for a wood products campus; and other potential governance arrangements that could be useful to consider, such as Good Neighbor Authority agreements. This research will be critical in determining the path forward for the JPA, particularly in relation to understanding the suite of services the JPA may offer and how these services will impact on the viability of the projected financial scenarios.

- **Identify strategic opportunities for communication among potential members.** Pilot project partners have engaged in many productive discussions with potential JPA partners over the course of this project. As the project proponents release new findings and identify strategic opportunities (e.g., presentations at board meetings, one-on-one conversations, group meetings, the planned meeting for February 2025 in collaboration with CSEDD), it will be critical to demonstrate the potential benefits of a new or expanded Central Sierra JPA and make a case for the importance of establishing the services described throughout this report in a new or existing entity. As part of these conversations, the pilot should also continue conversations with eastern Madera County, which could be another viable entity to include in the JPA given overlap in landscape type, fuel reduction needs, and economic development priorities and concerns.

- **Confirm members and commitments.** Currently, while some potential members have shown a strong interest in participating in a potential JPA, there have not been clear

[8] Note that MCRCD and its partners are currently planning a meeting for February 2025 that would include potential JPA partners and provide a forum to begin to address these questions and develop a roadmap for the new entity.

commitments to move forward; this uncertainty is to be expected at this stage of the pilot and given the many options still being explored. Through ongoing conversations with potential JPA members over the next year and a half, the pilot should focus on securing member commitments (e.g., letters of interest) and ensuring members have a clear understanding of what their participation in the JPA will entail.

- **Develop a clear timeline for forming a JPA.** Due to available budget for initial seed funding for the pilots from the Office of Land Use and Planning, the original timeline for forming a JPA has shifted. Based on the expected receipt of funds in fiscal year 2026–2027, the pilot members should develop a clear timeline for what they need leading up to formation and how the new or expanded JPA will meet required actions to ensure a smooth startup once state funds are available.

Once either a JPA (or alternate structure) and its members have been solidified, the new Central Sierra JPA (or other similar entity) should engage in a planning exercise to do the following:

- Clearly outline JPA members, roles, and responsibilities, such as expected contributions of in-kind staff support, how members will engage in providing services, frequency of meetings, and decision-making processes.
- Develop JPA foundational documents, contracts, and agreements among JPA members and any initial entities with which they will be contracting.
- Finalize a financial model and solidify initial sources of funding and financing, such as grants or fees for services. (See the Financial Analysis Report for more details regarding potential questions the new or expanded JPA could address to help finalize its financial model.)
- Engage in a process to identify priority JPA services and develop an implementation plan for how the JPA will initiate and phase its delivery of services.
- Develop a public engagement and outreach strategy (e.g., communications plan) focused on identifying potential service users and initiating partnerships for providing services.

It is important to underscore that the ability of a new program to increase the pace and scale of the beneficial use of woody biomass will depend on initial and stable funding from the state, and state money will continue to be a very important source of funding if a new program is established. If California is committed to supporting biomass reduction as a tool to strengthen forest health, increase forest resilience, and catalyze economic development, it needs to continue funding the counties and RCDs to do this work and consider how to allocate ongoing funds to promote their success. By continuing the work started through the Central Sierra pilot project—and with continued support from the state—the new or expanded JPA could serve a critical role in the region. The Central Sierra JPA has the opportunity to restore the health of the region's forest, decrease wildfire risk, and provide important economic development opportunities for local businesses.

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