# Assessing the Feasibility of a Joint Powers Authority-Led Sort Yard in Northeastern California

March 2025

*Prepared by:*
*Camille Swezy (Mule Ears Consulting) and Sarah Oldson (Cascade Resource Consultants)*

*Prepared for:*
*Fall River Resource Conservation District*

## Introduction

The Pit and Fall River Resource Conservation Districts (RCDs) work cross jurisdictionally including on behalf of the Lassen and Modoc National Forests to implement forest restoration projects to promote landscape health and reduce wildfire risk across northeastern California. These projects typically involve thinning of smaller diameter trees and biomass material that is chipped and hauled off-site by chip vans directly to a biomass facility. This model has worked well in the region to date, in part due to a relatively strong market for biomass from local cogeneration facilities, including Burney Forest Products in Burney, Honey Lake Power in Wendel, and Sustainable Resource Management in Anderson.

However, the success of this model relies on the assumption that biomass facilities are currently accepting and purchasing biomass feedstock. If a facility is not accepting supply in a given moment, it becomes a bottleneck to accomplishing important forest health and fuels reduction projects across a variety of land ownerships.

To address this potential bottleneck, the Fall River RCD is exploring the feasibility of siting a "sort yard" in the region, or a location where biomass material could be transported to and stored until biomass markets improve or another method of wood disposal is identified. Locating a sort yard in an area with a shorter haul time from project sites could help reduce additional transportation costs from moving biomass to an intermediary site. A sort yard could also support existing biomass facilities in the region by providing fuel during the winter months when the woods are snowed in or too muddy to allow for forest management activities.

This report explores the feasibility of a sort yard located in the "Intermountain Area" of northeastern California area based on specific operating, market, and geographic conditions in this region. We discuss important considerations for sort yard development and management, identify examples of existing sort yards in California and market conditions that allow for their success, and review a variety of ownership and management scenarios for siting a sort yard in the Intermountain Area.

### *Cal FRAME Project and Report Background*

This report was written as part of the Fall River RCD's California Forest Residual Aggregation Market Enhancement (Cal FRAME) program, funded by the California Governor's Office of Land Use and Climate Innovation. The purpose of this project is to explore how local government, such as formation of a Joint Powers Authority (JPA), can help improve and de-risk the biomass

supply chain in the northeastern California region. One main outcome of this project is that five RCDs in the region are exploring formation of a JPA consisting of RCDs, given the RCD's strong local leadership in advancing forest management and fuels reduction projects.

During this project, operation of a sort yard was identified as a possible item for a potential JPA to pursue in support of the biomass industry. This report explores the feasibility of a sort yard in northeastern California both to: 1) support existing biomass facilities by storing biomass for possible winter material supply if needed; and 2) as a place to stockpile biomass from the RCD's forest health and fuels reduction projects to ensure material is removed from the site to effectively accomplish forest health and landscape management goals, and to avoid having project success be at the mercy of local biomass markets (which can be volatile).

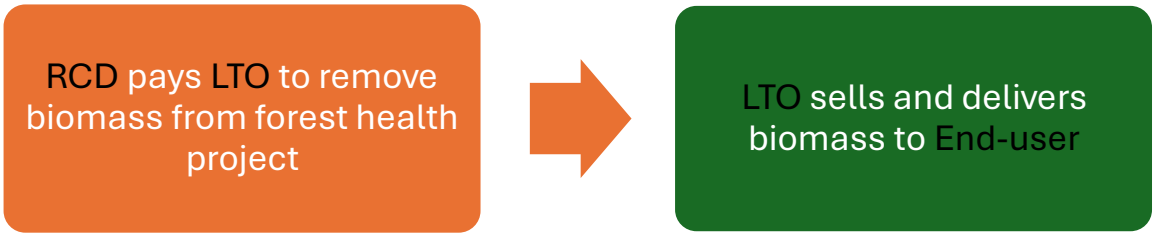
## The Role of a Sort Yard in Support of the Forest Biomass Supply Chain:

Following stakeholder outreach meetings performed in 2022 and 2023 for the Fall River RCD's Cal FRAME project, the idea of a sort yard was suggested to support two different outcomes:

1. In support of forest management activities – allow important forest health and fuels reduction projects to be completed in a timely manner by ensuring removal of all wood to meet landscape management goals.
2. In support of biomass facilities – in the case of a long or more wet winter, many biomass facilities in the region can struggle to meet their fuel supply needs when the woods are too muddy or snowed in to allow for biomass-generating activities. A similar scenario happens during summer months when fire weather restrictions are in place, limiting in-woods operation. A sort yard could fill in this gap by providing biomass to facilities during winter months and during fire weather conditions when facilities experience reduced loads of biomass per day.

The following diagrams show how a sort yard fits into forest biomass removal for forest health or restoration projects:

<u>Normal operations (no "sort yard"):</u>




The "normal operations" model assumes a licensed timber operator (LTO) has rights to the biomass and uses sale of biomass to end-users to offset implementation costs. This model also assumes that the LTO has access to a market to dispose of biomass at the time of operations.

It is important to note that the sale of biomass (green box) typically helps offset implementation costs (orange box). For example, if the LTO gets $500/load of biomass delivered to a biomass facility, and its per acre cost to perform a forest health project is $2000/acre, the LTO's price to the RCD for implementation will be $1500/acre.

Operations with “sort yard” step:


If local biomass facilities are not taking material, the LTO could transport biomass to a sort yard in log form for long-term storage until a biomass market develops, or until the LTO can find another market for disposal. The intermediary step (grey box) adds an additional step of loading and transporting material in this biomass removal process, therefore adding costs that will need to be paid for somewhere in this process.

## Sort Yards: Key Considerations

- **Sort yards add costs** to the biomass removal process**:** First and foremost, it is important to recognize that moving biomass is costly. Adding an intermediary step in the biomass removal process between the woods and the end-user will add costs for loading, transporting, and unloading biomass.
- Without a guaranteed outlet or market for the material, **a sort yard could carry considerable risk by requiring operator to store large volumes of low-value wood for an undetermined amount of time.** This would likely be accompanied by increased costs to accommodate that risk.
- **Need to establish who the sort yard is serving.** Is it aiming to support timely completion of forest health and fuels reduction projects, or is it to support biomass facilities with providing reliable access to supply during winter months? It may be necessary to choose 1 to ensure success.
- **Location is key.** The success of a sort yard can be very dependent on the location of both sources and end-users. Therefore, it is important that a sort yard that accepts woody biomass be sited in an optimal location that reduces transportation costs between the forest and end-user.
- **For ease of material storage and ensuring low moisture content can be achieved, biomass should be transported and stored at a sort yard as whole logs, which can then be chipped on-site as needed**.
    - Transportation of biomass in wood chip form to a sort yard will require a truck dump on-site for unloading of chip vans. Additionally, storing material as wood chips would require considerable day-to-day pile management to keep the biomass from composting or combusting and becoming flammable. Another benefit to storing biomass in whole-log form is it allows the operator to sell to a variety of wood products markets, not just chips.
    - However, transportation of biomass in log form adds an additional step in the woods, as biomass sized trees removed from mechanical thinning projects are typically chipped in whole tree form at the landing. To ship in log form would

require the logs to be processed (limbs removed and cut to length) and loaded onto log trucks with “turkey racks” to accommodate the short lengths.

- **Sort yards will require a truck scale on-site if biomass will be measured by the ton.** Another option for unloading biomass is a self-unloading chip van. However, these are typically more costly to purchase and maintain compared to standard chip vans, and many operators of self-unloading chip vans therefore do not operate them off pavement on dirt roads.
- **Permitting an undeveloped site could be difficult, costly, and time consuming**. Launching a sort yard on a previously undeveloped piece of property will require various permitting to ensure operations are compliant with local and state regulations, including:
    - CEQA compliance: obtaining a Use Permit from the county will require an Initial Study
    - Zoning – property needs to be zoned to allow for log storage uses
    - Fire district rules – need to have water supply and other fire suppression resources in place
    - Water supply and waste water discharge implications

## Sort Yard Examples in Northern California Operating Under Similar Contexts:

### *Crescent Mills Wood Products Campus – Crescent Mills, CA*

Set up following the Dixie Fire under an emergency log storage permit from Plumas County, on the 28-acre industrial site owned by Sierra Institute. The Crescent Mills site served as outlet for logs from hazard-tree removal projects around the surrounding Greenville and Indian Valley area. Logs delivered to the Crescent Mills site were processed into lumber, firewood, wood chips for the Plumas County Health and Human Services Center's biomass boiler, and a small quantity of poles.

Without the Dixie Fire, this operation would have been more challenging to permit and supply would have been more challenging to obtain. Following the Dixie Fire and other major wildfires that result in significant structure loss, fire-affected regions typically see an influx of funding to support fire recovery activities, such as from FEMA, CalOES, PG&E, Caltrans, and insurance payouts to homeowners; this resulted in a large amount of low-cost material delivered to Crescent Mills (in which log removal and transportation caused are subsidized), and does not reflect normal market conditions for “green” forest management projects.

As of March 2025, most post-fire wood processing operations have ended at the Crescent Mills site. The sawmill has ceased operations and most logs and biomass have been removed from the site. The Sierra Institute is leasing some space out on site to a small firewood business who provides their own logs to store and process on-site as needed.

### *Old Durham Wood – Durham, CA*

Old Durham Wood (ODW) is a wood disposal and processing yard based in Durham, and processes approximately 500,000 cubic yards of wood material per year. Existing operations include a green waste disposal facility, chipping and grinding operations for the production of biomass fuel, composting, and firewood processing and storage. ODW charges a tipping fee for any material brought to the site. Biomass material is typically derived from orchard removals, urban wood waste, and from post-fire cleanup activities in Paradise and other fire-affected places in the surrounding region.

Material is sorted and processed based on its best end-use, and either sent to market or stored on-site until a market develops. For the biomass fuel processing operation, material is processed through a horizontal grinder and then passed through a screen to separate the smaller material (fines) from the larger material. Larger chips are sent offsite to biomass power plants, while fines are composted onsite.

The length of time that wood material remains onsite depends on the local markets for biomass fuel and orders for compost. Biomass fuel is sent to biomass power plants typically during the winter months when forest management operations are halted.

ODW operates year-round.

### *Mt Lassen Power/Tubit Enterprises Yard – Westwood, CA*

As Tubit Enterprises worked to re-start the Mt Lassen Power cogeneration facility in Westwood, CA, they are stockpiling material on its 28 acres in anticipation of upcoming fuel supply needs.

Tubit Enterprises charges a $55/green ton tipping fee for unprocessed material, primarily from utilities, construction contractors, arborists, and occasionally LTOs from logging operations in close proximity.

Biomass material is kept in whole log/unprocessed form to maintain a low moisture content around 30-40%, therefore avoiding the combustion concerns that come with managing piles of wood chips. Tubit Enterprises plans to process this material as needed to supply the power plant once it is online.

It is likely that this sort yard will continue to be active provided that the Mount Lassen Power facility is able to interconnect to the PG&E grid – the date for this is unknown at this time.

### *Phillips and Jordan/Butte Fire Recovery in 2017 – Calaveras County*

Following the 2015 Butte Fire, PG&E hired Phillips & Jordan (P&J) Environmental to remove and process vegetative material surrounding PG&E power lines as part of its Expanded Debris Management program. The goal of this program was to remove all hazard trees from private property along power lines, and all logs and biomass removed were taken to P&J's Debris Management Site (a sort yard) for processing before sending to an end-user. End-users that received material from this sort yard include sawmills, biomass to energy facilities, firewood markets, and a colorization plant near Stockton.

One representative from this project reflected that processing and sending wood to end-users was a full time effort, and the yard was staffed with at least 7-8 people at a time.

It is important to note that this sort yard was started in response to a wildfire and subsequent abundance of material needing to be removed; the cost of log removal and transportation to the sort yard was paid for through P&J's PG&E contract, and administrative costs for the sort yard were offset by PG&E as well.

This project was completed in December 2019.

### *Middletown Wood Yard – Middletown, CA*

Similar to the Butte Fire sort yard discussed above, PG&E has partnered with County of Lake and the non-profit Clear Lake Environmental Research Center (CLERC) to stockpile, store, and process logs at a county-owned site in Middletown. The yard was set up in response to PG&E's need to remove dead trees along its power lines throughout southern Lake County. CLERC provides support in the form of leading the CEQA and air permitting processes for the yard, and helping identify opportunities to dispose of wood. Recently they have partnered with Earth Foundries to use a carbonizer on site to dispose of wood.

This operation is another example of a sort yard being set up due to a large amount of logs needing to be disposed of following a wildfire/tree mortality event, and shouldn't be compared to efforts to plan a sort yard under "normal" forest management activities (in green, unburned forests not in response to a wildfire).

At this time, the Middletown Wood Yard is a temporary operation but local stakeholders are interested in pursuing efforts to have it support forest biomass processing operations in the region long-term.

*Summary of Examples:*

Following a review of sort yard examples throughout northern California, we have found that the most successful sort yards are either started in response to a wildfire when post-fire funding is available and there is an abundance of logs made available from hazard tree removal activities, OR those that charge a tipping fee at its gate to cover site management and operating costs; the latter typically source material from urban wood waste or tree service work as paying a tipping fee for wood disposal is more custom in those industries.

When biomass prices were higher in California, it was common for biomass facilities to operate "satellite yards", or sort yards, to store their biomass until it was needed; the market prices at this time could help pay for such costs. Beyond biomass prices not being high enough today, these satellite yards have also been less commonly used since the BioRAM program came into effect and set requirements for material to be procured from High Hazard Zones, making it challenging to accurately track sources of biomass when it's aggregated at a satellite yard.

## Three Operating Scenarios for a Sort Yard in Northeastern California:

Below are three scenarios for ownership and operating arrangements for a potential sort yard located in northeastern California. The RCD is used as an example of a partner involved in these arrangements, but this role could also be assumed by a non-profit, tribe, or a JPA.

*Option A: Privately Owned Wood Yard Enters into Agreement with RCD*

One option for a sort yard is for the RCD to collaborate with an established facility (Operator) that already processes and stores wood material. The Operator would agree to taking a certain volume of wood from the RCD's forest management projects in case local end-users, like biomass facilities, are not taking material. The RCD in this scenario is assumed to have access to biomass and wood material, such as through USFS projects it implements via Stewardship Agreements. The RCD would coordinate removal and transportation of biomass to the site, and the Operator would take responsibility for off-take or end-use of the material. Once biomass is delivered to the sort yard, the RCD would no longer own the material.

There are several smaller-scale wood processing yards in the region that could fit this example, such as the Hat Creek Bioenergy site in Burney, Tubit Enterprises wood yard in Burney, and Warner Enterprises facility in Anderson. These sites are already permitted to store feedstock, and some of these sites already have an end-use facility located on site or have one planned for future development. A map of all potential sites in the Intermountain Area that could host a sort yard are depicted in Figure 1.

A key factor that will need to be worked out is if the Operator pays the RCD for the material, if the RCD would give material for "free" to the Operator, or if Operator would charge RCD a tipping fee for accepting material.

Another option is that the Operator, assuming it is a LTO, bids on the forest management project offered by the RCD and builds the biomass disposal costs into its per-acre bid.

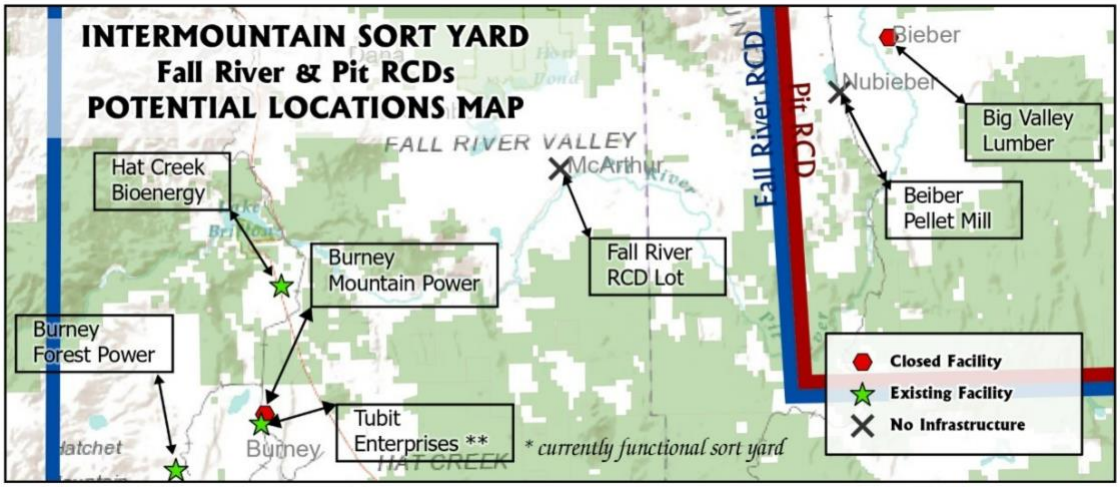



*Figure 1. Potential sites in the Fall River/Pit RCD district areas that could host a sort yard.*

Based on outreach to local operators performed as part of this report, and considering the inherent risk associated with storing material at a sort yard without a guaranteed end-use or market, it should be expected that the Operator would charge the RCD a tipping fee for receiving material at a sort yard. Initial outreach suggests this **tipping fee could be as high as $68/green ton,** which is likely too costly to warrant further exploration of a sort yard to support forest health projects.

Pros - Option A:

- Sort yard operations are likely already permitted, therefore reducing start-up costs and development time.
- Allows for RCD to only participate when needed, reducing CAPEX and OPEX costs to the RCD/JPA (who typically relies on grant funding for in-woods work anyway).
- Transfers risk associated with long-term storage of low-value wood (without a guaranteed end-user) away from RCD.
- Reduces responsibility to RCD for identifying end-users for low value material, and instead leverages expertise of Operator who is already in the business of moving wood.
- Existing staff and equipment on-site already capable of receiving and processing material, such as weigh-scales, log loader, wheel loader, truck/tip dump, or chippers.
- Operator could benefit from partnership with RCD by enhanced access to feedstock via RCD's implementation projects.

Cons - Option A:

- Studies performed for CEQA compliance of facility's Use Permit may not have accounted for additional truck trips, or air quality/noise impacts of sort yard operations; additional analysis could be required which would add costs and delays.
- Operators have estimated a $68/green ton tipping fee, which adds costs that would be borne by the RCD.
- May not be viewed favorably by larger biomass facilities. If Operator charges a tipping fee, may set a bad precedent for other local biomass facilities that pay for biomass to be delivered – brings up question on why not just take the extra cost of paying a tipping fee, and agree to lower purchase price for biomass from end-user.

- Similarly, if the RCD relied on grant funding to cover costs of transportation of biomass to the sort yard, or to pay for the tipping fee, then this insertion of grant funding into the forest biomass supply chain could inflate the biomass market and result in facilities lowering their purchase price for biomass. This could reduce the financial feasibility of other forest management projects in the region that do not have grant funding to offset implementation and biomass transportation costs.

**Option B: RCD Owns Sort Yard, Leases to Private Entity to Operate**

The second scenario for sort yard operations involves the RCD owning a site outright and leasing it to a private entity to operate on (Operator). This example assumes that permitting is complete for site operations, including any studies needed for a Use Permit, and the RCD pays all taxes, insurance, and any other fixed costs associated with site ownership. The Operator, or the lessee, would bring their own equipment and staff to run operations and process biomass, manage contracts with end-users of the material, etc.

Option B assumes that Operator assumes ownership of biomass once it is delivered to the site, and the RCD therefore has a minimal role in sort yard operations beyond supplying material, site ownership, and providing support to Operator with identifying markets and end-uses.

Pros of Option B:

- RCD could support sort yard operations without taking on risk of doing the work.
- Could select site close to in-woods operations to reduce haul distance and transportation costs for moving material out of the woods and onto the site.
- RCD could make an arrangement with the Operator that the Operator agreed to transport biomass to the sort yard from the RCD's forest health projects, in exchange for lease payments. However, without lease payments, this would leave little funds left for the RCD to pay fixed costs associated with site ownership, such as taxes and insurance.

Cons of Option B:

- Operator would need to take on risk for storing material long-term, or would need to identify an outlet for large quantities of biomass -the latter is not very realistic given existing challenges with limited biomass markets in the region.
- Will be challenging to find a business or operator willing to take this on without guaranteed funding or a market.
- Would be more successful if Operator/lessee developed a mixed-product wood utilizing/end-use facility on-site to ensure disposal of biomass.

**Option C: RCD Owns/Operates Sort Yard**

In Option C, the RCD takes a lead role in both site ownership and operations. In this scenario, RCD is responsible for procuring biomass and developing agreements with end-users. Biomass could be sourced from the RCD's implementation projects, or it could procure material from other sources. The RCD would also be responsible for finding end-uses for the material to ensure wood can be disposed of.

This option could work well to directly support the RCD's forest health projects performed via Stewardship Agreements on behalf of the USFS, or grant-funded fuels reduction projects in WUI landscapes, to ensure that projects can be promptly completed.

The RCD would be responsible for all costs associated with this option, including both expenses for start-up (property purchase or rent payments, property and other relevant taxes, insurance, permitting costs) and operations (unloading, processing, and loading biomass, managing material on-site).

Pros of Option C:

- Best method for ensuring timely completion of the RCD's forest health and fuels reduction projects, which would provide great public benefit through reduced wildfire risk and improved landscape health.
- Gives RCD greatest control over the fate of biomass material from its projects.

Cons of Option C:

- Could be viewed negatively by private entities, seen as competition and potentially negatively impacting market prices due to insertion of grant funds to the supply chain.
- If the RCD relied on grant funding to support transportation and yard operating costs, the insertion of grant funding into the forest biomass supply chain could inflate the biomass market and result in facilities lowering their purchase price for biomass. This could reduce the financial feasibility of other forest management projects in the region that do not have grant funding to offset implementation and biomass transportation costs.
- There could be considerable risk for the RCD to take on a large volume of wood without a guaranteed outlet.
- Would require some degree of funding to help pay for site operations and biomass management at the sort yard.

## Discussion

While a sort yard that temporarily stores biomass from the RCD's forest health or fuels reduction projects close to the sort yard could work on a case-by-case basis, it is important to acknowledge that the addition of a sort yard in the biomass supply chain will inevitably add costs. These added costs will require some level of revenue to cover sort yard operating costs and risk associated with holding onto biomass without a guaranteed outlet, end-user, or market for the material. Many sort yards in more urban areas achieve this by charging a tipping fee; however, this is less customary in rural areas such as in the northeastern California region where residents are more likely to burn their wood waste rather than pay for its disposal, and where forest managers are used to being paid by a biomass power plant for delivery of biomass fuel to its site (rather than paying for disposal).

Northeastern California is home to many timber operators who are highly experienced with moving biomass from forest health projects to end-uses amidst constantly changing market conditions. The region is also home to several large biomass power plants (Shasta Sustainable Resource Management, Burney Forest Products, and Honey Lake Power) that play a critical role in supporting forest management activities in the region; it is imperative that any efforts to launch a sort yard do not compete with these facilities or inflate prices.

Instead of developing and operating a sort yard, the proposed JPA should determine how to leverage the existing expertise present in the region among timber operators and biomass facilities, and direct any available funds and resources to helping improve the business environment for these operators. This is discussed further below.

## Our Recommendation

Following outreach to stakeholders in the northeastern California area involved with selling and buying woody biomass, and drawing on our collective knowledge as Registered Professional Foresters experienced with selling biomass and with wood yard operations, we do not see pursuit of a sort yard as the best use of the proposed JPA's time and funds at this time. Sort yards are typically most successful if they: 1) are able to charge a tipping fee to cover operating costs; 2) are launched in response to a strong market; and/or 3) are launched in response to an abundance of "free" or no-cost material from post-fire recovery activities. These conditions do not apply to normal market and operating conditions for forest management in the Intermountain Area, therefore a sort yard sited in this area would not be economically feasible.

It is important that the proposed JPAs actions do not compete with private market – this is feedback we've heard throughout the Cal FRAME outreach process since 2022. We suggest that the JPA instead focus energy on improving market conditions for existing facilities and operators already in the business of moving biomass from the forest to its end-user, rather than operating a sort yard.

Examples of improving market conditions could be to:

- Offer insurance to existing wood processing yards to reduce risk associated with long-term storage of low value wood, in case a market or end user does not materialize;
- Provide technical assistance to expand storage capacity at existing biomass facilities;
- Focus efforts on planning for and securing funding for forest management projects so there is a consistent pipeline of NEPA and CEQA-ready projects available for operators to bid on – in other words, guarantee a consistent long-term supply of biomass to incentivize operators to get creative with disposing of biomass or creating markets for it.