

Strong Workforce Program
Agriculture, Water, and Environmental Technologies
Biomass & Beyond:
The Future of Our Forests & Working Lands
Regional Workforce Advisory Meeting Proceedings
November 20, 2024
In Person

Introduction

The Los Rios Community College District, in partnership with Valley Vision and in collaboration with Sierra College, Yuba Community College District, and Lake Tahoe Community College, invests in Strong Workforce funding to organize and convene Regional Advisories. The objectives of the Regional Advisories are to build strong relationships between employers, educators, and the workforce that:

- Provide timely information on skills gaps and workforce needs, informing partners on major industry trend information;
- Improve the efficiency of the advisory process for educators and employers;
- Reflect a regional view of workforce needs and assets;
- Provide opportunities for more systemic, ongoing engagement, including workforce partners in key industry sectors.

Regional Advisory meetings provide crucial insights for guiding investments and improvements in Career Education (CE) programs to meet the rising demand for middle-skill positions. This report summarizes the Fall 2024 Regional Advisory meeting, which focused on careers in the Agriculture, Water, and Environmental Technologies (AgWET) sector, emphasizing the impact of the Biomass sector on our workforce and working lands. It includes key findings, best practices, and detailed minutes from the discussions.

Valley Vision supports a robust talent pipeline through our multiple 21st Century Workforce initiatives. We prepare our regional workforce for the future by addressing skills gaps, advancing research, aligning efforts, and strengthening systems. Valley Vision's workforce efforts are supported by the Sacramento Employment and Training Agency (SETA), Golden Sierra Workforce Development Board (WDB), North Central Counties Consortium, Yolo WDB, Los Rios Community College District, and others.

The Strong Workforce program provides Career Education opportunities to increase social mobility and fuel regional economies with skilled workers.

Key Findings

- The greater Sacramento region has abundant biomass resources but lacks a coherent management strategy. This leads to severe wildfires from excess woody biomass, open burning of agricultural residues, and overflowing landfills. Biomass can be utilized for electricity generation, heating, transportation fuels, and hydrogen production.
- Traditional methods often involve burning organic materials in open piles, releasing harmful pollutants into the air. However, new technologies are emerging to address these challenges, reduce pollution, and meet community needs.
- A reliable and steady supply of biomass feedstock is essential to support the investment and development of new facilities and technologies. Without a consistent flow of material, justifying the required capital investments for new biomass processing infrastructure becomes difficult.
- Filling skilled manufacturing positions like electricians, millwrights, and saw operators at biomass facilities poses a challenge due to the specialized skills and training required for these technical roles, which include expertise in machinery maintenance and repair. As a result, many companies are implementing in-house training programs to nurture the needed workforce.
- There is a significant demand for transportation and logistics positions, especially for drivers with a Commercial Driver's License (CDL) who can handle challenging terrains and conditions in forested areas. The panel highlighted the difficulty in finding sufficiently insured and licensed drivers to transport biomass materials from forests to processing facilities.
- Support roles beyond field operations, including legal, contracts, policy development, grant writing, project management, and administrative/finance positions, are essential to the success of biomass projects, as these functions are vital for securing funding, navigating regulations, and ensuring the viability of projects.
- The biomass industry struggles with workforce issues due to a lack of training opportunities in related fields like forestry and agriculture. Short-term contracts make logging and hauling companies hesitant to engage with biomass facilities. Additionally, the seasonal and risky nature of forestry jobs complicates recruitment, retention, and professional development for workers.
- To meet workforce needs in the biomass industry, it's important to expand the talent pool by targeting underrepresented groups, especially women, and to raise awareness of career opportunities in urban areas. Partnering with community colleges and workforce development boards can help connect with a wider range of potential workers.

Meeting Proceedings

Welcome and Introduction

On Wednesday, November 20th, 2024, the Folsom Community Center was the site of Valley Vision's regional convening on biomass utilization. Leaders from local and state governments, public agencies, NGOs, community groups, educational institutions, and industry gathered to explore how biomass can improve air quality, enhance forest health, and create workforce development opportunities. Discussions focused on using biomass to provide cleaner energy, manage forests sustainably, and develop skills needed in the growing biomass sector. This collaborative effort aimed to generate actionable solutions that benefit the Greater Sacramento region's forests, working lands, and communities.

In the Greater Sacramento region, an overwhelming amount of biomass exists in both our forests and as waste from agricultural lands. This cross-sector issue continues to impact our region and the State, putting communities at risk and draining our natural and financial resources. For example, wildfires significantly damage water reservoirs and infrastructure, and the Placer County Water Agency allocates [millions of dollars](#) to wildfire mitigation to protect this precious resource for millions of residents. Inaction puts communities and wildlife at further risk due to catastrophic wildfires and local governments and communities facing resource constraints.

Opening Remarks

Eric Guerra, a member of the California Air Resources Board and the Sacramento City Council, opened the event by sharing his personal background as part of a farmworker family in Yolo County. He emphasized the critical importance of public health in biomass management and highlighted the negative effects of poor air quality. Councilman Guerra pointed out the necessity of utilizing biomass to protect forests, reduce wildfire risks, and improve air quality.

He stressed the need for innovative solutions that align air quality, forest health, and agricultural sustainability. Councilman Guerra remarked on the devastating impact of wildfires, stating, "... All the efforts on electrification, reducing emissions from our stationary sources, and curbing emissions from our cement plants can be wiped out by a single forest fire."

During his discussion, Councilman Guerra explained how biomass utilization can serve as a protective measure for forests, helping to prevent severe wildfires. He noted, "Biomass allows us to protect our forests, enabling us to avoid intense, hot forest fires that lead to flooding and destroy the land's ability to regenerate." Furthermore, he highlighted the dual benefits of biomass utilization for both forest health and agricultural sustainability. His approach could help maintain affordable food prices and secure jobs in agricultural areas while simultaneously improving air quality.

Biomass 101

Martin Twer, the Biomass Program Director at The Watershed Center, provided an overview of biomass. He defined biomass as organic matter that can be used for energy or other products, including materials such as trees, energy crops like willow and corn, agricultural waste, and municipal solid waste. Biomass originates from three primary sources: municipal waste, agriculture, and forest residues.

In the context of a circular economy, biomass serves as a renewable source of energy and valuable products, such as building materials and mulch for landscaping and agricultural applications. Currently, our region has abundant biomass resources; however, we lack a feasible and consolidated strategy to manage these potential assets. As a result, woody biomass contributes to catastrophic wildfires, agricultural residues are often burned in large open piles, and municipal waste overflows our landfills. These issues pose significant dangers to our communities and strain our economy. A new approach to address these regional challenges is essential.

Twer discussed the various ways to utilize biomass, including electricity generation, heating and cooling, transportation fuels, and hydrogen production. He highlighted the significant challenges of advancing biomass utilization and emphasized the need for innovative technologies and supportive policies. Additionally, he pointed out the importance of locating biomass processing technologies closer to the resource to reduce costs and emissions associated with transportation.

There are still misconceptions and obstacles surrounding biomass utilization. Traditional methods often involve burning organic material in open piles, which releases toxins and pollutants into the air. However, as technology advances, new ideas are emerging to tackle resource challenges, reduce pollution impacts, and meet community needs. Twer noted a decline in biomass utilization in California, with many former facilities closing down, resulting in fewer options for managing forest and agricultural residues. He expressed optimism about the potential for mobile and modular biomass processing units that can be deployed closer to feedstock sources. These smaller-scale, distributed technologies could help address the issue of transporting materials over long distances to centralized plants.

Twer emphasized the necessity for a reliable and consistent supply of biomass feedstock to support the investment and development of new utilization facilities and technologies. Without a steady and predictable flow of material, it becomes challenging to justify the capital investments required to build new biomass processing infrastructure. Twer noted, "There is a perception that these facilities are not controlled to the maximum extent possible - this is incorrect. Biomass facilities are not massive smokestack buildings. We have technologies for small-scale, community biomass processing facilities."

By embracing these innovative solutions, biomass resources can be better managed to protect our forests, reduce wildfire risks, improve air quality, and promote both forest health and agricultural sustainability. This approach offers the dual benefits of maintaining affordable food prices and securing jobs in agricultural areas while also contributing to a cleaner and healthier environment.

Case Studies

BEAM Circular

Gloriamar Gamez, the Chief Program Officer at BEAM Circular, presented on the [Circular Bioeconomy initiative in Stanislaus County](#). She emphasized that the initiative focuses on investing in key elements vital for the bioeconomy industry, including infrastructure, innovation, access to capital, and workforce development.

Gamez highlighted the initiative's success in attracting investment and support to develop the innovation ecosystem by creating a public-private capital stack. This effort includes commitments from local, state, federal, and private sectors. She noted that technical funding from [Stanislaus County's investment in the American Rescue Plan Act \(ARPA\)](#) has been leveraged to mobilize additional resources from various sectors.

The initiative collaborates with universities, community colleges, government, industry, manufacturers, and community groups to tackle barriers to scaling technologies and companies. Together, they work to transform waste into valuable products such as biofuels, chemicals, and alternative proteins. Gamez stressed the importance of supporting the transition from lab-based innovation to commercial-scale manufacturing, which will enable greater biomass utilization.

Gamez emphasized key policy initiatives to streamline regulatory processes and create "green lanes" for sustainable, biobased industrial facilities. She advocated for developing end markets and supply chains for biobased products through procurement policies that prioritize these materials, along with financial incentives and market development funding.

Additionally, Gamez highlighted the importance of financing mechanisms for the circular economy, such as green bonds and low-interest loans, to lower capital barriers. She stressed the need for alignment between state carbon regulatory programs and bioeconomy goals and emphasized investing in workforce development and data measurement initiatives to support the bioeconomy's growth statewide.

Cal FRAME

Kerri Timmer, the Regional Forest Health Coordinator for Placer County, presented the [Cal FRAME \(California Forest Residual Aggregation for Market Enhancements\)](#) project, which aims

to create a hub linking biomass producers with users. This initiative, launched by Placer County and the Placer County Water Agency, seeks to streamline the contracting process for entities such as sawmills, biomass facilities, loggers, and haulers, simplifying efforts for project managers.

The primary goals of the Cal FRAME project are to improve supply chain logistics and facilitate long-term feedstock contracts to encourage investment in new biomass utilization facilities. Timmer explained that project managers currently need to contract individually with various entities, which is a complex and time-consuming process. The Cal FRAME project is exploring the potential to create a centralized hub that could manage these contracting and logistics functions, making it easier for biomass producers to connect with end users. Research has shown strong interest in a hub model that could offer additional services beyond contracting, such as permitting assistance, grant administration, and residential green waste disposal.

One significant challenge identified by the Cal FRAME team is the absence of long-term feedstock supply contracts. Timmer noted that without reliable, long-term contracts, attracting investment for new biomass utilization facilities becomes difficult. The hub concept aims to mitigate investment risks by providing more certainty regarding biomass supply. The team is evaluating different organizational models, such as a joint powers agreement or a separate joint powers authority, to determine the best structure for implementing this hub. Initially, they may adopt a more informal JPA structure to build trust and relationships before potentially transitioning to a separate entity.

The Cal FRAME project represents a regional effort to address key logistical and financial barriers that have historically hindered the growth of biomass utilization. By creating a centralized hub to aggregate supply and demand, the goal is to facilitate and attract the development of new biomass facilities in the region. This initiative aims to ensure that materials generated from forest health and fuel reduction efforts are consistently and predictably connected with those who need them while addressing the current challenges of unused or burned materials. Key issues being explored include long-term feedstock supply contracts, pricing mechanisms, and risk mitigation strategies to encourage the establishment of new biomass utilization facilities.

State Biomass Utilization Strategy

Elizabeth Betancourt, the Natural and Working Lands Policy Advisor at the California Department of Conservation, presented the state's policy priorities, programs, and opportunities to enhance biomass utilization in California. She placed a strong focus on mitigating wildfire emissions and fostering partnerships at the local and tribal levels. Betancourt highlighted the department's comprehensive approach to addressing climate and natural resource challenges, reflecting a broader shift in the state's strategy to tackle complex, interconnected issues. She also noted that her role is unconventional, as the Department of

Conservation seeks to break down silos in order to effectively address climate and natural resource concerns.

Betancourt presented a graphic from the draft Biomass Utilization Strategy (Figure 1), which projects an increase in the use of biomass for clean fuels, particularly biofuels, over the next 10 to 20 years. This aligns with the [state's Scoping Plan goals](#) to scale up sustainable aviation fuel and clean hydrogen production from biomass. The graphic also highlights the ongoing significance of biomass for electricity generation, as well as its emerging uses in chemicals and building materials.

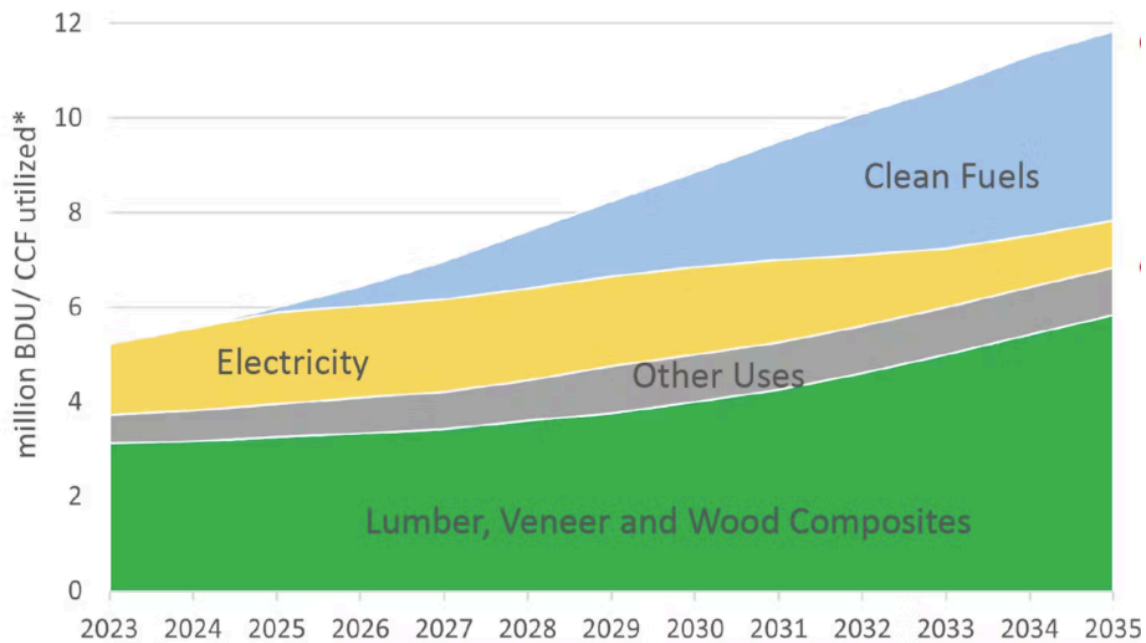


Figure 1.1 Biomass Utilization Pathways

While discussing existing policies and programs, Betancourt mentioned state mandates such as the [Bioenergy Market Adjusting Tariff \(BioMAT\) Program](#) and [Bioenergy Renewable Auction Mechanism \(BioRAM\)](#), the [Low Carbon Fuel Standard](#), and the [Clean Fleet Mandate](#). These initiatives create market incentives for biomass utilization. She highlighted collaborative efforts between the [California Air Resources Board](#) (CARB) and other agencies to develop a comprehensive report on hydrogen applications, as well as the [Alliance for Renewable Clean Hydrogen Energy Systems](#) (ARCHES) aimed at establishing a major hydrogen hub in California. These policies reflect the state's multifaceted approach to supporting the growth of the biomass industry and the broader bioeconomy.

Betancourt identified significant opportunities outlined in the [State's Scoping Plan](#), which includes ambitious targets for clean hydrogen and sustainable aviation fuel. She stressed the need for continued policy support, such as procurement mandates, investment de-risking, and leveraging tribal partnerships, to help the biomass industry achieve these goals. Additionally,

she highlighted the crucial role of local governments and community leaders in advocating for biomass projects and overcoming local barriers.

By encouraging collaboration and communication, Betancourt urged the audience to seek state support when facing challenges, underscoring the state's commitment to being a resource and partner for local stakeholders. She shared a successful example of collaboration where state agencies participated in a local community event to foster understanding and build relationships. This approach reflects the state's recognition of the importance of two-way communication and community engagement in advancing biomass and broader bioeconomy initiatives.

Workforce Panel Discussion

During the panel discussion, a group of experts and stakeholders provided a comprehensive overview of the biomass utilization landscape in California. The panelists represented various perspectives, including:

- Chris Quijano, Rio Bravo-Rocklin, Director of Operations
- Karrie Timmer, County of Placer, Regional Forest Health Coordinator
- Justin Britton, CalFire, Forester II, Wood Products & Bioenergy
- Becky Roe, Foundation for California Community Colleges, Senior Manager, Climate Strategies

The discussion focused on innovative approaches to developing bioeconomy infrastructure and addressed the challenges and opportunities in supply chain logistics and long-term feedstock contracts. Panelists examined state policies, programs, and funding mechanisms that support biomass utilization.

They underscored the importance of local government leadership, community engagement, and cross-sector collaboration in advancing biomass projects. The panelists shared insights and predictions for the future of California's biomass industry, stressing the need for ongoing education, coalition building, policy support, and workforce development. Hilary Tellesen, Senior Project Manager at Valley Vision, moderated the panel.

Occupations and Skills Needed

The panelists highlighted several key roles and skills that are in high demand within the biomass industry. Registered Professional Foresters and Forestry/Fire Technicians play critical roles in forest management and wildfire mitigation, requiring specialized training and certification. These positions often have a strict training path and demand significant experience, with many foresters needing additional training and certification as firefighters.

Filling skilled manufacturing positions, such as electricians, millwrights, and saw operators at biomass facilities, presents a significant challenge. These technical roles require specialized skills and training in areas like machinery maintenance and repair. To address this issue, many companies are implementing in-house training programs to develop and nurture the necessary workforce.

Additionally, transportation and logistics roles, particularly for Commercial Driver's License (CDL) drivers who can navigate difficult terrain and conditions in forested areas, are critically needed. The panel noted the difficulty in finding enough insured and licensed drivers to transport biomass materials from forests to processing facilities. This situation underscores the necessity for specialized training in operating log trucks versus chip vans.

Support roles beyond field operations, including legal, contracts, policy development, grant writing, project management, and administrative/finance positions, are essential to the success of biomass projects. These functions are vital for securing funding, navigating regulations, and ensuring the viability of projects. Developing expertise in these areas is just as important as acquiring technical forestry and manufacturing skills.

The biomass industry requires a diverse range of occupations and skill sets, from highly specialized forestry and manufacturing roles to essential support functions. Building a robust workforce to meet these needs poses a significant challenge for the industry. There are limited current workforce development and training opportunities for the bioeconomy industry and adjacent sectors such as forestry, agriculture, transportation, and manufacturing. Short-term contracts for existing biomass facilities discourage logging and hauling companies from working with these facilities or entering into contracts. Additionally, the seasonal and high-risk nature of forestry jobs contributes to workforce issues, including recruitment, retention, and upskilling/professional development.

The panelists stressed the importance of cultivating a well-rounded workforce with expertise across various domains to effectively harness the potential of biomass for environmental, economic, and community benefits. This diverse skill set is crucial for advancing the industry's growth and addressing the complex challenges it faces. Furthermore, new companies like [Glanris Biocarbon](#) and [Rio Bravo Rocklin](#) are located in the region, highlighting the ongoing developments in biomass utilization.

Challenges Facing the Biomass Industry

The panelists identified several significant challenges facing the biomass industry. A primary concern is the lack of vendors and equipment needed to meet the demand for forest treatment work, particularly in remote areas. Karrie Timmer from Placer County provided an example in which a vendor with six log trucks sat idle because only one driver was qualified to operate these vehicles. This shortage of available vendors and equipment makes it difficult to scale up the pace and volume of forest treatments.

Restrictions on project activity levels set by the Forest Service also pose a challenge. The "project activity level" system restricts the amount of work that can be done daily based on weather conditions and fire risk. This often leads to vendors canceling contracts and leaving, significantly disrupting project timelines. Timmer mentioned that the individual liability placed on Forest Service staff for prescribed burns that go outside of prescription acts as a major disincentive for approving these activities, limiting the use of prescribed fire as a forest management tool.

The transient nature of federal land managers further complicates matters. Frequent rotation of Forest Service supervisors, sometimes every 180 days, hinders the ability to build relationships and maintain continuity needed to address complex challenges. This lack of consistent leadership on the federal side creates difficulties in coordinating projects and achieving progress.

The lack of stability associated with long-term contracts for biomass facilities makes it difficult to attract and retain skilled workers. Many potential employees are reluctant to accept positions at facilities that have only 2 to 3 years remaining on their contracts because the long-term viability of the industry remains uncertain.

Opportunities to Address Workforce Needs

The panelists outlined several strategies to address workforce needs in the biomass industry. Key strategies include expanding the talent pool by targeting underrepresented groups such as women and raising awareness of biomass industry careers in urban areas, not just rural and forested communities. Leveraging partnerships with community colleges and workforce development boards can help connect with a wider pool of potential workers.

Specialized training programs are crucial for building a pipeline of skilled workers with in-demand expertise. Developing programs focused on specific skills, like log truck driving, and expanding existing CDL training programs to make them more accessible and affordable for students are essential steps. Ensuring these training programs are built on a foundation of transferable skills that can be applied as the industry evolves is also important.

Collaborative partnerships between community colleges, workforce boards, and biomass companies are necessary to align training programs with industry needs. Facilitating knowledge-sharing and coordination between workforce developers, economic developers, business leaders, and policymakers can further support workforce development. Leveraging regional initiatives and funding sources, such as the California Resilient Careers in Forestry program, can enhance these efforts.

Policy and funding support are critical for sustaining workforce development. Advocating for policy changes and public investments to support long-term market development and workforce training in the biomass industry is vital. Exploring financial incentives, like tax credits,

can make biomass careers more attractive and accessible. Ensuring stable funding and long-term contracts can provide the certainty needed to attract and retain skilled workers. A hub or public entity taking on risks and negotiating longer-term contracts would not only promote industry growth but also job growth along the supply chain.

Additionally, identifying and creating more workforce development opportunities in the bioeconomy sector that align with the State's carbon reduction goals is essential. This alignment ensures that the workforce is prepared to meet the demands of a growing bioeconomy while contributing to broader environmental objectives.

Overall, the panelists underscored the importance of a well-rounded and diverse workforce to effectively harness the potential of biomass for environmental, economic, and community benefits. Addressing workforce needs through targeted strategies, specialized training, collaborative partnerships, and policy support is crucial for advancing the industry's growth and overcoming the challenges it faces

Conclusion

At the conclusion of the advisory, faculty, employers, and community members were encouraged to continue fostering collaboration to strengthen the pathway into careers within the region's Agriculture, Natural Resources, and Environment industry. This effort aims to ensure that graduates are well-prepared to enter the workforce.

Adrian Rehn, Senior Project Manager at Valley Vision, and Renee John, Valley Vision Managing Director, accentuated the importance of ongoing education and coalition-building to support the biomass industry. They reiterated the need for market development and long-term contracts to sustain biomass projects, alongside community engagement and education, to garner support for these initiatives.

[Please click here](#) to view the detailed event materials and access a video recording. Learn more about our region's long-term initiative for inclusive economic development and access to high-quality jobs, [We Prosper Together](#). The working lands sector - agriculture, forestry, mining and related manufacturing industries - is identified as one of our region's target sector strategies with the greatest opportunity for job growth. Additionally, if you're interested in staying updated on the latest news, insights, and opportunities in workforce development, you can [sign up for Valley Vision's newsletter here](#). For more information about this report, please contact:

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