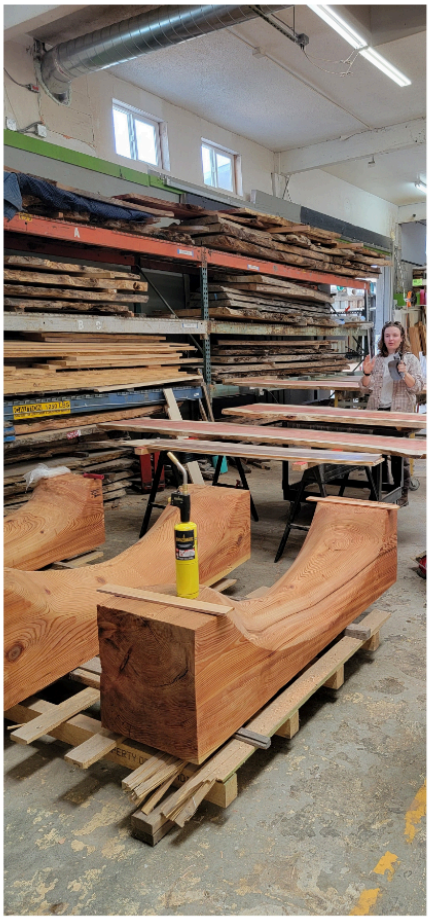
CAMBIUM

Tacoma Urban Wood Reuse

Evaluating Tacoma's Wood Waste Streams and Circular Economy Potential

November 2025



Prepared for:

City of Tacoma

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Authors and Acknowledgements

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This report is a component of the City of Tacoma's *Wood Reuse Study*, jointly led by the City's **Urban Forestry Program** and **Solid Waste Management Division** within the Department of Environmental Services. The City engaged **Cambium**, a public benefit corporation enabling a regenerative cycle of urban wood reuse, to conduct the analysis and prepare this report.

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Glossary of Terms

- **Compostable:** Materials that are currently accepted in residential curbside and multifamily food and yard waste programs in Tacoma, composted through commercial collection programs, or accepted for collection at the Tacoma Recovery and Transfer Center (e.g., food scraps, leaves and yard debris).[1]
- **Department:** Administrative unit of the City of Tacoma that is responsible for a particular service or function, such as Environmental Services and Public Works.
- **Dimensional Lumber and Engineered Wood:** clean and painted wood commonly used in construction for framing and related uses, including 2 x 4's, 2 x 6's, and sheets of plywood, strand board, and particle board. Includes pallets and crates.[1]
- **Interagency Partner:** Independent government agencies that work in and around the City of Tacoma, including Tacoma Public Utilities and Parks Tacoma (See Figure 3).
- **Non-recoverable:** Materials that are not readily recyclable or compostable or that face other market, technology, or programmatic barriers (e.g., bathroom waste).[1]
- **Potentially Recoverable:** Materials that can be diverted from landfill through safe disposal, specialty recycling programs, or other reuse programs designed for waste products (e.g., e- waste, fluorescent light tubes). Markets exist for these specialty recycling and reuse programs but are either not well developed or are not currently utilized.[1]
- **Recoverable C&D and Wood:** Construction and demolition materials that can be reused, repurposed, or recycled at dedicated C&D processing facilities (e.g., dimensional lumber and engineered wood).[1]
- **Leaves and Yard Debris:** Any yard/garden waste that has not been treated and has the potential to be composted, including pumpkins.[1]
- **Roofing and Siding Wood:** Painted or unpainted wood from demolition or construction waste that is commonly used for siding or roofing of buildings. This category includes only wood products, such as cedar shingles or shakes.[1]
- **Sort Yard:** A temporary location where logs, chips, and other woody biomass are sorted and processed before being delivered to utilization facilities.
- **Treated Wood:** Wood treated with preservatives such as creosote, including dimension lumber. This category may also include some treated plywood, strand board, chemically treated wood, and other wood.[1]

[1] Adapted from the City of Tacoma 2023 Waste Characterization Study

- **Other Wood:** Other types of wood including wood products that do not fit into the above categories, including all-wood furniture.[1]
- **Woody Biomass Generators:** Companies actively engaged in tree care and management activities (e.g. removals).
- **Woody Biomass Utilizers:** Businesses using wood in primary and secondary products (e.g., durable wood products, bioenergy, biochar, etc.).
- **Woody Biomass/Wood Waste/Woody Material:** Material consisting of brush, logs, chips, mulch
- **Work Group:** Divisions within departments, including Urban Forestry, Solid Waste (See Figure 3)
- **Yard Waste:** Chipped branches, tree limbs, yard debris, and occasional log rounds. May be classified as wood waste by some organizations.

Executive Summary

Tacoma's trees are one of its most valuable public assets, providing shade, improving air and water quality, storing carbon, and enhancing neighborhood livability. Maintaining this resource requires ongoing care, including pruning, hazard mitigation, and, when necessary, removals. These activities are essential to keeping the urban forest healthy, safe, and resilient. Reimagining how Tacoma manages this material represents a powerful opportunity to align climate action, circular economy, and local job creation.

The current system for managing tree removals and maintenance activities in Tacoma does not yet meet the City's climate and sustainability goals. Not only is the volume of removals projected to grow in the coming decades due to increased development, climate-related stressors, and infrastructure needs, but most removed material is not directed to its highest and best use. Recoverable wood is frequently chipped, composted, or landfilled without evaluation for higher-value applications such as milling, furniture-making, or long-term habitat placement.

Analysis of wood waste generation and disposal data reveals that Tacoma's challenge is not a shortage of material, but a lack of systems and infrastructure to capture and utilize what already exists. The Tacoma Recovery and Transfer Center (RTC) alone receives over 57,000 tons of woody material annually, roughly 95 percent of which is recoverable and/or compostable. However, only about half of this volume is currently diverted through composting or internal programs such as TAGRO. Meanwhile, an estimated 25,000 tons of recoverable wood are lost to the municipal solid waste (MSW) stream each year, representing a major opportunity for improved recovery, cost savings, and emissions reduction.

While the disposal data highlights a volume problem, the generation data reveals a quality opportunity. Wood generated from City operations is not necessarily of higher physical quality, but it is predictable, traceable, and cleaner than public drop-off material. Because the City has control over its origin, handling, and species, this material can be strategically assessed for high-value applications such as sawmilling and biochar production. Harnessing this controlled stream of wood waste represents one of Tacoma's most practical and impactful opportunities for reuse.

The City has ambitious waste diversion, climate, and canopy coverage targets, including reusing one-third of wood from high-risk removals by 2028 and diverting 70 percent of overall waste from landfill. However, these goals are hindered by fragmented data collection, siloed operational practices, and limited infrastructure for sorting and processing salvaged wood. Most City work groups and interagency

partners lack mechanisms to track species, dimensions, and end use of removed trees. Contractor-owned material from public projects is seldom reported, reducing transparency and limiting opportunities for reuse.

This study, commissioned by the Tacoma City Council and led by Cambium, engaged more than 25 collaborators across City work groups, interagency partners, regional agencies, and private industry. Through analysis of primary datasets, waste characterization studies, and market research, the project estimated current generation and disposal volumes and identified five clear opportunities to improve Tacoma's wood-reuse system.

The five recommended actions are:

1. **Improve data transparency and integration**: Standardize wood waste tracking across City work groups and interagency partners to capture source, volume, species, and processing outcomes, enabling better forecasting and investment planning.
2. **Update project specifications and municipal code**: Incorporate "reuse-first" requirements into capital project bids, prioritize salvaging logs over chipping, and revise outdated provisions that classify large logs as waste.
3. **Develop centralized sorting and storage capacity**: Establish a right-sized chip depot and salvage yard to balance supply and demand for chips, aggregate logs for milling, and support emerging technologies such as biochar production.
4. **Invest in workforce development**: Build a green jobs pipeline in wood recovery, processing, and product manufacturing, in partnership with local organizations and educational programs.
5. **Align with regional initiatives**: Explore aggregation of volumes with Pierce County and neighboring jurisdictions to support shared processing facilities and market development.

By transforming how it manages its urban wood, Tacoma can turn a disposal liability into a community and climate asset. A reuse-first system would keep valuable material in circulation, reduce landfill volumes, and create skilled green jobs, all while advancing the City's leadership in climate resilience and circular economy innovation.

Introduction

Tacoma is a rapidly growing city in the Puget Sound region facing mounting challenges in managing its urban wood waste. In response, the City Council commissioned the Wood Reuse Study to better understand the volumes, sources, and opportunities associated with wood generated through tree removals, maintenance, and construction activities.

The study was jointly led by the Urban Forestry Program and Solid Waste Management Division within the City's Department of Environmental Services, two City work groups advancing Tacoma's broader environmental and reuse goals. The Urban Forestry Program has established annual tree maintenance targets, implemented removal characterization requirements, and set a 2028 goal of reusing one-third of the wood waste from high-risk tree removals. The Solid Waste team aims to achieve a 17 percent improvement in greenhouse gas emissions avoided through material diversion and has piloted several initiatives focused on wood and yard waste reuse.

The project's purpose is to support Tacoma in building a self-sustaining, equitable, and climate-aligned wood utilization framework that:

- Improves adaptive management of natural resources,
- Advances waste diversion and emissions-reduction targets, and
- Expands pathways for green jobs and circular economy development.

To achieve these objectives, the study focused on three core tasks:

1. **Biomass Characterization & Analysis:** Aggregate and interpret existing forest data (e.g., active tree inventory, demographic data, anticipated tree removals) and conduct market analysis of wood utilization technologies.
2. **Collaborator Engagement & Communication:** Interview key collaborators to understand current biomass management practices and identify opportunities and barriers to value-added reuse.
3. **Best Use Assessment & Action Planning:** Evaluate potential end uses for material of various species and grades and present a recommended operational model and program design.

This analysis was conducted by Cambium, a public benefit corporation enabling a regenerative cycle of urban wood reuse. The company has worked with governments, NGOs, and private sector companies across the United States to develop programs, partnerships, and markets that enable wood utilization.

More than 25 partners from across City departments, regional agencies, and private industry contributed data, interviews, and insights that informed this analysis. Their input was essential in shaping a comprehensive understanding of Tacoma's wood generation and reuse systems.

Background

A range of factors (e.g., increased development, natural disturbances, recent policy changes, and environmental targets) are likely to increase the amount of wood waste generated in Tacoma, requiring the City to review how it currently manages this material and identify strategies to encourage reuse. However, even without these growing stressors on the urban canopy, several opportunities exist to improve management of tree waste generated through routine City processes and construction projects.

Development Pressures
Increased development across Tacoma is expected to significantly impact the volume of woody biomass generated through tree removals and ongoing landscape maintenance. With the approval of the Home in Tacoma Initiative in 2024, the City adopted new zoning regulations aimed at supporting more diverse and affordable housing options across more neighborhoods. This policy shift enables increased residential density, which will likely accelerate infill development and redevelopment projects, especially in areas that previously had lower-intensity zoning. In the recent LiDAR (Light Detection and Ranging) study conducted by the City, tree canopy loss is associated with areas identified in the Home in Tacoma market analysis as having high development potential. As parcels are cleared to make way for new housing, existing trees may be removed, resulting in more woody debris and construction-related organic waste.

This trend aligns with Tacoma's broader planning framework outlined in the One Tacoma Comprehensive Plan, which anticipates that Tacoma will add 137,000 new residents and require 60,000 additional housing units between 2017 and 2040. Accommodating this growth will not only involve the construction of new buildings but also the expansion of infrastructure and urban services, activities that often require vegetation clearing and ongoing landscape maintenance. As a result, the volume of woody biomass from both initial land clearing and routine tree pruning is likely to increase, presenting new challenges and opportunities for managing this material in ways that support the City's sustainability goals.

Natural Disturbances

Climate change is increasingly contributing to the rise of pests and diseases in Tacoma's urban forest, compounding stress on trees and accelerating the need for removals. While exact projections are unavailable, local urban forestry staff, community partners, and researchers have observed a growing presence of invasive species and tree diseases, as well as more trees succumbing to native pests. Rising temperatures, longer periods of seasonal drought, and shifting climatic conditions are weakening tree health and resilience, making certain species more vulnerable to infestation and decline. These changes are already influencing Tacoma's tree planting strategies, prompting updates to species recommendations and a more cautious selection of trees suited to a changing climate.

Several pests and diseases currently impact Tacoma's tree canopy. Sooty bark disease, which affects maples and is linked to heat stress, has become more prevalent, prompting both concern and community education efforts. Birch trees are under pressure from the bronze birch borer, leading the Urban Forestry team to phase out birch species that show high vulnerability. In 2024, the Washington State Department of Agriculture captured 32 Japanese beetles near the Seattle-Tacoma Airport, but the species has not yet established itself in Tacoma. Similarly, the emerald ash borer has not been confirmed in Washington State but has been found in neighboring Oregon and British Columbia, raising concerns about future spread. According to UF staff, Mediterranean oak borer and five spine ips are also looming concerns for oak and pine trees in Tacoma, and a five spine ips was recently discovered in Pierce County. While these pests are in various stages of establishment, their increasing presence reflects a broader trend of climate-induced stressors reshaping the health and composition of Tacoma's urban forest.

Solid Waste Projections

As Tacoma's population continues to grow, solid waste generation (including wood waste) is expected to increase, placing additional pressure on the City's waste management systems. Waste characterization studies conducted in 2015 and 2023 suggest that total waste generation is increasing at **more than twice** the rate of population growth.

Currently, the City generates approximately 378,000 tons of material annually, with about 55 percent diverted from the landfill through recycling and composting. The remaining 165,000 tons are sent to landfill.

Although existing landfill capacity at the LRI landfill in Graham, WA is expected to meet current and near-future needs, long-term waste management strategies are essential to ensure sustainability. Tacoma's Solid Waste Management division recognizes that population growth will increase waste volumes and is actively

working to implement programs and infrastructure upgrades to slow landfill use and increase recovery of reusable materials.

Management Plans and Goals

In 2015, the Solid Waste team set an ambitious goal of diverting 70 percent of its solid waste from landfills by 2028. At the time, the City's waste diversion strategy was structured around a multi-phase plan that included both infrastructure investments and policy changes. Notably, the development of an integrated Materials Recovery Facility (MRF) to process commingled recyclables and dry commercial waste, along with new dry waste routing systems and restrictions on wood waste at the Tacoma Recovery and Transfer Center, was estimated to divert an additional 30,000 tons annually. However, the high cost of MRF development prompted Solid Waste to consider regulatory pathways, such as mandatory recycling for targeted materials and expanded requirements for commercial recycling service.

In tandem with these efforts, Solid Waste is developing a comprehensive waste management plan and an asset management strategy to guide future equipment upgrades and ensure continued progress toward diversion goals. In alignment with the broader county-wide Tacoma-Pierce County Solid and Hazardous Management Plan, Solid Waste is developing new metrics and targets that focus on reducing overall waste generation rather than solely increasing diversion. The City does not anticipate the construction of a new landfill, underscoring the importance of maximizing existing infrastructure through resource recovery and waste reduction initiatives.

Tacoma's 2030 Climate Action Plan outlines a comprehensive framework to reduce greenhouse gas (GHG) emissions and build a more resilient, sustainable city. Adopted in 2021, the plan sets interim and long-term emissions reduction goals, including a 45 percent reduction in GHG emissions by 2030 and a net-zero emissions target by 2050. Two major areas of focus in the plan, urban trees and material consumption, highlight the connection between climate and wood reuse goals.

Under the Natural Systems & Local Food category, the City aims to exceed the national average per capita spending on tree care and increase the total acres of actively managed open space ecosystem habitat by 24 percent, while also protecting an additional 6 percent of natural areas. In terms of material consumption, Tacoma seeks to reduce per-capita waste generation by 14 percent and increase GHG reductions from diverted materials by 17 percent.

Tacoma's 2019 Urban Forest Management Plan (UFMP) also sets forth a vision to sustainably manage the city's urban forest, with clear implications for wood waste management and reuse systems. The City has set a goal to achieve 30 percent tree

canopy coverage by 2050—up from 20 percent in 2018, the lowest measured rate in the Puget Sound region. Simultaneously, the UFMP anticipates an increase in biomass from routine maintenance, removals, and storm events. To address the growing volume of wood waste, the plan includes a 2028 target to reuse one-third of the wood waste from high-risk tree removals through pathways such as milling, woodworking, or biomass energy.

To implement these goals, the UFMP outlines several supporting actions, including developing standardized protocols for debris management and wood utilization. These protocols are especially important as the City increases maintenance activities and as the volume of tree removals grows due to pests, disease, or infrastructure development. In 2023, the City began piloting a wood reuse project in partnership with a local mill, processing wood from hazardous tree removals into higher-value products rather than discarding it as waste.

The UFMP also calls for improved data systems, including a comprehensive and updated tree inventory and integration with asset management platforms. Such data are essential for monitoring canopy change, prioritizing plantings, and projecting future biomass streams. With climate-related pressures expected to increase tree mortality, the development of a Tree Risk Management Plan could further guide long-term planning for wood recovery and reuse.

Meeting the goals of the Solid Waste, Urban Forestry, and Climate Action plans will require Tacoma to expand its capacity for recovering and reusing materials, particularly wood waste from tree removals, construction, and deconstruction. Investing in wood reuse systems could support both diversion and emissions reduction targets by extending the lifecycle of wood products and reducing demand for virgin materials. These actions, alongside the City's goal to expand green jobs tenfold, reflect Tacoma's broader commitment to addressing climate change through practical, measurable strategies that deliver tangible ecological and social benefits.

Existing Policies and Programs

In response to the UFMP and other City plans discussed above, several new policies and programs have been implemented to meet Tacoma's climate and waste reduction goals. This study was funded at the direction of the City Council to explore opportunities for reusing fresh-cut wood waste.

The adoption of Ordinance 28926 in 2024, the most significant right-of-way tree code update in nearly 100 years, and the implementation of the updated Urban Forest Manual mark a significant shift in how the City of Tacoma regulates and manages street tree maintenance and removals. The new permitting requirements under

Chapter 9.20 of the Tacoma Municipal Code aim to increase transparency in urban forestry activities, particularly by improving the quality of data collected on pruning and removal work. Prior to this update, tree work permits lacked detailed application requirements, making it difficult to track the volume, type, and condition of wood material removed from the public right-of-way. The new permit system now requires applicants to provide specific information, including tree species, size, location , a photographic record of the tree(s), and a plan describing the scope and justification for the activity in accordance with best management practices. Over time, this approach will allow the City to better characterize the volume, species, and potential quality of woody biomass entering the waste stream.

In March 2024, Tacoma City Council unanimously approved a resolution directing the City Manager to study options to expand deconstruction and salvage practices citywide. The goal is to identify ways to recover reusable building materials, including dimensional lumber, before demolition occurs and estimate related costs, logistics, and workforce needs. Council members highlighted that traditional demolition often results in the loss of valuable materials worth millions of dollars and emphasized that reuse helps balance growth with climate goals. The study is underway and will inform future policies, regulations, and incentives that encourage deconstruction rather than demolition.

Regional Context and Study Bounds

Recent efforts in Tacoma to investigate and improve wood reuse closely align with Pierce County's broader goals. Sustainability 2030: Pierce County's Greenhouse Gas Reduction Plan sets a goal of reducing GHG emissions by 45% by 2030, with waste reduction indicated as one of the plan's primary areas of focus. As a way to mitigate material heading to the landfill, County officials also noted an interest in exploring volume aggregation with municipalities in the region to develop wood reuse campuses that can support wood utilization technologies. Despite this desire to improve wood reuse, the County acknowledged a significant shortage of funding and workforce capacity dedicated to wood waste management initiatives.[2]

Tacoma's approach to wood waste management stands out for its progressive vision, and as the largest city in the county its urban forests face a set of distinct challenges compared to those in rural or wilderness forests. Unlike rural forests, urban forests have differing maintenance levels and approaches to planting and preservation, requiring a multi-faceted management approach. Climate change is a significant

[2] Further discussion of Pierce County's efforts related to wood waste can be found in **Appendix A: Summary of Collaborator Interviews**.

factor influencing the structure and function of forest ecosystems, but the overall impact of climate change on Tacoma's canopy remains poorly understood.

A range of wood waste challenges and opportunities persist across the Puget Sound Region, with a variety of angles for addressing them. The present study primarily focuses on understanding the landscape of wood generation, disposal, and utilization associated with Tacoma government activities and permitting (e.g., capital construction projects, tree work in the right-of-way, and hazardous tree removals). However, as the City increasingly looks to understand the role of other tree activities (e.g., private tree care work on private property and broader regional efforts), many of the findings in this report can help inform future discussions.

Existing Utilization and Disposal Landscape

Understanding how wood waste currently moves through Tacoma's disposal and utilization systems is essential for identifying where the City can intervene most effectively. This section provides an overview of the public and private facilities, programs, and markets that process wood material—from arborist chips and brush to dimensional lumber and construction debris. It highlights how these materials are presently managed, the scale of existing operations, and the economic and logistical factors that influence where wood goes after removal. By mapping these end-use pathways, the City can better assess which streams already support recovery, which rely on lower-value disposal options, and where targeted investments could increase diversion and create higher-value outcomes.

Summary of Wood Products Industry

Several established markets exist for wood waste in Tacoma and Pierce County, although most operate at modest scale with limited capacity to absorb the City's full material volume. Compost and soil amendment facilities represent one of the primary destinations for low-grade wood waste. The City of Tacoma's TAGRO program, for example, blends woody material with biosolids to produce compost for landscaping and agricultural use. This program has strong local recognition and remains a reliable, if lower-value, outlet for certain wood residuals.

Mulch and wood chips are also common end uses for recovered wood waste. Local contractors, City work groups, and landscapers routinely use chipped material for erosion control and ground cover. However, this market is sensitive to fluctuations in feedstock quality and to end-user specifications.

ChipDrop is a service used throughout Tacoma that connects arborists with community members seeking wood chips. The platform provides arborists with a convenient, low-cost disposal option while offering residents and landscapers access to large volumes of material. Deliveries typically consist of a full truckload of mixed arborist chips, often 20 yards or more. While ChipDrop is effective at diverting woody material from disposal and supporting tree care providers, its reach is limited to a niche market of end users who can accommodate the substantial volume and variability of material in each load.

Higher-value lumber markets exist but are significantly constrained by the loss of regional milling infrastructure. Until its closure in late 2023, the WestRock paper mill on the Tacoma Tideflats processed up to 510,000 tons per year of linerboard, kraft bag paper and pulp and employed approximately 400 people. While large producers such as PotlatchDeltic and WeyerHaeuser operate within Washington and maintain distribution networks, there are few active sawmills in the Tacoma area capable of processing large volumes of urban or salvaged logs.

Small portable sawmills and independent lumber reclaimers remain active but operate at limited scale. These operators provide custom milling, reclaimed wood products, and salvage services, but are not yet positioned to absorb the City's growing supply of recoverable logs and dimensional wood waste. As a result, much of the City's wood continues to be landfilled or composted at low value.

Despite these challenges, Tacoma is well positioned to leverage emerging opportunities. Washington State continues to support circular economy initiatives that promote the conversion of wood waste into usable products. Markets for compost, mulch, and reclaimed lumber remain active at a small to mid-scale, and new technologies being explored across the region—such as sustainable aviation fuel (SAF) and biochar—show promise for higher-value diversion.

Current Disposal Options and Practices

There are many public and private disposal options for wood waste throughout Pierce County, with varying material requirements, tipping fees, and disposal practices. Several of these facilities are discussed in detail below.

DTG Recycling

DTG Recycling's Recovery 1 facility operates on a five-acre site as a certified Construction & Demolition (C&D) material recovery facility. The facility accepts mixed loads from local contractors, government agencies in Tacoma, and commercial haulers. Accepted materials include clean wood, untreated brush, stumps, logs,

pallets, and various construction lumber, excluding prohibited items such as asbestos-containing materials, lead-painted wood, and creosote.

Recovery 1 processes approximately 12,000 tons per year of wood and land-clearing debris delivered through Tacoma and non-Tacoma sources. This volume includes both brush and clean wood, although the precise mix between the two was not reported in available data.

At Recovery 1, materials are sorted into two distinct streams after load inspection. Commingled material is shredded and directed to hog fuel markets, where material cannot be used for higher-value products. This stream generally includes mixed wood with nails, glue-laminated timber, or other contaminants.

Brush, which consists of clean, untreated tree trimmings and land-clearing debris, is shredded and converted into mulch or bark products. This stream is in high demand by local landscapers and municipal programs. DTG reports that demand for brush-derived mulch remains strong, and the facility has ample additional capacity in this product line.

Clean wood (e.g., pallets and construction-grade lumber) is separated and sold to partners, including regional paper mills and other wood reuse outlets. This stream has limited capacity, but DTG benefits from stable, ongoing partnerships with regional offtake buyers.

The facility's pricing structure as of 2025 includes:

- $174 per cubic yard for commingled material, intended to encourage waste generators to separate wood before drop-off
- $110 per cubic yard for clean wood
- $60 per cubic yard for brush material

Cedar Grove

Cedar Grove's Maple Valley facility serves as a primary outlet for green waste generated in Tacoma. The facility receives material from municipal operations, self-hauling residents, landscaping companies, and commercial tree care contractors. Maple Valley accepts a broad range of woody material, including yard trimmings, brush, and wood debris. Material processed by Cedar Grove is marketed as compost and soil amendment and distributed through the company's Tacoma soil yard as well as major retail outlets such as Home Depot.

Cedar Grove charges a tipping fee of $27/yard of yard waste or land-clearing material sent to the Maple Valley facility. Company representatives noted that Cedar Grove can also provide direct hauling services at a higher rate. The Maple Valley site can

process up to 200,000 tons of organic material annually across a variety of feedstocks, though no breakdown is available distinguishing wood from other organic inputs.

The Tacoma Recovery and Transfer Center sends commingled green waste to Cedar Grove on a regular basis. Facility estimates indicate that Tacoma delivers roughly 30,000 tons of green waste annually. However, Pierce County officials report that Cedar Grove frequently operates near capacity and diverts excess material to Land Recovery Inc. (LRI), discussed below.

Tacoma Recovery and Transfer Center

The Tacoma Recovery and Transfer Center (RTC) serves as the City of Tacoma's primary municipal facility for managing solid waste, recycling, and organic material. Operated by the Solid Waste Management Division of the Environmental Services Department, the facility plays a central role in receiving, sorting, and redirecting wood waste generated by both City operations and the general public.

The RTC receives yard waste through two main streams: collection services and self-haul deliveries. Collection services include residential and commercial yard waste bins, while the self-haul stream captures material brought directly to the facility by residential and commercial customers, including landscapers and contractors.

The RTC charges tipping fees based on the type of material, the weight of the load, and the customer's status (e.g. Tacoma resident, Tacoma commercial customer, or non-resident). Tacoma residents may deliver yard waste free of charge if the load weighs one ton or less. As of 2025, yard-waste pricing is as follows:

- City of Tacoma Residents: $0 (for loads under one ton, otherwise commercial rate applies)
- Non-City of Tacoma Residents: $8.50 per 100 pounds
- Commercial Customers: $8.50 per 100 pounds

Yard waste arriving at the RTC typically consists of chipped branches, tree limbs, yard debris, and occasional log rounds. This material is visually inspected at the scale house, where loads are categorized based on content and quality. Some loads, especially clean chips, are diverted to other City operations such as the TAGRO biosolids program, which receives approximately 500 tons of clean chipped wood annually from the RTC.

The majority of remaining yard waste is sent to Cedar Grove for composting. Due to limited storage capacity, the RTC does not hold material for extended periods. Instead, wood waste is generally processed on demand—either chipped on-site for immediate use or consolidated and hauled to external processors.

The 2015 and 2023 waste characterization studies also estimated a significant amount of wood waste within the municipal solid waste stream, which is currently directed to the LRI landfill (see "Wood Waste Generation and Disposal Estimates" below for further detail). However, limited datatracking capacity prevents precise and consistent quantification.

LRI/Waste Connections

Land Recovery Inc. (LRI), a subsidiary of Waste Connections, provides integrated waste collection, composting, construction and demolition (C&D) processing, and landfill disposal services throughout Pierce County and adjacent Thurston County. LRI holds the municipal solid waste (MSW) contract with the City of Tacoma through 2036 and processes household and commercial waste delivered to Tacoma's Recovery and Transfer Center and other regional facilities.

The organization processes yard waste countywide through a number of transfer stations and the Hidden Valley Compost Factory, which produces P.R.E.P. (Pierce County Recycled Earth Products) compost. Yard waste includes branches, brush, stump material, and clean wood delivered by both residential and commercial users from across the region. LRI also owns and operates a 168-acre landfill in Graham, Washington; this facility receives some wood waste through its MSW stream but does not accept yard waste intended for recycling through composting outlets.

Pricing at LRI facilities follows county guidelines. Yard waste under one ton is free for Pierce County residential and commercial customers. Loads over one ton are charged roughly $110 to $115 per ton. The land-clearing rate (for stumps and unhand-loadable brush) is approximately $75–$80 per ton. Clean wood coming through the C&D sorting stream is evaluated differently, with pricing determined by grade and contamination level.

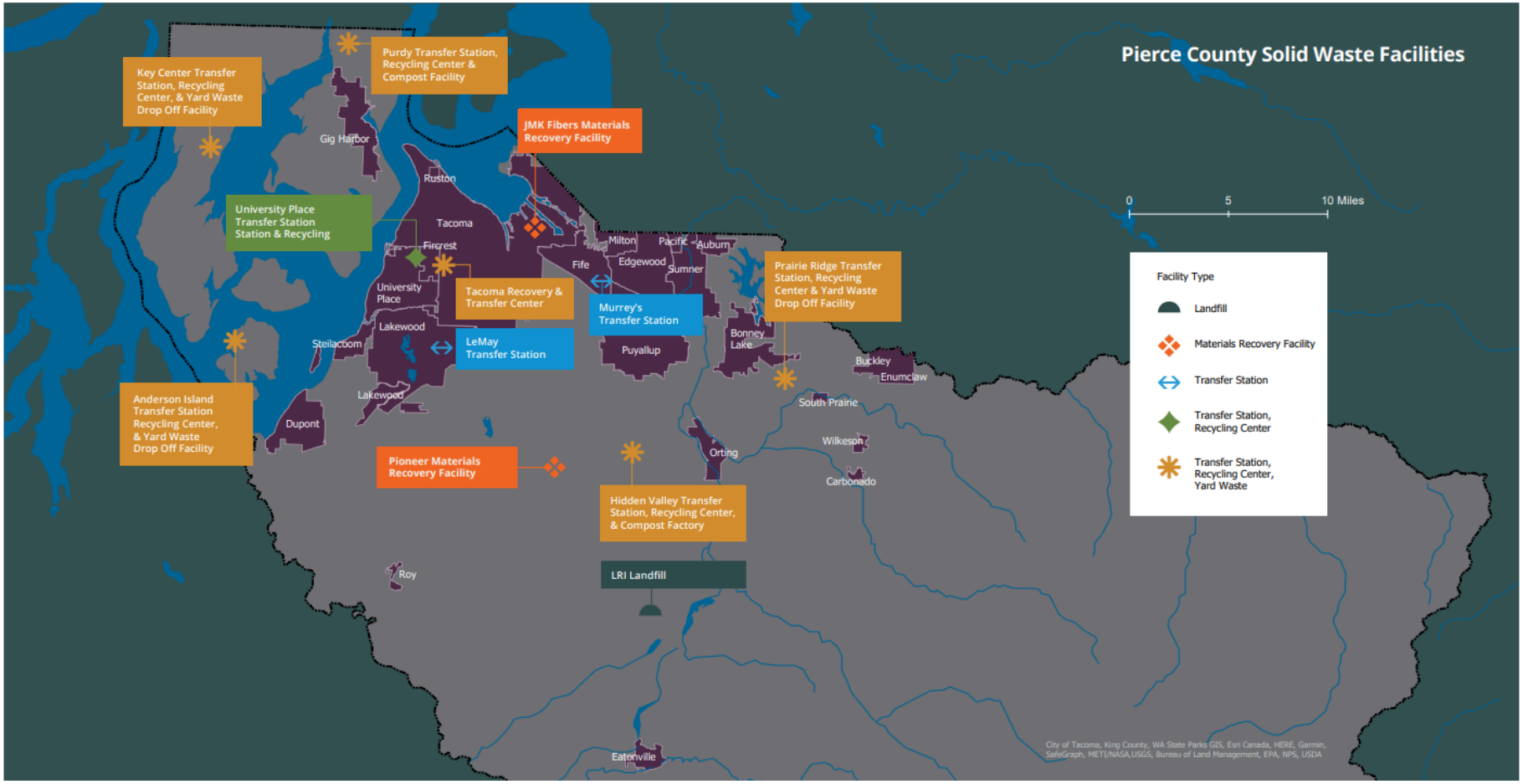


Figure 1. Location of transfer centers and disposal outlets across Pierce County, excluding private operations such as Cedar Grove and DTG Recycling). Source: [Tacoma-Pierce County Solid and Hazardous Waste Management Plan: 2021-2040](#).

In addition to the disposal outlets described above, some wood waste generators pursue direct reuse strategies. For example, certain City work groups repurpose chipped material for their own landscaping and maintenance needs, while others leave cut firewood on site for community use. **Figure 3** below provides a general overview of the various City groups that generate, utilize, and/or handle disposal of woody material.

Collaborator Interviews

To better understand the challenges and opportunities surrounding wood reuse in Tacoma, Cambium conducted interviews with more than 25 organizations actively involved in woody biomass management. These collaborators included local and regional waste processors, disposal companies, technology developers, and public agencies working in forestry, planning, and environmental services. The Urban Forestry Program and Solid Waste Management Division helped identify many of these key partners.

This outreach has already sparked broader interest in urban wood utilization. Several partners have acknowledged the value of the study, and the Urban Forestry team recently hosted colleagues from Seattle who expressed interest in applying similar wood reuse strategies in their own programs.

The interview process also reflects the spirit of the 2019 Urban Forest Management Plan's Community Engagement Goal, which emphasizes that "sustainable urban forest management and equity is achieved through a partnership with the City and its residents resulting in improved wellbeing, human health outcomes, and stronger local economies." By engaging a diverse range of partners, this study advances broader goals of collaboration, transparency, and community-based stewardship of Tacoma's urban forest resources.

Figure 2 illustrates several of the key opportunities and challenges that emerged from our conversations with collaborators. The following subsections summarize conversations with City of Tacoma government partners, regional government and interagency partners, and private partners. Additional information on department and work group-specific wood waste practices is provided in **Appendix A.**

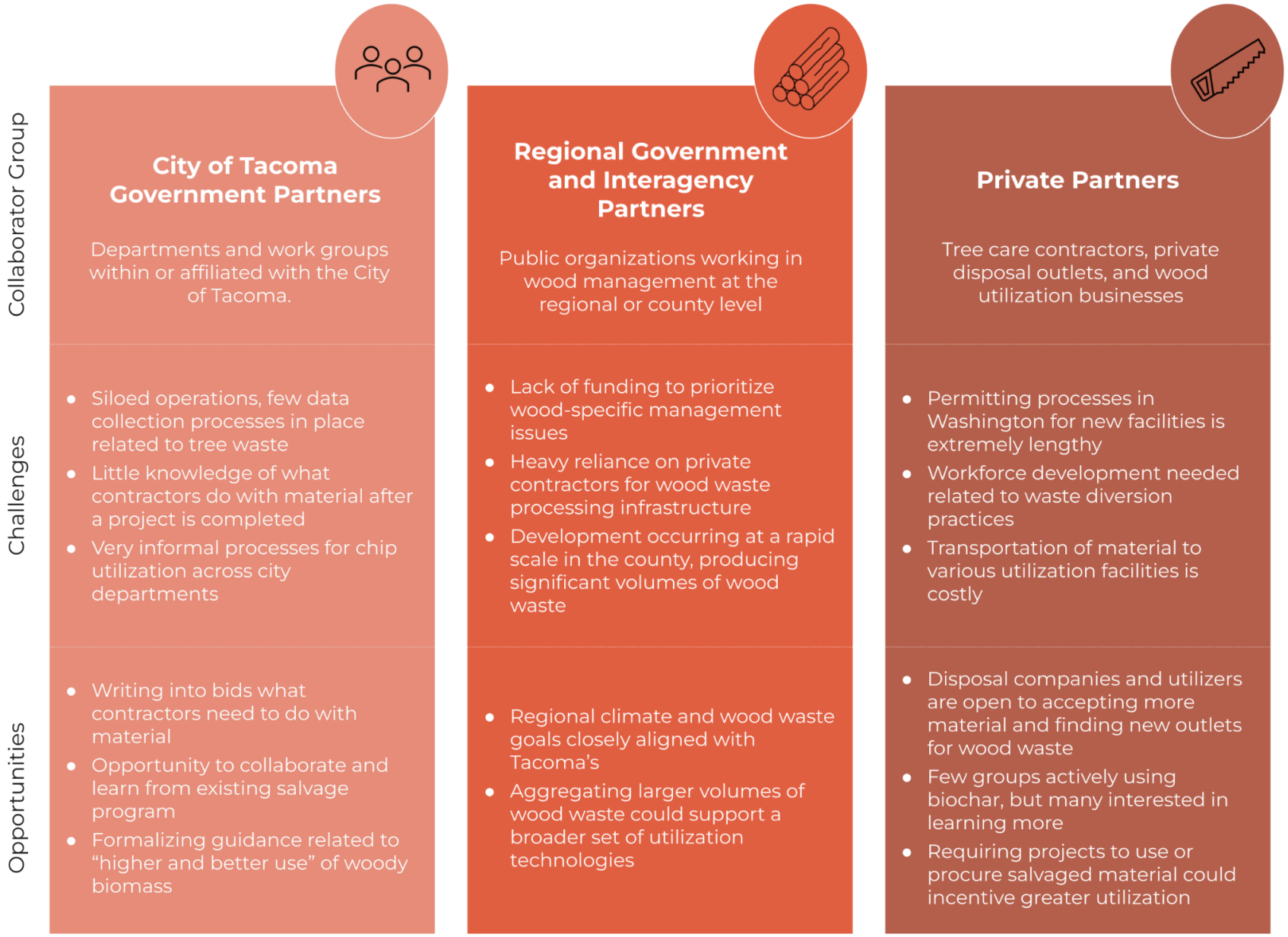


Figure 2. Summary of Cambium's Collaborator Interviews

City of Tacoma Government Partners

The City of Tacoma government partners interviewed for this study represented a range of roles across the wood waste management system, including material generators and end users, disposal site operators, permitting officials, and advocates for workforce and economic development. In some instances, separate policies and contract structures determine whether the City or a private contractor retains ownership of the material following tree removals or pruning work. Key partners in this category included:

- City of Tacoma Environmental Services (Urban Forestry, Solid Waste, Grounds, Engineering, Open Space, TAGRO)
- City of Tacoma Public Works (Engineering, Facilities, Street Operations)
- City of Tacoma Planning and Development Services (Permit Compliance and Commercial Review)
- City of Tacoma Arts & Cultural Vitality
- City of Tacoma Community and Economic Development (Green Economic Development)

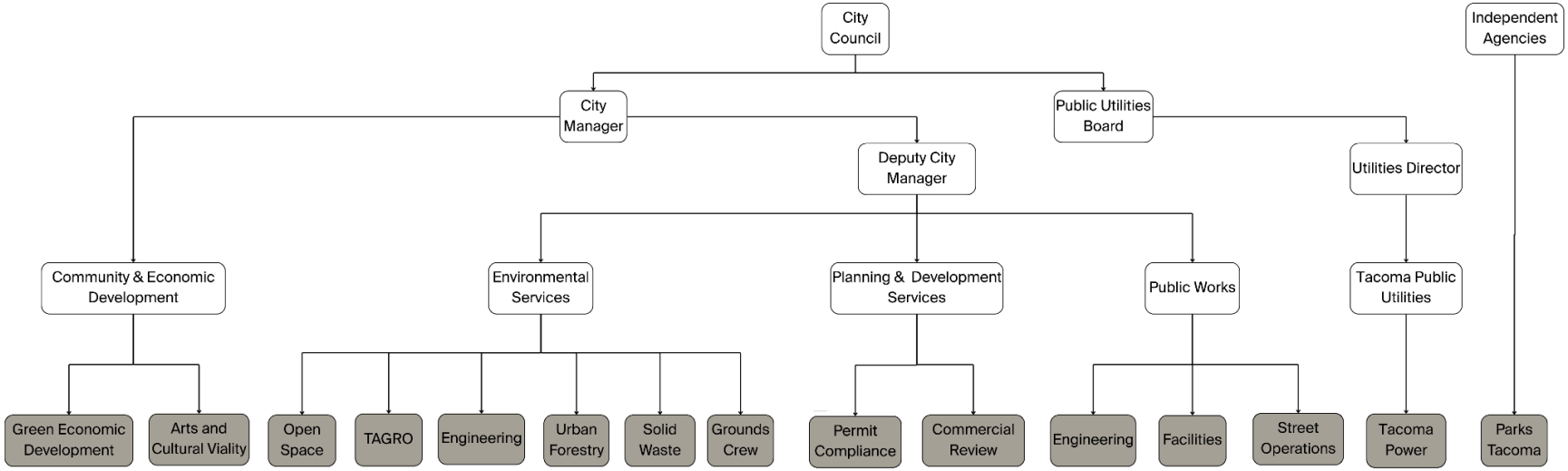


Figure 3. Condensed organizational chart for the City of Tacoma. Departments and work groups in grey represent collaborators spoken to during the course of this study. Most groups generate, dispose of, or utilize wood in some capacity and maintain independent data collection practices. Tacoma Public Utilities and Parks Tacoma are also included in this diagram but are considered interagency partners in this study.

A recurring challenge identified throughout this study is the lack of coordination and information-sharing between City of Tacoma groups involved in tree care, removal, and wood waste management. Tracking and coordinating of tree care and wood waste management among work groups has not historically been an organizational priority. While many work groups generate woody material, there is no centralized system to track how this material is managed, moved, or utilized once it leaves the site of origin. As a result, key decision-makers have limited visibility into how other departments and work groups handle wood waste, hindering efforts to develop consistent practices, scale reuse programs, and assess citywide diversion potential.

For example, Urban Forestry, Public Works Engineering, and Environmental Services Engineering each maintain separate operational protocols for tree removals and disposal. However, few of these work groups share data or coordinate their efforts, leading to duplicative, disconnected systems. Some work groups, such as Public Works Street Operations, have internal storage sites for chipped or cut material, while others rely on external outlets like the Tacoma Recovery and Transfer Center (RTC) or private processors such as LRI or DTG. Yet in most cases, this information remains internal and is not readily shared with other work groups or centralized in any reporting tool.

Moreover, formal data collection related to woody biomass is inconsistent or entirely absent across departments. While Urban Forestry tracks some City removals through its Tree City USA reporting, available records often lack detailed characterization of the material. Conversely, Urban Forestry collects detailed records of removals through the Hazardous Tree Assistance Program, including size, species, condition, and destination of material. Public Works Engineering has recently begun collecting tree removal data in response to updated City code, but these systems are still in early stages and not retroactive. Other groups, such as Environmental Services' Transmission Maintenance team, have no data protocols in place. In several cases, staff were unable to estimate how much material they generate annually or where it is ultimately taken.

Related to the lack of data collection, City departments and work groups rely on highly informal and decentralized approaches to chip utilization. While many City crews and contractors produce wood chips during routine maintenance and removals, there is no standardized system to coordinate their use, storage, or redistribution. Open Space, Public Works, and Tacoma Public Utilities each manage chip piles independently, often relying on informal agreements, ad hoc requests, or verbal coordination between staff. This results in frequent mismatches between supply and demand; some groups report an overabundance of chips with limited space to store them, while others routinely run short and struggle to secure material when needed.

Another challenge City departments and work groups face is limited oversight and tracking of wood material once it leaves a project site under the responsibility of a private contractor. In many cases, the City contracts out tree removals or site work that generates woody debris, yet there are few, if any, requirements for contractors to report on how that material is handled. Once removed, the wood becomes the contractor's property, and the City has limited visibility into whether it is landfilled, chipped, sold, or reused in higher-value ways. In some cases, the contractor disposes of the wood at a landfill or compost facility and bills the City for the cost of the disposal. This lack of transparency makes it difficult to assess the environmental impact of public projects, quantify wood diversion efforts, or identify potential opportunities for reuse partnerships.

Regional Government and Interagency Partners

Regional Government and Interagency Partners included County and City groups that permit compost facilities, manage solid waste operations, maintain parks, or preserve transmission lines. Some interagency partners, such as Parks Tacoma and Tacoma Public Utilities, operate under independent management structures that shape the generation, handling, and disposal of wood waste. Key partners interviewed for this study are listed below; attempts were also made to coordinate with members of the Pulluyap Tribe who manage the Tribe's natural resources, however, coordinating an interview for this analysis was unsuccessful.

- Tacoma-Pierce County Health Department (Waste Management)
- Pierce County (Parks, Solid Waste)
- Joint Base Lewis-McChord (Solid Waste)
- Parks Tacoma (Urban Forestry)
- Tacoma Public Utilities (Tacoma Power: Grounds and Transmission Maintenance)

Pierce County faces significant workforce and resource constraints that limit its ability to advance wood-reuse initiatives. Despite being the state's second-largest county, its Solid Waste Division operates with one of the smallest teams. While King County has over 400 employees working in its solid waste division, Pierce County has 7. This limited capacity constrains both daily operations and long-term planning, particularly as the County develops its forthcoming Solid Waste Master Plan. Staff noted that existing responsibilities take priority, and efforts to advance wood reuse are often sidelined due to time and personnel shortages.

Equipment limitations compound these challenges. The County lacks critical infrastructure such as mobile grinders and relies heavily on private contractors (notably LRI) to process material. Parks staff expressed strong interest in integrating

wood waste into restoration and recreational projects, but cited inconsistent logistical support for moving or processing material across park sites. Although a new grant writer was hired recently to identify external funding, staff emphasized that implementation will continue to lag without dedicated personnel, targeted investment, and coordinated infrastructure planning.

Pierce County is also experiencing accelerated development pressure, particularly in unincorporated and southern areas, which is contributing to significantly higher wood-waste volumes compared to the more densely built-out City of Tacoma. Large tracts of forested land are being cleared to accommodate rapid residential and commercial expansion. Unlike Tacoma, which is largely developed and primarily undergoing infill and redevelopment, Pierce County's growth is dominated by new subdivisions, infrastructure corridors, and utility expansions across previously forested parcels. This scale of disturbance produces much larger volumes of woody biomass, including full-tree removals, stumps, and understory vegetation.

Because many of these projects occur in areas lacking material-management infrastructure, wood waste is often handled by private contractors with limited oversight or reuse requirements. Staff noted that much of this material, particularly stumps and land-clearing debris, is chipped and incorporated into compost operations as biofilter material or stockpiled on-site with minimal reuse planning.

Without effective systems for capturing, sorting, or repurposing this material, the County faces increasing challenges in managing its growing wood waste stream. These dynamics underscore the need for new infrastructure, dedicated staff, and policy tools that can better support diversion and reuse at the county scale.

Private Partners

Private partners interviewed for this study included tree care contractors, disposal outlets, and wood-utilizing businesses (e.g., composters and milling operations). These organizations engage with the City in various ways, completing tree work, processing material, or accepting wood from municipal operations. Organizations interviewed include:

- Cedar Grove
- LRI / Waste Connections
- DTG Recycling
- Wane + Flitch
- Hunter's Tree Service
- Family Tree Care
- Aloha Carbon

Private-sector wood reuse and processing partners in Tacoma face a number of structural challenges that limit their ability to grow or fully participate in Tacoma's emerging wood-reuse ecosystem.

Collaborators noted that permitting new processing facilities in Washington State can be prohibitively slow. This delay is a major barrier for companies seeking to site new infrastructure such as a biochar system, mill expansion, or wood sorting yard in Tacoma. In interviews, City and private sector collaborators noted that permitting timeline both delays implementation and discourages investment, especially for operations that require stormwater management, air quality compliance, or special zoning for biomass handling. Even when a facility is envisioned to support public policy goals (e.g., greenhouse gas reduction or material diversion) the lack of expedited pathways often prevents progress.

Across the board, tree service operators, mills, and processing companies also reported workforce limitations as a key constraint. For example, Paula Hunter of Hunter's Tree Care emphasized the shortage of skilled arborists and "biologically trained" workers who understand both tree health and reuse potential. Companies like Wane + Flitch, which focus on high-value recovery, face bottlenecks due to the absence of certified graders or workers trained in log assessment and milling. These limitations restrict operations and reduce the share of material reaching higher-value end uses.

Tacoma currently lacks a formal green jobs pipeline focused on urban forestry or wood reuse. While the Washington Conservation Corps and Job Corps have expressed interest, their involvement has been minimal to date. The Environmental Services Department is currently supporting a workforce development program for green stormwater infrastructure known as GRO Corps (Green Resilience Opportunity Corps), but as this program is high-level and covers a breath of subjects over just an 8-week period, there is no structured program to train workers specifically in wood recovery, sorting, processing, or small-scale milling.

Transportation emerged as another consistent barrier across the wood reuse value chain. Small- to mid-sized operators lack the equipment (e.g., grapple trucks, cranes, dump trailers, front end loaders, etc.) or personnel to move bulky logs or chipped material to end-users like Wane + Flitch or TAGRO. Even when high-value reuse opportunities exist, partners often default to disposal due to the logistical burden of hauling large volumes across town or to out-of-county facilities like LRI or DTG. Wane + Flitch, for instance, receives material from Parks when coordination allows, but the lack of hauling support often means large logs sit unused at storage sites.

Wood Waste Disposal and Generation Estimates

The following analysis quantifies how much wood waste the City of Tacoma generates, manages, and loses to landfill each year. These estimates are not just a snapshot of current conditions—they provide the foundation for the City's recommended investments in a centralized sort yard, improved data systems, and expanded reuse programs. Understanding the scale and character of this material stream clarifies where the City can capture the most value and make measurable progress toward its 70% diversion and 2028 wood reuse goals.[3]

Across City operations, the dominant pattern is high-volume, low-value disposal. Recoverable material is being chipped, composted, or landfilled because there is no consistent system for sorting, storing, and transferring it to reuse markets.

The opportunity for Tacoma lies not in generating new supply, but in capturing existing wood more effectively and using data, policy, and infrastructure to channel it toward beneficial reuse.

Wood Disposal Streams

Tacoma's wood waste system reveals a clear opportunity to convert existing disposal streams into valuable local resources. Each year, the Tacoma Recovery and Transfer Center manages more than 57,000 tons of woody material, yet only about half is recovered through composting or internal reuse, leaving over 25,000 tons of recoverable wood lost to landfill. At the same time, TAGRO, one of the City's most successful circular programs, purchases more than 30,000 cubic yards of clean sawdust and bark from external vendors because there is not enough uncontaminated wood fiber available from City sources. Regionally, processors such as Cedar Grove, LRI, and DTG Recycling handle over 130,000 tons of yard and land-clearing debris each year, but without consistent data tracking, Tacoma cannot fully use these outlets to support local diversion goals. Together, these conditions highlight the City's unmet demand for clean, sorted wood material and the potential for a centralized sorting facility to connect internal and regional markets, transforming a fragmented system of disposal into a coordinated network for reuse, cost savings, and climate action.

Quantifying the Diversion Gap

Tacoma's municipal solid waste (MSW) stream has been found to contain significant amounts of wood waste, which is currently not recovered, but disposed of at the LRI Landfill. A waste characterization study completed by Cascadia Consulting in 2023

[3] A detailed description of the data sources and estimation methods used in this analysis is included in **Appendix B**.

estimated that over 28,000 tons of wood waste ends up in MSW annually, with the material ranging in its level of recoverability **(Table 1)**. However, Solid Waste Management does not regularly review or track MSW, and waste characterization studies are conducted roughly every 8 years.

The Tacoma Recovery and Transfer Center (RTC) serves as the city's central hub for managing yard and wood waste. Each year, the facility receives more than 57,000 tons of woody material through curbside collection, self-haul, and City operations. Roughly half of this material—primarily mixed chips and yard debris—is composted through partnerships with Cedar Grove[4] and TAGRO. The remainder, including dimensional lumber and clean wood, is disposed of through the municipal solid waste (MSW) stream.

Cascadia Consulting's 2023 Waste Characterization Study estimated that over 28,000 tons of wood waste in the MSW stream could be diverted from landfill if sorted and processed appropriately.[5]

Table 1. Summary of Wood Waste Entering the RTC and Strategic Implication

Metric	Status (2022–2024 Average)	Strategic Implication
Annual Woody Material Received (Total)	Over 57,000 tons	Total volume that could be used to sustain a processing facility or sort-yard; includes a range of material types.
Yard Waste Diversion (to Compost/TAGRO)	~29,000 tons/year	Represents existing, successful diversion pathways for lower-grade chips and yard debris.
Estimated Recoverable Wood Lost to MSW	~25,000 tons/year	This material, including dimensional lumber and clean timber, must be targeted by new sorting infrastructure.

[4] Pierce County officials noted that due to capacity challenges, Cedar Grove is currently sending a significant amount of material to LRI's composting facilities. Solid Waste Management holds contracts with both LRI and Cedar Grove, which allows them to flexibly haul material depending on which facility is open for dumping.
[5] Solid Waste Management does not regularly review or track MSW, and waste characterization studies are conducted roughly every 8 years. This is the most recent study and has been used for this analysis.

Metric	Status (2022–2024 Average)	Strategic Implication
Estimated Non-Recoverable Wood in MSW	~3,000 tons/year	Materials that are not readily recyclable or compostable, such as treated wood

Note: See **Appendix B** (Table B1) for further detail.

The table above shows that approximately 95% of woody material entering the Tacoma Recovery and Transfer Center is recoverable on an annual basis. Currently, only about 50% of this material is being recovered through composting from material entering the yard waste stream.

A 2015 waste characterization study estimated that ~20,000 tons of wood waste were present in the municipal solid waste (MSW) stream. Assuming an average annual growth rate of 4.2% from 2015 to 2023, projections indicate that by 2030, the MSW stream will contain approximately **38,000 tons of wood waste**.

There are several avenues for wood and yard waste once it enters the RTC, depending on the material type and disposal method. **Figure 4** provides an illustration of how material flows from generator to eventual disposal outlet.

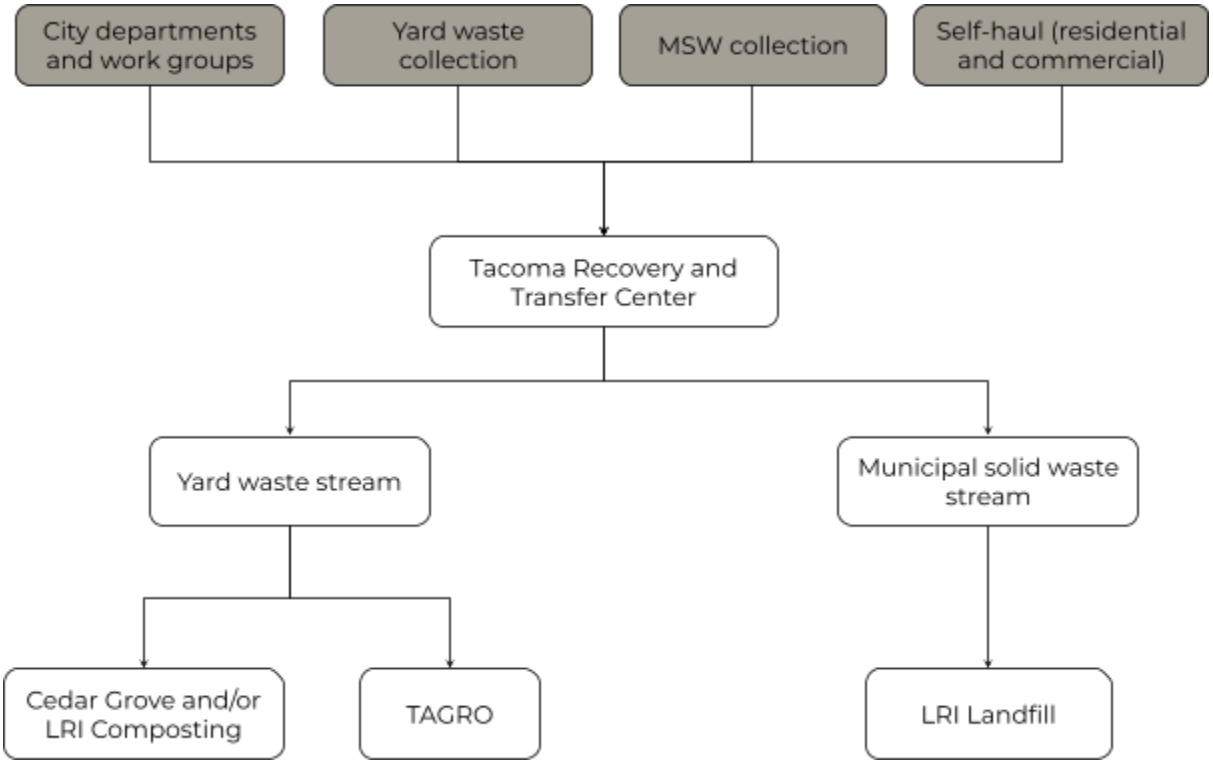


Figure 4. Illustration of how wood and yard waste moves between the Tacoma Recovery and Transfer Center. Gray boxes represent sources of wood waste within the City.

A medium-scale sort yard capable of processing 15,000–25,000 tons per year could directly intercept up to half of the recoverable wood currently lost to disposal.[6] Such a facility would not only increase diversion but also support local industry and workforce development—key objectives of the City's Climate Action and Urban Forest Management Plans.

TAGRO Feedstock Supply and Sourcing Constraints

The successful TAGRO program represents an established, reliable internal market for fine wood residuals. While this system provides a vital end-market, it also highlights the City's reliance on external, high-cost procurement of clean materials.

TAGRO's current sourcing is restricted by the need for materials that meet specific cleanliness and processing requirements, leading to high external purchasing volume.

[6] See Wood Waste Sort Yard Scenario Analysis.

Table 2. TAGRO Material Procurement and Estimated Volumes

TAGRO Material Procurement	Volume (Annual Average)	Source
Purchased Sawdust / Black Bark	Over 30,000 cubic yards	External vendors (due to quality/contamination concerns)
City-Sourced Clean Mulch (from RTC)	1,070 cubic yards (2024)	Internal RTC yard waste stream (limited volume)

Note: See **Appendix B** (Table B2) for further detail.

The limited internal supply (1,070 CY) compared to the large volume purchased externally (over 30,000 CY) highlights the City's significant unmet demand for clean wood fiber. Establishing a centralized sorting facility offers the opportunity to produce recovered wood chips that meet the required cleanliness standards for reliable transfer to TAGRO, thereby reducing reliance on external procurement and associated costs.

Regional Processing Opportunities

Tacoma's wood waste system exists within a broader regional network of composters and recovery facilities that could play a larger role in helping the City meet its diversion goals. Across Pierce County, several outlets—including LRI Hidden Valley, Cedar Grove, LRI/Pierce County Composting Facility, Purdy Topsoil & Gravel, and Joint Base Lewis-McChord—processed an estimated 131,000 tons of yard and land-clearing debris into compost in 2024. However, it is unclear how much of this material originated from Tacoma, underscoring a key data gap that limits the City's ability to track where its recoverable wood ends up.

DTG Recycling's Recovery One facility also serves as an important option for wood and land-clearing debris, processing approximately 12,000 tons per year from both Tacoma and surrounding communities. City work groups identified Recovery One as favorable due to its lower tipping fees and proximity, but the lack of Tacoma-specific data makes it difficult to evaluate how effectively the facility contributes to local diversion goals.

It's important to note that this analysis does not capture the full range of wood utilization options in the region. For instance, smaller salvaged wood mills such as Wane + Flitch and community reuse platforms like ChipDrop are actively diverting

material, but were not included in the data review. These outlets likely represent additional, undercounted capacity for reuse and composting.

Wood Generation Streams[7]

While the disposal data highlights a volume problem, the generation data from City work groups and departments reveals a quality opportunity. Wood generated from City operations (e.g., Urban Forestry, Public Works) is crucial not because it is always of higher quality, but because the City has visibility and control over the material's origin, handling, and species. This makes the wood predictable and plausibly cleaner than public drop-off material, allowing for a strategic assessment of its suitability for specific high-value applications like sawmilling and biochar.

Wood Waste Generator Summary

The following table **(Table 3)** details the City departments and work groups that generate woody biomass. While total volumes are modest compared to the Recovery and Transfer Center's overall intake, these streams are strategically significant. They represent material the City can directly influence – where origin, quality, and handling practices are known – making them the most viable sources for high-value sorting and reuse planning.

[7] Wood waste generation volumes were estimated for tree removals and maintenance activities performed by City departments, work groups, and interagency partners, and that is performed on City property (e.g., tree removals permitted on the City right-of-way). No estimates or data were available for tree debris generated on privately-owned land by private contractors.

Table 3. Summary and Characterization of Generation Activities by Work Group

Generator	Primary Operations	Data Tracked	Est. Removals & Prunings (2023-2024)[a]	Example Projects & Notes	Strategic Value to Wood Reuse
Urban Forestry	Hazardous Tree Assistance Program	Trees removed and maintained, species, size, location, type of disposal	14 trees removed; 755 trees maintained	Focused on removing hazardous trees in the ROW. Volume is small but generates potential high-diameter, millable logs.	Critical source of highest-value logs; requires dedicated handling via a sort yard.
Public Works (Streets & Grounds)	Street-level tree removal and maintenance, maintenance of trees on City Parcels and ROW.	Trees removed and maintained (data aggregated with PW Engineering)	136 trees removed; 22 trees maintained[b]	Operations include routine tree care; material is typically chipped or hauled off site via contractors.	Maintenance activities could supply a steady stream of clean chips for internal reuse (e.g., trail surfacing, TAGRO).
Environmental Services Grounds Crew	Grounds maintenance on ES parcels and ROW.	Not Reported	NA	Tree work is sporadic and wood waste volumes are low.	Improved data tracking could clarify the reuse potential of this generation stream
Open Space	Maintenance and tree removal on City-owned Open Space properties.	Trees removed and maintained	65 trees removed; 236 trees maintained	In most cases, felled trees are left onsite to decompose and support watershed health,	Improved data tracking could clarify the reuse potential of this generation stream

Generator	Primary Operations	Data Tracked	Est. Removals & Prunings (2023-2024)[a]	Example Projects & Notes	Strategic Value to Wood Reuse
Public Works Engineering	Capital Construction Project (CCP) waste removal, Wood waste generation from sewer/street projects.	Trees removed and maintained (data aggregated with PW Streets & Grounds).	136 trees removed; 22 trees maintained[b]	CCP wood is a source of C&D waste and construction-mandated logs from required removals. Ownership of wood waste often transfers to contractors upon removal.	Policy leverage: mandating "highest and best use" in contractor specifications could allow for effective resource capture.
Environmental Services Engineering	Capital improvement projects that support the City's solid waste, stormwater, and wastewater utilities.	Trees removed and maintained	85 trees removed; 1 tree maintained	No contractual requirements specifying how the wood is to be used or disposed of; staff logs over about 10" DBH are sometimes sold by contractors, while smaller material is typically chipped or sent to landfill	Policy leverage: mandating "highest and best use" in contractor specifications could allow for effective resource capture.
Planning & Development Services	Tracking of required tree removals in ROW and construction permits.	Permit Data Quality (DBH, species, contractor, date, location)	258 tree removals; 45 trees maintained	Permitted tree work likely represents less than half of the projects that require a permit; a substantial share of activity remains unpermitted and undocumented.	Improving permit data could provide more accurate estimates of material size and species, enabling strategic planning for salvage.

Generator	Primary Operations	Data Tracked	Est. Removals & Prunings (2023-2024)[a]	Example Projects & Notes	Strategic Value to Wood Reuse
Tacoma Public Utilities	Transmission line clearance and maintenance.	Trees removed and maintained	48 trees removed; 1,005 trees maintained	Material is primarily sent to private facilities (e.g., DTG).	Ongoing biochar pilot program provides valuable data on the viability of emerging technologies for low-grade biomass.
Total Estimated Trees Removed and Maintained (2023-2024): 405 trees removed; 2,369 trees maintained					

[a] Generation data was primarily derived from Tree City USA reports and the Acella Database

[b] Estimated tree removals and maintenance activities are not disaggregated between PW Engineering and PW Streets & Grounds work groups.

While these generation streams capture how and where wood waste is produced today, the public tree inventory offers a look ahead. It describes the structure and health of Tacoma's public canopy, revealing what types of trees, and therefore what types of material, are most likely to enter the City's recovery system in the future.

The City's public tree inventory[8] offers a valuable snapshot of Tacoma's managed canopy and a foundation for understanding long-term wood waste generation. While it includes roughly 30 percent of all public trees, the dataset is robust enough to illustrate trends in species composition, size, and distribution that inform future management and material recovery planning. The inventory shows a predominance of ornamental and medium-diameter species, with maples, cherries, Douglas firs, and flowering pears among the most common. Average tree sizes range between 8 and 11 inches in diameter and 15 to 19 feet in height, indicating a relatively young and mid-mature canopy that will generate moderate wood volumes over time rather than a surge of large-diameter removals. Most trees are in good or fair condition, representing about two-thirds of the inventory, while fewer than five percent are rated poor or dead, suggesting that immediate removals will remain limited but consistent as trees age or infrastructure conflicts occur.[9]

These structural patterns imply that most recovered wood will be suitable for mulch, chips, or small craft and reuse applications, with only a small subset likely to provide millable material. However, the inventory was not designed to track removals, condition changes, or maintenance cycles, and updates have been inconsistent across departments. As a result, it cannot yet forecast near-term generation volumes with confidence. Expanding its role beyond canopy management (i.e., by linking it to removal permits, maintenance records, and disposal data) would allow the City to anticipate where and when recoverable material will emerge and to plan for processing or reuse accordingly. In this way, the inventory can evolve from a static record of the City's living assets into an operational tool for proactive resource recovery and circular materials planning.

Recent permitting updates from Planning and Development Services (PDS) have greatly helped the City understand and manage its wood waste, underscoring the importance of improving data collection systems. The new permit requirements now capture key metrics (e.g., DBH and species) for nearly every permitted tree removal. This has driven data completeness from virtually zero to over 80 percent, marking a major leap in the City's ability to quantify its recoverable wood resources before removals occur. Linking this permit data with systems like TreePlotter, which houses

[8] See Appendix B: Wood Waste Generation for more details.

[9] Trees are typically inventoried at the time of planting which heavily skews the data toward smaller, younger, and healthier trees. Recent LiDAR data from the Urban Forestry Work Group has confirmed this bias in the public tree inventory.

the public tree inventory, will further enhance internal coordination, forecasting ability, and justification for future investments in wood recovery infrastructure.

By tracking what is being removed and where it is going, Tacoma can begin to treat wood waste as a measurable, recoverable asset rather than an untracked byproduct. These data improvements open the door to accurately estimating recoverable tonnage, identifying high-value logs for reuse, and incorporating salvaging expectations directly into contractor specifications. In short, better data transforms Tacoma's wood waste management from a reactive disposal system into a proactive resource recovery strategy.

Expansion of City Tree Maintenance Capacity

In addition to the activities described above, the City has strengthened its operational capacity to manage and recover material at the source. In June 2025, a new two-person arborist crew was established to support removals, maintenance, and planting across Public Works and Environmental Services projects and properties. The addition responds directly to increasing canopy maintenance needs and the City's goal of improving control over the quality and fate of its generated wood material.

Tree City USA data indicate that between 2023 and 2024, City departments collectively managed roughly 200 tree removals and nearly 2,000 maintenance actions each year. The new crew is expected both to assume a portion of this existing workload and to expand the overall amount of proactive maintenance completed annually. Equipped with a dump trailer and chipper, the team can handle mulch and material transport internally, helping meet growing watering and mulching demands for new plantings while improving operational efficiency.

Beyond additional planting and tree care capacity, the crew provides significant value in improving the traceability and quality of the City's wood waste stream for the trees they remove. The arborists could potentially catalyze the identification, separation, and transportation of millable logs to a central sorting facility. This logistical capacity enables the selective recovery of sound logs suitable for reuse, an essential step toward reducing the historic reliance on low-value chipping. One recent example of this crew's work includes the removal of a red maple, which was transported to an Open Space site as chips and logs for use in restoration projects.

At the same time, the crew does not have some of the necessary equipment for larger log opportunities, which may require support from private tree care companies or lumber companies to recover. Although not specified in contract expectations today, companies like Hunter's Tree Care support the diversion of large amounts of woody

material in alignment with City goals. Continued collaboration between public and private entities will be a critical component to bolstering reuse efforts.

Table 4 summarizes the projected annual number of tree removals and maintenance activities to be completed by the arborist crew, organized by operational tier. Initial efforts are focused on Tier 1 capital project areas, with expansion to additional tiers as funding and labor allow. These estimates are derived from the cost proposal presented to City Council during program approval.

Table 4. Projected Removal and Maintenance Activities Performed by the New Arborist Crew

Tier Activity (Tier Number)	Department or Work Group	Trees Removed & Maintained (Annually)	Biomass Estimate (Tons)[a]	Strategic Value to Wood Reuse System
City Capital Construction Project Trees in ROW (Tier 1)	PW and ES	456	79.8	Reliable chip supply for TAGRO, biochar pilot, etc.
Trees on City-Owned Parcels (Tier 2)[a]	PW and ES	624	31.2	Potential for millable logs from removals that were previously backlogged
Trees on City Responsible ROW (Tier 3)[a]	PW and ES	624	31.2	Generation of chips from routine pruning for internal use
Hazardous Tree Assistance Program (Tier 4)[a]	Urban Forestry	170	72.3	Generation of large-diameter logs from urgent removals
City-Owned Open Space Property (Tier 5)[a]	Open Space	15	6.4	Potential for millable logs and chips from maintenance and removal activities
Totals		**1,889**	**220.9**	**All Tiers**

[a] One removed tree was assumed to yield an average of 0.8 tons of woody biomass; One maintained tree was assumed to yield 0.05 tons of woody biomass

[b] Tiers 2-5 did not disaggregate expected tree removals from tree maintenance activity

The crew's work is projected to add approximately 220.9 tons of woody biomass to the City's managed material stream each year. This total represents removals and maintenance across all five operational tiers, and, importantly, material that is now far more likely to be tracked, sorted, and routed to higher-value end uses. While the overall quantity remains small compared to the tens of thousands of tons of recoverable wood processed annually at the Tacoma Recovery and Transfer Center (RTC), the crew's operations demonstrate the strategic value of direct City control. Their work models the type of closed-loop management that, if scaled, could substantially improve recovery rates and supply cleaner feedstock to Tacoma's developing wood reuse system.

Program Update: Arborist Crew Operations (November 2025)
First-Season Observations and Outcomes

During its first operating season in summer 2025, the new two-person arborist crew has focused primarily on structural and clearance pruning of young street trees, typically three to five years old. This work has been concentrated in areas with recently completed capital projects, with the aim of developing proper branch structure and ensuring safe clearance over sidewalks and streets. Removal activity to date has been limited to a small number of dead or poor-condition trees and occasional storm or emergency response events. These removals have included: one large 30-inch diameter catalpa, several medium-sized cottonwoods, one 28-inch maple, one 18-in birch and a number of other small-diameter birches affected by bronze birch borer.

Based on initial observations and broader citywide patterns, maintenance and planting activities are expected to comprise roughly 85 to 90 percent of the crew's work by tree count in the early years, with removals accounting for the remaining 10 to 15 percent. Over time, removal volumes are anticipated to grow gradually as the crew assumes more hazardous tree program responsibilities.

By fall 2025, the scope of work is expected to shift seasonally with the addition of tree planting, which will increase associated watering and mulching needs without significantly affecting removal tonnage. Most young tree pruning to date has involved removing approximately 5 to 25 percent of the canopy, depending on species and specific maintenance needs. This yields relatively small biomass volumes, primarily small-diameter limbs chipped on site. In contrast, removals produce a wider range of material sizes, from fine chips to large-diameter logs.

Current material disposal practices vary according to the type and condition of the biomass. Most chipped material from maintenance work is hauled either to the Public Works Solid Waste chip pile, the Urban Forestry/Open Space nursery pile, or

dropped at Open Space restoration sites. Chips from pest-affected material, excluding birches killed by bronze birch borer, are treated as green waste and delivered directly to the RTC for appropriate handling.[10] As of November 2025, **eight chip loads** (approximately 3 cubic yards each) and **six logs** have been delivered, with additional material drops continually scheduled. Completed deliveries include:

- **Nursery (WCC):** 2 loads (7/16 and 7/17)
- **Fern Hill – 518 S 82nd St:** 1 load (10/8)
- **2193 Westridge Ave W:** 2 loads (11/3)
- **First Creek at E 47th:** 1 load + 3 logs (11/12)
- **First Creek at E 47th:** 1 additional load + 3 logs
- **South Ash Open Space (S 95th & Alaska St):** Additional chip load planned

Disposal Cost Avoidance from Expanded Wood Reuse

To provide context for the potential economic implications of expanded wood reuse, this section presents an illustrative estimate of direct disposal costs that could be avoided if a portion of Tacoma's woody debris were redistributed for City use or public distribution rather than hauled to regional composting facilities. The intent is not to represent a full cost–benefit analysis, but rather to ground subsequent reuse scenarios in current disposal practices, documented diversion volumes, and published tipping fees.

At present, clean woody debris and yard waste generated across City operations, residential self-haul, and commercial haulers are primarily consolidated at the Recovery and Transfer Center and sent to facilities such as LRI and Cedar Grove. While some material is already intercepted for internal use—most notably through TAGRO and emerging City-managed arborist operations—disposal remains the dominant pathway for the majority of woody material. Understanding the order of magnitude of these disposal costs provides a useful baseline for evaluating the potential value of expanded redistribution or reuse.

[10] Chipping of birch trees afflicted by bronze birch borer is considered a bad management practice

Table 5. Estimated annual disposal cost avoided (by diversion scale)[11]

Diversion scenario	Annual diversion	LRI – Hidden Valley / Purdy *($115 per ton)*	Cedar Grove – Maple Valley *($27 per cubic yard)*
Happening Today			
Current documented diversion (TAGRO, 2024)	~320 tons (~1,070 CY)	≈ **$36,800**	≈ **$28,900**
City-controlled expansion (arborist crew)	~200 tons (~660 CY)	≈ **$23,000**	≈ **$17,800**
Potential Futures			
Near-term expansion	~1,000 tons (~3,300 CY)	≈ **$115,000**	≈ **$90,200**
Moderate system capture	5,000 tons (~16,700 CY)	≈ **$575,000**	≈ **$450,900**

Interpreting the results

The revised scenarios distinguish between documented, City-controlled diversion and broader system-level opportunities. Current TAGRO diversion represents a proven baseline, while the addition of the City's new arborist crew increases the amount of woody material that can be directly managed, characterized, and retained within City systems. Together, these two sources already represent more than 500 tons per year of potential diversion without requiring changes to private hauling practices or the Recovery and Transfer Center's core operations.

[11] TAGRO diversion volumes (1,070 cubic yards in 2024) and arborist crew biomass estimates (~200–220 tons annually) are drawn directly from this study. Arborist crew volumes reflect projected annual removals and maintenance activities once fully operational. Conversions from cubic yards to tons use an EPA-referenced planning assumption of 0.30 tons per cubic yard for mixed yard waste and clean woody debris. Disposal rates reflect published tipping fees for the closest facilities serving Tacoma: $115 per ton at LRI (Hidden Valley / Purdy compost pathway) and $27 per cubic yard at Cedar Grove (Maple Valley). Estimates reflect avoided tipping fees only and exclude hauling, labor, and replacement product value.

The near-term expansion scenario (~1,000 tons per year) reflects a plausible next step achieved by scaling existing practices—such as cleaner sorting, expanded internal mulch use, and limited public distribution—rather than structural system redesign. The 5,000-ton scenario illustrates a moderate level of system capture relative to total material flows managed by Solid Waste and is intended to convey order of magnitude rather than a near-term target.

Key takeaway

Documented City-managed diversion through TAGRO and the arborist crew already demonstrates meaningful disposal cost avoidance. Incremental expansion of these practices could yield six-figure annual reductions in disposal costs while improving material availability for City projects and public use. These estimates provide a conservative financial baseline for evaluating the reuse scenarios described in the following sections and underscore the value of retaining clean woody debris within City systems wherever feasible.

Five Opportunities to Improve Systems of Wood Reuse

Tacoma's current system for managing tree and construction wood waste presents five clear opportunities for improvement. As shown in the preceding analysis, large volumes of recoverable material are generated through City operations and capital projects, yet most is not directed to its highest and best use. Fragmented data systems, limited infrastructure for sorting and storage, and inconsistent project requirements continue to constrain reuse potential.

This section identifies five practical and coordinated opportunities for Tacoma to strengthen its wood-reuse system and deliver on the goals of the Urban Forest Management Plan, Climate Action Plan, and Tacoma–Pierce County Solid and Hazardous Waste Management Plan. Together, these opportunities provide a roadmap to accelerate progress towards climate, equity, and circular-economy goals while reducing landfill dependence and creating lasting local value.

The five opportunities are:

1. **Improve wood waste data collection and integration across departments.** Standardize how City work groups and contractors track the type, volume, and destination of wood material to enable coordinated planning and performance measurement.
2. **Revise project specifications and City code to encourage salvaging and reuse.** Update bid documents and permitting language to require or incentivize recovery of usable wood before chipping or disposal.
3. **Invest in a centralized chip depot and salvage sort yard program.** Develop a shared facility for the sorting, processing, and redistributing of clean wood chips and salvaged logs for City and community use. Use this program as a model for encouraging the "highest and best use" of woody materials in Tacoma.
4. **Expand workforce development and training in wood recovery.** Develop partnerships with local organizations and educational institutions to train workers in tree care, wood reuse, processing, and product manufacturing, building green jobs within Tacoma's local economy.
5. **Support emerging technologies and regional initiatives.** Align City initiatives with Parks Tacoma, Pierce County, and neighboring jurisdictions to aggregate volumes, share facilities, and support regional market development for recovered wood products.

Together, these opportunities offer Tacoma a practical framework to transform wood waste from a disposal liability into a regenerative local resource that supports economic development, environmental stewardship, and long-term resilience.

Opportunity 1: Improve Wood Waste Data Collection and Integration

In sum: Tacoma should define a **core set of standardized data fields** to be collected consistently across departments and work groups. These should include source (e.g., public removal, private development, capital project), species and size, material condition, and potential utilization pathways (e.g., mulch, sawlogs, lumber recovery). This framework could build on Tree City USA reporting standards but expand their value for operational planning and reuse forecasting.

To effectively manage and reuse the wood waste generated by municipal activities, Tacoma should build a unified, transparent data system across all departments and work groups that play a role in urban forest management, including inputs into the wood waste stream. Currently, data collection practices related to wood generation and disposal vary widely among City work groups. Some departments and work groups, such as Urban Forestry and Public Works, are beginning to enhance their data systems, while others lack any formal mechanisms to track wood waste. This fragmented approach creates major information gaps that limit the City's ability to estimate wood waste volumes, track material flows, and identify reuse opportunities.

The current absence of a coordinated data system:

- Loses economic value, as usable wood is often chipped or discarded before higher-value recovery options are even considered.
- Hinders decision-making on infrastructure investment, procurement, and sustainability planning
- Obscures the potential for job creation through workforce training and materials recovery
- Challenges the ability to track progress toward climate and waste-diversion goals

A more coordinated and transparent data infrastructure would provide a clearer picture of the wood waste generated through maintenance operations, capital projects, and private development. This includes not only the quantity of material removed, but also its quality and potential applications.

Some departments and work groups have already taken steps to improve data tracking. Urban Forestry is hiring a construction arborist to coordinate removal data for City capital projects. Public Works Engineering is enhancing its tree-removal

records for capital projects. Planning and Development Services (PDS) maintains the Acella database, which holds significant information related to permitting and land use, though many fields are self-reported and inconsistently verified, limiting their operational value.

By establishing an integrated, consistent data system, Tacoma would lay the foundation for data-driven decision-making, unlocking new market opportunities, reducing waste, and improving cross-departmental coordination to advance a circular wood economy.

Opportunity 2: Revise Project Specifications and City Code to Encourage Salvaging and Reuse

In sum: Tacoma should revise its project specifications and the Tacoma Municipal Code (TMC) to create **clear, enforceable requirements for salvaging and reusing wood** from public works projects. By updating bid specifications to include mandatory delivery of usable wood to approved reuse facilities, implementing a "reuse-first" disposal hierarchy, incorporating sustainability into bid scoring, and requiring standardized reporting, the City can significantly improve wood recovery outcomes.

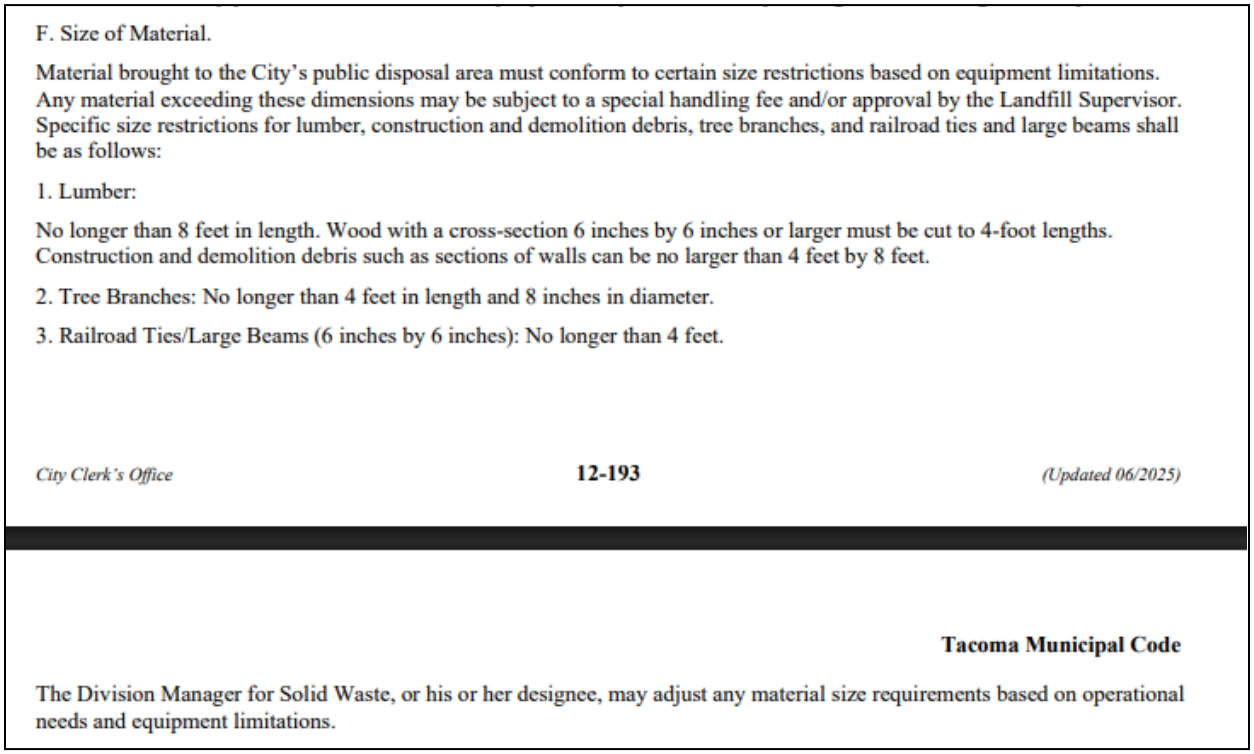
Tacoma currently has no standardized requirements for how contractors must handle wood removed during public-works projects.. In practice, this means contractors consistently retain ownership of removed material and can dispose of it at their discretion with no obligation to prioritize reuse. Without clear, citywide expectations, large volumes of high-quality urban wood end up in low-value outlets such as chips and landfill.

Updating bid specifications and key sections of the Tacoma Municipal Code (TMC) would establish consistent expectations for wood recovery and create a framework the City can enforce. While departments such as Public Works (PW) and Environmental Services (ES) have the ability to direct contractors toward higher-value outcomes, this authority is not applied uniformly, and reuse is seldom required. Strengthening specifications and code language would give the City the tools to ensure that recoverable material is diverted to better uses, support circular-economy goals, and reduce disposal-related costs.

Existing language in TMC 12.09.130 (i.e., Tacoma Municipal Code governing “Size of Material” for wood disposal at the Tacoma Recovery and Transfer Center) further limits reuse. The section focuses on landfill handling constraints and omits mention of full trees **(Figure 5)**. It lists only “tree branches” up to 4 feet long and 8 inches in

diameter, leaving trunks and large-diameter logs undefined and creating ambiguity around their eligibility for salvage or reuse.

In practice, the Tacoma Recovery and Transfer Center already accepts some larger material under a discretionary clause that allows the Division Manager for Solid Waste (or their designee) to adjust size limits. Staff confirm they occasionally process large-diameter items: some are run through a horizontal grinder (which has capacity limits), while others are stockpiled or provided to landscapers. These existing practices show that scaling up large-wood acceptance and processing is feasible and already occurring within the bounds of the current code.



F. Size of Material.

Material brought to the City's public disposal area must conform to certain size restrictions based on equipment limitations. Any material exceeding these dimensions may be subject to a special handling fee and/or approval by the Landfill Supervisor. Specific size restrictions for lumber, construction and demolition debris, tree branches, and railroad ties and large beams shall be as follows:

1. Lumber:

No longer than 8 feet in length. Wood with a cross-section 6 inches by 6 inches or larger must be cut to 4-foot lengths. Construction and demolition debris such as sections of walls can be no larger than 4 feet by 8 feet.

2. Tree Branches: No longer than 4 feet in length and 8 inches in diameter.

3. Railroad Ties/Large Beams (6 inches by 6 inches): No longer than 4 feet.

City Clerk's Office **12-193** *(Updated 06/2025)*

Tacoma Municipal Code

The Division Manager for Solid Waste, or his or her designee, may adjust any material size requirements based on operational needs and equipment limitations.

Figure 5. Passage from Municipal Code 12.09.130

City crews and project managers also face regulatory and logistical hurdles when diverting salvaged wood. At times, usable material cannot be transferred to reuse partners due to interpretations of Washington's "gift of public funds" doctrine, which prohibits the direct transfer of City-owned assets for public benefit without a formal program or contractual agreement. This restriction has caused missed opportunities, such as a large Norway maple removal that Public Works crews intended to deliver to a local processor but instead had to discard.

To align City construction practices with reuse goals, Tacoma should amend bid specifications and code language to include the following four requirements:

1. **Mandated Delivery to Approved Reuse Facilities**
   Require contractors to deliver all usable logs, rounds, and chips from City-funded projects to a City-designated centralized sort yard, chip depot, or other approved reuse facility.[12]
2. **"Reuse-First" Prioritization**
   Establish a hierarchy of disposal:
   1. Milling or lumber recovery
   2. Habitat log placement
   3. Donation to community projects
   4. Mulch production
   5. Composting
   6. Landfill disposal only as a last resort
3. **Inclusion of Sustainability in Bid Scoring**
   Award higher points to bidders that commit to verifiable higher-use destinations for removed material. Require documentation of final disposition as part of contract compliance.
4. **Standardized Reporting Requirements**
   Require contractors to submit a Material Disposition Report within ten days of project completion, listing species, size, volume, and final destination for all woody biomass removed.

Implementing these measures will ensure a consistent supply of clean feedstock to support Tacoma's planned centralized yard and related reuse infrastructure. Bid language updates can be advanced through the City's Standards Committee and incorporated into sustainability scoring criteria for future procurements.

Finally, revisions to TMC 12.09 should formally recognize wood as a recoverable resource rather than waste. Clarifying that trunks and large-diameter logs are eligible for diversion would expand reuse options such as milling, donation, and habitat placement. Establishing an explicit legal framework for the transfer or sale of salvaged material would also remove barriers under the gift-of-funds restriction, enabling City crews and contractors alike to direct usable wood to beneficial, community-serving uses.

[12] This may also entail certain expectations around handling (e.g., size of logs and location of disposal) depending on the type of material and choice of disposal.

Opportunity 3: Invest in a Centralized Chip Depot and Salvage Sort Yard Program

In sum: Tacoma can address current chip oversupply and shortage mismatches and prevent the loss of salvageable logs by **establishing a centralized chip depot and salvage sort yard at or near the Recovery and Transfer Center**. While throughput of 15,000 to 25,000 tons annually is plausible, the scenario financial estimates intentionally model smaller, reliably recoverable diversion volumes in the near term to reflect current material variability and phased implementation. A phased approach that begins with managed redistribution and data integration, and then expands selectively into milling and workforce partnerships, offers a practical, low-risk pathway to improve diversion outcomes, reduce disposal costs, and advance Tacoma's climate, urban forestry, and equity goals.

Tacoma's current wood-waste management system is fragmented and inefficient. Some interagency partners, such as Tacoma Public Utilities (TPU) and Parks Tacoma, have persistent wood chip oversupply, while City work groups, including Open Space and Public Works Street Operations, face ongoing shortages. This imbalance wastes resources and limits the City's ability to reuse material effectively.

A centralized chip depot and/or salvage sort yard would allow the City and partner agencies to aggregate material, redistribute chips and mulch, and stage millable logs for higher-value reuse. The facility should be sized appropriately for Tacoma's needs; initial throughput estimates of 15,000–25,000 tons annually appear achievable and sufficient to manage a major share of municipal biomass. However, the scenario financial estimates presented below model smaller, reliably recoverable diversion volumes to reflect current material variability and phased implementation.

Recent Failures Underscore the Need for a Centralized System

Recent incidents highlight systemic gaps in Tacoma's ability to recover usable wood from City projects.

- **2025 Hazardous Tree Assistance Program:** A large black locust tree slated for salvage by Wane + Flitch was chipped, chunked, and discarded due to a lack of a crane and on-site logistics support **(Figure 6a)**
- **Norway Maple removal, Union Ave:** Usable logs were removed by contractors without assessment or diversion requirements, likely entering conventional disposal or low-value processing pathways **(Figure 6b)**

These cases underscore the lack of a citywide salvage protocol, the challenges to divert material without dedicated infrastructure, and the need for clear operational procedures across departments and work groups.

Figure 6
(a) Black locust removed by the Hazardous Tree Assistance Program, with a DBH over 50 inches before the split and each trunk DBH ranging between 20-28 inches.
(b) Norway maple on N Union that had to be removed by Public Works in 2024. Exact specs on this tree are unavailable, but other trees of the same species and age on this street have a DBH range between 30-40 inches.

A centralized chip and salvage yard would deliver significant operational, environmental, and community benefits for Tacoma. Operationally, it would improve efficiency across departments and work groups. Today, work groups such as Street Operations and Open Space manage materials independently, often with limited space and inconsistent access to supplies. A central depot would streamline redistribution of mulch and chips, easing pressure on overstocked sites like Parks Tacoma's SERA chip pile and supporting groups like Public Works and Open Space that experience seasonal shortages.

The second benefit is the ability to stage and sort high-quality logs and roundwood for reuse. Currently, most wood waste is chipped or discarded without assessing its

milling potential. A centralized site would allow Tacoma to partner with local processors such as Wane + Flitch and to support soil and mulch programs like TAGRO. This would improve diversion outcomes and reduce landfill tipping fees.

A centralized yard could also advance public-facing goals. Providing free or low-cost mulch to residents, modeled on Fort Collins' chip program, would support Tacoma's climate and equity commitments without requiring a full retail operation. The site could host training partnerships with Northwest Youth Corps, or similar groups, offering hands-on experience in log grading, milling, and landscaping while building a local green workforce.

Case Study: Fort Collins Chip Program

Overview

Fort Collins operates a closed-loop chip reuse program that processes ~1,000 bone-dry tons of woody biomass annually from public tree operations. This model is effective, low-cost, and community-oriented..

Key Features

- **Source Material**: ~600 trees removed per year, most under 8 inches DBH
- **Site**: Four-acre, City-managed woodlot
- **Grinding**: Tub grinding contracted twice per year to produce screened, garden-ready mulch
  Distribution: Free mulch giveaways occur once or twice annually; no material is sold
- **Drop-Off Rules**: Only prescreened contractors working on public land are permitted to drop off material
- **Millable Logs**: Logs staged for Baldwin Hardwoods, a local sawmill that mills on-site or hauls logs off at no cost to the city

Relevance for Tacoma

With a four-acre footprint and seasonal processing schedule, the program operates at a scale comparable to Tacoma's needs and could be adapted to existing sites such as the Tacoma Recovery and Transfer Center. By restricting drop-offs to prescreened, trusted contractors working on public land, Fort Collins ensures feedstock quality—an approach Tacoma could use to address contamination and invasive species concerns raised by departments such as Solid Waste and Parks Tacoma.

The Fort Collins model also balances chip surpluses and shortages across municipal departments. In Tacoma, agencies like TPU and Parks often report excess chip material, while Open Space and Street Operations experience

shortages. A centralized chip depot modeled after Fort Collins could help balance these flows and improve internal redistribution.

Key Takeaway

Fort Collins demonstrates that a small, contractor-restricted chip yard can advance urban forestry goals, deliver public benefits, and divert wood from landfill without requiring intensive staffing or infrastructure.

Finally, a centralized system would directly support Tacoma's Climate Action Plan, Urban Forest Management Plan, and solid waste diversion targets. By enabling recovery of reusable materials and improving collaboration between work groups, the facility would help meet the City's 2028 target of reusing one-third of wood from high-risk removals while reducing emissions from hauling and disposal.

The Tacoma Recovery and Transfer Center is the most appropriate site for a centralized chip and salvage yard. The facility is already undergoing a site master planning process, and the southern portion of the closed landfill offers sufficient space for a six to ten acre operation. Locating the yard here would minimize travel time for City crews and contractors, as well as support coordination with Solid Waste, TAGRO, and other municipal and interagency users.

Wood Waste Sort Yard Scenario Analysis

To evaluate options for expanding Tacoma's wood waste management capacity, three development scenarios were developed to model potential pathways for a centralized chip depot and wood sort yard. Each scenario represents a different level of operational complexity, investment, and risk, allowing the City to scale deliberately based on performance, market demand, and partner readiness. Where financial estimates are shown, they model conservative diversion volumes that are expected to be reliably recoverable under current conditions.

- **Scenario 1 – Pilot Chip Depot and Data Integration:**
  A low-cost, low-risk approach that leverages existing Solid Waste and Urban Forestry infrastructure to improve chip redistribution, log transfer, and data collection, with no new dedicated staff or on-site processing.
- **Scenario 2 – Expand to Milling and Local Reuse Partnerships:**
  A selective processing model that adds small-scale milling and workforce engagement to capture higher-value reuse opportunities, requiring modest capital investment, limited new staffing, and co-location with existing facilities.
- **Scenario 3 – Regional Integration and Advanced Processing:**

A long-term, conditional opportunity to develop a regional, full-spectrum wood reuse hub, dependent on partner alignment, shared investment, and a future feasibility study.

Together, these scenarios provide a structured framework for right-sizing Tacoma's wood recovery efforts while preserving flexibility to adapt as data, markets, and partnerships evolve. **Table 6** summarizes these metrics.

SCENARIO 1: Pilot Chip Depot & Data Integration (Managed Redistribution)

Scenario 1 establishes a pilot chip depot and log transfer system focused on improving how woody material is tracked, staged, and redistributed across City operations. This scenario is intentionally designed as a managed operational layer, not a new facility and not a continuously staffed site.

Under this model, Tacoma designates space at or near the Tacoma Recovery and Transfer Center (RTC) where chips and logs generated through routine City work, such as tree maintenance, capital projects, and storm response, can be temporarily staged during defined operating windows. Material does not arrive continuously, and the site is not intended to accept unscheduled deliveries or public drop-offs.

How Scenario 1 Operates Day to Day

Work in Scenario 1 occurs during scheduled handling windows aligned with known material flows. Typical activities include:

- Directing arborist chips to designated staging areas rather than default disposal
- Sorting and staging log rounds or sawlogs suitable for off-site reuse
- Redistributing chips to internal users (Parks, TPU, Streets, TAGRO) based on need
- Conducting basic contamination screening and quality checks
- Recording volume, source, species mix, and destination data
- Preparing staged logs for scheduled pickup by reuse partners

When material volumes are low, no staff are assigned to the site. There is no expectation of continuous oversight, customer interaction, or production activity.

Staffing and Facility Role

Scenario 1 is not a staffed facility. Instead:

- Urban Forestry defines reuse standards, SOPs, and partner coordination.

- Solid Waste staff operate equipment as part of existing duties during scheduled work periods.
- Periodic contracted support may be used for storm events or site clean-outs.

This approach mirrors Fort Collins' managed mulch redistribution model and is intentionally low-risk, low-cost, and immediately implementable.

Scenario 1 – Pilot Chip Depot & Log Transfer

Parameter	Details
Land Size	~2 acres (shared site at or near RTC)
Annual Throughput	5,000–10,000 tons (≈10–20% of citywide woody material)
Utilization Focus	· Internal chip redistribution (Parks, TPU, Streets, TAGRO) · Sorting/staging of logs suitable for off-site reuse · Public mulch giveaways or option for sale
Staffing	*No new dedicated FTEs* · Managed by Urban Forestry (SOPs, partnerships) · Solid Waste staff operate equipment in schedules · Contracted support 1–2×/year for surge or storm events
Capital Investment: Site Infrastructure	*$25K–$75K (incremental only)* Examples: striping and delineation, ecology blocks, minor gravel/asphalt patching, signage, tarps or covered bins, minor stormwater BMPs
Capital Investment: Equipment	$0 (fully shared with Solid Waste and utilization of current equipment)
Equipment Needed	Existing City-owned equipment: · Loaders / skid steers (shared) · Dump trucks (shared) · Storage bins
Overhead / Utilities	Minimal; absorbed into existing operations (fuel, routine maintenance, housekeeping)
Operational Intensity	Intermittent, not continuous · Chip redistribution: as-needed basis · Log sorting: surge-based · Storm debris: seasonal · Mulch events: 3–4×/year

Main Outputs	• Chips/mulch for internal City use • Logs diverted to reuse partners • Data to inform Scenarios 2 & 3

Financial Implications: Disposal Cost Avoidance and Limited Cost Recovery

Under Scenario 1, the primary economic benefit derives from avoided disposal costs associated with intercepting clean woody material and processing it into mulch for internal use or public distribution. While the scenario is designed to handle on the order of 5,000–10,000 tons of woody material annually, the financial estimates presented below intentionally model a more conservative diversion volume to reflect current operating conditions and material quality.

Specifically, this analysis assumes that approximately 1,000 tons per year of material can be consistently intercepted, processed, and directed toward reuse pathways in the near term. This represents a realistic expansion of existing practices (roughly three times current TAGRO diversion volumes), achievable through improved sorting at the Recovery and Transfer Center and expanded mulch distribution, without requiring major changes to how material is received from the public.

Assumptions used in this estimate include:

- **Total woody material diverted (modeled):** approximately 1,000 tons per year (within a larger handling capacity of 5,000–10,000 tons annually)
- **Material processing:**
  - Woody debris chipped into mulch
  - Logs transferred off-site for reuse or disposal (no on-site milling)
- **Material distribution approach:**
  - Majority of mulch used internally by City departments or distributed through free public pickup
  - A limited portion sold at TAGRO-consistent pricing for cost recovery

Scenario 1 – Estimated annual financial outcomes[13]

Component	Assumption	Estimated annual impact
Avoided disposal costs	1,000 tons diverted	**≈ $90,000 – $115,000 saved**
Mulch sales (cost recovery)	~30% of volume sold ≈ 1,000 CY × $5/CY	**≈ $5,000 recovered**
Delivery fees (optional)	~50 deliveries × $25	**≈ $1,250 recovered**
Total annual financial benefit	Disposal savings + cost recovery	**≈ $96,000 – $121,000**

Scenario 1 demonstrates that even modest, reliable diversion volumes can yield meaningful, recurring reductions in disposal costs without requiring significant operational change or reliance on product sales. Although the system is capable of handling much larger quantities of material, this scenario intentionally models only the portion of the stream that can be consistently converted into usable mulch under current conditions.

More than 90 percent of the financial benefit in this scenario comes from avoided tipping fees, reinforcing that diversion, not revenue, is the primary economic driver. Limited mulch sales function as a pragmatic tool to offset handling and distribution costs while preserving flexibility for free public giveaways and internal City use.

SCENARIO 2: Expand to Milling and Local Reuse Partnerships (Selective Processing)

Scenario 2 builds on the systems and data established in Scenario 1 by introducing selective, small-scale milling and structured reuse partnerships. This scenario adds on-site processing, but remains right-sized, work-oriented, and non-public-facing.

Unlike Scenario 1, Scenario 2 involves ongoing production activity, but it is not driven by daily log deliveries. Instead, the facility operates on a planned production schedule, where logs are accumulated and staged over time and then processed in defined work blocks.

[13] Avoided disposal costs reflect a range based on regional disposal pathways. Low end: Cedar Grove at ~$27 per cubic yard (≈ $90,000 for ~3,300 CY). High end: LRI at ~$115 per ton (≈ $115,000 for 1,000 tons). 1,000 tons ≈ 3,300 cubic yards using an EPA-referenced planning assumption of 0.30 tons per cubic yard. Mulch sales and delivery fees based on current TAGRO pricing.

How Scenario 2 Operates Day to Day

Day-to-day work in Scenario 2 is driven by work queues, not by real-time intake. Typical activities include:

- Milling logs that were staged during prior weeks
- Sorting, grading, and inventorying logs and milled material
- Preparing lumber or slabs for transfer to reuse partners or internal projects
- Equipment maintenance, blade changes, and safety inspections
- Site organization, cleanup, and material staging
- Data entry, tracking, and reporting on material flows
- Coordination with Urban Forestry, Solid Waste, and reuse partners
- Workforce training and supervision

When log inflow slows, staff continue to work through existing inventory, perform maintenance, and prepare for future processing periods. Staffing levels remain modest and flexible, scaled to the volume of material staged on site.

Staffing and Facility Role

Scenario 2 assumes:

- One dedicated Program/Yard Manager responsible for scheduling, safety, quality control, partner coordination, and reporting
- One to two workforce participants on site at a time, focused on milling, material handling, and site operations

The site is not open to the public and does not function as a retail lumber yard. All material movement occurs through planned City operations and pre-arranged partnerships. This model aligns with workforce-integrated programs such as the Philadelphia Reforestation Hub, where small teams remain productive despite variable material inflow.

Scenario 2 – Milling & Local Reuse

Parameter	Details
Land Size	2–4 acres (co-located with existing Solid Waste or RTC)
Annual Throughput	15,000–25,000 tons (selective processing subset)
Utilization Focus	• Mulch and chip redistribution • Sorting and milling of reuse-quality logs • Local lumber and slab production

Staffing	*1.5–3 new FTEs* • 1 Program/Yard Manager • 1–2 workforce participants (potential to be seasonal) • Integrated training partnerships
Estimated Annual Labor Cost	$160K–$280K (fully loaded)
Capital Investment: Equipment	*$150K–$300K* • Portable sawmill (e.g. Woodmizer) • Debarker, edger • Skid steer or loader (if not shared) • Tools and safety equipment
Capital Investment: Site Infrastructure	*$200K–$600K (depending on current site)* • Covered milling/staging structure • Reinforced pads • Electrical drops, lighting • Safety fencing, fire suppression • Minor drainage/dust control
Equipment	Combination of new milling equipment and shared Solid Waste equipment
Overhead / Utilities	$100K–$150K/year (power, maintenance, consumables, insurance; excludes staffing)
Operational Intensity	Regular but limited-scale operations • Milling scheduled around material availability • Processing remains selective
Main Outputs	• Mulch • Sorted sawlogs • Dimensional lumber and slabs • Workforce training outcomes

Financial Implications: Disposal Cost Avoidance and Limited Cost Recovery

Scenario 2 builds on the diversion benefits of Scenario 1 by adding limited on-site milling capacity for simple, low-complexity wood products, while maintaining mulch and chip production as the dominant material pathway. This scenario is designed to manage approximately 15,000–25,000 tons of woody material annually at the system level; however, consistent with the conservative approach used throughout this

analysis, financial estimates are based on a smaller, reliably recoverable subset of that volume.

For modeling purposes, this analysis assumes that approximately 5,000 tons per year can be consistently diverted into reuse pathways under Scenario 2. Revenue generation remains secondary and supplemental, supporting partial cost recovery rather than serving as a core justification for the scenario.

Assumptions used in this estimate include:

- **Total woody material diverted (modeled):** approximately 5,000 tons per year (within a larger system handling capacity of 15,000–25,000 tons annually)
- **Product mix:**
  - ~90–95% processed as mulch or woody chips
  - ~5–10% suitable for simple milled products as sorting improves
- **Milled products included:**
  - Tree stakes / blocking
  - Basic garden components (e.g., raised-bed sides, edging kits)
  - Green lumber / blocking
- **Excluded products:**
  - Slabs and specialty lumber are excluded from City revenue modeling and assumed to continue flowing to local reuse partners (e.g., Wane + Flitch).
- **Distribution approach:**
  - Mulch prioritized for internal City use and free public distribution
  - Limited sales used to offset processing and handling costs

Scenario 2 – Estimated annual financial outcomes[14]

Component	Assumption	Estimated annual impact
Avoided disposal costs	5,000 tons diverted	**≈ $450,000 – $575,000 saved**
Mulch sales (cost recovery)	~15% of volume sold ≈ 2,500 CY × $5/CY	**≈ $12,500 recovered**

[14] Avoided disposal costs reflect a range based on regional disposal pathways. Low end: Cedar Grove at ~$27 per cubic yard (≈ $90,000 for ~3,300 CY). High end: LRI at ~$115 per ton (≈ $115,000 for 1,000 tons). 16,700 cubic yards using an EPA-referenced planning assumption of 0.30 tons per cubic yard. Pricing for simple milled products is adapted from the Philadelphia Reforestation Hub's published product list, with Tacoma pilot pricing set at or slightly below Philadelphia Reforestation Hub levels to reflect early-stage operations and a cost-recovery focus. Mulch sales and delivery fees based on current TAGRO pricing.

Component	Assumption	Estimated annual impact
Simple milled products	~5-10% of volume, pilot pricing	**≈ $22,000 – $28,000 recovered**
Delivery fees (optional)	~150 deliveries × $25	**≈ $3,750 recovered**
Total annual financial benefit	Disposal savings + cost recovery	**≈ $488,000 – $619,000**

Scenario 2 illustrates how improving the reliability and scale of diversion, rather than maximizing product sales, drives the majority of economic benefit. Even with expanded milling capacity, avoided disposal costs account for the vast majority of financial impact, while cost recovery from mulch and simple milled products remains intentionally modest.

The assumption that 5–10 percent of material is suitable for simple milling reflects both improved sorting relative to current conditions and the realities observed in comparable public-sector urban wood programs. Anchoring pilot pricing to the Philadelphia Reforestation Hub demonstrates that meaningful cost recovery is achievable without requiring Tacoma to enter higher-risk or market-competitive product spaces. As in Scenario 1, revenue assumptions are conservative by design and preserve flexibility to prioritize public benefit, equity-based distribution, and partnership-driven reuse over sales.

SCENARIO 3: Regional Integration and Advanced Processing (Long-Term, Conditional)

Scenario 3 describes a potential long-term opportunity to scale Tacoma's wood recovery efforts into a regional, full-spectrum reuse system serving Pierce County and neighboring jurisdictions. This scenario is not a recommended next step, rather an illustration of what could be pursued if Tacoma and regional partners collectively choose to invest at a much larger scale.

Scenario 3 is framed around strategic integration, not greenfield development. A key assumption is that much of the operational backbone – site access, utilities, stormwater systems, heavy-equipment circulation, and some staffing – could be shared with existing landfill and transfer operations, rather than duplicated.

How Scenario 3 Would Function Operationally

If pursued, Scenario 3 would shift operations from episodic or scheduled activity to continuous, regional-scale processing. Day-to-day work could include:

- Receiving and managing wood from multiple jurisdictions
- Coordinating material flows across processing streams (mulch, lumber, biochar, energy)
- Operating advanced processing equipment
- Managing inventory, logistics, and outbound material
- Ensuring environmental compliance and safety
- Coordinating regional partners and reporting outcomes

However, the exact configuration, including which activities are co-located with existing landfill operations versus housed in separate facilities, would depend on outcomes of a future feasibility study.

Staffing and Facility Role

Scenario 3 would require additional staffing, but many roles could be shared or layered onto existing Solid Waste and landfill operations, such as:

- Equipment operators
- Maintenance and safety staff
- Administrative and compliance roles

Dedicated staffing would increase as processing intensity increases, but exact levels would be determined through detailed planning. Until those decisions are made, Scenario 3 should be understood as a conceptual planning construct, not an implementation proposal.

Scenario 3 – Regional Full-Spectrum Hub (Illustrative)

Parameter	Details (Illustrative)
Land Size	Existing landfill/RTC with targeted expansions, or multi-site regional model
Annual Throughput	35,000–50,000+ tons (regional scale)
Utilization Focus	· Full-spectrum reuse · Advanced milling · Biochar and/or biomass energy · Regional aggregation

Staffing	*15–25 FTE (illustrative)* • Many roles shared with existing Solid Waste operations
Capital Investment: Equipment	Not defined; dependent on technology selection
Capital Investment: Site Infrastructure	Not defined; dependent on integration with existing facilities
Investment Types (Examples)	• Incremental pad and utility upgrades • Advanced processing equipment • Environmental controls and permitting • Regional logistics systems
Overhead / Utilities	High; configuration-dependent
Operational Intensity	Continuous, regional-scale operations
Time Horizon	Long-term; requires feasibility study and partner agreements

Each scenario offers distinct advantages depending on the City's objectives and near-term capacity. Scenario 1 provides a low-cost pilot to improve redistribution, establish standard operating procedures, and generate foundational data on volumes, quality, and destinations. Scenario 2 adds selective milling and structured partnerships to capture additional value from a limited subset of material, while remaining operationally right-sized. Scenario 3 is included as a long-term, conditional concept to illustrate what regional integration could enable, but would require a separate feasibility study, shared investment, and partner agreements before it could be considered for implementation.

Table 6. Summary of Wood Waste Sort-Yard Scenarios

Parameter	Scenario 1	Scenario 2	Scenario 3
Land Size	~2 acres (shared)	2–4 acres	Existing landfill/RTC or multi-site
Annual Throughput	5–10k tons	15–25k tons	35–50k+ tons
Processing Level	None	Selective milling	Full-spectrum
New Staffing	None	1.5–3 FTE	15–25 Shared Solid Waste FTEs *(illustrative)*
Capital: Equipment	$0	$150K–$300K	TBD
Capital: Site Infrastructure	$25K–$75K	$200K–$600K	TBD
Overhead / Utilities	Minimal	$100K–$150K/yr	High
Risk Level	Low	Moderate	High
Time Horizon	Immediate	Near-term	Long-term

Recommended Phased Implementation Approach

Table 6 illustrates that Tacoma has multiple viable pathways for improving wood waste recovery, each with different levels of complexity, investment, and risk. While current analysis confirms that the City generates sufficient woody material to support larger-scale operations, the appropriate near-term strategy is measured, data-informed growth, rather than immediate investment in capital-intensive processing.

Accordingly, Tacoma should pursue a phased implementation approach that prioritizes strengthening the systems used to track, store, and move material efficiently before expanding into higher-value processing. This sequencing ensures that early investments deliver immediate operational benefits while generating the data needed to guide future decisions.

In the near term, Scenario 1 represents the most appropriate starting point. This phase focuses on managed chip redistribution, standardized intake and tracking

protocols, and improved coordination across departments and work groups. By formalizing chip and log staging practices at or near the Tacoma Recovery and Transfer Center, the City can address current oversupply and shortage mismatches, reduce unnecessary disposal, and prevent the loss of salvageable logs—all with minimal new staffing or infrastructure.

As performance data, internal demand clarity, and partner readiness improve, Scenario 2 represents Tacoma's practical upper limit under current conditions. Selective on-site milling and workforce partnerships should be pursued only after the City has demonstrated sustained diversion volumes, consistent material quality, and operational readiness. Even under Scenario 2, processing remains selective, with the majority of material continuing to flow to mulch and chips, and cost recovery treated as secondary to diversion and public benefit.

Scenario 3 is not recommended as a near-term action. It is included to illustrate what could be enabled through regional coordination and shared investment if future conditions warrant. Any movement toward Scenario 3 would require a separate feasibility and governance analysis and should not be assumed as an extension of early pilot efforts.

Table 7. Phased Implementation Roadmap for Centralized Chip Depot and Sort Yard

Phase	Key Actions	Expected Outcomes
Phase 1: Pilot Chip Depot and Data Integration Establish foundational infrastructure and data systems for wood tracking and redistribution.	• Launch at or near the Tacoma RTC • Develop standardized intake, tracking, and contamination protocols • Capture inflow/outflow, species mix, and quality data across departments • Redistribute chips among Parks, TPU, Street Operations, and TAGRO • Pilot public mulch giveaways modeled after Fort Collins	• Demonstrated operational feasibility • Verified material volumes and quality • Unified data system for wood flows • Reduced chip oversupply/ shortage imbalance • Initial landfill diversion increases
Phase 2: Expand to Milling and Local Reuse Partnerships Add small-scale milling and build workforce and market connections for higher-value reuse.	• Expand with portable sawmill and small shop facilities • Partner with Wane + Flitch and similar local processors • Integrate “reuse-first” requirements into City bid specs • Use data from Phase 1 to refine cost recovery and market projections • Launch training collaborations	• Expanded diversion of sawlogs • Documented workforce participation • Pilot production of simple milled products • Slab production or diversion • Early cost recovery through sales or partnership
Phase 3: Regional Integration and Advanced Processing Scale operations and establish Tacoma as a regional hub for full-spectrum wood reuse.	• Co-develop regional agreements with Pierce County and neighboring jurisdictions • Evaluate feasibility of biochar, energy recovery, and scaling durable wood processing operations • Seek external grants (e.g., USDA Wood Innovations, EPA grants)	• Regional wood recovery hub operational (if warranted) • Diversion and emissions-reduction targets achieved • Sustainable funding model established

Taken together, the scenario analysis and phased roadmap in **Table 7** demonstrate that Tacoma's strongest near-term opportunity lies in improving coordination, logistics, and internal redistribution, rather than immediately expanding processing capacity. Regional markets for mulch and compost are often saturated, and higher-value reuse depends on consistent material quality and reliable handling systems.

A pilot chip depot and salvage sort yard provides a low-risk mechanism to build operational experience, capture performance data, and strengthen partnerships before committing to additional capital investment. As these systems mature, Tacoma will be better positioned to determine when selective milling or other processing activities are warranted and at what scale. Over time—and only if supported by data, demand, and partner alignment—this approach could enable collaboration with Pierce County and regional partners on a shared, full-spectrum wood reuse system that links public operations with local businesses, workforce programs, and emerging applications such as biochar.

Recommended Next Steps:

- **Advance pilot implementation planning at the Tacoma Recovery and Transfer Center.** Use findings from this study to define the footprint, circulation, and operating constraints for a pilot chip depot and salvage staging area at the RTC, in coordination with Solid Waste's ongoing site planning efforts.
- **Develop standard operating procedures (SOPs)** for intake screening, contamination controls, invasive species handling, and log staging criteria for reuse partners.
- **Define internal demand and specifications** for chips and mulch (seasonal needs, preferred chip size, contamination thresholds) across TPU, Parks, Street Operations, Open Space, and TAGRO to enable predictable redistribution.
- **Engage contractor and tree-care networks** to document current disposal practices and identify operational changes that would increase participation (e.g., prescreened access, scheduled drop windows, clear acceptance rules).
- **Pilot data capture and reporting** during Scenario 1 to quantify inflows/outflows, species mix, and diversion outcomes, and use those data to refine whether/when Scenario 2 milling capacity is warranted.

Opportunity 4: Develop Workforce and Partnership Capacity

In sum: Tacoma should prioritize workforce development by pairing wood reuse infrastructure with strategic partnerships. By working with private operators, workforce organizations, and educational partners, the City can **use a centralized wood sort yard as a training and employment hub** for collecting, handling, and processing salvaged wood. Competitive solicitations (RFPs or RFQs) can be used to engage operators that integrate workforce training into facility operations, with performance-based contracts that reward material recovery, product return, or service delivery. This approach builds local green jobs while strengthening the City's long-term capacity for urban wood reuse.

Expanding Tacoma's workforce development capacity is a critical step to strengthening the City's ability to collect, process, and utilize salvaged wood for environmental and economic benefit. As numerous collaborators noted, the lack of skilled labor and technical expertise is a significant barrier to realizing the potential of a local wood reuse economy.

Tacoma currently lacks a formal workforce pipeline to support urban wood reuse, and no nonprofit organizations are actively dedicated to this space. While small-scale reuse efforts such as Wane + Flitch demonstrate strong community interest, they also highlight gaps in technical processing skills, grading expertise, and business-development support. Paula Hunter, of Hunter's Tree Service, emphasized the scarcity of certified arborists with a deep understanding of reuse systems, noting that much of the sector lacks the training and structure to handle salvaged material beyond basic disposal or chipping.

To address this, Tacoma can look to external models. The Philadelphia Reforestation Hub operates under a public-private partnership that combines workforce training with urban-sustainability goals, focusing on green infrastructure, urban forestry, and stormwater management. Camp Small in Baltimore offers a fully municipal model that integrates wood reuse and workforce training under a City-run operation. Nearby, the University of Washington's Salvage Wood Program offers a regionally relevant example of how educational institutions can support workforce development, research, and materials testing.

Table 8 highlights several operational models for local biomass-utilization programs with varying levels of government support. The Arbor Day's Value Capture Through Biomass Utilization roadmap further outlines frameworks communities can use to design wood-utilization and workforce programs.

Table 8. Select Wood Waste Operational Models

Model Type: Example	Potential Benefits	Potential Challenges	Takeaways for Tacoma
Private: Memphis Urban Wood	• Requires minimal City staff • Enables specialized operators to manage processing • Allows recovery of some material for public use • Mitigates asset-transfer issues through use of public RFP	• Requires outreach to attract qualified bidders • Less likely to qualify for public grant funding • Generates lower direct value capture for the City • Limited to certain removal or development project types • Requires identification and preparation of a suitable processing site	• Tacoma could outsource or partner for wood-reuse services rather than assuming full infrastructure and staffing costs • A regional partnership model could stabilize feedstock supply by aggregating material from multiple jurisdictions
Public: Baltimore Camp Small	• Keeps value capture and resource management fully under City control • Can leverage public grants and funding to launch operations • Enables full municipal log collection and oversight	• Requires dedicated staff to design, operate, and maintain facilities • Subject to municipal liability and regulatory constraints • Program growth limited by annual budgeting cycles • City responsible for offtake, sales, and product distribution • Requires site identification and facility setup	• This model highlights the value of pairing reuse operations with workforce development and community engagement to promote equitable job creation • Camp Small's products demonstrate the potential for municipal reuse programs to generate revenue and support local businesses
Public-Private: Philadelphia Reforestation Hub	• Allows program development and scaling outside City budget cycles • Can still leverage grants and government funding for startup costs • Enables citywide log recovery without full municipal ownership	• Requires strong private-sector partnerships through competitive RFPs • Needs a shared or co-managed processing site • Demands clear Standard Operating Procedures and accountability with partners	• Could enable Tacoma to pilot a reuse system without assuming full municipal ownership or staffing responsibility • Its integrated workforce-training model aligns with Tacoma's priorities around professional capacity building and equitable job access

Programmatically, Tacoma already has several partners it could engage or expand to advance this effort. The Nature Conservancy, in collaboration with Palmer Scholars and the City of Tacoma, provides a trades-focused workforce pipeline for BIPOC communities called GRO Corps (Green Resilience Opportunity), while the Washington Conservation Corps has expressed interest in broadening its focus to include urban forestry (though labor laws have previously limited their engagement in ROW tree work). Solid Waste and Urban Forestry also have a history of partnering with local public schools, Job Corps, and community workforce programs, but these partnerships remain informal and are not targeted toward wood-reuse or utilization careers.

Case Study (Private Model): Memphis Urban Wood

Memphis Urban Wood (MUW), led by The Works, Inc. and Unified Wood Economy, is a privately owned regional processor handling urban and wildland-urban interface (WUI) wood waste from Memphis and surrounding areas. Rather than limiting itself to municipal tree removals, MUW accepts material from a broad range of sources (e.g., public removals, storm damage, utility operations, and contractor collections) and transforms that feedstock into lumber, compost, mulch, and biochar products. MUW is designed as a zero-waste facility, building a circular supply chain that retains wood value rather than sending material to landfill.

Key Features

- **Regional Feedstock Scope**: Sources include urban tree removals, storm debris, utility tree work, and Wildland Urban Interface (WUI) zones, creating a diverse and stable feedstock supply.
- **Zero-Waste Processing**: Lower-grade branches and offcuts are repurposed through composting or biochar production, ensuring no material is wasted.
- **Value Creation & Reinvestment**: Revenue from wood-product sales supports reforestation, community planting, and long-term maintenance programs.
- **Workforce & Equity**: MUW integrates workforce development by hiring locally (often from historically underserved neighborhoods) and providing training in processing, manufacturing, and logistics.
- **Institutional Partnerships & Scale**: MUW collaborates with arborists, tree-care firms, local governments, and regional buyers to strengthen both supply and demand networks.

MUW demonstrates how a regional, privately owned facility can process diverse wood sources, create local jobs, and reinvest in forest health. For Tacoma, adapting elements of this model could enable a scalable, low-cost wood reuse strategy that advances public forestry goals without overextending municipal resources.

Case Study (Public Model): Baltimore Camp Small

Camp Small is a publicly owned, City-operated urban wood-recycling facility managed by the Baltimore City Department of Recreation and Parks. Located on a five-acre site in the Jones Falls Valley, the facility processes wood waste exclusively from city-managed trees removed due to storms, disease, or infrastructure projects. Its mission is to divert wood from landfills and incineration by transforming recovered material into high-value products (e.g., lumber, mulch, firewood, and furniture) while creating jobs and engaging the community.

Key Features

- **Municipal-Only Feedstock:** Only accepts wood from city-managed trees, ensuring a clean, consistent, and traceable feedstock supply.
- **Onsite Processing:** Equipped with sawmills, drying kilns, and processing equipment to convert raw wood into finished products.
- **Product Offerings:** Produces kiln-dried lumber, firewood, mulch, and custom wood items like tables and park benches.
- **Community Engagement:** Sells products to the public at affordable prices, offers discounts for community projects, and collaborates with local artists and organizations on custom woodwork.
- **Workforce Development:** Provides training and employment opportunities for local residents in wood processing, sawmilling, and sustainable forestry.

Camp Small illustrates how a City-run model can achieve environmental, economic, and equity goals simultaneously. For Tacoma, adopting a similar model could enable sustainable processing of City-managed trees while advancing local workforce development and community engagement. The facility's diverse product mix also demonstrates how municipal reuse operations can generate revenue and support local artisans and small businesses.

Case Study (Public-Private Model): Philadelphia Reforestation Hub

The Philadelphia Reforestation Hub is a public-private partnership among Philadelphia Parks & Recreation, PowerCorpsPHL, and Cambium. Located at the Fairmount Park Organic Recycling Center, the Hub processes trees removed due to storm damage, disease, or maintenance, diverting material from low-value disposal streams toward higher-value uses. It operates a small sawmill, provides workforce training, and supplies locally salvaged wood for reuse in construction, furniture, and community projects.

Key Features

- **Public-Private Collaboration:** PowerCorpsPHL manages day-to-day operations and workforce training, while Cambium supports infrastructure, product development, and digital material tracking.

- **Processing Capacity:** Processes ~2,000 tons of urban hardwoods annually, primarily oak, maple, cherry, and ash.
- **Workforce Development:** Trains young adults (ages 18–30) in sawmilling, log handling, and basic wood science, advancing green-job creation and workforce diversity.
- **Revenue and Reinvestment:** Generates revenue through the sale of salvaged wood, with a portion reinvested in local reforestation and urban-forestry initiatives.
- **Material Tracking:** Uses digital tools to document log species, size, and disposition, improving accountability and informing reuse planning.

Philadelphia's approach demonstrates how municipal, nonprofit, and private collaboration can jointly improve wood-waste recovery and workforce outcomes while advancing citywide forestry and sustainability goals. For Tacoma, adapting elements of this model could help design a scalable and community-aligned wood-reuse program that leverages both public capacity and private innovation.

Advancing Workforce and Partnership Models for Wood Reuse

Workforce development in Tacoma's wood-reuse system should be driven by operations, not standalone planning efforts. Rather than creating a new workforce program in isolation, the City can build capacity by embedding training and employment directly into wood reuse activities operated by partners.

A centralized wood sort yard—proposed elsewhere in this study—provides a practical platform for this approach. Co-locating reuse operations with workforce training allows participants to gain hands-on experience in log handling, sorting, basic processing, inventory tracking, and logistics while directly supporting City and contractor needs.

Public-private partnership structures, implemented through competitive Requests for Proposals (RFPs) or Requests for Qualifications (RFQs), offer a flexible way to advance this model. Under this approach, private or nonprofit operators manage day-to-day reuse activities while meeting clearly defined service and workforce outcomes. Contracts can be structured to reward material recovery, product return, or service delivery rather than ownership of raw material, ensuring public benefit while minimizing municipal staffing and operational risk.

The Washington County, MN RFP for Yard Waste Processing is one example. The County secured five-year contracts with private vendors emphasizing diversion to the "highest and best use." Vendors did not pay for raw materials (e.g., logs, limbs, chips); instead, contracts were structured around service delivery, product return (e.g., a portion of lumber or firewood), or credit systems.

Other models—used successfully in Philadelphia, Baltimore, and other jurisdictions—allows Tacoma to grow a green workforce in parallel with reuse capacity, scaling training and employment only as material volumes and operational demand are proven.

Workforce development is not just a strategy to improve wood-waste management; it is essential for the success of any reuse initiative. Building capacity at the intersection of environmental stewardship and economic opportunity will ensure that Tacoma's wood is both salvaged and transformed into lasting local benefits.

Recommended next steps:

- **Start with partner-led pilots:** Use RFPs or RFQs to partner with private or nonprofit operators that can run wood-reuse activities and provide hands-on workforce training using City-generated wood.
- **Build workforce capacity alongside centralized operations:** Co-locate partner-run reuse and workforce activities at the centralized wood sort yard to improve efficiency, material quality, and training outcomes.
- **Scale what works through long-term partnerships:** Expand proven reuse and workforce models through performance-based contracts and regional partnerships as material volumes and demand stabilize.

Opportunity 5: Support Emerging Technologies and Regional Initiatives

In sum: Tacoma should **collaborate with regional partners** such as Pierce County to supply clean woody biomass to emerging technologies such as biochar and renewable fuels. The City should also create policy incentives to encourage high-value wood diversion, pursue funding for pilot projects, and coordinate shared infrastructure to scale up sustainable biomass solutions.

As Tacoma manages growing volumes of woody biomass from development, maintenance, and climate-related tree loss, it can play a key role in advancing sustainable, regional approaches to wood utilization. Emerging technologies such as renewable fuels, mass timber, and carbon-based products offer promising, but complex, pathways for low-grade wood material that lacks higher-value reuse options. Tacoma's most strategic role is to act as a feedstock supplier, policy enabler, and collaborative partner that helps advance innovation while staying grounded in the City's core waste-diversion and climate objectives.

- **Sustainable Aviation Fuel (SAF):** The Port of Seattle's *Municipal Solid Waste to Liquid Fuels Study* outlines viable SAF production pathways in Washington using gasification and Alcohol-to-Jet (ATJ) processes. These systems could use large volumes of wood waste and contribute to regional decarbonization. Tacoma could contribute as a regional supplier of clean woody material, coordinating with other jurisdictions to explore long-term logistics and permitting requirements for SAF production.

- **Biochar Systems:** In 2023, Tacoma Solid Waste completed a feasibility study for a biochar system capable of processing ~30,000 wet tons of material annually. While challenges remain (e.g., high capital costs and uncertain market demand), the analysis confirmed biochar's long-term potential for carbon sequestration and soil enhancement. The process is particularly well-suited for low-grade, chipped material that lacks other reuse options. In parallel, Tacoma Public Utilities is piloting a small-scale internal biochar initiative using biomass from transmission line maintenance to test operational feasibility. Instead of developing a standalone facility, Tacoma could support regional biochar or biomass energy producers by supplying clean woody feedstock and participating in pilot projects that demonstrate sustainable operations and carbon benefits. This approach would allow the City to build practical experience without assuming direct ownership or operational risk.

- **Renewable Fuels:** The Aloha Carbon project, proposed at the Port of Tacoma, aims to convert mixed waste (including woody material) into renewable natural gas and fuels. With a 10-acre footprint and projected throughput of ~500 tons per day, it could serve as a nearby pilot site for Tacoma to assess technical performance and air-permitting processes, ensuring alignment with public health and emissions goals.

- **Mass timber and Engineered Wood Products:** Rising demand for mass timber and engineered woods offers another outlet for salvaged material. The Engineered Wood Association, headquartered in Tacoma, supports national industry partners developing glulam, cross-laminated timber, and other advanced products that align with Tacoma's reuse and climate objectives.

Right-Size Technology Investments to Local and Regional Volumes

Tacoma generates ~50,000 tons of woody material each year, much of which consists of chips, brush, and small-diameter rounds. At this scale, the most effective approach is to serve as a supply and coordination partner for regional or private initiatives rather than to lead capital-intensive projects. For example:

- Feedstock from City maintenance and removal activities could be supplied under agreement to regional biochar, biomass energy, or renewable-fuel producers that meet strong environmental and emissions standards.
- The City can support policies and programs that encourage sustainable woody biomass utilization, including procurement incentives, research partnerships, and interlocal coordination.
- Collaboration with regional partners, such as Pierce County, Parks Tacoma, the Port of Seattle, and local utilities, could enable shared feasibility studies, transportation networks, and siting analyses for larger-scale systems.
- Tacoma can pursue state and federal funding opportunities (e.g., Washington Clean Energy Fund, DOE Biomass R&D initiatives) to participate in pilot projects and evaluate future market opportunities.

Tacoma should also engage regional partners to identify shared infrastructure and policy opportunities. Both Pierce County and Parks Tacoma expressed interest in wood waste solutions but lack the resources to implement them independently. A coordinated approach could unlock economies of scale in transportation, siting, and technology deployment, especially for capital-intensive systems.

Recommended next steps:

- **Coordinate with regional partners** (e.g., Port of Seattle, Parks Tacoma, Pierce County, Aloha Carbon) to identify shared project sites and feedstock aggregation pathways.
- **Develop policy incentives** for contractors and agencies to divert material toward high-value uses such as SAF or biochar.
- **Pursue grant and partnership opportunities** through regional climate and biomass programs to fund pilot technologies.

Closing and Next Steps

Tacoma has a clear opportunity to improve how it manages the resources of its urban forest. Wood waste, long treated primarily as a disposal challenge, can instead support local climate action, workforce development, and circular economy goals. By implementing the recommendations outlined in this study, Tacoma can transform its wood reuse system into a model for cities across the region.

The recommended next steps align directly with the phased scenarios in this report: near-term actions pilot systems and close coordination gaps (Scenario 1), mid-term actions test and refine centralized infrastructure (Scenario 2), and long-term actions scale proven approaches through regional partnerships (Scenario 3).

Near-Term Priorities: Strengthen the foundation

In the near term, Tacoma can achieve meaningful gains without major capital investment by formalizing interdepartmental coordination, standardizing tracking requirements, and piloting log salvage and chip redistribution through existing facilities and partners.

- **Improve data tracking and integration.** Standardize how departments record the source, species, and destination of wood materials to create a unified citywide dataset.
- **Clarify and align policy and code.** Update project specifications and permitting language to define reuse expectations and require reporting from contractors and City crews.
- **Coordinate internal handling and redistribution.** Strengthen communication among Urban Forestry, Solid Waste, Public Works, and Parks to ensure chips, logs, and usable rounds are directed to the most appropriate internal or community uses.
- **Share information publicly.** Establish an annual summary of wood generation and reuse to maintain transparency and measure progress over time.

Mid-Term Priorities: Test and refine systems

During this phase, the City's primary role is to coordinate and enable, rather than directly operate, value-added wood processing. Centralized sorting and storage infrastructure would support City crews, contractors, and partners by improving material quality and reliability while leaving manufacturing and end-product development to private or nonprofit partners. Once the data and coordination framework are in place, Tacoma can pilot operational changes that demonstrate how reuse works in practice.

- **Launch a centralized pilot yard.** Test aggregation and sorting of City-generated material to measure supply consistency, evaluate equipment and staffing needs, and identify reuse and redistribution partners.
- **Evaluate material flow and performance.** Use pilot results to refine specifications, logistics, and tracking methods for scaling across departments.
- **Build workforce and partner capacity.** Collaborate with local organizations, educational institutions, and contractors to develop hands-on training programs tied directly to reuse operations, including arboriculture, materials handling, and reuse logistics.

Long-Term Priorities: Scale proven approaches

Long-term investments should be contingent on demonstrated demand, stable feedstock volumes, and sustained partnerships. Regional aggregation, shared facilities, and emerging technologies should be pursued incrementally, with flexibility to adapt as markets and climate conditions evolve.

- **Develop a regional reuse network.** Coordinate with Pierce County and neighboring jurisdictions to align standards, share infrastructure, and support regional market development.
- **Institutionalize reuse in City operations.** Embed wood recovery practices into contracts, capital projects, and departmental budgets so reuse becomes standard practice.
- **Maintain accountability.** Continue data collection and annual reporting to track diversion, emissions reduction, and local benefit outcomes.

By advancing a phased, reuse-first approach to urban wood, Tacoma can reduce waste, lower costs, and strengthen climate resilience while supporting local jobs and regional collaboration. Success will depend on consistency in data, policy, and practice—starting with effective management of the City's own material and expanding over time through strategic partnerships. The actions outlined in this study provide a practical roadmap for moving from fragmented practices to an integrated, self-sustaining reuse system that reduces landfill dependence, supports green jobs, and demonstrates Tacoma's leadership in building a circular, climate-resilient urban forest.

Appendix A: Summary of Collaborator Interviews

City of Tacoma Government Partners

Urban Forestry Program

The City of Tacoma's Urban Forestry Program plays a central role in managing and protecting the City's public trees, overseeing tree-related work across 10 City Departments and 25 work groups. Operating under Environmental Services, they serve as a coordinating body to ensure proper tree assessment (e.g., species, DBH, and condition), permits, and compliance with tree regulations. Urban Forestry has identified improving wood utilization systems as a key priority, and they were a primary partner on this wood reuse study with Cambium.

Urban Forestry supports tree plantings, removals, maintenance activities, and wood reuse practices in a variety of capacities. The team operates a nursery at the Tacoma Recovery and Transfer Center to support community-facing and equity-oriented initiatives such as tree incentive programs (e.g. Grit City Trees, Tree Coupon Program, Community Tree Program). These programs deliver free or subsidized trees, supplies like stakes and TAGRO compost, and support for underserved neighborhoods through volunteer education, planting assistance, and long-term tree care.

In addition, the team administers the City's Hazardous Tree Assistance Program, providing tree risk assessments, safety pruning or removal, stump grinding, and replacement trees for eligible public right-of-way property owners.

Despite wide-ranging responsibilities related to tree care in Tacoma, the team lacks visibility into the actual volume of tree work being completed across the city and how woody biomass is disposed of. For example, data provided by work groups for TreeCity USA program contains limited characterization data; in addition, staff note information in the Public Tree Inventory is often incomplete or outdated.

The Urban Forestry team indicated that strengthening data collection efforts and collaboration across City departments and work groups is crucial to support risk prioritization, adaptive management, and utilization opportunities. While they maintain key data sources for annual tree removals, maintenance activities, and plantings from City departments and work groups, this information is often incomplete. In particular, they currently lack visibility into activities that occur through change orders or private development.

To improve their understanding of canopy changes across Tacoma, Urban Forestry is collaborating with GIS teams to integrate new 2024 LiDAR data with previous

inventories to track tree changes citywide, which will enhance their ability to monitor removals, identify gaps, and ensure accurate reporting.

Recent staffing increases will also allow Urban Forestry to track and characterize tree activities at a more refined level. They are actively working to hire a construction arborist who will advise on all applicable City projects, ensuring trees are assessed (by species, size, and condition) and properly documented before removal. Additionally, a recently-hired two-person arborist crew will support maintenance of City responsible public trees, and work towards maintaining all public trees on a 7-year rotation (roughly 600 trees annually). This new crew is also implementing new recordkeeping practices to closely document and characterize the tree work they complete.

Solid Waste Management Division

The City of Tacoma's Solid Waste Division, part of the Environmental Services Department, manages the collection, transfer, disposal, and recycling of municipal solid waste across the city. Operating a network of facilities the division applies a closed-loop philosophy to ensure compliance with state and local environmental regulations while supporting the City's Climate Action Plan goals. The division oversees the maintenance and long-term operations of the 200-acre closed landfill, manages construction debris programs, and directs daily operations at the Recovery and Transfer Center (RTC), where yard waste and woody biomass are compacted and shipped to external processors.

Phet Sinthavong, Senior Regulatory Analyst, leads the Environmental Program workgroups, focusing on permitting, regulatory compliance, and strategic planning. He works closely with operations staff to monitor material flows, manage regulatory reporting, and support long-term projects such as the RTC Site Master Plan. The Master Plan, currently in development, includes upgrades such as a new organics management building and potential expansion for TAGRO, positioning the City to process larger wood and yard waste in-house and explore co-located composting or wood reuse functions.

Woody biomass enters the RTC from a combination of residential self-haul, commercial haulers, and internal City departments, including Public Works, Open Space, Street Works, and Tacoma Power Utility. While the majority of green waste is sent to Cedar Grove for composting, a small fraction—approximately 500 tons annually—is chipped onsite for TAGRO or used in City landscaping projects. Scale house operators perform visual inspections and load checks to screen out contaminants and invasive species, ensuring material quality before processing.

The Solid Waste Division currently handles only small- to medium-diameter wood. Large-diameter tree material is generally not processed onsite due to equipment

limitations, though staff are exploring the acquisition of a larger chipper and the potential development of an urban wood sort yard. Such a facility could aggregate logs and other reusable materials from City departments, private haulers, and self-haul customers, supporting broader circular economy and wood reuse goals.

Partnerships are central to Solid Waste's operations. The division coordinates closely with Urban Forestry, Public Works, TAGRO, and other City departments to optimize material reuse and ensure compliance with local regulations. Regular audits of processing facilities, along with strengthened contract language, aim to improve transparency and accountability with partners like Cedar Grove and LRI. Future regional coordination—including potential interlocal agreements with University Place, Fircrest, and other jurisdictions—could enable shared intermodal facilities for transporting waste, organics, and wood by rail or barge.

Workforce development and community engagement are integrated into the division's operations. The Solid Waste Division hosts interns from Tacoma Public Schools and Job Corps, providing hands-on experience in environmental management and operations. Site tenants, such as Parks Tacoma, also leverage the RTC for educational programs, creating opportunities for mentorship and practical training in sustainability practices.

Looking ahead, Solid Waste's strategic priorities include expanding wood recovery and reuse, strengthening vendor oversight, improving internal consistency with regional waste management practices, and preparing for the eventual closure of LRI's landfill in Pierce County. Staff anticipate that the RTC's future facilities will support larger-scale processing, co-located composting, and the development of circular material economy programs that benefit both the City and the broader community.

Open Space

The City of Tacoma's Open Space Program, managed within the Environmental Services Department, is responsible for the care and restoration of more than 500 acres of passive open space—forests, wetlands, gulches, and shorelines that provide essential ecological services such as stormwater retention, water quality protection, and erosion control. Unlike active open spaces, which are developed for recreation and maintained by Public Works or Real Property Services, passive open spaces are largely undeveloped and managed for environmental function rather than public use.

Tree and vegetation management is an important but often complex part of this restoration work. Although trees are generally left in place or left to decompose naturally in forested areas, removals do occur, particularly near property edges, rights-of-way, or areas impacted by encampments. When removals are necessary,

they are typically handled by contracted arborists—often through the Urban Forestry Program or other City-authorized crews—and the wood is either chipped and used on-site or hauled to landfill, depending on safety and logistical constraints. While wood chips are a valued resource for mulching and erosion control, distribution is limited by equipment and staffing capacity. The team currently relies on ad hoc drop-offs and informal coordination with Tacoma Public Utilities or Urban Forestry crews, and there is no centralized system for requesting, tracking, or distributing wood materials.

The Open Space team has expressed interest in improving access to wood chips and exploring new reuse opportunities—ranging from local artisan materials to erosion control products like biochar or compost. However, challenges persist, including strict definitions around hazardous trees, organizational coordination hurdles, and outdated practices that sometimes limit flexibility in material use. The program currently lacks formal relationships with external wood reuse or biomass partners, and much of the material that could be repurposed is either left on site or discarded.

Looking ahead, the Open Space team sees potential in strengthening internal systems for wood material reuse—such as implementing a wood chip inventory or adopting tools like Chip Drop—as well as integrating wood utilization goals into restoration and community engagement programs. The ecologists managing these spaces also emphasized the cultural value of using salvaged wood for creative or craft-based purposes, and noted opportunities to engage groups like the Washington Conservation Corps or local artisans in future collaborations.

TAGRO

TAGRO (short for Tacoma Grow) is the City of Tacoma's biosolids-based soil product, created by blending treated wastewater solids with fine sawdust, and sand. This award-winning program diverts organic waste from the landfill and transforms it into a beneficial soil amendment used by residents, community gardens, and commercial landscapers. Operating out of the City's wastewater treatment facility, TAGRO represents a successful example of circular resource management, recycling 100% of the biosolids it receives while reducing costs for the City's Solid Waste division. Products are sold or distributed at low cost, with a standard delivery fee, and are also available for pickup by residents.

Dan Eberhardt, who has worked for the City of Tacoma for over 40 years, currently serves as the Biosolids Supervisor and leads TAGRO's operations. He manages the procurement and integration of woody materials, sourcing fine sawdust primarily from Gem Shavings in Shelton and aged bark from Puget Sound Wood Products in Auburn. In addition to its compost-based products, TAGRO also processes some woody debris from the City's Solid Waste operations, offering chips for sale or

distribution. These products are not incorporated into TAGRO's compost blends due to concerns about contaminants often found in yard waste, such as pesticides or herbicides. They also create and sell a black aged bark mulch product.

Wood utilization plays a key role in TAGRO's operations, though it presents both opportunities and challenges. While TAGRO benefits from receiving woody material that helps reduce tipping fees for the Solid Waste division, the program must be selective about what it uses. Cedar and alder sawdust are avoided, and only clean, finely milled material is accepted. Storage space and staffing capacity remain ongoing limitations. Although there is potential to scale up sawdust use, Eberhardt notes that additional market research and operational support would be required. TAGRO has previously explored adding biochar to its mixes but found that the oily residue it leaves behind was not compatible with their product line.

TAGRO operates on a $3.5 million annual City budget and generates about $1.1 million in revenue, resulting in a net loss that the City currently supports. Future plans include relocating the facility to enable operational upgrades, expand product offerings, and improve capacity. Previous collaborations have included work with University of Washington students on developing a hemp-based product for cannabis growers. Eberhardt sees opportunities to expand partnerships with local wood processors and artisan markets, although labor shortages continue to constrain the program's growth. Despite these challenges, TAGRO has proven to be a resilient and adaptable model, offering valuable insight into how municipal infrastructure can support wood reuse and sustainable material recovery.

Public Works - Street Operations

Craig Hamburg serves as the Grounds Maintenance Supervisor within the City of Tacoma's Public Works Street Operations Division. His team is responsible for maintaining trees and vegetation within the City's rights-of-way (ROW), including areas near fire and police stations, along trails, and in state-managed areas under contract with the Department of Transportation. In addition to routine upkeep, the team provides emergency response for vegetation-related issues, such as fallen trees obstructing public roads and sidewalks.

Street Operations generates woody biomass through pruning, vegetation control, and emergency tree removals. Smaller material, such as branches and shrub clippings, is typically chipped and reused for mulching around newly planted trees or other City landscaping needs. While crews often use all the chips they generate, there is no systematic tracking of volumes or demand. Hamburg estimates they generate approximately five to ten cubic yards of wood chips per month. These are stored at the landfill in a 20-by-20-foot chip bin, while mixed green waste is stored in an "upper yard" facility on South C Street that is often over capacity. This mixed yard

waste includes fine debris not suitable for reuse and is eventually transported to the Tacoma Landfill or the privately operated LRI site in Pierce County.

Larger tree debris is handled differently. Logs are sometimes cut into rounds for firewood and left on-site when possible, or hauled to landfill facilities. Overall, Hamburg notes that there is very little planning capacity for tree maintenance; most of their work is reactive due to staff limitations. A small team of five to six crews conducts vegetation management using chipper trucks and Trex equipment, but the team lacks the resources to proactively prune or track material flows. Urban Forestry collaborates with Hamburg's team, particularly for hazardous tree assessments and removals. However, with no dedicated tree inventory or permitting process for Public Works projects, data on wood waste generation is minimal. Hamburg reports about one to two large tree removals per year by PW crews, often due to storm damage.

There is interest in improving wood utilization within Street Operations. Hamburg highlights the need for a centrally located, easily accessible chip drop-off site, ideally within the City's core. He stresses that any new solution must be simple for field crews to use, requiring minimal paperwork or logistical burden. While some invasive plant materials are excluded from reuse, crews are trained to identify and avoid using them. Staff are generally supportive of wood reuse initiatives, and larger equipment is available through Street Operations to support expanded efforts.

Public Works - Engineering

Brian Wang serves as the Assistant Division Manager for Public Works Engineering in the City of Tacoma. His team oversees capital improvement projects that often intersect with tree removals, typically when trees fall within the footprint of street or infrastructure upgrades. While Public Works Engineering is responsible for setting specifications for how trees are removed or stumps ground down, there is currently little to no guidance in project bids or contracts regarding what happens to the resulting woody biomass. Tree material, once removed, is managed by the contractor, and the City does not currently track the fate of this material or place any reuse requirements in its specifications. However, Wang identified this as a key area of opportunity, noting that the Engineering team could influence wood recovery by embedding reuse or on-site restoration guidance into project bids.

Historically, trees were only evaluated by an arborist if their removal appeared imminent. However, following a recent municipal code update requiring permits for all right-of-way tree removals, Public Works Engineering is now implementing a standardized process for documenting tree removals and plantings across projects. Although the transition is still in its early stages, new tracking tools—like a spreadsheet cataloging removals—are beginning to formalize recordkeeping. In

contrast, data from previous years is fragmented and lacks detail on species or tree size. Past projects may contain references to tree classes (Class 0 to Class V) in demolition plans, but even this information is inconsistently archived, as some projects were managed by consultants or private developers under City oversight.

Tree removals are most likely to occur during capital improvement projects, of which Wang's team oversees approximately 30 annually, with budgets ranging from $500,000 to $40 million. Maintenance contracts generally do not involve tree work. As part of their pre-design process, Public Works regularly contracts Sound Urban Forestry (Kevin McFarland) to assess tree health and determine necessary removals. These assessments are funded through a dedicated contract that is renewed as needed. Additional support can be accessed through other on-call contractors used across Environmental Services and Urban Forestry.

Despite growing awareness of wood waste issues, removals remain embedded in lump-sum construction contracts, and no centralized data is collected on the volume or disposition of tree waste. Anecdotally, Wang noted that most contractors haul tree waste to general disposal facilities like Dickson, unless the material is contaminated, in which case it may go to LRI. Public Works does not currently instruct contractors on how to handle or dispose of wood waste. Nevertheless, Wang emphasized that if a clear and actionable reuse strategy were proposed, his team could support integrating that guidance into future construction specifications.

Looking ahead, Wang sees potential for policy and procurement changes that promote wood reuse, particularly in coordination with the City's Planning and Development Services (PDS) and Facilities Management teams. He suggested that efforts to encourage private developers to salvage tree material—or to retrofit City facilities with reused wood—could be spearheaded by colleagues like Cory Newton (Division Manager) and Justin Davis (Facilities Division Manager). Additionally, for deeper insight into construction practices and contractor behaviors, he recommended connecting with Mark Henry, an Assistant Construction Manager who regularly interfaces with project execution teams.

Public Works - Facilities

Within the City of Tacoma's Public Works Department, the Facilities Division is responsible for maintaining, upgrading, and constructing municipal buildings, including essential infrastructure such as police stations, fire stations, City Hall, and Public Works operations centers. The division's work is split between two primary functions: capital improvements, managed by Josh Clarke, and maintenance and minor construction, overseen by Stephen Kruger.

Josh Clarke leads the Capital Improvement Program (CIP) within Facilities Management, overseeing planning, design, permitting, and procurement for

large-scale building upgrades and new construction. His small team of project managers focuses on modernization efforts—upgrading HVAC systems, electrifying gas infrastructure, and improving energy efficiency—rather than new builds, as Tacoma has completed very few new construction projects in the past two decades. The last major project, a new fire station, was completed in 2021, and prior to that, the City had not built a new facility in nearly 18 years. Clarke's team manages all projects through Tacoma's Planning and Development Services (PDS) permitting system, ensuring compliance with building codes and sustainability policies.

For projects exceeding 5,000 square feet, Facilities adheres to LEED certification standards and the City's sustainable procurement guidelines, though these primarily focus on systems efficiency rather than materials sourcing. Furniture and interior finish procurement is handled through the design phase in partnership with contracted architects and designers, followed by a competitive bid process. Wood-based products are typically limited to commercial system furniture rather than custom joinery. While Facilities would support sourcing salvaged or locally reclaimed wood for furnishings, Clarke noted that there is currently no internal code or policy requiring it. Integrating such requirements would likely fall under PDS's emerging deconstruction and salvage program, which could one day inform public project specifications.

Stephen Kruger, meanwhile, manages the Facilities Maintenance Division, which handles small-scale repair and renovation projects under roughly $150,000. His team operates a city carpentry shop that serves approximately 50 municipal buildings, providing repairs, cabinetry, trim, and custom woodwork for City Hall, police precincts, and fire stations. The shop includes four carpenters and one mechanic and is equipped with planers, joiners, and shapers but no large-scale milling capacity. They source most of their lumber from local supply houses and occasionally fabricate small furniture pieces such as desks or doors in-house.

Kruger's team also plays a role in salvage and reuse when opportunities arise. During the planned demolition of the Kavanaugh Building, Facilities began coordinating with a salvage company to recover as much as 90 percent of the structure's heavy timber. However, these opportunities are currently handled case by case, without formal tracking or policy guidance. The shop retains first right of refusal for surplus material generated by other departments, though no centralized inventory system exists for reclaimed wood or furnishings.

Both Clarke and Kruger acknowledged that Tacoma's Facilities operations remain largely reactive rather than proactive, constrained by limited budgets and competing priorities across dozens of aging structures. Yet both see potential for greater integration with circular material systems in the years ahead. Clarke's team, for instance, could incorporate wood reuse requirements into future design-bid-build

specifications, especially as the City revises its sustainability and procurement policies. Kruger's crew, meanwhile, could benefit from improved interdepartmental coordination to access clean wood material for maintenance projects or small fabrication work.

Planning and Development Services

The City of Tacoma's Planning and Development Services (PDS) Department plays a growing role in how woody biomass is regulated and managed, particularly in the context of private development. Lucas Shadduck, a building examiner with a background in architectural engineering and previous experience as a City arborist, focuses on ensuring code compliance for construction and demolition projects. He is currently leading the development of a Salvage Assessment Program that will require permit applicants to report how they plan to handle salvageable materials, including wood framing. While this program is still in its early stages, it aims to create a more structured approach to material diversion within private development. However, it does not currently apply to public land or capital construction projects.

James Pasley, who joined the department in 2024, is responsible for overseeing tree removal permitting, particularly for trees located in the right-of-way (ROW). Since early 2023, new regulations have required permits for the removal of both ROW trees and trees affected by development on private property. James also investigates code violations and hazardous tree complaints, and has observed a high number of unauthorized removals. Enforcement is challenging due to limited staffing and awareness among contractors that oversight is still relatively weak. It is estimated that fewer than half of tree removals that require permits are properly documented.

Data tracking within PDS is evolving. While site plans for development projects typically include landscape requirements and are often stamped by licensed landscape architects, tree-specific information such as species or size is not consistently digitized. In the ROW, diameter at breast height (DBH) is self-reported, which can result in inconsistent or inaccurate data. James has begun compiling information manually using spreadsheets, but more robust tools are needed. The department uses the Accela permitting system, which could eventually be customized to better track tree-related data. There is potential to collaborate with the City's internal "I-Team" to build this functionality, although current data extraction remains largely manual.

Lucas noted that the Salvage Assessment Program may provide a valuable opportunity to improve reporting by requiring developers to indicate whether trees were removed and where they were sent. This could help address one of the department's biggest challenges: a lack of visibility into how contractors dispose of

wood waste. Currently, private development projects are required to track debris destinations, but there is no equivalent requirement for public construction projects.

PDS staff acknowledged the public sensitivity around tree removals, particularly for older or heritage trees. They also pointed to ongoing City Council conversations about offering incentives for retaining or reusing trees onsite. These incentives, however, must compete with a range of other development bonuses, including those related to accessibility, affordable housing, and historic preservation.

Finally, staff suggested that improved interdepartmental coordination and data-sharing could help establish more consistent permitting practices and enforcement. They recommended following up with Natural Resource Manager Lisa Spadoni and the I-Team for additional information on permitting processes and potential upgrades to the City's tracking systems.

Environmental Services - Grounds Crew

Mark Lewis (Assistant Division Manage) and Ryan Bair (Maintenance Supervisor) are part of the Environmental Services (ES) Grounds Maintenance team in the City of Tacoma. Their work primarily involves landscaping and property upkeep around ES-owned infrastructure such as sewer transmission lines, pump stations, stormwater ponds, and the central treatment plant. These spaces are typically adjacent to built structures rather than within the public right-of-way. The team does not engage in routine tree care or proactive pruning, and tree removals are extremely rare.

Any wood waste they do encounter typically results from storm events when trees fall unexpectedly. In these cases, material is hauled to either DTG Recycling or the Tacoma Recovery and Transfer Center. DTG is the preferred destination for larger loads due to lower costs and greater capacity. Solid Waste charges by weight and becomes more expensive once loads exceed 400 pounds. The crew does not own a chipper and typically transports material using a truck. On average, they only deliver woody material to DTG once or twice per year.

Tree removal happens so infrequently that the team could not recall the last time it was necessary. When issues do arise, such as trees growing toward the right-of-way or large trees on ES properties failing, they usually defer to contractors managed by the Urban Forestry team or the City's new arborist crew. Their responsibilities are focused on routine property maintenance, including mowing, landscaping, and stormwater facility upkeep. To coordinate responsibilities between departments, they use the Actrax mapping system, which includes Open Space property layers. Generally, Open Space areas near buildings fall under their care, while Public Works manages areas adjacent to roads.

While the team uses mulch for landscaping and stormwater compliance, they do not generate it themselves. They previously tested mulch produced by Solid Waste but found the quality insufficient—especially for use in ponds and filter areas that require clean, undyed mulch for water quality reasons. They now purchase bagged mulch from a nearby landscape supplier. The selection of mulch products is usually determined by the engineering team, and the grounds crew is not looking to modify this process. From their perspective, any additional responsibility related to wood reuse or handling would add complexity without clear benefit.

Although the City has recently expanded its arborist crew, it is unclear how this change will affect the ES Grounds team's workload. They do not anticipate a major shift in their role and prefer to avoid managing wood waste directly. Ryan Bair suggested that any future planning for wood reuse or diversion strategies might be better coordinated through the Urban Forestry team, particularly Ryan Hebert, who could provide guidance on best practices for handling the small volumes of woody material the team encounters each year.

Environmental Services - Engineering

Erik Ward serves as an engineering manager in the Capital Delivery Group within Tacoma's Environmental Services (ES) Department. His team is responsible for designing and managing construction projects that support the City's stormwater, wastewater, and solid waste utilities. Most of their work involves public infrastructure upgrades such as pipe replacements, rather than right-of-way (ROW) improvements or streetscape projects that typically involve tree planting or removal. However, when large utility projects intersect with existing urban trees—particularly mature or old-growth specimens—ES must evaluate how to minimize impact while delivering essential services.

Tree removals on ES projects are handled on a case-by-case basis, often depending on the size and proximity of trees to the excavation site. In these instances, the engineering team utilizes Tree Solutions, an on-call arborist consultancy under contract with Environmental Services, to assess the health of the trees and provide recommendations for protection or removal. These consultants do not perform removals but instead produce reports that guide the general contractor, who holds responsibility for the entire project. Contractors are expected to follow these recommendations, though ES does not directly manage how tree removals are executed or how materials are ultimately disposed of. Once the contractor removes a tree, they effectively "own" the material. While ES can include specific requirements for wood waste reuse or diversion in bid documents, such provisions are rare and typically cost-prohibitive unless intentionally prioritized.

Currently, there are no standard requirements for contractors regarding the final disposition of wood waste, and the City does not track how these materials are handled. Erik suspects that large-diameter wood (above 10 inches) may be salvaged or sold, but smaller material is more likely to be landfilled. Contractors such as Northwest Cascade, R.L. Alia, and Olson Brothers have carried out major ES projects in the past, including green infrastructure installations, but practices for handling tree waste vary across firms. Overall, Erik believes ES projects are often constrained by limited budgets, especially those tied to stormwater and wastewater systems, which can make higher-end reuse strategies more difficult to implement without dedicated funding or clear policy directives.

Data tracking has also been a challenge. While Tree Solutions has supported ES with arborist reports for the past five years, there is no centralized dataset quantifying past tree removals. Erik mentioned that some project plans do note tree sizes and classifications, which could be used to reconstruct basic metrics. He expressed willingness to help identify recent projects where this information may be recoverable from project PDFs, focusing on completed work. In the future, ES plans to improve its internal documentation and project permitting processes, particularly as ROW tree removals now require more serious characterization and public reporting.

Erik also highlighted the tension between necessary infrastructure work and the City's commitment to protecting mature trees. In many cases, ES engineers explore options to avoid removals altogether, even rerouting utilities to preserve old-growth trees. Communicating these efforts to the public can be challenging, particularly when beloved trees must be taken down. He suggested that if salvaged wood could be returned to the neighborhood—either through art, furniture, or community features—it might help foster goodwill and public understanding. While ES does not often trigger Tacoma's 1% for the Arts program (which applies to projects with significant visual or streetscape impact), Erik noted that integrating wood reuse into project design could offer similar community benefits, even on smaller-scale jobs.

Finally, Erik pointed to the complexities around tree ownership and maintenance in the ROW. While the City may remove trees during utility projects, required replanting is often done in planter strips adjacent to private property, placing the burden of maintenance on residents. This disconnect can lead to frustration, especially when new trees are vandalized or poorly maintained. Addressing these systemic challenges—alongside better data collection and reuse pathways—could help Environmental Services contribute more meaningfully to Tacoma's urban forestry goals.

Community and Economic Development

Paul Bakker is a Senior Project Manager with the City of Tacoma's Community and Economic Development Department, where he supports the city's broader green economy strategy. His work focuses on facilitating partnerships and navigating permitting and business development processes for projects that advance climate and circular economy objectives, including renewable energy, low-carbon manufacturing, and sustainable materials management.

Within the scope of Tacoma's emerging green industrial base, Bakker has played a key liaison role for Aloha Carbon, a company proposing to develop a gasification facility on the Port of Tacoma tideflats that would convert construction, demolition, and clean wood waste into syngas and other renewable fuels. While the project is still in the early feasibility stage, Bakker has been involved in helping the company understand Tacoma's permitting landscape and potential partnership opportunities with both public and private stakeholders. He describes the city's involvement as "off and on dialogue," emphasizing that the City's role is not to sponsor the project but to help "grease the wheels" where viable sustainable development can bring economic and environmental benefit.

Bakker noted that Aloha Carbon's feasibility study found Tacoma to be a technically feasible site, and a public release of that study is expected once internal reviews are completed. The principal challenge for the project, from the City's perspective, is site availability and cost—specifically, whether the company can secure an appropriately zoned parcel within the Port area at a price point that allows the project to move forward.

Beyond Aloha Carbon, Bakker has also expressed personal and professional interest in wood reuse and salvage initiatives. He is familiar with Tacoma's small-scale innovators such as Wane + Flitch, and has previously worked with the Engineered Wood Association on testing and certification of wood products. He sees wood salvage, reuse, and advanced wood product manufacturing as an area ripe for expansion under Tacoma's green economic development strategy.

For the purposes of this study, Bakker suggested that the most useful contribution would be quantifying Tacoma's available woody feedstock (particularly clean construction and deconstruction wood) and evaluating how these materials could support new local industries such as gasification, biochar, or engineered wood manufacturing. He noted that the city is eager to identify "higher and better uses" for material that currently ends up chipped for compost or landfill cover, and that credible, data-driven recommendations from this project could help shape future City Council direction around material recovery, industrial land use, and economic incentives for sustainable industry.

City of Tacoma Arts and Cultural Vitality

The City of Tacoma's Arts & Cultural Vitality (ACV) Division, housed within the Community and Economic Development Department, leads public art, cultural funding, and creative engagement efforts across the city. Through programs like Tacoma Creates, the Public Art Program, and artist grantmaking, ACV supports a wide range of cultural initiatives that strengthen Tacoma's identity and creative economy. A key component of this work is the Public Art Program, which administers the City's "1% for Art" policy, which allocates funds from capital and utility projects to commission site-responsive artworks throughout Tacoma. While the division primarily supports visual, performance, and community-based art, it has also explored opportunities for material reuse in partnership with other departments and work groups, including Environmental Services, Urban Forestry, and Solid Waste.

Recent collaborations, such as the work of artist Teruko Nimura, who embedded within the Solid Waste Division to source salvaged wood and other materials, demonstrate the potential for wood reuse within the arts. These partnerships have been informal but promising, revealing a need for more structured systems to connect City-generated wood waste with creative reuse opportunities. ACV does not currently have a formal process for sourcing materials from City operations, but staff expressed interest in developing one, suggesting that even basic awareness of available wood could allow artists to incorporate reclaimed materials into future projects. While only a handful of the roughly 30 artists currently engaged through ACV programs work directly with wood, there is room to grow this capacity, especially with clearer communication about available resources and support for sourcing and maintenance.

One high-profile example of creative wood reuse is the work of Danish artist Thomas Dambo, who constructs large-scale troll sculptures entirely from recycled and repurposed wood. His installation on Vashon Island highlights how reclaimed urban and construction materials can be transformed into permanent, publicly accessible artworks that engage communities while diverting wood from disposal streams. Dambo's work exemplifies the type of collaboration ACV could facilitate locally by connecting City-generated wood waste with artists who can repurpose it into durable public art.

Challenges to wood reuse include the lack of centralized material tracking, concerns about wood durability in outdoor installations, and the need for artists to take initiative in sourcing. Nonetheless, opportunities exist to pilot systems that notify artists of available wood, develop public art calls centered on reuse, and engage broader networks, such as Pulluyap tribal carving program or youth workforce development partners.

Regional Government and Interagency Partners

Parks Tacoma

Parks Tacoma is one of the largest landowners in the city and manages the trees and forested areas across its neighborhood and regional parks. Mark McDonough, the urban forester for Parks, oversees the maintenance and health of these trees using a detailed inventory system that helps track tree conditions and removals. In addition to regular reactive maintenance, Parks Tacoma is currently developing an urban wildfire management plan, which will include a chapter focused on wood reuse.

Wood waste is generated as part of ongoing park maintenance and restoration efforts, as well as larger projects like the current tree removals at Point Defiance Park for the Loop Trail improvement project. Rather than sending this material to the Tacoma transfer station, Parks Tacoma typically processes and stores wood waste on-site. Branch wood is chipped and reused throughout the parks system, including volunteer sites and landscape beds. This chipped material is stockpiled at locations such as SERA Athletic Complex and in Point Defiance. Logs and large woody debris are cut into approximately eight-foot sections and stored for potential reuse, wildlife habitat, or future removal. Contractors are often brought in for large or complex removals, but all wood remains the responsibility of Parks Tacoma; contractors are not permitted to retain any material.

While Parks has a policy in place allowing for the release of surplus wood upon request, distribution is limited by logistical constraints, storage capacity, and concerns over plant disease transmission. For example, wood chips are occasionally withheld from broader distribution due to concerns about spreading pathogens such as Phytophthora. There is interest in putting this material to better use, such as for stream and salmon habitat restoration or artisan woodworking, but past efforts have been hindered by a lack of transportation options and staffing capacity. Even when partnerships with organizations like Wane & Flitch have been explored, moving large logs off-site has proven to be a challenge.

Looking ahead, there are opportunities to make better use of this material through more proactive partnerships, improved internal coordination, and formalized reuse pathways. As the wildfire management plan takes shape, it may help Parks Tacoma clarify strategies for processing, storing, and distributing wood waste in ways that support ecological restoration, reduce fuel loads, and provide valuable materials to local organizations and community projects.

Tacoma Public Utilities

Within Tacoma Public Utilities (TPU), woody biomass management primarily falls under the operational purview of Transmission & Distribution (T&D) and Grounds

Maintenance, where wood waste is an unavoidable byproduct of vegetation management and landscaping around substations, transmission corridors, and utility properties. While both units work with substantial volumes of material over the course of a year, TPU does not currently track or quantify the total wood or chip output, as most of this work is performed on prescribed maintenance schedules and handled operationally rather than as a distinct waste stream.

Jason Hymer, Transmission and Distribution Arborist, oversees vegetation management along TPU's extensive network of power lines and substations. His work is focused on maintaining safe clearances around infrastructure through routine tree trimming and removal. The T&D division operates with two in-house crews and five contractor crews, supported by seven dump trucks and multiple chippers. Nearly all of the woody biomass generated from these operations is chipped on-site. Larger trees located on private property are typically the landowner's responsibility, while any merchantable timber within TPU-owned righ.g., cedar rounds) is often left onsite for firewood or habitat use.

Most of the chipped material generated by T&D crews is disposed of through chipdrop programs, internal reuse, or delivery to local facilities such as LRI or Tacoma's Recovery & Transfer Center. TPU maintains a chip bunker at South 74th and Tyler, where Asplundh (the contract tree service) and internal line-clearance crews deposit chips. Material from this bunker is regularly drawn down for use by other TPU divisions, particularly Grounds Maintenance, which uses the chips for substation landscaping, restoration, and revegetation projects. Because the T&D tree work operates on fixed vegetation management cycles, there are no project-specific work orders or internal data collection systems tracking wood waste tonnage or chip volume.

Jake Johnson, who manages Grounds Maintenance under the Generation/Natural Resources section, oversees approximately 65 acres of landscaped property and another 1,000 acres of natural and semi-wild land across TPU's service area. His team is responsible for turf, plantings, and site aesthetics around substations and administrative facilities, as well as managing select restoration and wildlife enhancement projects. Grounds crews generate limited woody material themselves (mainly hedge and grass clippings) and primarily reuse arborist chips from Hymer's transmission maintenance operations. They also maintain a 40-cubic-yard green waste bunker, which is hauled to LRI's Purdy facility roughly once or twice per month. Disposal costs vary seasonally, averaging about $500 per month in winter and $200–300 in summer, depending on volume.

Johnson's team reuses a portion of chips internally but also relies on commercial "beauty bark" for formal landscaping projects, citing quality, consistency, and weed suppression as factors. Staff have experimented with replacing beauty bark with

fresh arborist chips, but some batches have produced undesirable fungi or odors when not properly composted. This has prompted conversations around “cooking” chips longer in the yard before use and expanding reuse only when storage and curing capacity allow.

At TPU’s Cushman Reservoir properties, Johnson’s division also manages land-clearing and restoration work under the Generation Natural Resources group. Here, large volumes of woody debris are stockpiled and burned after drying, though the utility is exploring the use of a tub grinder to process this material in the future. Staff are currently conducting a three-year study testing the use of biochar produced from these burn piles as a soil amendment in wildlife forage fields (roughly 60 acres). Results are being monitored and may be shared publicly once internal review concludes.

Both Hymer and Johnson noted that TPU’s wood-handling systems are highly decentralized, and data gaps make it difficult to estimate total annual generation. Each operational group is responsible for its own disposal logistics, and coordination with the City’s broader urban forestry or solid waste tracking systems is limited.

From an operational standpoint, both identified several opportunities that would make wood management easier and more efficient:

- Establishing centralized chip storage or distribution bunkers for different divisions, potentially on vacant TPU properties.
- Investing in grinding or screening capacity to improve chip quality for reuse and reduce disposal costs.
- Improved tracking mechanisms (even simple load counts or volume estimates) to support sustainability reporting and identify reuse opportunities.
- Exploring regional partnerships with Solid Waste, Open Space, or Pierce County for shared wood processing or reuse facilities.

Joint Base Lewis-McChord (JBLM)

The Joint Base Lewis-McChord (JBLM) military base in Pierce County manages most of its wood waste on-site, prioritizing internal reuse and cost-effective processing to avoid the high expense and logistical challenges of off-base disposal. Kyle Greer, JBLM Solid Waste program manager, noted that tree removals are typically handled by contractors or the Army Corps of Engineers, after which firewood permit holders promptly collect usable wood for on-base use. Larger woody debris, such as stumps, is often repurposed as roadblocks or habitat features in training areas, though limited grinding equipment means some unprocessable material must occasionally be hauled off-post. Smaller branches and wood (12 inches or less), along with leaves and organic debris, are sent to Earthworks—JBLM’s on-site composting facility—where they're shredded and composted at $30 per ton.

While some large materials are removed by contractors, Greer emphasized that the base generally strives to retain materials in-house. Earthworks tracks compost input data, but there is no centralized record for large-scale tree removals or wood waste, despite the base reportedly processing hundreds of trees each year due to infrastructure needs or forest management. JBLM does not accept organic material from outside sources, reinforcing its self-contained approach. Overall, JBLM's wood waste management strategy reflects a strong emphasis on internal reuse, minimal external hauling, and adaptive reuse within the limits of existing infrastructure.

Pierce County Solid Waste Management and County Parks

Pierce County Solid Waste Management and County Parks play a regional, operationally focused role in how woody biomass is managed across much of Pierce County. Together, they support wood waste diversion, habitat use, and composting while wrestling with capacity, staffing, and market constraints. Pierce County Parks (represented by Jess Stone, Natural Lands Steward & Arborist) regularly generates and repurposes wood from removals and plantings (e.g., using chips and logs for play features, restoration habitat, and onsite landscaping) but most removals are contractor-driven and contractors typically determine final disposition. County Parks has persistent, practical needs for clean chips and woody material for habitat projects, dog parks, trails, and restoration, but moving chips to sites and consistently accessing the right sizes/volumes are logistical barriers.

Pierce County Solid Waste staff (including Acting SW Manager Chris Brown, and environmental project coordinators Dan Watts, Amanda Ringer, and Russell Cole) manage transfer stations, composting, and long-range planning. The County is one of the few in Washington that owns compost infrastructure (operated by LRI under contract), and facilities like Purdy and Hidden Valley handle yard waste, land-clearing debris, and compost production (P.R.E.P. and similar products). Staff described significant system stress: transfer stations are often over capacity, compost markets can be saturated, and the region has lost some historic outlets for hog fuel and other clean wood markets, which has lead operators to give material away or use it as daily landfill cover in some cases.

The County is actively developing its Solid Waste Master Plan and exploring technologies and synergies (biochar, digesters, filtration/biofilter uses for stumps, and expanded compost capacity), but progress is constrained by limited staff, land, and funding. Practical near-term opportunities raised by staff include siting a dedicated wood-waste facility or sort yard (Purdy was repeatedly discussed as a promising location), establishing a centralized giveaway chip pile or simple chip distribution program, investing in mobile grinding capacity (the County does not own mobile grinders and currently must contract grinding), and pursuing grants to

support pilot infrastructure. There is clear interest in biochar as a complementary pathway but feasibility, costs, and how biochar would interact with existing compost markets remain open questions.

County staff emphasized that better upstream coordination (so Parks and contractors can plan removals that preserve reuse potential), clearer markets for clean wood, and modest investments in logistics (grinders, storage, haul support) would produce outsized benefits for restoration, workforce, and landfill-diversion goals. This is especially critical given the looming landfill capacity horizon and the reality that much wood handling is currently driven by private contractors whose disposal choices are opaque.

Tacoma-Pierce County Health Department

The Tacoma–Pierce County Health Department (TPCHD) serves as the primary regulatory authority overseeing solid waste handling and composting facilities across Pierce County, including those that process woody biomass from the City of Tacoma. Within this framework, Environmental Specialist Troy Rowan plays a central role in permitting and compliance oversight, ensuring that private and public operators manage waste in accordance with Washington State's solid waste handling standards (WAC 173-350). His work provides critical regulatory oversight for facilities such as LRI's Hidden Valley Composting Facility in Puyallup, the Purdy Compost Facility on the Key Peninsula, and smaller institutional operations such as the Joint Base Lewis-McChord compost site operated by the Department of Defense.

Through this role, Rowan helps track the flow of materials (e.g., green waste, land-clearing debris, and clean wood) into permitted composting operations. Recent annual reports reviewed by TPCHD show that, in 2024, approximately 29,000 tons of green waste and 1,300 tons of land-clearing debris were processed across Pierce County facilities, though volumes fluctuate annually based on weather patterns, regional hauling contracts, and feedstock contamination levels. While TPCHD does not directly operate waste facilities, its permitting process establishes conditions for how wood and yard waste are accepted, stored, and processed to prevent odor, leachate, or fire hazards. Facilities are required to submit annual tonnage reports and conduct operational monitoring, which Rowan reviews as part of ongoing compliance.

Rowan's perspective highlights how TPCHD's regulatory focus complements the City of Tacoma's wood reuse and diversion efforts. The department's oversight ensures that composting facilities can safely manage increasing organic waste volumes anticipated under Washington's new organics management laws (e.g., HB 1799) without compromising environmental or public health standards. He noted that many facilities are expanding capacity to accommodate new feedstocks, including

food waste, and that maintaining a balanced carbon-to-nitrogen ratio is essential—making clean wood waste an important component of regional compost operations.

Beyond composting, TPCHD's environmental programs intersect with broader material recovery and sustainability initiatives in Tacoma. Rowan supports business environmental recognition through programs like EnviroStars and maintains awareness of small-scale reuse operators such as Earthwise Salvage and Wane + Flitch, which contribute to waste reduction outside traditional permitting frameworks. Although the department does not directly regulate wood reuse or deconstruction activities, Rowan sees these local businesses as integral to reducing landfill pressure and extending the life of the region's primary landfill at Hidden Valley, which is projected to reach capacity by approximately 2037.

While TPCHD does not generate wood waste itself, it serves as an important data gatekeeper for understanding county-wide material flows. From Rowan's perspective, improved reuse systems and stronger data sharing between the City and regional processors would help support both TPCHD's oversight goals and Tacoma's broader circular economy initiatives by reducing organic loads to landfill and ensuring cleaner, safer composting operations.

Private Partners

Wane + Flitch

Wane + Flitch is a Tacoma-based urban sawmill and woodworking company that transforms locally sourced, ethically recovered trees into value-added products such as furniture, slabs, mantels, and benches. Founded and managed by Brett Johnson, the business occupies a distinctive role in the City's emerging circular wood economy, helping to bridge the gap between municipal tree removals, artisan-scale processing, and local market reuse. The company primarily sources wood from storm-damaged and diseased trees within the region and strives to utilize at least 90 percent of each log it receives. While roughly 80 percent of Wane + Flitch's products serve residential customers and 20 percent serve commercial clients, Johnson aims to reach a 50-50 balance through greater participation in civic and institutional projects.

The company has collaborated informally with the City's Urban Forestry Division and Parks Tacoma, particularly through the Hazardous Tree Program and removals from public golf courses. These partnerships have diverted materials that would otherwise be chipped or landfilled, though the work has often been performed at Wane + Flitch's own expense as a proof of concept for urban wood recovery. Their operations demonstrate strong potential for scaling wood diversion from public projects,

particularly if coordinated through a centralized sort yard or material storage hub. Johnson has also explored using customer-supplied logs and pilot projects involving City-owned material, such as local redwood fencing trials, underscoring the potential for public-private alignment around reuse objectives.

Transportation logistics remain a key barrier. Without a dedicated log loader which can cost around $100,000, Wane + Flitch relies on drop-offs or ad hoc coordination for pickup, limiting their ability to capture large-diameter material. Despite these limitations, the company consistently reuses or donates 85 to 90 percent of incoming wood, with the remainder processed into firewood or small-scale community donations. Sawdust and chips are selectively recovered, including sales to TAGRO for composting.

Johnson sees significant opportunity for economic development and job creation through expanded wood reuse infrastructure. He envisions a municipally supported sort yard that separates sawable material from mulch-grade biomass, enabling local reuse for benches, fixtures, and architectural elements in City projects. He also points to the potential for a City-operated surplus store like Baltimore's Camp Small to support resale, workforce training, and small-business development. Wane + Flitch's experience suggests that, when cost parity with traditional lumber is achieved, salvaged wood can compete effectively in both retail and construction markets. Future collaboration with the City could include incorporating local salvage requirements into public bids, supporting early coordination on capital projects, and developing systems to track and market Tacoma-sourced wood. Johnson has expressed interest in exploring carbon credits for biochar and air-curtain burner applications, as well as advancing partnerships that tie tree reuse directly to Tacoma's green building and circular economy goals

DTG Recycling

Erin Gagnon serves as Chief Revenue Officer at DTG Recycling, one of the Pacific Northwest's largest privately operated recycling and materials recovery firms. With more than two decades of experience in the waste and recycling industry, Gagnon leads DTG's external partnerships, policy engagement, and market development strategies, helping the company identify new opportunities for circular material recovery across construction, demolition, and organics sectors. Founded more than 25 years ago, DTG Recycling has grown to operate 22 facilities across Washington State and one in Oregon, encompassing construction and demolition (C&D) recovery, commercial recycling, an organics facility, and a sustainability consulting branch.

Within the City of Tacoma and Pierce County, DTG plays an important role as a downstream processor for both municipal and private sector wood waste. Through partnerships with large haulers such as DM Recycling (Waste Connections), as well as

homebuilders, landscapers, and independent contractors, DTG accepts a wide range of woody materials. The company distinguishes between three primary categories of incoming feedstock: clean wood, brush (land-clearing material), and commingled debris. Clean wood is sorted and ground for resale or sent to regional paper mills and fiber users, while brush is shredded into mulch or bark products through DTG's organics retail yard. Commingled debris—containing mixed or contaminated wood—is shredded for use as hog fuel, which DTG distributes exclusively within Washington through its Recovery 1 subsidiary. The company reports processing roughly 12,000 tons of wood and land-clearing material annually at its Recovery 1 facility, though the exact split between clean and mixed material varies year to year.

DTG's pricing model incentivizes separation of material at the source: commingled debris is charged at approximately $174 per cubic yard, clean wood at $110 per cubic yard, and brush at $60 per cubic yard. This structure both rewards cleaner loads and ensures operational efficiency within DTG's facilities, where material is ground on-site under proper environmental permits. Gagnon emphasized that demand for brush is consistently high, driven by strong landscaping and restoration markets, and that the company has ample capacity to accept more. Clean wood volumes are steadier but limited by existing offtake agreements with local fiber and fuel users.

In terms of market development, DTG is actively pursuing new value-added pathways for wood utilization and energy recovery. The company has held preliminary discussions with sustainable aviation fuel (SAF) developers, which could use wood-derived biomass as a feedstock; however, permitting hurdles in Washington have delayed such facilities by several years. DTG has also engaged with biochar producers, but most have required processors to pay for material, making participation economically unfeasible under current market conditions. Still, Gagnon underscored that DTG remains "open to any conversation with any commodity market," from early-stage startups to established players, and that wood remains a feedstock priority for future investment.

DTG's operational philosophy focuses on keeping materials in local circulation and minimizing long-haul transport. Recovery 1 distributes all hog fuel and mulch products within Washington, supporting industrial fuel users and landscapers while reducing the embodied emissions of waste hauling. The company's leaders, including Gagnon, have expressed interest in helping site an energy-recovery or advanced wood-utilization facility in the Tacoma area, but permitting challenges and infrastructure costs remain major barriers.

Cedar Grove

Cedar Grove plays a key role in managing and processing organic material from the City of Tacoma and the broader Puget Sound region, helping divert woody and food

waste from landfills through large-scale composting. Ted Bartlett, who oversees organics account management and client relations, focuses primarily on food waste programs, but his team also handles a significant volume of wood and yard waste from both residential and commercial sources. The company accepts a wide range of woody materials, from broken pallets and chipped branches to full stumps, provided they are free from contaminants such as paint, preservatives, or excessive metal. Clean wood is kept separate from mixed yard debris, as it serves as an important carbon source in the composting process.

Cedar Grove operates two primary composting facilities—Maple Valley and Everett—processing roughly 350,000 tons of organic material annually, with Tacoma's inputs routed to the Maple Valley site. The company maintains grinders on-site to homogenize material and balance the carbon-to-nitrogen ratio essential for composting. Wood waste makes up a crucial fraction of this mix, counterbalancing the anticipated increase in food waste volumes driven by new state organics management laws (e.g., HB 1799, which restricts landfilling of food waste). Bartlett noted that Cedar Grove will always have capacity to accept additional wood waste, as it helps stabilize compost blends, though the organization encourages higher-value reuse before composting where possible.

Pricing varies by material type, with yard waste accepted at approximately $83 per ton and pure wood waste at $95 per ton, reflecting higher processing requirements. Material can be dropped off directly or hauled by Cedar Grove or licensed haulers such as Recology. The company works with a diverse range of customers, including municipal programs, landscape contractors, and tree care firms. While Cedar Grove does not track the specific volume of wood received from Tacoma separately, wood waste represents a substantial portion of its incoming feedstock.

Finished compost and mulch products are sold through both bulk and retail channels, including direct sales at their soil yards in Tacoma, Maple Valley, and Everett, and through major retailers like Lowe's and Home Depot. The Tacoma soil yard, opened in 2024, has been particularly successful, serving as both a distribution hub and a local example of circular resource management—returning processed compost to the same communities that supplied organic waste.

Cedar Grove continues to explore opportunities for innovation in wood-based composting, including potential partnerships around biochar integration, though Bartlett noted that current production costs remain prohibitive. The company's in-vessel and hybrid air composting systems represent some of the most advanced organics management technology in the region, supporting efficient decomposition and emissions control. Looking ahead, Cedar Grove anticipates growth in its wood waste intake as regulatory shifts increase demand for composting capacity, and it

remains an essential partner in Tacoma's broader wood reuse and organics management ecosystem.

LRI / Waste Connections

LRI Services is a major regional waste-collection, transfer, composting, C&D, and landfill-operator covering all of Pierce County (and parts of Thurston County). Under contracts including that with the City of Tacoma (for municipal solid waste and yard/green-waste processing), the firm plays a significant role in how wood-waste and other organics are handled in the Tacoma area. Samantha Winkle, in her account-management/business-development role with LRI, provides oversight of woody-biomass streams, C&D wood streams and how they interface with the larger waste system in the City of Tacoma.

In the wood-waste/woody-biomass domain, LRI accepts yard-waste and green-waste from residents and commercial yards, processes clean wood as part of the C&D sorting line (for example dimensional lumber from clean loads goes to the C&D facility), and diverts land-clearing debris and stump/branch material through its Hidden Valley campus (transfer station + composting + landfill) in Puyallup. LRI's Hidden Valley site includes a compost factory producing "P.R.E.P." (Pierce County Recycled Earth Products) from organics feedstocks. Their website also clarifies that "processed wood that is painted, treated, or processed wood" is *not* accepted in the green-waste/yard-waste stream.

LRI's business has differentiated disposal rates: for example, at Hidden Valley "yard-waste" loads are charged $115/ton when hauled, whereas material classified as "land-clearing" loads or refuse carry higher rates. LRI's Acceptable Materials lists show that dimensional lumber, wood chips, bark, branches may be accepted under yard-waste if clean, but explicitly forbid "construction debris: painted, treated, or processed wood" in the yard-waste stream.

Samantha Winkle emphasised that within the context of Tacoma, LRI is trying to reduce the amount of wood and organics going to landfill by increasing diversion via composting and C&D reuse. They highlighted that the company used to have a larger hog-fuel market for clean wood, but that has diminished, leading to many clean wood loads being given away or down-cycled, as markets tighten. They also noted that LRI's C&D sorting currently is small (but in development) with a goal to build a materials recovery facility for clean wood. Winkle indicated several challenges to increasing reuse including fine sawdust from C&D streams that is difficult to handle and contamination of loads. Metrics tracking the portion of wood accepted from Tacoma specifically are also weak.

In terms of capacity and strategy, Winkle indicated that the compost facility is currently in a somewhat saturated market—the Hidden Valley site produces compost and mulch, but product off-take is slower than expected. As a result, increasing supply (including wood-waste) may be easier than finding new end-markets. Emerging technologies such as biochar are being discussed internally at LRI/Waste Connections, but from Winkle's perspective, they are not a near-term investment. Instead, the focus remains on sorting clean wood, expanding C&D processing, maintaining the compost line, and aligning with regulatory shifts (e.g., Washington's organics laws) to capture more organics streams.

Hunter's Tree Service

Hunter's Tree Service is a long-standing, family-owned tree care firm based in the Tacoma and Puyallup area, founded in 1986 and led by certified arborist Paula Hunter. The company provides pruning, removals, stump grinding, and small-scale logging across Pierce County, and serves as a contractor for several City of Tacoma department and work groups, including the Urban Forestry team's Hazardous Tree Assistance Program.

Paula runs a compact, experienced crew of about five people who place a strong emphasis on material reuse and sustainable tree care practices. The team uses a grappler to move material when working in the right-of-way and ensures that nearly all wood byproducts are diverted from landfill. Chips are typically left with municipal partners, firewood is given away or left on-site when feasible, and larger merchantable logs are sent to regional mills such as Weyerhaeuser. Paula also maintains a small in-house mill for personal use, though the company does not operate a grader, which limits their ability to supply artisan or boutique mills like Wane + Flitch that require more precisely graded material.

Only a very small portion of Hunter's material ends up in landfill, as disposal can cost upward of $1,000 per load. The company does not maintain formal work order data or tonnage records, but Paula estimates that almost all generated material finds a productive outlet. She expressed concern that newer contractors in the industry tend to dispose of usable wood rather than repurpose it, reflecting what she views as a growing skills gap and a decline in traditional arboricultural knowledge. She also noted that the industry is in need of more certified and scientifically trained professionals, emphasizing the value of "arborists with biology degrees" who understand both tree health and material recovery.

Aloha Carbon

Aloha Carbon is a Kailua, Hawaii based developer (Simonpietri Enterprises LLC) building a gasification-based waste to energy and fuels business that focuses on converting construction and demolition debris and other organic waste streams into

syngas, renewable fuels, and value-added byproducts. Their team has developed the Aloha Sustainable Materials Recycling and Fertilizer Facility concept and a pilot gasification program in Hawaii to process mixed C&D and green waste using a fluidized bed gasification and cleanup system; the firm positions gasification as distinct from incineration and emphasizes lower air emissions and the ability to immobilize or sequester heavy metals in ash.

Aloha Carbon is proposing to replicate and scale that model on the West Coast, and the Tacoma Tideflats has been identified in City planning documents as a potential local opportunity where a green refinery could be sited to divert organic C&D from landfills and produce renewable jet fuel and other fuels. The company describes a target processing scale of about 500 tons per day for its SMRFF / Aloha Carbon concept, and has framed its technology and project as a pathway to produce green hydrogen, renewable natural gas, and eventually sustainable aviation fuel.

In practice Aloha's model requires reliable, long term feedstock agreements for clean and contaminated wood streams and mixed C&D inputs; they have been explicit that feedstock logistics and transportation are a major commercial constraint, and project economics depend on a combination of tipping fees, offtake for fuels and ash byproducts, and capital and permitting timelines. Aloha has pursued technical trials, characterization work, and community engagement around their Hawaii SMRFF development and has received federal innovation awards and grant support to advance their research and demonstrations, but they also note permitting timelines in Washington State as a significant hurdle for near term deployment.

Key risks and constraints Aloha anticipates include feedstock sourcing time horizons and contract length, transportation and siting constraints in the Tideflats or port areas, Washington permitting timelines and air emissions review, and the need to avoid crowding local compost and higher-value reuse markets. However, the project offers local diversion benefits for C&D streams, potential integration with Port logistics to lower haul costs, and co-benefits such as local fuel production that align with regional decarbonization goals.

Appendix B: Wood Waste Generation and Disposal Supplementary Information

Wood Waste Disposal

Table B1 provides estimates of the amount of wood and yard waste received by the RTC between 2022-2024. Yard waste data were provided by RTC staff, and wood waste estimates in MSW were adapted from the 2023 Waste Characterization Study.[15] The "Leaves & yard debris", "Dimensional lumber & engineered wood", and "Roofing & siding wood" categories of the waste characterization study were defined as recoverable material. Nearly all woody material entering the yard waste stream is recoverable and currently processed for commercial composting.

Table B1. Estimated Wood and Yard Waste Received at Tacoma Recovery and Transfer Center

Waste Stream	Material Type[a]	Recoverability Category[a]	Amount Wood Managed or Utilized (Tons)		
			2022	2023	2024
Municipal Solid Waste	Leaves & yard debris	Compostable	5,412	5,608	5,805
	Dimensional lumber & engineered wood	Recoverable C&D & Wood	17,996	18,649	19,301
	Roofing & siding wood	Recoverable C&D & Wood	923	957	990
	Treated wood	Non-recoverable	1,512	1,567	1,622
	Other wood	Non-recoverable	1,399	1,450	1,501
Yard Waste	Clean chips, limbs, debris, etc.	Compostable; Recoverable C&D & Wood	30,555	26,397	29,803
Total			**57,797**	**54,628**	**59,022**
Total Recoverable & Compostable			**54,886**	**51,611**	**55,900**

[a] See Glossary of Terms for definitions used for material types and recoverability categories

The Tacoma Recovery and Transfer Center reserves a portion of their yard waste stream to send to TAGRO's facility, which is then sold as an arborist chip product across the City. TAGRO also noted they purchase sawdust and black bark from

[15] Estimates for wood waste in MSW for 2022 and 2024 were calculated based on growth rates between the 2015 and 2023 waste characterization studies.

nearby distributors as input to their biosolids and black bark products respectively. **Table B2** provides estimates in cubic yards on the amount of woody material used by TAGRO.

Table B2. Estimated Woody Material Used by TAGRO

Material Type	Amount Managed or Utilized (Cubic Yards)		
	2022	2023	2024
Sawdust (purchased)	13,114.80	12,461.60	13,245.20
Black bark (purchased)	18,395	17,355	20,930
Wood Mulch/arborist chips (hauled from Tacoma Recovery and Transfer Center)	318	580	1,070
Total	**31,827.80**	**30,396.60**	**35,245.20**

Source: Correspondence with TAGRO

Wood Waste Generation

The most consistently maintained dataset related to tree removals and maintenance activities across Tacoma departments and work groups is what is submitted annually to Tree City USA. This national recognition program, administered by the Arbor Day Foundation, requires participating municipalities to track and report tree care activities, including the number of trees removed and maintained. In Tacoma, various City groups and interagency partners (e.g., Urban Forestry, Parks Tacoma, Public Works Engineering, and Environmental Services Engineering) report these figures to the Urban Forestry team, who compile the data for Tree City USA submission.

However, while the Tree City USA dataset offers a citywide snapshot of tree work, its utility for wood waste estimation is limited. Urban Forestry staff note that these figures are likely underreported, as not all departments and work groups consistently track their activities or submit complete information. Moreover, the dataset lacks critical characterization data such as species, diameter at breast height (DBH), wood volume, or disposal method. As a result, the dataset reflects only the count of trees affected, with no indication of the potential material generated or its condition for reuse.

Despite its limitations, this dataset remains the most comprehensive record available and provides a useful starting point for understanding the scale of public tree management efforts. **Table B3** presents a summary of the reported tree removals and maintenance activities from 2023 and 2024, disaggregated by government agency. This information, while incomplete, helps establish baseline trends and identify opportunities to improve future data collection systems.

Table B3. Tree Removals and Maintenance Activities Reported to Tree City USA

Group	Trees Removed		Trees Maintained	
	2023	2024	2023	2024
Urban Forestry	8	2	540	215
Parks Tacoma	28	33	187	163
Public Works (Street & Grounds and Engineering)	43	93	NA	22
Tacoma Public Utilities	44	4	1000	5
Open Space	23	42	236	0
Environmental Services Engineering	51	34	0	1
Total	**197**	**208**	**1,963**	**406**

The following sections provide additional information on how Tacoma government agencies and work groups currently generate, dispose of, and utilize woody material, along with some anecdotal estimates of amounts handled.

Urban Forestry. The Urban Forestry Program currently generates wood waste primarily through its Hazardous Tree Assistance Program. Urban Forestry contracts out removals to a private contractor (Hunter's Tree Service under the current contract), and once removed, the material becomes the contractor's property. The vast majority of this wood is chipped and either dropped on sites as mulch in the City or out in the county. Occasionally, logs are picked up on site by Wane+Flitch as part of a small wood reuse pilot. Only in rare instances does wood get sent to a landfill. A range of City work groups across Environmental Services and Public Works also utilize the tree work contract managed by the Urban Forestry team for their hazardous tree pruning and removal needs. Urban Forestry and Public Works Streets & Grounds recently collaborated to hire a new two-person arborist crew that will support Environmental Services and Public Works tree maintenance work.

Parks Tacoma. Parks Tacoma generates wood waste through the maintenance of forested lands and trees in neighborhood parks, as well as through specific projects such as the Point Defiance Loop Trail project. Much of the material from tree removals is cut into 8-foot lengths and stored at designated locations within Parks' properties including the SERA Athletic Complex and a site in Point Defiance Park. Wood chips from branch material are typically produced onsite and reused throughout the Parks district for mulching, especially at volunteer and restoration sites. The chip pile at SERA receives material from Parks, Tacoma Public Utilities, and some private tree care contractors., The volume is also and is substantial, estimated

in the range of hundreds to potentially over a thousand cubic yards. Work order recordkeeping to track removals recently began in 2025, and no data beyond Tree City USA reports were available for this study. Parks Tacoma retains ownership of all material handled by contractors, and most large woody debris remains onsite due to limited capacity for transport and lack of formal reuse infrastructure.

Public Works Streets & Grounds Operations. Public Works Streets & Grounds Operations generates wood waste primarily through the maintenance of trees in the public right-of-way, as well as on City-owned properties such as police and fire stations, trails, and medians. Work is largely reactive, addressing storm damage, hazard removals, and clearance issues, with occasional support from the Urban Forestry Hazardous Tree Assistance Program. Crews chip smaller debris and limbs, reusing some chips for tree planting or landscaping projects, though the supply often runs short. Chips and mixed green waste are also taken to the Upper Yard facility—a 20-by-40-foot bin that frequently overflows—before being hauled to the Tacoma Recovery and Transfer Center or LRI for commercial composting disposal. Larger material is sometimes cut into rounds for firewood and left onsite, but otherwise is transported to landfill or composting facilities. Staff provided rough estimates of generating about 5 to 10 cubic yards of chips per month, plus one to two large trees per year, though no formal tracking system exists for volumes or end destinations.

Public Works Engineering. Public Works Engineering generates wood waste primarily through capital improvement projects, which can include street, sidewalk, and utility upgrades that require tree removals in the right-of-way. Tree assessments are conducted by on-call arborists to document size and condition, but once removed, the material becomes the contractor's property. PW does not currently require contractors to divert or reuse wood, and staff have limited knowledge of final disposal, though anecdotal reports suggest most material goes to Dickson Demolition and Abatement for processing, a family-owned demolition and waste services contractor based in Tacoma[16] with the remaining material generated by PW Engineering is typically sent to LRI.[17] Historic data on removals is inconsistent, but new code requirements are prompting PW to track tree removals more closely, including DBH and location, through an internal spreadsheet. Annual volumes vary with project load, but past years have included dozens of removals, often skewing toward smaller Class I–II street trees.

[16] Disposal to the Dickson Waller Road Inert Landfill and Recycling CenterLandfill likely does not include wood, as their website lists wood waste and organics as prohibited from loads being sent to their recycling center/landfill.
[17] Disposal to the Dickson Waller Road Inert Landfill and Recycling CenterLandfill likely does not include wood, as their website lists wood waste and organics as prohibited from loads being sent to their recycling center/landfill.

Tacoma Public Utilities (TPU). Through its transmission and grounds crews, TPU generates wood waste primarily from routine vegetation management along transmission lines and on other TPU-managed lands. Most material is chipped directly in the field, with some chips used internally for landscaping projects, given to other interagency partners, or sent to disposal and composting outlets in the region. **Table B4** displays the amount of woody material TPU sends annually to the DTG Recovery One Facility. TPU also operates an informal program similar to ChipDrop, where excess wood chips generated from their transmission line maintenance work are made available to the public.

Table B4. Annual Wood Material Sent to DTG Recycling by TPU

Year	Annual Net Weight (Tons)
2016	67
2017	180
2018	131
2019	136
2020	138
2021	114
2022	131
2023	90
2024	91
2025	47

Larger tree removals are uncommon, as most substantial trees adjacent to transmission corridors are on private property and become the landowner's responsibility. TPU operates with two in-house crews and five contractor crews, but does not track the volume, species, or disposition of the wood waste generated. While exact figures are unavailable, operations involve seven dump trucks and multiple chippers, indicating that annual output is significant; however, without work order or disposal data, the total volume of chips or logs produced each year remains unknown.

Open Space. Tacoma's Open Space program generates wood waste through the stewardship of roughly 500 acres of City-owned forests, wetlands, streams, and habitat areas. Tree removals are relatively infrequent and typically occur to address hazards, infrastructure conflicts, or encampment-related issues, often using contract arborists shared with Urban Forestry. In most cases, felled trees are left onsite to decompose and support watershed health, particularly in passive open space areas, while only material that poses safety or access issues is chipped or hauled away. Chips are sometimes supplied by Tacoma Public Utilities or other City crews and used for erosion control, slope stabilization, and planting projects. Data on generation is limited, but internal mulch request records suggest periodic deliveries of roughly 10 cubic yards per drop, with total annual volumes likely modest compared to other departments and work groups. There is no formal tracking of total wood waste generated, and larger material that must be removed is typically sent to the Tacoma Recovery and Transfer Center.

Environmental Services Engineering. Environmental Services (ES) Engineering generates wood waste through capital improvement projects that support the City's solid waste, stormwater, and wastewater utilities. Tree removals occur when construction (e.g., pipe replacements, utility upgrades, or facility expansions) conflicts with existing vegetation. ES hires on-call consulting arborists to assess trees in project areas, but the actual removals are carried out by contractors, who then take ownership of the material. There are generally no contractual requirements specifying how the wood is to be used or disposed of, though staff believe logs over about 10 inches in diameter are sometimes sold by contractors, while smaller material is typically chipped or sent to landfill. ES Engineering does not track the quantity, species, or fate of wood removed, so total generation is unknown, though removals are project-dependent and can vary widely from year to year.

Environmental Services Grounds Crew. The Environmental Services Grounds Crew generates very little wood waste, as its work is focused on general landscaping and maintenance of ES-owned properties such as the central treatment plant, pump stations, ponds, and surrounding grounds. Tree work is sporadic and typically limited to storm response or hazard removals near structures. When wood waste is generated, smaller volumes are taken to the Tacoma Recovery and Transfer Center, while larger loads are sent to DTG Recycling, which staff prefer due to lower tipping costs. The crew does not own a chipper, so material is transported as rounds or mixed debris. Mulch is used in some landscaping applications, but it is purchased from third-party suppliers to meet strict water quality requirements. Given the infrequency of tree removals—often no more than once or twice per year—annual wood waste volumes from ES Grounds are minimal and not formally tracked.

Planning and Development Services

Another source of data reviewed was the Planning and Development Services (PDS) Accela database, which records tree removals, prunings, and plantings conducted under permit. Most of these activities fall under Right-of-Way Tree (RTRE) permits, which are required for tree work occurring in the public right-of-way (ROW). Other permit types that were found to have tree removals included Right-of-Way Use (RUSE) and Work Order (WO) permits.

Some permitted development projects (SDEV) also include tree work. If this work occurs in the ROW, it is typically authorized through an RTRE permit. Tacoma Municipal Code 13.06.090.B further specifies that developments with 500 square feet or more of landscaped area, or those with new permanent roadways requiring 10 or more street trees, must submit a Landscape Management Plan (LMP). LMPs could, in theory, provide additional information on tree work occurring outside the ROW. However, no LMPs were available in the Accela database at the time of this study.

PDS staff noted that permitted tree work likely represents less than half of the projects that require a permit, indicating that a substantial share of activity remains unpermitted and undocumented. This may be due to unawareness of existing permitting requirements as well as cost restrictions, although specific reasons are unknown.

Table B5 displays the estimated number of tree removals and tree prunings by permit type. The numbers presented below include projects permitted by private tree care contractors, City work groups, and interagency partners.

Table B5. Number of Permitted Tree Removals and Prunings

Number of Trees Removed					
Permit type	**2022**	**2023**	**2024**	**Jan - May 2025**	**Total**
RTRE	54	147	108	27	**336**
RUSE	0	0	1	0	**1**
WO	2	2	0	0	**4**
Total	**56**	**149**	**109**	**27**	**341**
Number Trees Pruned					
RTRE	11	15	30	29	**85**
RUSE	0	0	0	0	**0**
WO	0	0	0	0	**0**
Total	**11**	**15**	**30**	**29**	**85**

Permit application data provided additional characterization of tree removals and prunings. Beginning in 2024, PDS required applicants to report the diameter at breast height (DBH) of trees; however, this metric is self-reported, and staff note that the values are often unreliable. Applicants also self-report tree species. The share of applications containing both DBH and species data has increased in recent years **(Table B6)**. In addition, permit forms request the name of the contractor performing the work and a description of the issue or reason for removal. Removal and pruning projects are often undergone to manage dead, diseased or damaged trees.

Table B6. Percent of Permitted Projects with DBH & Species Available

Data Type	2022	2023	2024	Jan - May 2025
DBH	0.00%	0.00%	36.62%	82.35%
Species Type	48.72%	45.16%	64.94%	82.35%

Among permit applications with available data, the mean DBH was 21.0 inches, and the median was 14 inches. A total of 35 species were reported, with five species (maple, cherry, Douglas fir, plum, and birch) accounting for more than half of all entries. Work on these permitted projects was carried out by 43 unique contractors.

Public Tree Inventory

To support characterization of woody material generated across the city, data from the Public Tree Inventory was reviewed.[18] This partial inventory provides a record of trees, consisting of approximately 99% public right-of-way trees and a smaller number of trees located on public properties, all of which have been uploaded to TreePlotter. Trees in the public right-of-way are the responsibility of adjacent property owners, meaning the vast majority are not actively managed by the City.

The inventory should be viewed as a series of snapshots in time, reflecting the condition of each tree at the last field inspection. Some records are recent, while others date back 5–6 years. While most of these trees are not managed by the City, the characterization data remains the best available source for understanding the composition and condition of trees within City of Tacoma limits.

Table B7 summarizes trees in the public inventory by condition, along with average DBH, height, and canopy spread. **Table B8** also presents the five most common tree species, broken down by condition

Table B7. Public Tree Inventory: Tree Characterization by Condition and Size[a]

Tree Condition	Number of Trees	Average DBH (in)	Average Tree Height (ft)[b]	Average Spread (ft)
Unknown	3,219	6.23	12.56	0.94
Dead	207	6.89	14.91	11.25
Poor	952	8.45	14.59	10.20
Fair	4,862	10.57	18.67	14.76
Good	8,967	8.03	17.83	11.95
Excellent	2,328	6.78	13.89	12.24

[a] Excludes trees with “Stumps”, “Removed”, or “Proposed Site” statuses in inventory

[b] Tree height data is sparsely represented in the Public Tree Inventory

[18] The Public Tree Inventory is maintained by the Urban Forestry team in TreePlotter.

Table B8. Public Tree Inventory: Tree Characterization by Condition and Species[a]

Condition	Species	No. of Trees	% of Overall Condition
Unknown	dogwood, Japanese flower	176	5.5%
	lilac, Japanese tree	114	3.5%
	zelkova, Japanese	108	3.4%
	ginkgo	107	3.3%
	redbud, Eastern	85	2.6%
Dead	hemlock, mountain	25	12.1%
	cherry, Yoshino	11	5.3%
	maple, bigleaf	8	3.9%
	alder, red	7	3.4%
	pine, limber	7	3.4%
Poor	cherry plum	72	7.7%
	cherry, Japanese	43	4.6%
	sweetgum, American	38	4.1%
	hornbeam, European columnar	32	3.4%
	cherry, Kwanzan	29	3.1%
Fair	cherry plum	297	6.1%
	maple, red	252	5.2%
	maple, Norway	249	5.1%
	pear, flowering	177	3.7%
	Douglas fir	177	3.7%
Good	Douglas fir	551	6.2%
	pear, flowering	321	3.6%
	maple, Norway	285	3.2%
	cherry plum	256	2.9%
	maple, red	231	2.6%
Excellent	maple, Norway	126	5.4%
	cedar, deodar	100	4.3%
	parrotia, Persian	87	3.7%
	oak, Garry	62	2.7%
	Douglas fir	56	2.4%

[a] Excludes trees with “Stumps”, “Removed”, or “Proposed Site” statuses in inventory