



Wood Waste Utilization in Minnesota

Resource Management and Assistance Division, Minnesota Pollution Control Agency

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Executive summary

The purpose of this report is to identify and prioritize state agency and legislative actions to improve wood waste utilization efforts across Minnesota. The generation of wood waste will not stop, and it will not go away after Minnesota's ash trees are gone. Minnesota will continue to experience extreme weather events and emerging tree diseases, making the development of a holistic, long-term approach to management essential.

To address the increasingly urgent issue of wood waste, the Minnesota Pollution Control Agency (MPCA) began working with Management Analysis and Development (MAD), the State of Minnesota's management consulting practice, in September 2025. This was after the departure of MPCA's wood waste specialist in June 2025.

MAD relied on four main resources to prepare this report:

- The expertise of the MPCA wood waste stakeholder group
- Guidance from project advisors
- Interviews with select wood waste stakeholders
- Desk research

During this process, three priorities with the greatest potential for impact emerged.

Priority One: Develop regulations and standards that guide industry practice.

- Reform commercial open burning statutes.
- Consistently define wood waste in state statutes.
- Improve air permitting process efficiencies.
- Develop standards and specifications to support innovation and emerging markets.

Priority Two: Invest in data collection and analysis to inform decisions and investments.

- Collect data to create a shared understanding of wood waste, including assets to manage wood waste.
- Develop a resource map to minimize duplication and maximize available resources.
- Champion a life cycle analysis (LCA) to determine environmental impacts of wood waste through its lifespan.

Priority Three: Use incentives and education to guide favorable market behaviors.

- Advocate for additional funding and ensure existing funding streams and processes are designed to support wood waste utilization more efficiently.
- Educate decision-makers and professionals.

Questions and concerns related to how Minnesota can improve use and management of wood waste at a state level are not new. Additional resources will be required to fully realize the vision of creating a holistic, long-term approach to wood waste utilization. However, the State of Minnesota currently has resources to make progress on the prioritized actions articulated above.

Background

Minnesota's Climate Action Framework is the state's plan to reduce climate pollution, also known as greenhouse gas (GHG) emissions. First launched in 2022 and updated in February 2026, goals two and six of the framework explicitly identify seven actions related to wood waste. This is important as the Twin Cities metro area alone generates over 500,000 tons of urban wood waste annually ([Expanding Capacity for Woody Biomass Processing in the Twin Cities Metro Area Report](#), Cambium, 2025). This amounts to about 25,000 semi-truck loads, each carrying 20 tons. If these semi-trucks were lined up end-to-end, they would stretch roughly the distance from St. Paul to Roseau.

Wood waste management has become increasingly urgent due to impacts of extreme weather events, urban expansion, the increasing volume of trees dying from diseases and pests and declines in electricity subsidies to District Energy's heat and power operations. For example, on June 21, 2025, an extreme weather event in Beltrami County produced straight-line winds equal to a Category 3 hurricane that downed an estimated nine million trees. In addition, emerald ash borer, discovered in Minnesota in 2009, risks the loss of over one billion ash trees ([Emerald Ash Borer in Minnesota Report](#), Minnesota Environmental Quality Board, 2019). Before emerald ash borer, Minnesota faced a similar situation in the 1970s with Dutch elm disease, and around the same time the vision for District Energy was born.

District Energy, a nonprofit district energy provider, has historically used about half of the wood waste generated each year in the Twin Cities metro area to convert into energy that serves St. Paul. To support continued operations, the legislature authorized \$16.562 million in grant funding from September 2023 through June 2027. According to District Energy, about 92 percent of this funding helps manage wood waste at a rate of \$25 per ton by using it as fuel to generate energy. Currently, no additional public funding is allocated to support continued operations of District Energy beyond June 2027.

To address the increasingly urgent issue of wood waste, the Minnesota Pollution Control Agency (MPCA) began working with Management Analysis and Development (MAD), the State of Minnesota's consulting practice, in September 2025. This was after the departure of MPCA's wood waste specialist in June 2025. Over the following 10 months, MAD worked with MPCA and a group of over 80 stakeholders. This report is the result of that work and interaction.

The purpose of this report is to identify and prioritize state agency and legislative actions and investments to improve wood waste utilization efforts across Minnesota. The generation of wood waste will not stop, and it will not go away after Minnesota's ash trees are gone. Minnesota will continue to experience extreme weather events and emerging tree diseases, making the development of a holistic, long-term approach to management essential.

Methodology

MAD relied on four main resources to prepare this report:

- The expertise of the MPCA wood waste stakeholder group
- Guidance from project advisors

- Interviews with select wood waste stakeholders
- Desk research

First, MAD consulted with five project advisors who provided technical and subject matter expertise on the complexities of the wood waste issue.

In addition to project advisor consultation, MAD conducted 11 individual interviews with wood waste stakeholders. Refer to Appendix A for MAD’s initial assessment and Appendix B for the interview protocol. Interviewees were selected to represent the breadth and depth of many sides of the wood waste issue. Interviewees consisted of representatives from private tree care companies, counties who directly manage wood waste, counties who do not directly manage wood waste, the energy sector, and Greater Minnesota.

Next, in consultation with MPCA and the project advisors, MAD designed and facilitated three meetings with the wood waste stakeholder group. This preexisting, informal group was convened by MPCA to address the growing problem of wood waste and consists of about 80 stakeholders from private businesses, nonprofits, state government agencies, counties, and cities. The group initially met seven times between April 2024 and June 2025 to discuss wood waste management strategies along the [wood waste hierarchy](#). The wood waste hierarchy is a spectrum most preferable to least preferable methods for wood waste use:

1. Tree preservation
2. Durable wood products
3. Soil amendments
4. Bioenergy
5. Disposal

MAD built upon the discussions and work products of the previous meetings and the findings from the interviews to shape the design of three meetings between October 2025 and March 2026. Summaries of the meetings can be found in Appendices C, D, and E.

MAD also relied on a review and findings of more than two dozen documents provided by MPCA and wood waste stakeholders, which provided information on actions undertaken by public and private actors to address the wood waste issue. MAD also conducted a scan and reviewed relevant research from other sources.

Tensions shaping wood waste utilization

During the inquiry process and throughout the development of the report, two underlying tensions emerged. The first centered around ownership and second around regulation.

Tension one: Ownership

Like many complex issues facing the State of Minnesota, there is a shared responsibility for wood waste management across governmental agencies. Constraints also prevent those agencies from acting at will to address the issue. This tension is inherent to the design of state government in which agencies can act only with the authority and funding that is appropriated to them by the legislature. However, this design can present challenges when attempting to create robust frameworks and undertake initiatives that require resources or actions from multiple agencies without a single agency that “owns” the issue.

Despite this tension, effective governmental collaboration is necessary and has been a notable challenge to improve wood waste utilization in Minnesota as reflected in these comments from MAD's interviews:

- *It seems very much that wood waste is across different state agencies, but it's not clear to me how other agencies are working together in a more coordinated way. Lots of finger pointing about who has responsibility and there is a lot of fatigue with this.*
- *Everybody needs to get on the same page Department of Natural Resources, Pollution Control Agency, Department of Transportation, Public Utilities Commission.*
- *I wish the state would set a clear and concise policy. There is no consensus on what's happening. The state must provide more clarity. Decisions cannot be made in the [Twin] Cities alone. Wood travels. Wisconsin too. It is all connected.*
- *I've been a part of the wood utilization task force for a while. I know it's not easy, but if we could have more movement that would be great. Coordinated action is needed. We need movement.*

Furthermore, a February 2025 report by Cambium titled, "Expanding Capacity for Woody Biomass Processing in the Twin Cities Metro Area" recommends stronger partnership and collaboration to inform decision-making. The report suggests that the Environmental Quality Board (EQB) could play a role.

MPCA has in many ways taken a leadership role of the wood waste utilization issue. MPCA organizes and facilitates the wood waste stakeholder group, oversees a wood waste utilization grant, and previously funded a wood waste specialist position. However, other agencies and levels of government also have taken actions to improve wood waste in Minnesota and have roles to play in the broader wood waste ecosystem.

Tension two: Regulation

Government has a role in guiding markets and there are many levers the government can employ. One is through incentives, like grants, and the other is through disincentives, such as regulation. The same tension exists in the wood waste market, which in its current state is almost entirely unregulated. Currently, Minnesota allows for specific, beneficial uses of certain materials, including wood waste that otherwise would be classified as solid waste ([Minnesota Administrative Rules 7035.2860](#)). However, wood waste stakeholders, especially those in the private sector, have called on state government to increase regulation on the wood waste market through mechanisms like more stringent open burn permits. To this end, stakeholders have also frequently stated that the implementation of wood waste management strategies can only be as effective as the regulation that disincentivizes undesirable methods of wood disposal. While it is critical for the state to support circular economy strategies to keep urban wood and wood waste resources in use, some regulation is needed to reduce emissions and disincentivize undesirable behavior.

Prioritized actions for greatest impact

Three priorities for the State of Minnesota with the greatest potential for impact emerged through MAD's initial assessment, wood waste stakeholder meetings, and consultation with project advisors. Priorities focus on containing the market, understanding wood flows and projections, and incentivizing favorable public and private sector behaviors. A state level approach is necessary as decisions made in the Twin Cities impact Greater Minnesota and vice versa. The state is also uniquely and favorably positioned to promote comprehensive wood waste utilization strategies due to its reach and authority.

Priority one: Develop regulations and standards that guide industry practice

Unlike the extensive public sector planning that has occurred for other waste streams in Minnesota there have been no comparable policies and plans for wood waste. Generally, wood waste management in Minnesota is largely unregulated. The following four ideas for action received the most attention during stakeholder engagements:

1. Reform commercial open burning statutes.
2. Consistently define wood waste in state statutes.
3. Improve air permitting process efficiencies.
4. Develop standards and specifications to support innovation and emerging markets.

Action step: Reform commercial open burning statutes

There are few restrictions and minimal enforcement on open burning in Minnesota. Permits are accessible and affordable. Currently, a \$5 burn permit per site through the Minnesota Department of Natural Resources (DNR) or local counties requires nominal reporting on volume, material type, or duration. It is significantly less expensive for wood waste generators to manage material by open burning than other methods along the wood waste hierarchy. In addition, the DNR lacks the authority and staff to sufficiently address the increasing fire and smoke complaints it receives.

State partners, the DNR, MPCA Wood Smoke Specialists, and others can collaborate to propose changes to Minnesota Statutes Chapter 88 related to burning (for example 88.16, 88.17, and 88.171). This would include exploring increasing the cost of commercial burn permits and/or prohibiting commercial open burning statewide or within counties that have higher population densities. In making statute changes, Minnesota can reduce GHG emissions in alignment with the Climate Action Framework while mitigating risks that may push open burning further into rural and/or hidden areas of the state or bordering states.

Action step: Consistently define wood waste in state statutes

Various state statutes define wood waste and biomass in different ways and some neglect to define these terms altogether. MPCA and the Minnesota Department of Agriculture (MDA) in particular can make progress in guiding markets for wood waste utilization by ensuring clear, consistent definitions across statutes. Minnesota Statutes 115A.03, 41A.15, and 216B.2424 are places to begin.

Action step: Improve air permitting process efficiencies

Challenges with the state's permitting processes are well known and outlined in [Executive Order 26-03](#), signed by Governor Walz in February 2026. During the wood waste stakeholder meetings, participants repeatedly expressed frustration they were unable to use new equipment, purchased using MPCA's Wood Waste Utilization grant, for soil amendment and bioenergy methods because air quality permits were still under review. They noted that it would be easier to simply open burn the wood waste. The MPCA Small Business Environmental Assistance Program recognizes these challenges, particularly regarding biochar production equipment. The program is dedicated to helping small businesses navigate air permitting requirements

Action step: Develop standards and specifications to support innovation and emerging markets

While biochar, sustainable aviation fuel (SAF), and composting show promise as end products of wood waste, common standards and specifications are needed to further support the development and widespread use of these products. The Minnesota Department of Transportation (MnDOT) is and can continue to play a central role in development of state specifications and standards for biochar, compost, and mulch for roadway and other projects. In addition, standards and specifications for urban wood can be developed and written into public requests for proposals (RFPs) so architects, engineers, and construction supervisors, can write urban wood materials into plans, especially for exterior use.

The MPCA, in partnership with other state agencies and the legislature, can leverage the \$200 million grant (available through September 2029) from the Environmental Protection Agency (EPA) to support innovation and cut climate pollution from our state's food systems.

Minnesota's climate-smart foods systems competitive grant program plans to fund \$33 million in the prevention of wasted food and organics management, \$10 million for composting, and \$60 million for industrial innovation. Each of these funding opportunities could support the use of wood waste. For example, composting models like [VONCO II](#) could be replicated. VONCO II is a wood waste campus that requires a 70-75 percent carbon source, like wood waste, with 25-30 percent food scraps. In addition to these competitive grant programs, the MPCA's Industrial Innovation in Food Systems program has already committed \$10 million in funding to Ramsey/Washington Recycling and Energy, in partnership with Dem-Con KVI Bioenergy and the Shakopee Mdewakanton Sioux Community, to construct and operate a new organics management facility in Shakopee, Minnesota. The facility will showcase the effectiveness of advanced industrial energy and decarbonization technologies, particularly anaerobic digestion and biochar production.

Finally, as the state works to realize the vision outlined within the Climate Action Framework, the Department of Commerce and partner agencies may develop carbon free thermal energy standards to further reduce use of natural gas and GHG emissions. In doing so, the state could define the conditions under which thermal energy from biomass is considered carbon free. The Public Utilities Commission (PUC) followed this example in January 2026 when they elected to use a fuel life cycle analysis (LCA) to assess which electricity generation resources qualify as carbon free. This created a pathway for woody biomass to be used if there is a net reduction in GHG as compared to processes that are most likely to otherwise occur.

Priority two: Invest in data collection and analysis to inform decisions and investments

Estimates of the total volume of wood in the Twin Cities are known, but the precise volumes, origins, and destinations of wood waste across both the public and private sector are not known. Stakeholders and interviewees underscored the importance of having a complete picture of wood waste flows and assets to manage wood waste. Data collection and dissemination can take many forms including total wood waste volume estimates and projections, asset mapping, and wood yard volumes.

Action step: Collect data to create a shared understanding of wood waste, including assets to manage wood waste

First, stakeholders recommend leveraging data collection efforts that have already been underway. This could include updating the emerald ash borer projections gathered by MDA and EQB which were last updated in 2019. Similarly, the DNR could replicate and expand the federal Timber Product Output program. This program already includes data gathered by counties on estimates of timber products, logging residue, mill residue, residential fuelwood, and other wood removals.

Additionally, MPCA collects data from county solid waste management plans. Future plans can be modified to collect additional data to improve understanding of the wood waste challenges. At a minimum, this data can include the amount of wood waste being generated and processed at wood yards. Practically, this could mean that plans include an ordinance requiring wood yards to register with the county and report volumes of wood waste collected, managed, stored, and disposed. Additional data can also be collected on tree inventories, facilities, and industries that play a role in wood waste management (such as biomass, compost sites, mulch producers, tree care companies, etc.).

Action step: Develop a resource map to minimize duplication and maximize available resources

Interviewees highlighted that not only are there sites around Minnesota with additional wood waste processing capacity, but that counties and cities have and are continuing to enter into joint agreements to purchase shared processing equipment. However, there is no central database of sites and equipment that would help local governments plan better for investment and redirection of wood, especially in emergency situations. The state can develop an asset map, available to state agencies and local governments, to allow for responsive re-direction and asset sharing between regions in Minnesota.

Action step: Champion a life cycle analysis (LCA) to determine environmental impacts of wood waste through its lifespan

Compilation of existing data and additional data collection efforts would both support and be furthered by the development of an LCA, which stakeholders repeatedly mentioned would be extremely useful to understand the full lifecycle of wood. The primary purpose of the LCA would be to clarify the wood waste hierarchy. The LCA would provide a consistent baseline for the environmental impacts of currently available wood waste management strategies to drive investment. Staffing and funding would need to be identified and, if secured, project timelines will also be an important consideration. Wood waste stakeholders expressed concerns about the length of time past state-led LCAs have taken. To expedite the development of an LCA, the state could support an LCA conducted by an external organization while leveraging the significant amount of data that already exists.

Priority three: Use incentives and education to guide favorable market behaviors

State agencies are in a unique position to guide the wood waste industry statewide by using regulations to disincentivize unfavorable behavior. Similarly, state agencies can use incentives, like grant programs, to support

the development of markets, encourage favorable actions, and educate industry professionals, Minnesotans, and governments about the wood waste issue.

Action step: Advocate for additional funding, and ensure existing funding streams and processes are designed to support wood waste utilization more efficiently

Emerging industries need economic stability and certainty to cultivate a healthy market for wood waste. The state can support pathways to end use markets using credits and existing funding streams while avoiding mandates that can collapse the market for wood waste once removed. For market development, stakeholders specifically mentioned the use of wood waste end products in projects such as brownfield remediation, water quality improvement, and ongoing MnDOT projects. The state could also make use of revolving loan funds to stimulate end uses for wood waste use, as has been done in Virginia and Montana. Finally, the MPCA and other state agencies can continue to encourage preferred methods of wood waste utilization through existing programs like MPCA's Climate Pollution Reduction Grants and MPCA's Wood Waste Utilization Grants.

There was also consensus among stakeholders that state agencies can update request for proposal (RFP) processes to improve wood waste utilization. First, the state can ensure that grant funds are distributed more evenly between nonprofit, public, and private sectors to encourage a greater volume and variety in solutions. Stakeholders also mentioned that the RFP process itself, which awards points and funding based on competitive criteria, is a mechanism to guide behavior even in the absence of awarded funds because grantees will modify their behavior to boost their competitiveness for funding opportunities. Thus, the RFP process can be updated to include additional points awarded for more favorable activities, such as using urban wood and lumber in building projects or using wood waste effectively in road construction.

Action step: Educate decision-makers and professionals

A coordinated education and outreach strategy that includes the general public, decision-makers, legislators, and industry professionals is critical for building a long-term approach to wood waste utilization.

Information sharing and coordination between agencies can continue, including through the existing interagency workgroup facilitated by EQB. The mission of EQB is to support informed decision-making that protects and enhances Minnesota's environmental quality. Early in 2027, the interagency workgroup can present a plan for action and investment to advance a holistic, long-term approach to wood waste utilization and management.

Additionally, the Senate Committee on Agriculture, Veterans, Broadband, and Rural Development, which has previously heard related presentations on the wood waste issue, will continue to be an important body to engage. These briefings can emphasize the environmental, economic, and community benefits of improved urban wood management and the role that policy can play in supporting market development, reducing waste, and strengthening rural and urban ecosystems.

Cities, counties, and state agencies can be educated on and encouraged to adopt "shall use" ordinances that require or strongly prioritize the use of wood waste including urban wood, especially on disturbed construction sites. Clear guidance, examples, and implementation support will be important for helping local governments incorporate these standards into procurement, site planning, and public works workflows.

Professional practitioners, including construction firms, engineers, architects, and arborists, will need targeted technical education to support consistent practices. This includes training on how to specify, source, and use materials from urban wood, as well as how to plan for and manage urban wood resources. Through the Wood From The Hood (WFTH) initiative, specialized education can help arborists, municipal forestry staff, and tree care companies learn how to manage trees, for example how to trim and remove trees in ways that create usable 12-foot boles, suitable for urban wood products. Such practices increase material yield, reduce waste, and expand opportunities for local urban wood markets.

Conclusion

Questions and concerns related to how Minnesota can improve the use and management of wood waste at a state level are not new. In fact, some stakeholders have reported that District Energy became a reality in part because of the crisis of wood waste generated from Dutch elm disease more than 50 years ago. The State of Minnesota can use its authority, resources, and expertise to play a significant role in building and sustaining the market, understanding wood flows and projections, and incentivizing favorable public and private sector behaviors.

While it's true that additional resources will be required to fully realize the vision of creating a holistic, long-term approach to wood waste utilization, the State of Minnesota has resources to make progress on the prioritized actions articulated above. For example, the staff expertise, systems, processes, and relationships that created Minnesota's solid waste management framework can be used to create a wood waste management framework. In addition, existing staff can shift their work priorities over time and existing grant funds can incentivize using urban wood and wood waste. The benefits of state action to improve wood waste utilization further Minnesota's environmental and business goals.

Appendix A: Wood waste utilization initial assessment themes (January 26, 2026)

Note to readers: This appendix contains the initial assessment MAD produced which was used to design the wood waste stakeholder meetings in January and March 2026.

Background

The Minnesota Pollution Control Agency (MPCA) convened an informal group of about 80 stakeholders from private businesses, nonprofits, state government agencies, counties, and cities to address the growing problem of urban wood waste. The group met seven times between April 2024 and June 2025 to discuss wood waste management strategies along the [wood waste hierarchy](#). This work has become increasingly urgent due to declines in electricity subsidies to St. Paul Cogeneration/District Energy's heat and power operations, impacts of extreme weather events, urban expansion, and the increasing volume of trees dying from diseases and pests.



Figure 1 Wood Waste Hierarchy

After the departure of its wood waste specialist in June 2025, MPCA began working with Management Analysis and Development (MAD), the State of Minnesota's consulting practice, to keep this group's work moving forward. By June 2026, MAD will develop a summary report that outlines short- and long-term recommendations for action and investment to improve wood waste utilization efforts within the Twin Cities metro area and across Minnesota.

This document contains a summary of MAD's initial assessment of the above issues. Findings are based on review of more than two dozen documents, eleven interviews conducted in December 2025, consultation with five project advisors, and supplemental research. The themes from this initial assessment will be used to guide two wood waste stakeholder meetings on January 28 and March 11, 2026.

Two significant decisions in the coming months will influence the future of wood waste utilization in Minnesota:

1. Minnesota's Clean Electricity Standard requires electric utilities to provide 100 percent carbon-free electricity by 2040. The Public Utilities Commission's (PUC) will decide if and how the electricity produced from the combustion of woody biomass aligns with this carbon free standard.
2. District Energy's heat and power plant typically uses 250,000 tons of urban wood waste annually. The MPCA commissioner will decide by June 2026 whether to implement a tip fee on ground material

received by District Energy which will inform any extension of its power purchase agreement with Xcel Energy beyond May 2028.

Inclusion of woody biomass in Minnesota's Carbon Free Standard

On January 15, 2026 the Public Utilities Commission made a decision related to [eDocket #24-352](#). The question it set out to answer was, "Should the commission adopt a fuel life-cycle analysis framework as part of its responsibility to set criteria and standards for evaluating utility compliance with Minnesota's Carbon-Free Standard?" Unlike Minnesota's other energy standards, the statute governing the Carbon Free Standard allows for partial compliance and does not define which technologies are eligible. The PUC elected to use a fuel life cycle analysis (LCA) to assess which electricity generation resources qualify as carbon free. This decision allows a pathway for woody biomass to be used if there is a net reduction in greenhouse gas emissions as compared to processes that are most likely to otherwise occur ("the counterfactual").

Maintaining use of wood waste at District Energy

It is well known that District Energy plays a key role in the utilization of approximately half of the wood waste generated in the Twin Cities metro area. A societal cost-benefit analysis of District Energy included in Xcel's compliance filing and petition for approval of a power purchase agreement (docket # E002/M-21-590) from March 29, 2024 showed approximately \$880 million in net present value of societal benefits with a power purchase agreement (PPA) extension from 2025-2050, with about \$694 million in avoided criteria pollutant emissions from open burning and another \$156 million in avoided greenhouse gas emissions from natural gas combustion. Maintaining operations at District Energy, including use of wood waste, has been seen as supporting the goals outlined within Minnesota's Climate Action Framework.

As outlined in [Minnesota Statutes 216B.2424, subdivision 5C \(d\)](#), District Energy must "...attempt to obtain funding to reduce the cost of generating electricity." The Public Utilities Commission (PUC) has also articulated the need to reduce the cost of District Energy's operations below the current \$98/MWh to extend the current PPA with Xcel that goes through May 2028. Currently, District Energy has a \$16.562 million grant (September 2023–June 2027) allocated from the legislature in 2023 to support its operations in utilizing waste wood, to upgrade equipment, and to develop a long-term financial plan to keep the facility cost competitive. Roughly 92 percent of grant funds are dedicated to managing wood waste (\$25/ton) by using it as biomass fuel to generate energy. To support the development of a long-term financial plan to keep District Energy cost competitive, several questions should be explored and answered, including:

- To what extent should the State of Minnesota manage and regulate wood waste like other solid waste streams such as mixed municipal solid waste, construction and demolition waste, and hazardous waste?
- Should Xcel Energy's ratepayers continue to indirectly pay for wood waste or should the direct customers (households, businesses, counties, cities) that produce the wood waste pay to have it managed? Who is ultimately responsible for the management of wood waste?
- Does the State of Minnesota have an interest in maintaining District Energy's operations, given the lack of cost-effective alternatives to manage 250,000 tons of wood waste?

The industry has already adopted tip fees to grind brush and logs into woody material. Overall, there is consensus among the wood waste stakeholder group that charging an additional tip fee to deliver ground

material to Environmental Wood Supply for use by District Energy would further incentivize open burning and increase costs for households and businesses having trees removed.

In the immediate term, wood waste stakeholders must continue to engage with decision-makers to provide data and expertise to inform these two pending decisions.

Building a wood waste system

The Twin Cities metro area generates over 500,000 tons of wood waste annually according to a February 2025 report by Cambium prepared for Partnership on Waste and Energy. This amounts to about 25,000 semi-truck loads (assuming 20 tons per truck) which, if lined up end-to-end, would stretch roughly the distance from St. Paul to Roseau. Currently, there is no comprehensive framework or system to manage the wood waste stream. Interviewees articulated a desire for state level coordination and collaboration as reflected in these comments:

- *It seems very much that wood waste is across different state agencies, but it's not clear to me how other agencies are working together in a more coordinated way. Lots of finger pointing about who has responsibility and there is a lot of fatigue with this.*
- *Everybody needs to get on the same page DNR, PCA, MnDOT, PUC.*
- *I wish the state would set a clear and concise policy. There is no consensus on what's happening. The state must provide more clarity. Decisions cannot be made in the [Twin] Cities alone. Wood travels. Wisconsin too. It is all connected.*
- *I've been a part of the wood utilization task force for a while. I know it's not easy, but if we could have more movement that would be great. Coordinated action is needed. We need movement.*

Cambium's "Expanding Capacity for Woody Biomass Processing in the Twin Cities Metro Area" February 2025 report also recommends stronger partnership and collaboration to inform decision-making and suggests the Environmental Quality Board could play a role. Unlike the extensive public sector planning that has occurred for other waste streams in Minnesota (mixed municipal solid waste, construction and demolition waste, hazardous waste, certain problem materials such as e-waste, paint, batteries, mercury containing products) there have been no comparable policies and plans for wood waste. Though counties have recently submitted their solid waste plans that include wood waste, wood waste standards and frameworks as well as regional coordinated action is still needed.

Interviewees were asked what actions Minnesota state government should prioritize in the near and long term. Several ideas for action and investment were outlined in the eleven interviews and review of dozens of documents. These ideas will guide discussion during wood waste stakeholder meetings in January and March and ultimately shape development of short- and long-term recommendations to improve urban wood waste utilization efforts in Minnesota.

The table below illustrates the key concepts that emerged both from interviews and review of relevant documents. The concepts are organized along a spectrum that ranges from actions that should occur immediately, to longer term actions that requiring planning and coordination.

We currently define "act now" as actions that are needed to address the current wood waste volume crisis as well as actions that don't require significant effort or collaboration. Further, we define "long term" not as lower priority actions, but rather actions that may be more complex and require greater coordination. The categorization of these actions may shift after wood waste stakeholder input.

<i>Act now</i>	<i>Short term</i>	<i>Short to mid term</i>	<i>Mid to long term</i>	<i>Long term</i>
1. Provide data and expertise to inform PUC's decision on docket #24-352. 2. Use existing infrastructure to clear out already full wood yards and provide funds to transport this wood waste (\$25/ton). 3. Provide clear direction and support to seven county metro in their efforts to meet MPCA's required and optional strategies to improve management of wood waste within their solid waste management plans.	4. Encourage woody biomass investment through MPCA's Climate Pollution Reduction Grants program. 5. Fund highest and best uses for wood waste through MDA's AGRI Bioincentive Program. 6. Hire full-time wood waste utilization specialist. 7. Update wood waste data, including emerald ash borer projections.	8. Invest in wood waste data systems to better track wood waste origins and destinations in the public and private sector. 9. Modify Minnesota Statutes Chapter 88 to disincentivize commercial open burning. 10. Include biochar and woody biomass in MnDOT's specifications for roadway projects. 11. Expand MPCA's wood waste utilization grant program.	12. Incentivize existing saw mills and kilns to include urban wood in their supply chains. 13. Require an emergency management standard in waste management plans. 14. Include urban wood products within sustainable government purchasing efforts. 15. Explore ways to cultivate the biochar market. 16. Develop an asset map, available to state agencies and local governments, to allow for responsive re-direction and asset sharing between regions in Minnesota.	17. Assist in infrastructure site selection, including the development of new sort yards, as local zoning laws can be prohibitive to finding solutions. 18. Partner with transportation industry to develop systems for backhauling of wood waste. 19. Research the feasibility of instituting a tree tax at point of sale or locally to support wood waste utilization.

Ideas for action

The actions in the table above are explained further below in order, starting from the top of the "Act Now" column to the bottom of the "Long Term" column.

1. Provide data and expertise to inform PUC's decision on docket #24-352. Failure to include woody biomass as a carbon free (or partially carbon free) feedstock may shift hundreds of thousands of tons of wood waste into open burning management and simultaneously result in power plants shifting to increasing use of natural gas in the short-term. Minnesota will remain reliant on woody biomass energy as a wood waste solution, even with expanded and diversified urban wood markets, because peak emerald ash borer removals are still ahead and undesirable species, residuals, and contaminated materials like stumps will always need an outlet.

2. Full wood yards, especially wood yards with an overflow of ground material, not only contribute to the backlog of wood waste to process and incentivize open burning but also are a significant fire hazard due to the potential of spontaneous combustion of the material. The state should maximize use of existing infrastructure, for example at Hibbing Power, Hibbard West Duluth, and Ashland's Bay Front Plant to clear out already full wood yards and to reduce current wood waste volumes. For a specific limited period, provide funds to transport this wood waste (\$25/ton) to facilities with existing capacity.
3. Convene the seven metropolitan counties as they implement their solid waste management plans for the next 20 years (2023–2043) to provide clear direction and additional supports when needed to implement the three required and six optional strategies to improve management of wood waste.
4. Invest in continued wood waste utilization through the MPCA's Climate Pollution Reduction Grants program (available through September 2029), tapping into the \$60 million available to support industrial innovation in food systems, which could support the use of woody biomass. This may include expanding composting models like VONCO II, a wood waste campus, that requires a 70-75 percent carbon source, like wood waste, with 25–30 percent food scraps. It may also include support for counties, cities, and private businesses to invest in equipment (e.g., grinders, chippers, mobile biochar or pyrolysis system for biochar, and bio-oil).
5. Fund innovative solutions to incentivize highest and best uses for wood waste including incentive payments for production of advanced biofuel, renewable chemicals, biomass thermal energy, and siding through the Minnesota Department of Agriculture's (MDA) AGRI Bioincentive Program. Additional funding innovation can come through local units of government applying for Biofuel Development Opportunity Zone ratings which demonstrates to potential investors that they can confidently invest in a region knowing that the woody biomass is readily available, transportation infrastructure exists, and other conditions are strong for bioeconomy business success.
6. (Re) hire a full-time wood waste utilization specialist to fill significant gaps in collaboration with emphasis on internal coordination of State of Minnesota investments and advancing public-private partnerships.
7. Update wood waste data, including emerald ash borer projections to inform longer term investment strategies as this data from the Minnesota Department of Agriculture (MDA) and Environmental Quality Board (EQB) have not been updated since 2019.
8. Estimates of the total volume of wood in the Twin Cities are known, but the precise volumes, origins, and destinations of wood waste across both public and private sector are not known. Thus, the state should invest in wood waste data systems to better track wood waste origins and destinations in the public and private sector.
9. Modify Minnesota Statutes Chapter 88 (for example 88.16, 88.17, and 88.171) related to open burning to increase the cost of commercial burn permits and/or prohibit commercial open burning statewide or within counties that have population densities greater than 100 people per square mile.
10. As the state's top consumer of compost, work with the Minnesota Department of Transportation (MnDOT) to ensure inclusion of biochar and woody biomass in their development of specifications for roadway projects.
11. Explore expansion of MPCA's wood waste utilization grant program. In 2025, MPCA awarded 9 grantees, \$1.4M. There were 56 applicants and \$9M in requests.
12. Incentivize existing saw mills and kilns to include urban wood in their supply chains to help divert waste toward higher value use.
13. Normal wood volume management is crucial, but shocks to the system, such as extreme weather and emerging tree diseases, can create spikes in wood waste volumes that require additional capacity and resources to manage. In addition to the wood waste planning requirement in solid waste plans, the state should require an emergency management standard in waste management plans.
14. Inclusion of urban wood within sustainable government purchasing efforts.

15. Explore ways the state can cultivate the biochar market. While biochar shows promise as an end product of wood waste, current biochar production facilities are not able to handle the volume of wood needed to maintain healthy levels in the seven-country metro region and the market for biochar as an end-product is new and not yet robust.
16. Interviewees highlighted that not only are there sites around Minnesota with additional wood waste processing capacity, but that counties and cities have and are continuing to enter into joint agreements to purchase shared processing equipment. However, there is no central database of sites and equipment that would help local governments better plan for investment and redirection of wood in emergency situations. The state should develop an asset map, available to state agencies and local governments, to allow for responsive re-direction and asset sharing between regions in Minnesota.
17. Assist in future infrastructure site selection, including the development of new sort yards, as local zoning laws can be prohibitive to solutions and the state can help move the needle for counties. Increased capacity to accept, sort, store, process, and distribute urban wood is needed to build markets and continue to move urban wood up the wood waste hierarchy. A model that has shown to be effective are marshalling yards that accept wood waste and sort it for highest and best use. These yards can then process wood on site for various markets including urban lumber, biochar, mulch, compost, energy, biofuels, and wood vaulting. Yards such as these are effective in sorting out high value logs for lumber and getting other woody materials into their highest and best use, all while avoiding significant transportation costs. The State of Minnesota could potentially commit to funding and promoting more of these yards and encouraging existing yards that produce only energy products to implement sorting activities and additional on-site processing for other markets.
18. Partner with the transportation industry to develop systems that support the backhauling of wood waste to sort yards or facilities that can use it.
19. Research the feasibility of instituting a tree tax at point of sale to set up a [SCORE fund](#) or an increase in a city/county tax to support a wood waste utilization, as is currently done in Minnesota for other solid waste like trash and recycling.

Appendix B: Wood waste utilization interview questions

1. [For counties and tree care companies] To begin, can you tell us about how you currently manage wood waste? (Type, volume, where it comes from, how it's used, etc.)
2. When it comes to wood waste utilization, what is working especially well within your organization, county, and/or the state? Why?
 - a. Probe: Are you aware of any known or developing public-private partnerships in this area?
3. From your perspective, what are 2-3 priorities to improve wood waste utilization efforts in Minnesota now, in the short-term? Why?
 - a. Probe: What are 2-3 priorities you'd prioritize soon?
 - b. Probe: What are 2-3 priorities you'd prioritize later, in the long term?
4. [For counties] In a scenario where the counties are leading the effort to find solutions to the wood waste issue, what would that look like to you? What additional state support would be needed?
5. The future use of woody biomass to generate electricity at the St. Paul's District Energy Co-generation plant is a serious concern. Stakeholders have shared the implications of a future power purchase agreement and implementation of a tip fee could result in nearly 50 percent of urban wood waste (250,000 tons) having no path for disposal. This may sharply elevate local disposal needs and generate greater environmental challenges due to inevitable increases in local burnings. What would be the corresponding impacts to your organization, county, or the state of the following two scenarios?
 - a. Scenario 1: The state implements a tip fee AND does not further regulate open burning.
 - b. Scenario 2: The state implements a tip fee AND tightens regulation on open burning.
6. Other solid waste streams rely on tip fees to operate facilities to process the materials they receive. If you had the authority to make critical decisions about this issue now, what would they be? What's your rationale? What may be the unintended consequences? How would you manage these?
7. If not a tip fee, then what? What other ideas do you have to ensure St. Paul's District Energy Co-generation plant continues to operate? What would happen to urban waste wood if St. Paul's District Energy Co-generation plant stopped operating?
8. What else would you like to share related to your interests or experience to improve wood waste utilization efforts in Minnesota?

Appendix C: Notes from wood waste stakeholder meeting (October 24, 2025)

Note to readers: This appendix contains unprocessed notes from one of three wood waste stakeholder meetings MAD facilitated.

Discussion on report audience and purpose focused on regional collaboration, scope, and public education

- Participants from counties mentioned that they are currently working on county policy plan wood waste work - they need a wood waste management plan, would want metro counties to collaborate on plan, agency should convene metro counties for regional wood waste management plan.
- A representative from a metro city noted that they would like to see a regional approach to the issue in the report including guidance to the counties and recommendations to the legislature. "We need long term solutions, yes, but it's really at a crisis level at the moment so short-term solutions are needed."
- Counties are looking at resource constraints and noted the benefit of some wood waste plan collaboration, but every county is in a different space.
- Having collected resources from counties and cities will be helpful for assessment.
- Individual counties are struggling to develop plans for gap in utilization options for a regional issue.
- Will have to be public/ private partnership with subsidies - counties struggle because they don't know all the resources.
- Participants from the private sector expressed a need for government support with utilization burden, not just ideas on how wood can be used.
- Connecting wood utilization producers with new markets is crucial.
- Participants also noted that looking at the entire wood waste supply chain would prove useful/interesting.
- Private sector is trying to use wood, build up markets - looking for support to push urban wood, possibly legislation to promote urban wood use in government projects. Quality logs need better use than chip/ burning - private sector is going to have a hard time pushing this by themselves, need public help.
- A participant asked about the scope of "wood waste" for this report? Urban? metro counties? state-wide? other wood residues? (mill and/or logging).
 - MPCA reply: We're open to feedback on the appropriate scope. We're always open to statewide, although I also think that there are some challenges specific to the metro and/or urban communities that we will likely want to highlight. Initial thought is that mill/logging wood waste would be outside the scope of the report - but again we're open to feedback from this team on the appropriate scope.
- Participants also noted several larger questions about the project and scope.
- Within the planning process what are the potentials for discussions around short and long term planning of municipal tree planting and end of life planning rather than just disaster planning around this most recent pest?
- What are the thoughts around carbon balance or other benefits that trees provide to local communities beyond carbon sequestration.
- How do we get funding to move these things forward- federal landscape is uncertain, if we don't have funding there, where does it come from?
- MPCA noted that the hope is that the report will be presented to the legislature and used to push for proposals that would help a large swath of Minnesotans – public, private, businesses, etc.

- On public education about the issue participants pointed out that more public education is needed and that most people do not know there is an issue, however, there are existing resources that exist and shared in the meeting: <https://urbanwoodnetwork.org/>.

Foundational resources discussion

Resources shared during the meeting:

[Twin Cities Metro Area Emerald Ash Borer Wood Waste Study, 2022](#)

[Expanding Capacity for Woody Biomass Processing Cambium Final Report, 2025](#)

[Solid waste planning | Minnesota Pollution Control Agency](#) (page 38-41)

Resources needed will be driven by purpose and audience or report. Report audience should be MPCA, where more control lies to set the market.

Unified Wood Economy was brought in from an MPCA grant to build the business case for a wood upcycling campus (including scalable market offtake opportunities, real estate recommendations, financial projections, supply chain, etc.) in the Twin Cities region. This project is expected to be finished before the new year.

On resources, a participant noted several important broader questions:

What is the optimal solution for public/ private challenges - each sector has different cost/pain points- what are the different needs and challenges?

What does government do really well- market development, policy, regulations to build trust and stability into market - not currently a strong, secure market understanding?

Appendix D: Notes from wood waste stakeholder meeting (January 28, 2026)

Note to readers: This appendix contains unprocessed notes from one of three wood waste stakeholder meetings MAD facilitated.

On Wednesday, January 28, 2026, wood waste stakeholders gathered in a hybrid meeting. Approximately 28 people participated in person with another 18 joining remotely. The purpose of the meeting was to:

- I. Increase understanding of existing efforts within state government to address wood waste now and in building a wood waste system.
- II. Discuss and explore immediate actions to address current wood waste issues.
- III. Begin to create a shared vision to build a wood waste system in Minnesota.
- IV. Brainstorm next steps to address current wood waste issues and to build a wood waste system in the future.

The Minnesota Pollution Control Agency partnered with Management Analysis and Development (MAD), the State of Minnesota's consulting practice for meeting design and facilitation support.

The meeting kicked off with a welcome from the Director of the Resource Management and Assistance Division followed by a brief review of the initial assessment conducted by MAD. Next, a panel discussion of state leaders focused on existing efforts related to wood waste utilization, including what is working well and what challenges and constraints limit action.

MNDOT was unable to join the panel but shared the following update:

MnDOT has a couple of research projects going on currently looking into biochar. The first project is with U of MN Duluth where we are looking at the different characteristics of biochar produced with different feedstocks and at different pyrolysis temperatures and evaluating the physical properties of these different products. This project also looks into developing knowledge, tools, and protocols to inform best practice standards for effective implementation of biochar in bioretention systems for treating roadway runoff. The primary project output is anticipated to be a tool or protocol (e.g., a decision-making matrix) to provide standardized guidance for best practices regarding the practical implementation of biochar in treating roadway runoff. The results of this research will be used to develop more comprehensive biochar specifications and future phases of this research project could include additional contaminant removal performance testing and evaluation of influences on hydraulic and soil health effects. We've also just recently proposed a project looking at developing recommendations for the use of Biochar in roadside green infrastructure applications. This project proposes to evaluate the potential for pollution retention, stormwater volume reduction and provision of habitat for native plants and pollinators. In addition to the research projects, we are also working with vendors on potential stormwater treatment options such as sediment control logs with biochar as part of the filler for contaminant/nutrient removal, different forms of soil amendments ranging from pellets to granular biochar as well as slurry solutions for applying biochar. Some vendors are looking into different filtration options for biochar even including the potential to extrude pipe constructed of biochar and other cementing agents. Some of the soil health research we are undertaking has also looked at the potential for biochar as a soil amendment to boost soil carbon and to evaluate stormwater treatment potential.

Following the panel, wood waste stakeholders had a two-part discussion. First, they focused on actions to take in the next six weeks and six months. After about 40 minutes of discussion, the group transitioned to the second

discussion focused on building a vision for a wood waste system. The bullets below are notes participants took while in conversation with one another.

Discussion, Part 1 (Action now)

March progress goals

When we gather again in 6 weeks, on March 11, what progress or milestone to address the current wood waste volume crisis do you hope this group can recognize and celebrate together?

Several themes for action in the next six weeks emerged including: clarify roles, engage in the 2026 legislative session, improve data systems, address permitting, and learn more about biofuels.

Clarify roles and close gaps

- Authority – who, define overlaps
- Commerce should be participating
- Attend EQB Board meeting (6 weeks +)
- Include PUC, Commerce in the interagency conversation.
- What gaps between the agencies could be closed that would help provide immediate benefit?
- Designate an agency to lead
- Answer (explore) incident command system (ICS) authority question
- County wood waste management plans, include city input
- Counties to meet with MPCA regarding creating wood waste management plans and develop RFP outcomes

Consistent messaging and engagement in 2026 legislative session

- Contact professional associations to contact legislature with consistent messaging of the need
- Consistent messaging from professional association to legislature
- Recycling Association of Minnesota and Minnesota Solid Waste Administrators Association Day at the Capitol regarding EAB general peaking; need emergency status to manage the problem with ICS structure.
- Legislation to help Environmental Wood Supply and other large processors continue operation
- Work with other counties to develop legislation to help support the large processors
- Education for legislators on the need and solutions
- The wood waste working group often shared legislation that partners were working on. Let's do that now.
- Develop workgroup to establish firm stance to relay to legislature to make wood waste issue a priority.
- Identify policy proposals that can be supported this session or not
- MN legislature – Funding appropriated to develop an assessment program for urban wood volumes created and utilized (Similar to the Timber Product Output (TPO) program)
- Identification of statutes that need to change
- Actual plans in place

Strengthen data informed decision-making by improving understanding of wood waste origins and assets

- Establish guiding principles to help make decisions, overlay the wood waste hierarchy
- Plan for tracking and reporting of where wood waste is going
- Activities completed + preliminary results from wood waste grantees

- Continue LCA work
- Locate a site for collection in North Metro
- Small quantities of wood chips could be delivered to Northern States Power Company sites (Red Wing, Wilmarth, French Island, Ashland)
- 2,000 truckloads of material in 6 weeks
- Identify locations where wood waste can be marshalled for higher use and processing into fuel

Permitting

- Air quality permit sorted for air curtain
- Plan around regulatory (green waste disposal)
- Biochar permits (pollution)
- Permit complete for air curtain incinerator, plus path for expedient replicability

Biofuels

- Clear place for sustainable aviation fuel (SAF) and qualifying biofuels in wood waste hierarchy
- Raise profile of SAF
- Clarity on which state grant or loan programs (many mentioned today) could be used to support development of SAF production. Need is especially acute for pre-development costs.

August progress goals

Imagine 6 months have passed – it's almost August, what progress or milestones have been made to address current wood waste issues and in the development of a wood waste system?

Direction and commitments from state and county partners are clearer

- Counties would start or continue work on development of wood waste management plans
- Determine what plan elements should be consistent across all counties
- Counties to release RFPs for wood waste management contractors
- Conversation with MPCA have been initiated
- Stay in communication with MPCA staff
- MPCA to appoint a wood waste primary point of contact
- More clear direction from state on what they want to see in a plan
- Legislative direction / authority given to one lead agency to move the wood waste utilization forward
- EAB interagency team revisit 2019 report recommendations and continue to update the status

Life cycle analysis

- LCA for wood waste hierarchy
- Base LCA
- LCA effort moved forward to help prepare for facilities/utilities to use

Biochar

- Better understanding of biochar output and usage (Step: increase education)
- Develop recommendations to increase the use of biochar in agriculture
- Clarify air permit requirements for biochar products
- Minneapolis biochar facility is fully operational

Biofuels

- Securing demo/pilot in MN of wood residuals --> SAF production

- Repeal RFS / EPA prohibition on wood from non plantation being used to make fuel
- Extend MN tax incentive for SAF: pass consensus eligibility language

Funding and infrastructure investments

- Financing tools for private/homeowners to get trees removed
- Transportation funding
- Grant available to establish urban wood network in MSP to further urban wood utilization.
- Establish a larger wood collection yard in North Metro
- Washington yard site design out and invitation for bid for construct
- 100,000 tons of wood waste utilized.

Miscellaneous

- Committee formed for regulatory
- With ~1 year secure commercial production facility
- Wood waste is deemed 100 percent carbon neutral
- More wood waste can be used for energy
- Legislative hearing

Discussion, Part 2 (Visioning)

15-year goals

What would it look, sound, and feel like if we were 100 percent successful in building a wood waste system in Minnesota? In 15 years looking back, imagine Minnesota has solved this issue. What was that story?

Innovation in funding

- Designate a portion of SCORE funding to wood waste management and disposal
- Allow homeowners to get access to funding that is assessed on property taxes
- Investment in wood waste markets like biochar, waste to energy, wood-to-table, organics processing
- State and county investment in research and development to manage tree waste in new and innovative ways
- State and county investment in solutions
- Funding mechanism to manage wood waste
- Funding for wood waste management
- Markets and infrastructure need investment, clarity, and predictability

Resiliency built within system

- No chaos if one part of the system goes offline
- Avoid short-term solutions for today that create future problems
- Life cycle analysis* incorporated into tree planting programs (*water use / stormwater)
- Right-size the industry in geographically appropriate locations (build where the wood is)
- No wood waste needs to be trucked more than 100 miles to be managed
- System with redundancy; Multiple outlets for wood waste
- All wood waste from storms, regular maintenance, pests, etc. would be managed, not stockpiled
- Hubs around metro area with dedicated disposal sites (EWS, Koda, Xcel, Biochart, Mulch, Compost, etc.)
- Manage wood waste similarly to other waste streams
- Implementation of plans at cities and counties

- Coordination with Tribal Nations on highest and best use
- Open burning of wood doesn't happen because it's so easy to dispose of wood
- We have specs and standards accepted and used by engineers/public works
- Diversified solutions for all the different feedstocks
- Wood waste system looks like it did after Dutch elm; flow was manageable

Valuable markets exist

- We no longer refer to this material as wood waste but call it urban wood because it has market value
- Society recognized the full value of using wood products versus other materials and was willing to insert incentives and/or mandates into policy
- Log yards to sort logs, durable wood products for sawmills, for soil amendments/bioenergy, for disposal (ethically)
- Make sure logs go to appropriate use, if not they go the next lower use
- All soundwalls and DNR park benches (and city) made with locally sourced wood
- Viable end markets for wood waste management (management/wood waste yards)
- Biochar as a municipal resource
- Viable end-markets are in place
- Wood waste moved up the hierarchy
- Architects using urban wood
- Urban wood standards created

State policy

- Pass laws/policy to promote wood use at a local level
- State policy for how to manage (who is responsible to develop state plan and who regulates?)
- Predictability – Policy and regulatory, clarity of responsibility for state
- Implementation of renewable thermal energy legislation, build off that that occupied at PUC
- Identified and closed existing gaps between agencies
- Effective public/private partnerships
- Burn permits would go away or be greatly reduced – especially for large quantity burns, Legislation that limits large burns even more

Appendix E: Notes from wood waste stakeholder meeting (March 11, 2026)

Note to readers: This appendix contains unprocessed notes from one of three wood waste stakeholder meetings MAD facilitated.

On Wednesday, March 11, 2026, wood waste stakeholders gathered in a hybrid meeting. Approximately 21 people participated in person with another 19 joining remotely. The purpose of the meeting was to:

- Share new information and actions from the last meeting.
- Develop action plans to advance specific ideas from last meeting.
- Strengthen connections and relationships with one another.

The Minnesota Pollution Control Agency partnered with Management Analysis and Development (MAD), the State of Minnesota's consulting practice for meeting design and facilitation support. MPCA Resource Management and Assistance Division Supervisor, shared six updates since the previous meeting was held on January 28, 2026.

Updates shared at the front of the room

1. Seven-county collaboration on Metropolitan Solid Waste Management Plans

- What: MPCA facilitated a meeting of metro counties on March 4th to support coordination around wood waste management plans. Metro Counties are required to develop wood waste management plans under the Metropolitan Solid Waste Management Policy Plan.
- Who: Anoka County, Carver County, Dakota County, Hennepin County, Ramsey County and Washington County (schedule conflict for Scott County).
- Outcomes and next steps: Discussion focused on key concepts to include in the plans, sharing information/status updates and identifying opportunities for collaboration.

2. Interagency coordination on EAB

- What: EQB facilitated an interagency EAB workgroup meeting on February 25th.
- Who: Six staff attended from MPCA, MDA, and DNR.
- Outcomes and next steps:
 - The group focused on review and discussion of notes from the January 28th wood waste stakeholder meeting.
 - Initial steps have been made to update select EAB data by DNR and MDA.
 - There is interest in bringing the wood waste issue back to the full EQB early in 2027 after election of new board members and appointment of new commissioners.

3. Tip fee at District Energy

- What: MPCA met with District Energy staff on January 27 to discuss its grant to support energy recovery from waste wood.
- Outcomes and next steps:
 - District Energy expressed interest in submitting a tip fee waiver request and requested additional guidance from MPCA.
 - MPCA provided additional guidance to District Energy in February.
 - MPCA expects to receive a tip fee waiver request from District Energy this month.
 - MPCA anticipates making a tip fee decision before July 2026.

4. Air permitting for new equipment

- What: During the January 28th meeting, wood waste stakeholders expressed frustration they were unable to use new equipment purchased using MPCA Wood Waste Utilization because air quality permits were still under review.
- Outcomes and next steps:
 - [Executive Order 26-03 Permitting Reform](#)
 - MPCA's Small Business Environmental Assistance Program helps Minnesota businesses comply with environmental rules and reduce wastes, emissions, and regulatory obligations. The program focus is on small businesses that are independently owned and operated, have fewer than 100 employees, and are not major sources of waste or emissions.
 - The program has a resource on biochar production.

5. Life cycle assessment

- What:
 - The PUC elected to utilize a fuel life cycle analysis (LCA) framework to assess which electricity generation resources qualify as carbon free. This decision allows a pathway for woody biomass to be utilized if there is a net reduction in greenhouse gas emissions as compared to processes that are most likely to otherwise occur ("the counterfactual").
 - During the January 28th wood waste stakeholder meeting, there was interest in what role the state could play in developing a life cycle analysis framework facilities/utilities could use.
- Outcomes and next steps:
 - Dept of Commerce is participating in today's discussion.
 - MAD final report will include the concept of a state agency lead LCA to clarify the wood waste hierarchy and provide a consistent baseline for the environmental impacts of currently available wood waste management strategies. Staffing and funding would need to be identified and if secured project timelines will also be an important consideration.
 - Feedback on project scope, timeline and prioritization is welcome in break out groups later today.

6. Funding opportunities

- The EPA awarded Minnesota \$200 million to cut climate pollution from our state's food systems.
- Apply now: There is \$33 million dedicated to prevention of wasted food and organics management. There is \$10 million available now for a composting infrastructure grants with more opportunities coming early 2026.
- Coming early 2026: There is \$60 million dedicated to industrial innovation for 1) technical assistance and planning grants and 2) implementation grants.
- In addition to these competitive grant programs, the Industrial Innovation in Food Systems program will provide \$10 million in funding to Ramsey/Washington Recycling and Energy, in partnership with Dem-Con HZI Bioenergy and the Shakopee Mdewakanton Sioux Community, to construct and operate a new organics management facility in Shakopee, MN. The facility will showcase the effectiveness of advanced industrial energy and decarbonization technologies, particularly anaerobic digestion and biochar production.
- Website & email notification sign up: [Minnesota climate-smart food systems](#)

Additional updates from the group:

After six updates were shared at the front of the room, all participants were invited to share additional updates and related upcoming events. The following information was shared:

- The USDA Wood Innovation Grant is open. The application period closes April 22, 2026. For more information, go to: [Wood Innovations | US Forest Service](#).
- Great River Greening is hosting two onsite biochar demonstration events on March 18 in Owatonna and March 20 in Arden Hills. For more information, go to: [Events Calendar — Great River Greening](#).
- Minnesota Erosion Control Association will be hosting a biochar and compost conversation in late April or May and the [Minneapolis biochar facility](#) is opening in May.
- MN Power is working towards updating their woody biomass standard and is open to input and feedback.
- After attending the Minnesota Nursery and Landscape Association Legislative Day on the Hill, a reminder was shared with the group about the opportunity to educate legislators about the issue of wood waste, noting that legislators often need to hear about an issue at least five times to gain a better understanding of the issue. There is an opportunity to improve understanding of this issue within the legislature.
- Life cycle analysis - The LCA required by PUC of electric companies is one thing, but there is a larger need for a state led holistic LCA beyond the utility biomass LCA.
 - Q: Where would a LCA start – planting a tree seed, tree preservation?
 - Q: Could a comprehensive LCA be state reviewed and supported, but not state lead?
- [Clean Energy Business Day 2026](#) is coming up on April 21, 2026 and the Minnesota Biochar Initiative (MNBI) hosts a monthly [Char Talk | Minnesota Biochar Initiative](#) on the third Friday of the month.

Small group discussions

Based on MAD's initial assessment, themes from the January 28th meeting, and consultation with project advisors, five topics were pre-selected for small group discussion. While participants had the opportunity to offer additional topics for discussion, none were offered. Participants were asked to choose two topics that interested them the most. While two rounds of conversation were planned, a large majority of participants chose one topic and stayed with that group for the entire hour. Each of the five topics had a table host with general questions and additional prompts specific to the topic to guide conversation. The notes captured by in person table hosts are below.

Data

What are the most important questions we would want data to answer?

- Industry is currently developing supply of sustainable aviation fuel to go to the airport, connecting producers across technologies to ensure supply, most producers are using wood waste as feedstock. Investment is a major issue to move things forward. What LCA survey or study/data collection would help producers?
- There is a timeliness to have a diversification of fuel. Feel like we are missing the big picture to be less dependent on foreign oil and natural gas. The data needs to show the social benefits of broadly managing our mmBTUs for the greatest good.
- Paint the clear picture of the benefits of SAF over something like boiler electricity production.
- From a finance perspective of who drives the investments – they need stability in metrics, the social acceptance of the metrics of success, having certainty of predicted cash flows which come from risk assessments.
- How are we measuring the effects of energy production from different sources? We have imperfect metrics that don't report all the effects of what we are doing. We need to get everyone on the same page.

- In order to drive investment, we need certainty on the management of wood waste for energy production.
- Need a cost-benefit study comparing different energy-producing technologies. For example, gas boiler vs biomass facility (wood waste processor), under our current regime.
- Currently, functioning biomass boilers function with incentives or price supports – wood supply support, but there are long-term issues to make it sustainable and achieve carbon neutrality. Needs: carbon neutrality, public-private partnerships or government incentives, supply chain (certification standards that the materials are coming from sustainable sources).
- Data requirements to develop a regulatory framework for this industry: need to prove that the wood is actually waste, there is a definition of waste, but it might not be all encompassing, we don't have a good definition yet.

If life cycle assessment for the wood waste hierarchy were developed, what elements would need to be included? What questions would need to be answered? (For example, is wood vaulting an effective practice to sequester carbon?)

- An LCA needs to encompass people, profit and the planet, the three tenants of sustainability. Data for this exists, there are climate calculators that include these elements. Actually, there is so much data but needs to be compiled and processed to tell the right story to be useful.
- In terms of the information necessary to paint a big picture of the issue, the data is there. Once we have the big picture, we can see what else is missing, maybe small, specific data to start painting the details.
- We are lacking the social mandate to use the data – we need to be careful on how we are using the social problem.
- The data is helpful to get the buy in to support this industry.
- We have two main supply sources of wood: state and federal.
- What challenges do Commerce have for the regulation of this industry? It would be helpful to have a matrix comparing the different energy producing industries and their regulatory frameworks.
- Biochar is effective at removing certain pollutants involved in wood burning/processing biomass.
- How do we define the benefits? Who benefits the most from this?
- From a public health perspective, an LCA should consider the consequences of wood burning, challenging air quality problems, to highlight the benefits that come from using wood for energy production vs open burning.
- Who oversees open burning permission? Overlap between DNR and MPCA – system broken – barriers because of the different costs between the two permits, which benefit one permit over the other.
- We need long-lasting solutions to wood waste, because there is always going to be a new emergency like EAB or other threats.
- There has to be a holistic picture of what we got, and then how do we do the best with what we got? Where are we right now? Where do any of our laws help with this? Where do we need to go? Holistic view to inform policy makers and decision makers align.

State of the wood waste market

Where is the wood? Where is it going? Where else could the wood be going?

- Environmental Wood Supply (EWS) - Spring is typically quite slow so we're used to it. But it has been slow earlier. I have about a 28-day supply. May 1st we have a 2 month shutdown. All chips/mulch. St. Paul can bring in mulch. Wood is going elsewhere. Open dumping is the new norm.
- Illegal dumping and land application.
 - A lot more open burning, Elk River.

- Burn permits could be an avenue to address this.
- Rivard is still accepting and making mulch.
- Carr's has outlets.
- Farmer's accepting tipping fees and then either abandoning.
- There is a legitimate market to farmers who can deliver as animal bedding and then in another year it can be land applied to fields.
- These illegitimate operations are able to undercut the market either by location or via cost.
- Municipalities want to direct towards proper disposal based on resident concern.
- Where is the current tip fee? \$250-\$300/load? 20 yard.
- Carr's is absorbing the loss internally. Trying to separate out sawlogs and identifying other markets for free.
- Open burning is much more acceptable north of the metro.

What are the causes for shifts in the flow of wood?

- More open sites.
- Contracts released on EAB. Municipalities are starting to slow down. Focus is shifting to private property. There are still a lot of trees and it is creeping W NW. This isn't ending even when all the ash trees are out of the metro.
 - Ash trees are now considered on par with invasives when restoration projects are concerned.

How full are existing wood and sort yards, including EWS and Davey?

- EWS - 2/3 full but waiting for a spring shutdown of 2 months.
 - This shutdown should not have the same impact as previous shutdowns.
 - Will have a fall shutdown that should be shorter.
- Toft - Not even half full
- Carr's interested in obtaining proper permits to have a wood yard
- Elk River compost site, wood and grass as carbon
- Dakota Wood Grinding - Slow but still going status quo
- How does Ceres fit?
 - Getting rid of mulch is our biggest concern. We operate on a very small footprint so we have high tipping fees and are centrally located. 3 acres. Bring a lot to district. No room to compost, do some screening of soil.
 - Looking at expansion opportunities.
 - Chip Drop doesn't even scratch the surface.
 - Mulch sales are not the money maker, tipping fees are the driving force behind profitability.

What additional assets exist that may be less well known? For example, [Sylva](#) in Brooklyn Park

- Sylva undercut on a nearby small yard and is transporting to Princeton from there.

What are the top trends that will impact the wood waste market in 3, 5, 10 years or longer?

- EAB, future tree diseases, storm events
- SAF Hub proposals are primarily focused on wood to SAF

What are three to five next steps to make progress?

Step #	What specific next step will make progress?	Who may lead or be involved?	When can this action begin or be completed?	What else?
1.	Biochar and end use materials. More mulch markets.	Yards willing to utilize air cap incinerators to create biochar	Complete air permits	N/A
2.	Silt fence and erosion control.	DOT	• Need specs for compost, mulch, and biochar. • Alleviate fear of non-compliance or future rule changes that could put these new activities out of compliance. • Foreperson can write it in but education is needed. • Would a hierarchy of use/application be helpful? • Engineers and architects respond to what is given to them. RFP's need to include extra points for projects that specifically call out these activities. They need motivation to solicit action. • Increasing the benefits associated with the roadside vs. the actual roadbed w/in the RFP. • Biochar for contamination, silt fence for erosion control, etc. • How to specifically use mulch in these projects.	N/A
3.	SAF and carbon sequestration markets.	MSP SAF Hub	Need to push wood to SAF and verified carbon accounting methods.	N/A
4.	Public education on the amount of wood out there. There are people concerned about this.	MPCA, DNR, MNLA, MNSTAC, EverGreen, Great River Greening.	N/A	N/A
5.	Urban Wood and wood products	Urban Wood Economy, Urban	• Need standards and specifications so that architects begin to write these materials into plans, especially for exterior use.	Infrastructure investment is need for arborists to handle saw logs.

Step #	What specific next step will make progress?	Who may lead or be involved?	When can this action begin or be completed?	What else?
		Wood Network	- We need a someone from construction specifications institute to write this spec that ties back to the standard available on USRW.net to build the markets. - WFTH - Education about how to grow usable urban wood, education about how to trim and remove urban trees to 12' boles. - MNSTAC/MNLA. - Thermally modified material to be spec'd in.	

What questions remain?

- Tree mortality rates are changing with climate change.
- Trim guidelines around powerlines are changing, we have more clearance requirements leading to more material.
- We need a carrot AND a stick!
- Open Burn Permits - Open Burn Restrictions
- Largely favorable among operators. Need drastic increases in fees and enforcement to make a dent in open burning and illegal land application. Revenues could be used to build markets and cover staff costs for enforcement actions.

Tip fee at District Energy

- A participant noted ideally system could be set up to have no tip fee for circumstances like EAB and storm damage. But an ideal system WOULD have a tip fee/would disincentivize or at least not offer 'free' disposal for someone who cuts down a tree to make a bigger patio for themselves.
- Transfer fee is already in place, only ground wood accepted (pushes the cost into the market).
- Scott County – all three facilities in their community that accept wood have a tip fee. Doesn't see a tip fee at DE as out of place with that.
- A participant noted by accepting only chipped material, essentially IS a tip fee.
- 1.50 per cubic yard up to \$7 per cubic yard for Ramsey county. Having that policy is effectively a tip fee.
- A participant noted if they were accepting brush and logs then the difference is that material has to be prepped (ground before getting sent)
- Having the only ground wood accepted is more efficient than the administrative element of a tip fee, that offsets the costs and makes it much easier for them on the biomass plant.
- Works better for wood waste suppliers because they can plan for the grinding. Tip fees at the door are harder for them to manage – and harder for the entities that would get billing.
- Also potential of wood waste generators going to less desirable (i.e., burning/stockpiling/ lowest cost) if there's a tip fee. That's a concern. Also assumes Ramsey's costs would increase in addition to the big increase they already absorbed to date.
- Hard to reset the system to the old methods. When at one point the wood waste being purchased.

- They can drop transfer fee or eliminate it if needed due to market conditions. Worst case is they could open up to brush and log.
- Lowered staff recently through attrition. Brush and log takes up more space, they have to take less material in. More ready for processing, less burden for supplier
- They will have to get more innovative on how they bid processing contracts. Vendors relying on EWS is useful, but the county should adjust for the fees they have to pay if other locations are needed for disposal. Their current processes the bidders are assuming they will have costs from traveling to other spots – that's baked into the cost and may be less efficient for the county.
- County used to have separate transportation and processing costs - contracts
- Scott County has some tree care companies buying properties for stockpiling, seeing some burning – some conflicts
- City of St Louis Park – Shut down their yard waste site, no longer open to outside contractors. Only managing city materials. Use a contractor to grind their wood waste.
- City of St Louis Park prefers no tip fee – will help manage their costs. Also understand the need to cover costs.
- SMSC sent about 9000 tons to DE

Sustainable end use markets

What are the most impactful sustainable end use markets for wood waste for investment right now?

- Biochar production shows a lot of promise and has a lot of potential end uses such as soil amendments for soil health and carb on sequestration, stormwater treatment as a soil amendment. MnDOT has also been looking into ways to add biochar to inslopes outside of construction projects for additional stormwater treatment in our ROW's. There is also the potential to use wood materials as a carbon source for composting. MnDOT also likes to use wood slash mulch for erosion and sediment control on construction projects but we typically use trees removed from the site as part of tree clearing for this purpose.

What are the highest volume options?

- More biochar facilities are opening and in the planning stages throughout MN. Hopefully, this will result in a price reduction from the current price of \$100 to \$150 (Even as high as \$250) per CY.

What are lower volume options that are also high value and can be developed?

- There is a demand from the composting facilities that need wood waste as a carbon source for making their compost batches especially from source separated organic material (SSOM) feedstocks.

What are the challenges in realizing these end use markets?

- For biochar it is getting the message out so people realize the potential benefits for building soil health, stormwater treatment options and potentially carbon credits. At this time the carbon credits are so low in value that is not always feasible to pursue this unless you are working with 5,000 acres or more. MnDOT looked into this for potential carbon credits on ROW but the return on investment was not there. Still, we are getting value in stormwater treatment (both volume reduction and water quality) and improving soil and vegetative health.

In what ways is the state prepared or unprepared to utilize sustainable end use markets for wood?

- MnDOT is preparing for utilizing these end use products by performing research to understand the full benefits and cost benefit analysis for use of these products. We need to do more to communicate this within MnDOT and to other agencies and groups to understand the value of these products. We have the potential to increase demand by including biochar soil amendments in our soil health practices.

MnDOT is also looking at ways to amend soils outside of infrastructure construction events by in-situ amendment of Right of Way soils using aeration or slit tillage applications of biochar into existing vegetation.

What role can state government play in developing these end use markets?

- Demonstrate the benefits through research and pilot testing these products. Communication to other organizations is also key in making this happen.

What strengths can be used to make progress? What models, case studies, or research already exist that Minnesota can learn from?

- MnDOT is currently doing research on biochar specifications which looks at different feedstocks and pyrolysis temperatures and how different biochar products are suited to different uses. MnDOT also just started a research project on potential uses of biochar in green infrastructure projects. There will be literature review coming in soon for this project. There is also some literature review out there regarding the stormwater treatment benefits with biochar both as a soil amendment and incorporation into sediment control BMP's.
- MPCA was awarded \$200 million to cut climate pollution from the state's food systems [Minnesota climate-smart food systems](#). There will be \$60 million available to support industrial innovation in food systems, which could support the use of woody biomass. For example, the MPCA will provide \$10 million in funding to Ramsey/Washington Recycling and Energy, in partnership with Dem-Con HZI Bioenergy and the Shakopee Mdewakanton Sioux Community, to construct and operate a new organics management facility in Shakopee, MN. The facility will showcase the effectiveness of advanced industrial energy and decarbonization technologies, particularly anaerobic digestion and biochar production.
 - We discussed the SMSC compost facility as some at the table have visited this facility and know staff there. They are utilizing biochar for making biochar/compost blends (currently in bulk form and someday perhaps bagged?). They also have a demand for processed wood waste for compost batching.

What are three to five next steps to make progress?

Step #	What specific next step will make progress?	Who may lead or be involved?	When can this action begin or be completed?	What else?
1.	Communicate the benefits of biochar use as a soil amendment and for stormwater treatment	MnDOT could lead or at least be involved since we have already done some research in this area.	It is in progress and new research is just beginning. Our research on production methods and specifications will be nearing completion in 2026.	N/A
2.	Pilot projects to demonstrate the beneficial uses for soil amendments and stormwater treatment.	MnDOT could assist but anybody could lead or be involved as there is no single agency or	N/A	N/A

Step #	What specific next step will make progress?	Who may lead or be involved?	When can this action begin or be completed?	What else?
		organization that would benefit from the use of these by-products.		
3.	City of Minneapolis biochar production facility opening this spring.	Jim Doten leading this facility	Tom has been communicating the availability of this product and the potential beneficial uses.	There are other facilities in MN making biochar such as Carba in Burnsville and possibly Dem-Con in Shakopee at some point. Need to be cautious with biochar quality and be wary of \$50/CY biochar at this time.
4.	MnDOT continuing to look at uses for wood wastes produced in tree clearing activities and utilizing these products on site for erosion and sediment control.	Anybody can use these practices. We are informing people about these more sustainable practices that you can leave on site and not have to remove and dispose of in a landfill like you have to do with silt fence.	N/A	N/A

What questions remain?

- MnDOT pursuing compost certification in MN. We're currently developing the program using state funds but could benefit possibly from the grant money coming available to finish this program. Will need about \$50,000 to get this to the finish line in FY 27.
- Need to continue working to develop the biochar market to assure early biochar startups succeed.
- Our table also discussed the use of portable biochar kilns that can be used to process materials on site. The challenge there is in processing the waste wood and getting the moisture content right before mobilizing to the site.

Legislative advocacy

Permitting and policy reform (top priority)

- Reform the burn permit statutes (MN Statute 88.17) during the permitting reform activities at the Legislature to align with other state priorities, or how statutes are being applied and enforced. MN Statute allows the issuing of \$5 burn permits for disposal of wood waste up to a maximum of \$50 per year per individual business, which doesn't align with other stated goals such as emissions reduction, public health, public safety, wood waste disposal hierarchy, etc. The reform should take into account the geographical differences across the state, and that alternative disposal methods may not be available due to distance, etc.
 - Note: It is interesting that 88.17 Subd 3 Special Permits states the following, *(c) Only trees, tree trimmings, or brush that cannot be disposed of by an alternative method such as chipping, composting, or other method shall be permitted to be burned at a permanent open burning site. A permanent tree and brush open burning site must be located and operated so as not to create a nuisance or endanger water quality. The commissioner shall revoke the permit or order actions to mitigate threats to public health, safety, and the environment in the event that permit conditions are violated.* As an example, I heard during the meeting yesterday that open burning is occurring near Elk River and there are several complaints on social media about smoke from those activities.
- Over the next 6 months, the MPCA should use the knowledge gained from the Wood Waste Working Group and these listening sessions to develop a solid waste management framework for the 2027 Legislature that could identify current statutory equity, existing policy levers and current/potential funding sources that could be applied or updated to improve the management of wood waste in MN.
- Clearly define wood waste in the solid waste statute. Align with definitions in other statutes related to the use of wood waste and tree waste as biomass, etc., and include it in the requirements for organic waste management. Current statutes:
 - 115A Waste Management
Wood waste is not included in 115A.02 Legislative Declaration of Policy; Purposes

115A.03 Definitions
Subd. 38. Yard waste

"Yard waste" means garden wastes, leaves, lawn cuttings, weeds, shrub, and tree waste, and prunings.
 - 41A Bioincentive Programs
41A.15 Definitions
Subd. 2e. Biomass.

"Biomass" means any organic matter that is available on a renewable or recurring basis, including agricultural crops and trees, wood and wood waste and residues, plants including aquatic plants, grasses, residues, fibers, animal waste, and the organic portion of solid wastes.

Advancing Uses for Wood Waste

- Nascent industries need economic stability/certainty to develop uses for wood waste. The state should support pathways to end use markets using credits and existing funding streams. Avoid mandates that once removed collapse the market. Ideas that were brought up were the use of products in brownfield remediation (5 massive programs under EPA), water quality improvement, MN DOT projects, the use of revolving loan funds like the State of Virginia used for living shorelines. There was also consensus that the state should avoid just providing funds to a non-profit to provide/develop solutions. There should be competition.

- Lead Agency: There was strong consensus that the MPCA should be the lead agency on management of wood waste and advancing alternative uses. The discussion at this table as well as the broader discussion described the difficulties of working through the PUC and Commerce related processes. That said, there was discussion that the lack of carbon free thermal energy policy creates difficulties to use wood waste as biomass energy. Currently the incentive for the use of biomass as a biofuel in Ag policy and is underfunded each budget cycle. There is also concern that it will be eliminated, which fosters additional market uncertainty. Meanwhile the state has strong climate and carbon free energy goals, and a climate action framework to drive change toward the use of carbon free energy that could be provided in part by wood waste. Natural gas utilities are proposing projects to use alternative sources of carbon free thermal energy to reduce the use of natural gas. Defining the conditions under which thermal energy from biomass is considered carbon free, like the action taken recently at the PUC on electricity, would help support wood waste being used as a thermal energy source in lieu of fossil fuels.

Large group debrief

Data

- For that specific question, the group discussed investors/banks would need certainty about the technology because there may be some data lacking on ROI for sustainable end use markets.
- Having certainty of cash flows that comes from risk assessments of the emerging technologies.
- Reliance on the biomass waivers and incentives and supports from government is missing right now; once those incentives are taken away, a lot of those plants fail.
- LCA:
 - What data is needed to inform LCA? That could encompass people, profit, and the planet so we can ensure there is a social benefit, a profit, and benefit to the planet
 - There is a lot of calculators available but need to paint a bigger picture; once you paint that bigger picture, you can see where additional data is needed and how carbon neutrality can be achieved with this tool
 - Plenty of objective data on technology side and raw emissions to put together at every level; the risk assessment is missing – the guarantee of any political certainty that supports any pathway; we can justify on the engineering side which technology is carbon neutral, but what is also important is the political will that will push investment
 - Question: is there a baseline utilization that we're using? Open burning?
 - Yes, how can we incentivize people to not do open burning and they can have the infrastructure to know where to take that wood
 - The baseline becomes wherever you draw your boundary; whatever happens inside your box will give you your usage pathways

State of wood waste market

- Wood yards are no longer inundated with material; it is flowing elsewhere and the elsewhere is farms, entities, and a lot of arborists are buying land and filling it up with wood waste and then walking away
- Also talked about where this ultimately goes and how do we actually develop markets, whether that's biochar, mulch, energy? We talked specifically about the air permitting process and that companies who want to buy an incinerator are able to do that
- We spent a lot of time across different markets in the area of specifications and building use into architectural plans, roadway plans. The thing we heard a lot of that a lot of industry folks are stuck in

their ways about what they use and how they approach their jobs so we need to have education on applicable uses ready to share so we can say “you can use biochar in roadway projects”

- Talked about education of arborists
- Also talked about open burning issues – would be good to have significant cost to open burn permit, and actually enforce it. No one in the group spoke in opposition of burn permits.
- MPCA needs to cite their own precedence on air curtain burners; we had to pull permits for an air curtain permits and we had PCA pull past permits and we were receiving different facts from PCA when they really should have been telling us the rules versus us telling them
- How you can get markets open? Engineers and architects respond to what the market is; In RFP process, give more points to innovative solutions that are using local products.
- Want to second what KS said; I think that would go a really long way
- The driving force behind any MnDOT project is the roadside infrastructure itself; MnDOT is currently doing climate impact modeling; the process for anything at MnDOT start 10 years ago and then catch up
- Did spend some time on SAF; wood to SAF needs to be prioritized over ag to SAF;
- A big part of our earlier efforts is recruiting producers to make SAF in Minnesota; all of the most excited producers use woody biomass; partners in this work are also feeling excited about it

Tip fee at District Energy

- Key takeaways: Costs have gone up for wood disposal, concerns about what that means for the market; evident that there is a dynamic out there that we are seeing these spots pop up that tree care companies are using those spots to store wood; and if you put tip fee at DE you are just encouraging that;
- DE charging transfer fee to move wood around and charging tip fee at brush and logs but not mulch is still a tipping fee because the tree care companies have to chip it anyway
- If there is a mechanism for a system that has an exception to tip fees, like storm wood, EAB wood, or other difficult circumstances
- Question: did you talk about acceptable range for tip fee?
 - Answer: No, but Ramsey county did say cost per cubic yard used to be \$1.50 and now is \$7.00 so if it goes any higher than that, it will dig into county budgets.

Sustainable end use markets

- We talked about a lot of different things but focus was more on biochar; we’ve done some research that had some lit reviews as part of it; there’s a lot of different feed stocks out of it, lots of things that vary as part of the pyrolysis elements; we have uses for biochar, soil amendments and storm water treatments.
- We are in the second year of a research project with Duluth looking at biochar; we are looking also at runoff pollutants; we get a lot of nutrients that runoff too, so if we have biochar soil amendments, we can absorb that and keep it in the roots.
- Also talked about some of the potential storm water treatment- there is incorporation of biochar in things like sediment control logs;
- Talked about the cost of biochar currently and how that impacts what we are trying to do; we talked about anyone using biochar should get carbon credits for that; Only need about 5000 acres for it to pay off
- Talked about different processing, different kilns that can be used. Would be nice to have portable kiln that we could use to turn things into biochar on site.
- Also looking at sustainable erosion control and sediment containment. When it comes to residue that has oiliness to it; no biochar in MN standards has petroleum in it; biochar will not be contaminated.

Legislative advocacy

- We talked about permitting form; crack open the burn permit- that could be a good place to start
- There is geographical differences across the states, whether it's the twin cities metro or other places
- Also talked about solid waste ordinances; where is the definition of wood waste; there in different places but it's not clear; so update the ordinances
- Use a solid waste management framework
- Make wood waste a priority for 2027 legislature – it will be a budget year. Talk about policy levels, funding, etc.
- If government can also help nascent markets to get them going and help them get to end use markets.
- There was a talk about biomass as well; we focused on the regulatory actions really at PCA. The provision around the biomass boilers, that is through MDA, might not be sustainable. So perhaps, I brought up thermal energy before, but if there is clean energy coming from biomass and can get carbon credits so that may be the vehicle to promote business with wood waste on the energy side.
- Hardship provisions: is that one entity or for one time?
 - It's not time bound;
 - There is an opportunity to crack that open and set up regulations to make it harder; make it expensive, make it harder to get the permit; it would not make the permit go away fully but would significant disincentivize use and open burning; when we put that kind of thing in place, it will incentivize wood to go to end use markets that are actually economically beneficial.