

Environmental
Permitting
Considerations
for Biochar
Production

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Minnesota Pollution Control Agency

June 28, 2023

Agenda

- Wood waste generation in MN
- Biochar as a management option
- Environmental permitting requirements for wood waste management/conversion

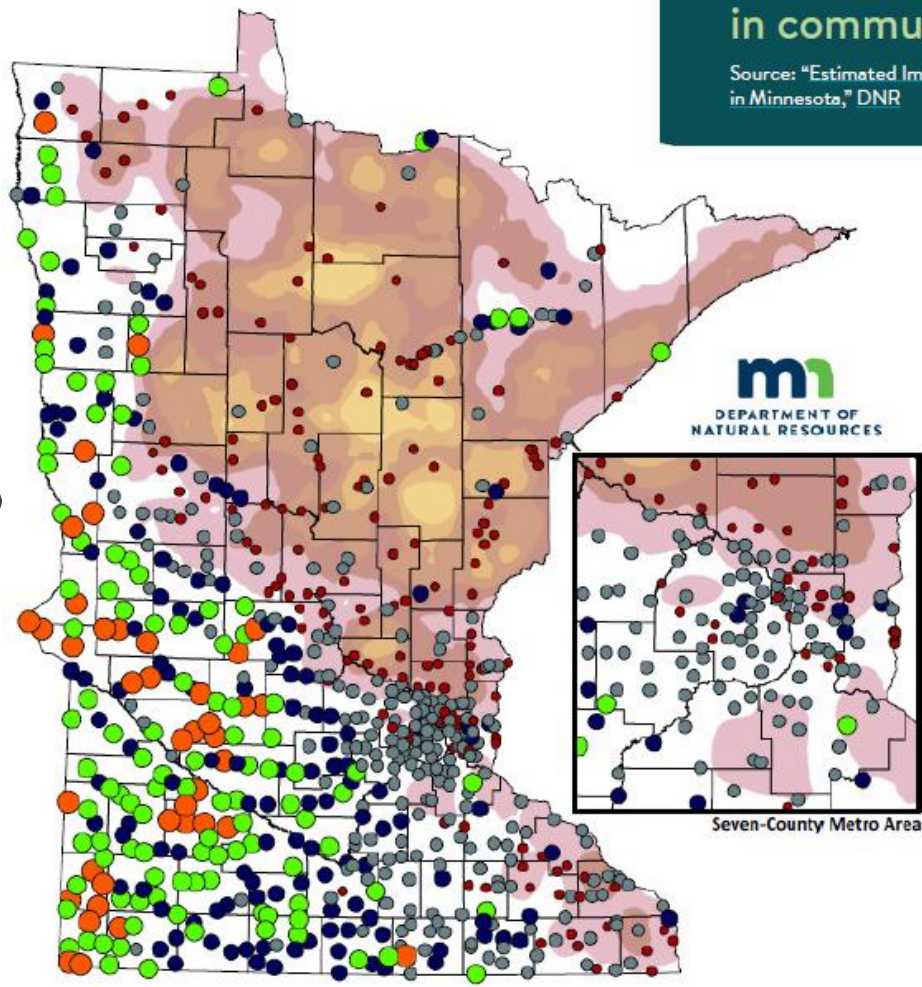


Emerald Ash Borer in Minnesota

Community and Forest Ash Trees in Minnesota

EAB could kill up to 360,000 trees in forested areas and 25,000 trees in community forests, annually.

Source: "Estimated Impacts of Emerald Ash Borer (EAB) on Ash Timber Supply in Minnesota," DNR

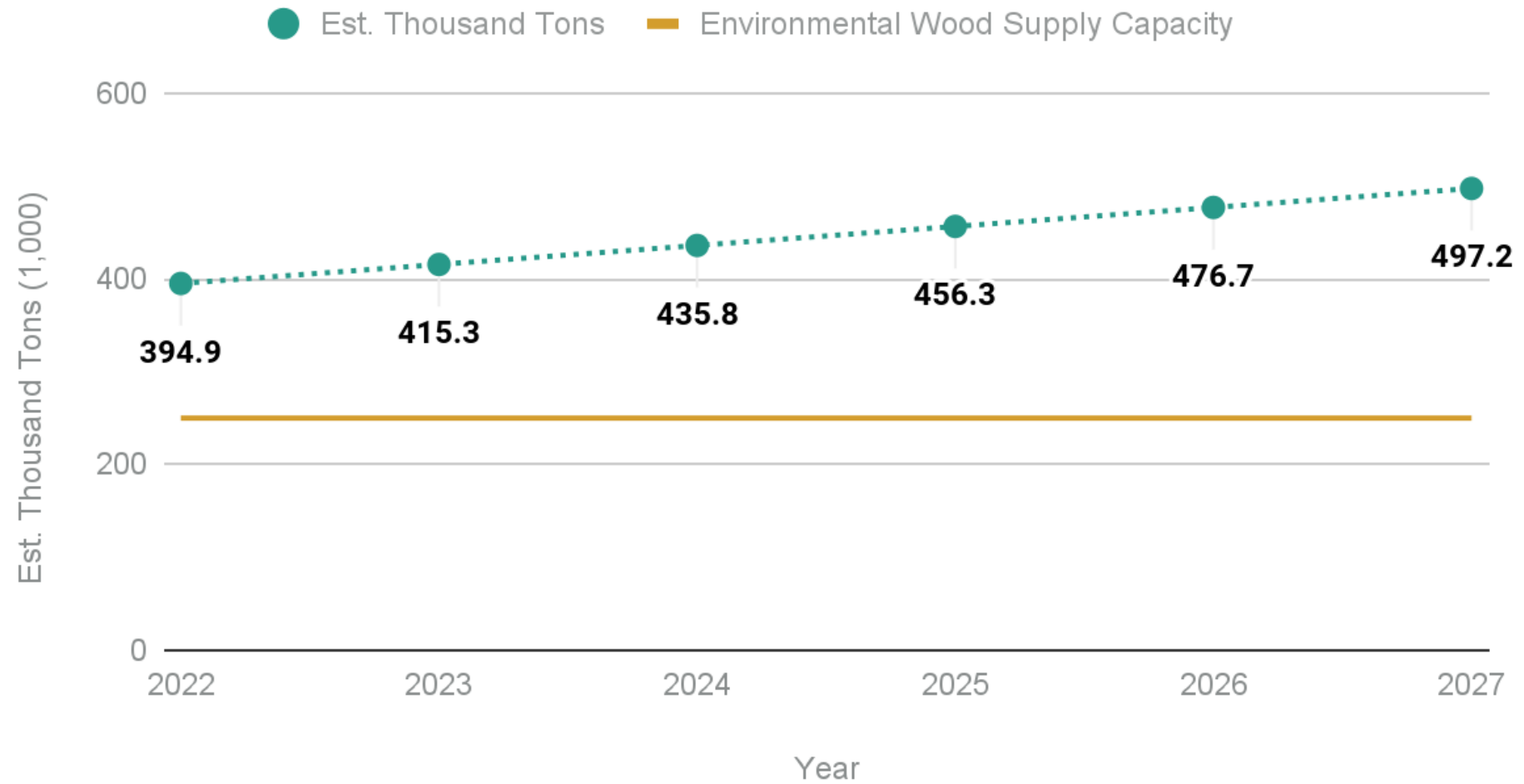


With over 1 billion ash trees, 2.65 million of which are located in communities, EAB is a major threat to Minnesota's ash resource. Minnesota has more than one million acres of forest dominated by ash - more than any other state in the country. The State of Minnesota manages 170,000 acres of ash-dominated forestland.

An analysis of ash populations and density by municipality.
 Source: 2010 Rapid Assessment, DNR
 "Percentage of trees of the genus Fraxinus (Ash) inside of municipal boundaries in 2010 and Black Ash Concentration in Cords per Acre"

Trees in communities	Black ash in forests
Total Ash as a Percentage of Total Trees Reported on 2010 Rapid Assessment (RA) (RA surveyed maintained areas)	Black Ash Forest Concentrations (2017 HA) Cords per Acre
● 0.1% - 10%	Low to None
● 10.1% - 20%	2 - 5
● 20.1% - 30%	5 - 8
● 30.1% - 40%	8 - 10
● 40.1% - 60%	10 - 13
	13 - 19

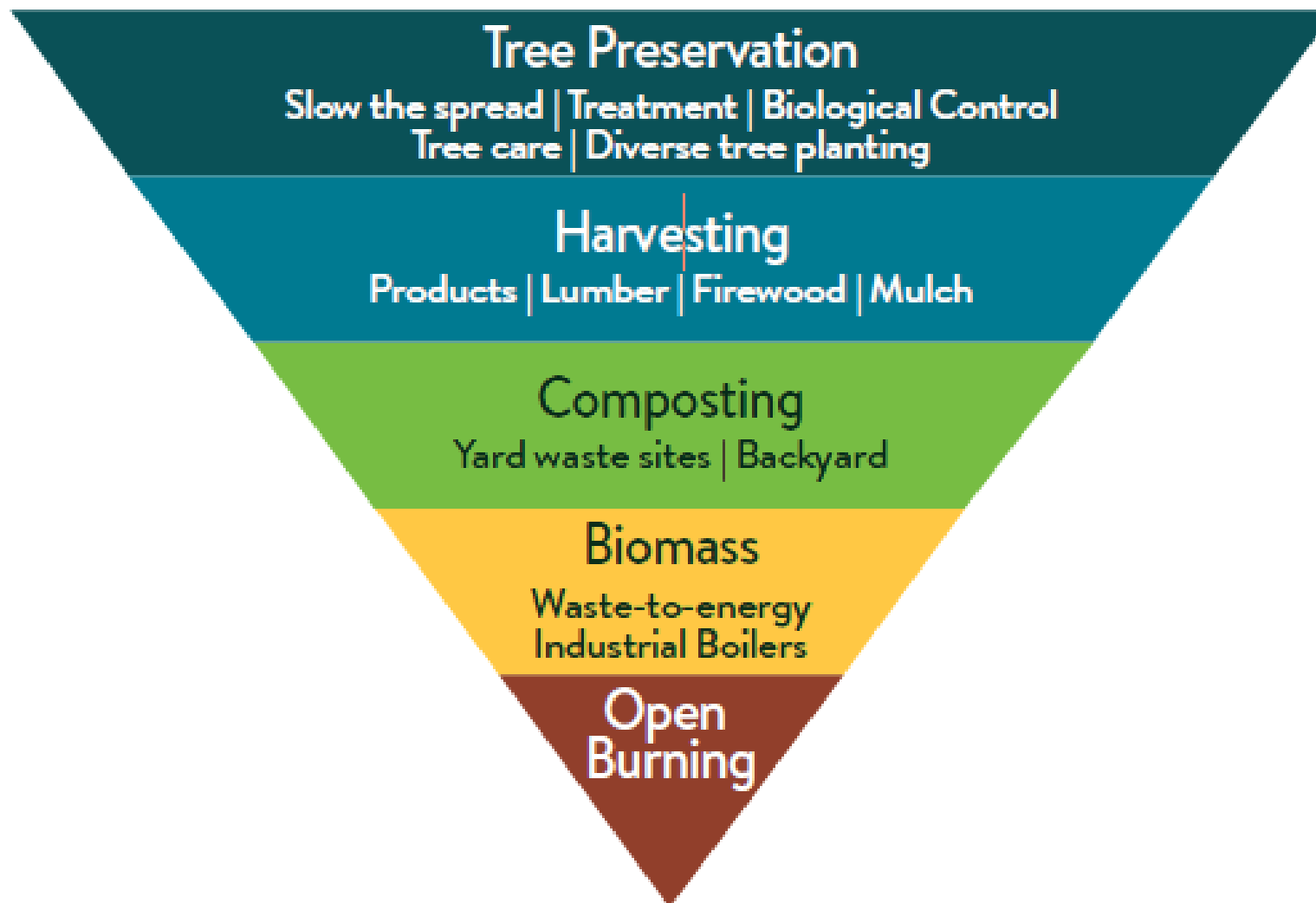
Estimated wood waste projections in Twin Cities Metro Area



Cambium 2022 “Twin Cities Metro Area Emerald Ash Borer Wood Waste Study” prepared for Partnership on Waste and Energy

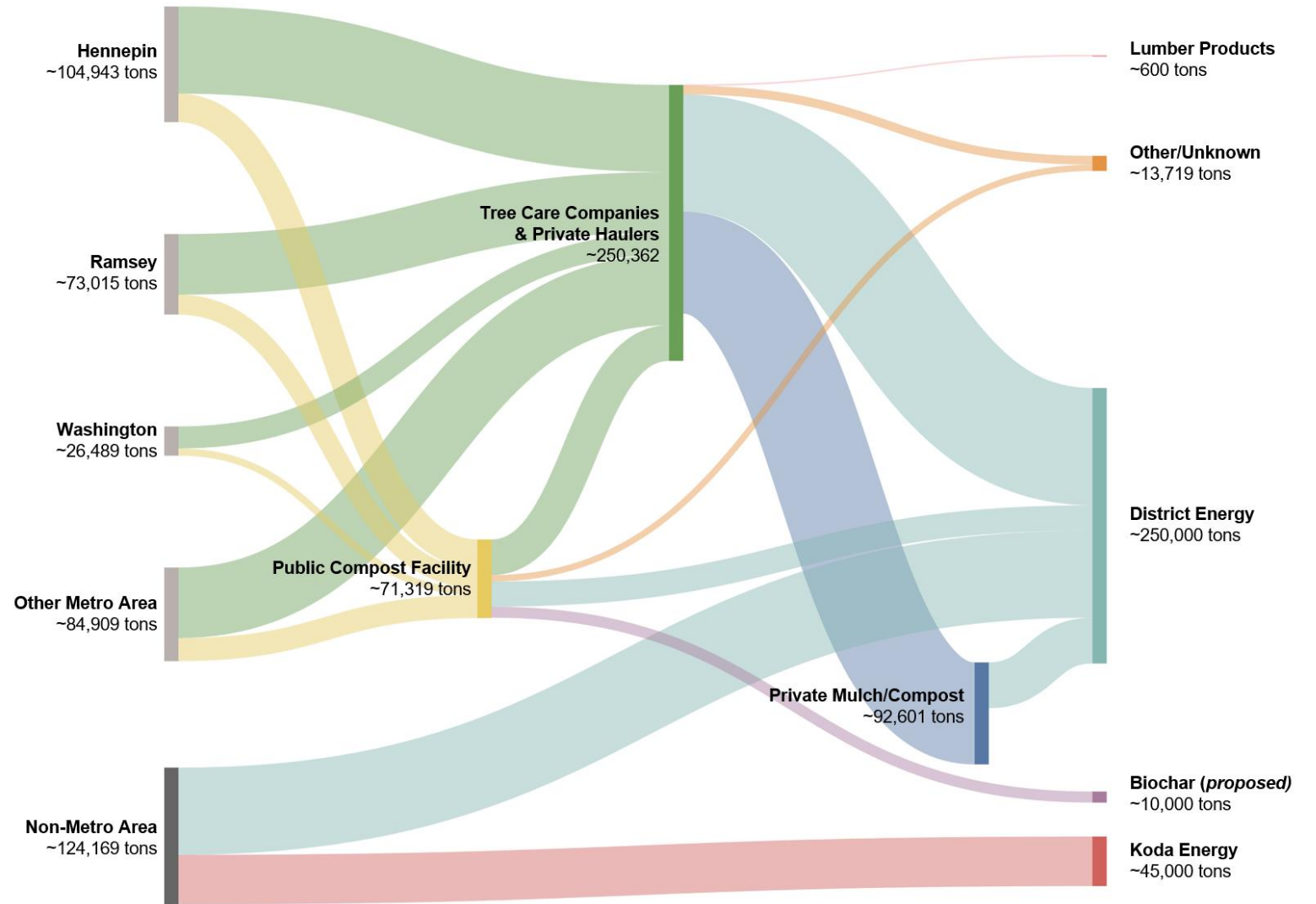
HIERARCHY OF ASH TREE MATERIAL MANAGEMENT

Most preferred environmental option



Least preferred environmental option

Shortfall in wood waste processing capacity expected



Cambium 2022 "Twin Cities Metro Area Emerald Ash Borer Wood Waste Study" prepared for Partnership on Waste and Energy



St Paul Co-Generation

- AKA District Energy
- Provides heating and cooling to St Paul district
- Generates 25 MW electricity
- Wood yard and boiler manage 250,000 tpy wood

Biochar Production Technologies

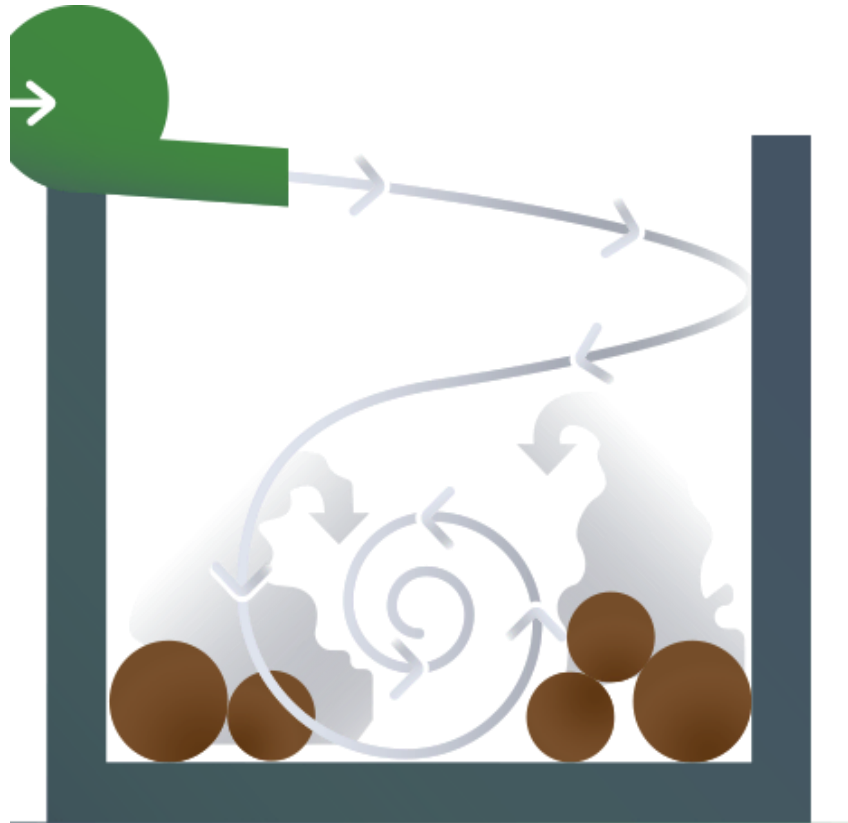


- Simple to complex
- Biochar, syngas, bio-oil
- Weight or volume reduction
- Co-location with wood waste sites (wood yard, compost)
- Soil amendment benefits
- Carbon sequestration potential

Determining whether an Air Emissions permit is needed

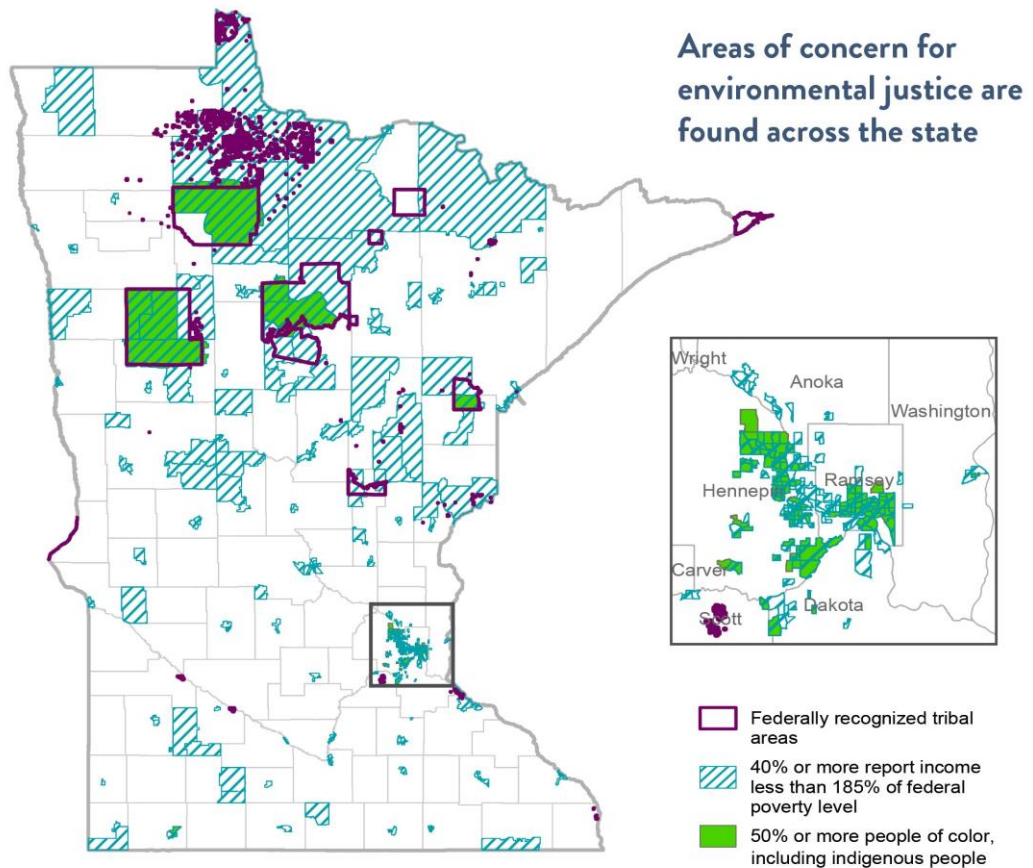
- Total Facility Potential to Emit thresholds (TPY)
 - Fixed Location
 - Portable
 - Equipment on site: Biochar, diesel engines, tanks
- Emissions factor X 8760 hours/year = Potential To Emit
 - EPA emissions database (AP 42)
 - Emissions test data
 - No exemption for demonstration projects
 - Worst-case emissions
- Keep record of calculations
- MPCA Small Business Environmental Assistance Program

Pollutant	Federal Permit	State
Nitrogen Oxides	100	NA
Sulfur Dioxide	100	50
PM10	100	25
PM2.5	100	NA
VOCs	100	100
Lead	10	0.5
CO	100	NA
GHG (CO ₂ e)	100,000	NA
One HAP	10	NA
All HAPs	25	NA



Air Curtain Incinerators

- Require Federal (Part 70) permit
 - Standards of Performance for Commercial or Industrial Solid Waste Incinerators (40 CFR Subp. CCCC)
 - Standards of Performance for Other Solid Waste Incinerators (40 CFR Subp. EEEE)



Environmental Justice Considerations in Air Emissions Permitting

- Address disproportion impacts as they are identified
- MPCA air permitting program goal: companies are engaged with their community
- Incorporate engagement early in project planning
- Pay attention to what is disruptive to community, neighbors
- Current MPCA practice: review complaints, violations, discuss with company opportunities for facility improvements

Environmental Review--Environmental Quality Board

- Environmental Review collects information to:
 - Help public agencies make informed permitting and approval decisions
 - Gives the public access to decision makers
 - Ensure public awareness and meaningful input into decision making.

Mandatory EAWs



Construction of facilities processing that convert biomass to a gaseous, liquid or solid fuel

25,000 tpy dry biomass input
Syngas
Bio-oil



Construction of air emissions facility increasing air emissions or greenhouse gases

250 TPY air emission pollutant
100,000 tpy greenhouse gas emissions (CO₂e)



Air dispersion modeling and air toxics assessment requirements

Roles in waste wood management

Minnesota Pollution Control Agency

- Wood waste management; Environmental permitting; Solid Waste facility grant management

Minnesota Department of Agriculture

- Implements and manages EAB quarantine
- AGRI Bioincentive Program

Minnesota Department of Natural Resources

- Wood utilization; Forestry management; open burn permit program

Minnesota Counties, Cities

- Solid waste management; open burn permits; public land managers

MPCA Wood Waste management



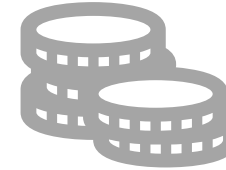
Twin Cities Solid Waste Policy Plan: 20 year plan for managing solid wastes in the 7-county metro area

Metro counties must develop wood waste management plans

Plans must encourage EAB prevention strategies

Policy plan on public notice to August 31, 2023.

Public meeting July 11, 2023



Capital Assistance Program Grants

Koda Energy \$3 million—expand EAB wood waste capacity

Expand wood waste markets, management—RFP published winter 2023/2024

Other solid waste funding opportunities may include wood waste--TBD

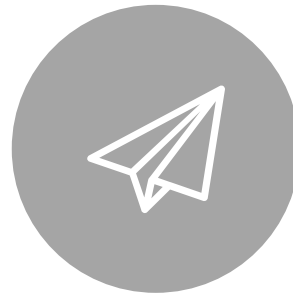
Environmental Issues in developing biochar production capacity

- Need to expand all forms of wood waste use to manage growing ash wood inventory
- If biochar production unit is kept at a modular, mobile scale, environmental permitting appears limited
- Limited production operational experience in Minnesota
- MPCA has grant funding for purchase of wood waste management equipment

MPCA Assistance Contacts



Small Business Environmental
Assistance Program
smallbizhelp.pca@state.mn.us



Email/notifications:
<https://www.pca.state.mn.us/about-mpca/contact-us> (Gov Delivery)