



**REPORT TO THE
LEGISLATURE**

DECEMBER 2023

Sustainable materials management and solid waste policy report

A detailed look at Minnesota's management of materials and solid waste, including ways that policy and programs can improve waste reduction, reuse, recycling and organics, and safe disposal.

Legislative charge

Minnesota Statute § 115A.411 requires the Minnesota Pollution Control Agency to draft a policy report for the Legislature every four years, including a summary of the status and effectiveness of materials management and solid waste, progress towards goals, opportunities for further research and action, and recommendations for new or modified policies to advance efforts statewide.

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Acronyms

AD	anaerobic digestion
CAP	Capital Assistance Program
C&D	construction and demolition
CBEI	consumption-based emissions inventory
CED	covered electronic device
CO ₂ e	carbon dioxide equivalent
CLP	Closed Landfill Program
DNR	Department of Natural Resources
EA	environmental assistance
EAB	Emerald Ash Borer
EJ	environmental justice
EV	electric vehicle
EPD	(International) environmental product declaration
EPEAT	electronic product environmental assessment tool
EPR	extended producer responsibility
GHGe	greenhouse gas emissions
GRE	Great River Energy (facility)
HERC	Hennepin Energy Recovery Center
HHW	household hazardous waste
HRL	health risk limits
IL	intervention limits
LCA	life cycle analysis/assessment
LRDG	local recycling development grants
M-SPIRE	The Midwest Sustainable Plastics Innovation Regional Engine
MDH	Minnesota Department of Health
MMSW	mixed municipal solid waste
MSW	municipal solid waste
MnDOT	Minnesota Department of Transportation
MnTAP	Minnesota Technical Assistance Program
MPCA	Minnesota Pollution Control Agency
MRC	Minnesota Reusables Coalition
MRF	materials recovery facility

NAHMMA	North American Hazardous Materials Management Association
OSHA	Occupational Safety and Health Administration
OSP	Office of State Procurement
PBR	permit by rule
PCC	post-closure care
PFAS	per- and poly fluoroalkyl substances
PPP	packaging and paper products
PWE	Partnership on Waste and Energy (Hennepin, Ramsey, and Washington counties)
RAP	Rule Advisory Panel (for C&D rule writing)
RDF	refuse-derived fuel
RMD	recycling market development
REC	Recycling Education Committee
RFP	request for proposals
SBG	Sustainable Building Group (external workgroup)
SCORE	Select Committee on Recycling and the Environment
SMM	sustainable materials management
SOP	standard operating procedure
SSOM	source-separated organic material
SWMT	Solid Waste Management tax
TMDL	total maximum daily load
UECA	Uniform Environmental Covenant Act
USEEIO	US Environmentally-Extended Input-Output (from U.S. EPA)
U.S. EPA	United States Environmental Protection Agency
WARM	Waste Reduction Model (from U.S. EPA)
WMA	Waste Management Act
WTE	waste-to-energy

Executive summary

With over forty-years since the passage of the Waste Management Act, Minnesota has seen a gradual transformation from a system solely designed to manage solid waste to one that more holistically recognizes the climate, environmental, and human health impacts of materials across the complete life cycle. According to the U.S. EPA, roughly 40 percent of the greenhouse gas emissions in the United States are associated with the production and transportation of goods. Strategies at the producer or industry level to reduce climate pollution are important, along with recognizing the role that consumption or demand of goods and services plays in driving these emissions and other environmental impacts. With a sustainable materials management lens, the Minnesota Pollution Control Agency (MPCA) aims to guide policy and programming that continues to improve traditional solid waste management, while also recognizing the critical need for changes earlier in the process starting with product design, raw materials extraction, manufacturing, and consumer behavior.

This report provides an update on the state of materials management and solid waste across Minnesota, including progress towards current goals and highlights for specific programs at the MPCA. It also identifies opportunities for further research and action and proposes recommendations for new or modified policies to advance efforts statewide. Policy, funding, and program opportunities are included throughout the report in specific program sections and summarized as a complete list at the end.

Using several criteria, the report identifies and ranks in priority order seven focus areas with specific recommendations for the state to pursue in the next several years. Additional detail on each of these can be found in [the final section of the report](#). For these recommendations to be successfully implemented, more work needs to be done to confirm the full scope, understand resource needs and engage partners, and secure additional funding to assist state agencies and offer competitive grants and pass through dollars for local programs.

- **Food systems**
 1. Require the reduction of wasted food, annual reporting, and proper food management for large generators of wasted food.
- **Data collection and analysis**
 2. Require waste composition studies at solid waste facilities statewide on a recurring basis.
 3. Expand waste reporting to require measurement of all waste streams (MSW, C&D, Industrial).
- **Reuse, rental, and repair**
 4. Establish an ongoing statewide waste reduction and reuse grant program.
- **Buildings and materials**
 5. Establish a statewide deconstruction requirement for state and local government-owned buildings.
- **Extended producer responsibility**
 6. Implement a statewide extended producer responsibility program for packaging and paper products.
 7. Implement a statewide deposit refund program.
- **Organics and recycling services**
 8. Require organics curbside collection or drop-off sites by city size and distance from an organics facility or transfer station.

- **Solid waste recovery and disposal facilities**

9. Develop a guidance for consistently incorporating environmental justice in solid waste permit review and issuance.
10. Establish clear regulations for when closed landfills can exit the formal post-closure period.

Since the last report submitted in 2019, some notable agency accomplishments include:

- Development of Minnesota’s Climate Action Framework, which acknowledges the connection of climate work and sustainable materials management. This framework serves as a foundation for future actions that can continue to strengthen this connection.
- Additional funding to further statewide investments in sustainable materials management and solid waste, including pass-through funding to the counties and one-time funds to expand competitive grants related to prevention of wasted food and food rescue, waste reduction and reuse, sustainable buildings and materials, recycling market development, organics management, and wood waste management. Existing programs like the Greater Minnesota grants and the Solid Waste Capital Assistance program were also updated to expand eligibility to include waste reduction and reuse.
- Federal funding from the U.S. EPA’s Solid Waste Infrastructure for Recycling grant program for the MPCA to complete an updated statewide waste composition study, updating the data from the last waste sort in 2013.
- Significant involvement with external parties in working groups focused on identifying opportunities for reducing the environmental impacts of Minnesota’s buildings and building materials (with an emphasis on upstream activities). A second working group discussed topics related to construction and demolition landfills to develop a new rule covering landfill design and operation, pollution prevention aspects, and water quality.
- Engagement with interested parties and industry partners to evaluate policy models for solar panel end-of-life management to encourage repair, reuse, and recycling.
- The state of Minnesota receiving an EPEAT Purchaser Award for the eighth year in a row based on the Sustainable Purchasing Program’s efforts to require sustainability as a part of electronic goods contracts.
- Continued commitment to maintaining existing and establishing new product stewardship programs and partnerships to manage items in the safest, most sustainable way. This includes electronics, architectural paint, mercury thermostats and displacement relays, and rechargeable batteries for existing programs. The MPCA has also participated in the county-led discussions related to extended producer responsibility for packaging and paper products.
- Partnering with a coalition of Minnesota agricultural and food businesses called MBOLD to bring a plastic film recycling plant, Myplas, to Minnesota. This new facility, located in Rogers, aims to recycle 90 million pounds of low- and high-density polyethylene packing and film annually and, when fully operational, will add 250 new jobs.
- Development of a report and recommended statewide actions to address concerns related to Emerald Ash Borer in partnership with the Environmental Quality Board, the Department of Natural Resources, and the Department of Agriculture.
- Development of the PFAS Blueprint and PFAS Monitoring Plan, which lay out a path forward for PFAS monitoring at solid waste, wastewater, and stormwater facilities, hazardous waste landfills, facilities with air emissions, and sites in the Brownfield or Superfund programs.

Report purpose and guidance

Purpose and policy

The purpose of this report is to update the Minnesota Legislature on the state of sustainable materials management and solid waste across Minnesota, including progress towards current goals and highlights for specific programs at the Minnesota Pollution Control Agency (MPCA). It also identifies opportunities for further research and action and proposes recommendations for new or modified policies to advance efforts statewide.

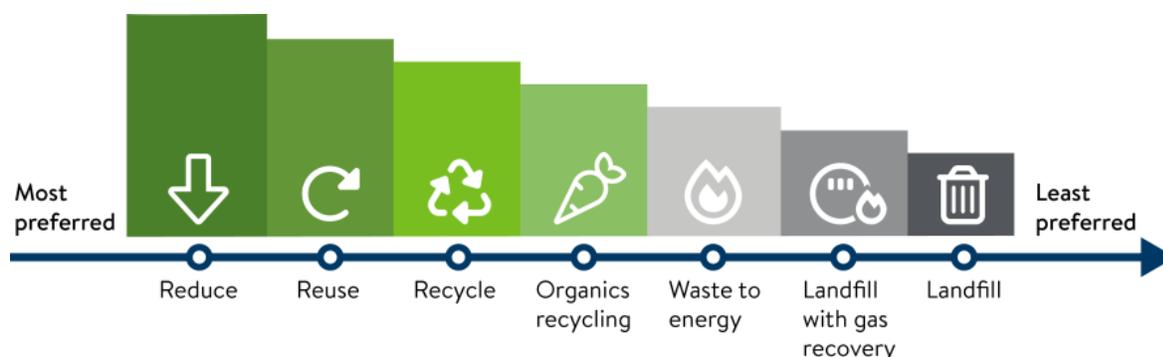
This report meets the MPCA’s legislative obligation in [Minnesota Statute §115A.411](#) to provide a report every four years and covers the period since the MPCA submitted the last report in 2019. It was historically titled the “Solid waste policy report,” but has since been renamed the “Sustainable materials management and solid waste policy report.”

Sustainable Materials Management and the Minnesota Waste Management Act

Adopted in 1980, the Waste Management Act (WMA) ([Minnesota Statute §115A.02](#)) established criteria for managing solid waste. The goal of the act is to protect Minnesota’s land, air, water, other natural resources, and public health by:

- Reducing the amount and toxicity of waste generated.
- Separating and recovering materials and energy from waste.
- Reducing indiscriminate dependence on disposal of waste.
- Coordinating solid waste management among political subdivisions.
- Developing waste facilities in an orderly and deliberate way.

Figure 1. Minnesota’s waste management hierarchy identifies “reduction” and “reuse” strategies as the most preferred for materials management, with recovery strategies like “recycling” and “organics recycling” as the next most preferred, and finally, waste management strategies of “waste-to-energy (WTE)” and “landfilling” as the least preferred.



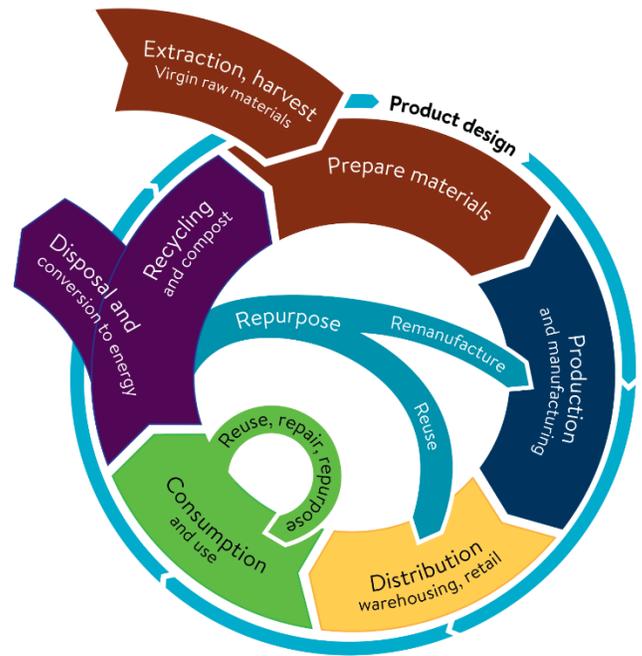
While the title and language contained in this legislation, including the waste management hierarchy (Figure 1), use “waste” terminology, the MPCA draws on the sustainable materials management (SMM) framework to guide policy and programming. SMM is a systematic approach to minimizing the total environmental and human health impacts of materials over their entire life cycles, including product design, raw material extraction, production, use (and reuse), and best management at end-of-use and disposal (Figure 2).

SMM includes traditional solid waste management while accounting for the broader scope of resources and toxic chemicals used to manufacture materials and climate pollution resulting from production and use of items. The MPCA and the U.S. Environmental Protection Agency (U.S. EPA) agree that an SMM approach seeks to:

- Use materials in the most productive way with an emphasis on using less.
- Reduce toxic chemicals and environmental impacts throughout the material life cycle.
- Ensure there are sufficient resources to meet today’s needs and those of the future.

While the MPCA’s delegated authority for permitting and enforcement relates to solid waste facilities, the agency’s responsibility to protect and improve human health and the environment includes pursuing and advancing programming, research, assistance, and policy that focus on efforts further “upstream” such as design, manufacturing, consumption, and behavior change.

Figure 2. Accounting for life cycle environmental impacts creates a more complete view and ensures strategies address the points of the greatest influence.



Guiding priorities and relevant reports

Guiding documents that connect to and inform ongoing statewide materials and solid waste management efforts include, but are not limited to:

- [MPCA Strategic Plan](#),
- [MPCA Environmental Justice Framework](#),
- [MPCA Toxics and Pollution Prevention Evaluation Report \(TPPER\)](#),
- [Minnesota’s PFAS Blueprint](#), and
- [Minnesota’s Climate Action Framework](#).

Themes and recommendations throughout this report draw on each of these documents; however, for focused and specific information on these topics, refer to the original publications.

Current system, roles, and measurement

Climate

Systems and infrastructure for managing materials and solid waste are affected by Minnesota's changing climate, requiring investments in adaptation and resilience strategies.

[Minnesota's Climate Action Framework](#) is organized around six goals, four of which include priority actions and future opportunities related to materials management and program focuses contained in this report.

- **Goal 2: Climate-smart natural and working lands:** Enhance climate benefits by absorbing and storing carbon, reducing emissions, and sustaining resilient landscapes.
- **Goal 3: Resilient communities:** Provide each Minnesota community with tools to plan for and become resilient to its unique climate impacts.
- **Goal 4: Clean energy and efficient buildings:** Expand the use of carbon-free energy and create healthy, comfortable buildings that are cheaper to operate and pollute less.
- **Goal 6: Clean economy:** Build a thriving carbon-neutral economy that produces goods and services with environmental benefit and equitably provides family-sustainable job opportunities.

There are opportunities to increase the use of composting and the beneficial use of materials to invest in and support Minnesota's agriculture and soil health. Minnesota's consumption of all goods and services also contributes significantly to the climate crisis, requiring investments in mitigation strategies in addition to resilience. Mitigation includes efforts to reduce waste and increase the capture of usable materials. However, many strategies need to be considered long before waste management, with changes to product design, manufacturing, and purchasing. Minnesota also needs to ensure that efforts to improve buildings go beyond energy and building operations to recognize the role of embodied carbon in existing materials and structures. Additionally, jobs that advance a "clean" economy also include expanded reuse, repair, rental, and materials and solid waste management.

Equity and environmental justice

In May 2022, the MPCA released the Environmental Justice Framework, which established the vision, strategies, and implementation actions for integrating environmental justice (EJ) principles into the MPCA's work. The agency is committed to EJ and deems every Minnesotan – regardless of income, race, ethnicity, color, or national origin – has the right to healthy air, sustainable lands, clean water, and a better climate. However, the MPCA also recognizes this principle has not historically guided policies and programming related to materials and solid waste management, resulting in disparities in who has access to and benefits from systems, resources, and investments.

To work toward environmental equity, decision-makers can actively seek out and facilitate the involvement of potentially



affected communities so that all people have an equal opportunity to participate in decisions that may affect their environment and health. Community members can provide authentic, qualitative information about the vulnerabilities and challenges they face based on their lived experiences, culture, and social context. EJ staff at the agency have invested in connecting with the community through trusted organizations and leaders and building relationships that enable critical information sharing. There has also been a focus on using culturally specific radio stations, online newspapers, and hardcopy community newspapers, including translated materials based on the MPCA EJ engagement procedures.

In addition to expanding meaningful involvement of impacted communities, the MPCA is committed to agency functions not placing disproportionate burdens on specific populations or regions of the state. The agency includes questions on EJ and community relationships within grant applications to prioritize awarding opportunities with the most significant potential for reducing environmental impacts and supporting historically underserved communities. The MPCA is also working to embed EJ in the program decision-making when writing new permits or issuing renewal permits for facilities. These principles are the foundation for developing new regulations, conducting enforcement actions, and implementing new programming.

This report recognizes past shortcomings specifically with Minnesota's materials and solid waste management and addresses current steps forward and future opportunities for EJ across programs and systems operating in this space.

Roles and requirements

In Minnesota, the responsibility of managing materials and solid waste (across the entire hierarchy – reduce, reuse, recycle, WTE, landfilling) is primarily delegated to the counties. At the same time, the state retains oversight authority and supports local efforts through planning, financial support, technical assistance, permitting, and enforcement.

Generators of waste, large and small, also have a role to play in preventing and managing waste, including all residents of Minnesota. Haulers and facility operators must ensure that waste is managed properly upon collection and look for opportunities to shift materials up the hierarchy.

Planning

Regional and county plans detail how materials and waste are managed in accordance with Minnesota laws and identify additional programming and goals to further reduce climate and environmental impacts of these systems and processes. The plans include waste reduction goals and describe the volume and composition of materials collected in the area for reuse, recycling, organics management, and household hazardous waste (HHW) management. They also specify the facilities used for collection and disposal. The MPCA assists local government to implement their plans, developing projects and resources, sharing best practices, and advising on measuring the impacts of the related work.

- **Twin Cities Metropolitan Area (Metro Area) planning**
Metropolitan County Solid Waste Plans must comply with the current <https://www.pca.state.mn.us/sites/default/files/w-sw7-22.pdf> (Metro Policy Plan), which is a 20-year plan prepared and updated every six years by the MPCA with input from state agencies, county staff, and other interested parties ([Minnesota Stat. § 473.149](#)). The Metro Policy Plan guides materials management and solid waste activities by counties, solid waste facilities, haulers, businesses, and residents. Metro County Solid Waste Plans ([Minnesota Stat. §473.803](#)) are updated every six years, aligning with the Metro Policy Plan timeline.

- [Minnesota Statute §473.848 Restriction on Disposal](#) (ROD) prohibits waste from the Metro Area from being landfilled until capacity at processing and WTE facilities is fully utilized. Information on the amounts of waste and how much was processed is included in county annual reporting. ROD is limited to the Metro Area to drive progress towards meeting the Metro Area goals related to landfill abatement defined in Minnesota Statute §473.803. Landfill abatement was originally the responsibility of the Metropolitan Council.
- **Greater Minnesota planning**
Counties and solid waste management districts outside the seven-county Metro Area prepare and implement detailed solid waste management plans every ten years. Greater Minnesota County Solid Waste Plans must conform to the WMA and Minnesota rules and be approved by the MPCA. The MPCA created a [solid waste plan review checklist](#) as a guide and reference for local government units developing their plans.

Permitting

The MPCA oversees much of the recovery, recycling, and disposal activities in Minnesota. The MPCA permits are required for the construction, modification, and operation of solid waste management facilities where waste is treated, stored, processed, transferred, or disposed. Permits include:

- Recycling and material recovery facilities
- Composting facilities
- Municipal solid waste (MSW) landfills
- Construction and demolition (C&D) landfills and industrial landfills
- WTE facilities
- Transfer stations

Operating permits specify the types of waste facilities can accept, such as C&D waste, industrial waste, mixed municipal solid waste (MMSW), or waste combustor ash. Solid waste facilities might also be covered by other permits, such as a stormwater, air quality, or hazardous waste permits, depending on all the activities at the site.

Compliance and enforcement

The MPCA ensures that nearly 300 permitted solid waste facilities and other related regulated entities comply with state statutes, rules, and permits designed to protect the environment and human health. The MPCA inspects permitted facilities, investigates complaints, and reviews required reports to ensure standards are met. The MPCA compliance and enforcement (C&E) staff also provide technical assistance and training to help permitted facilities and regulated entities meet their requirements. The agency strives to work cooperatively with permitted facilities to prevent pollution and violations.

When environmental rules and regulations are violated, the resulting pollution can harm humans, wildlife, and the environment. [Enforcement actions](#) by the agency include warnings, field citations, notices of violation (NOVs), administrative penalty orders (APOs), stipulation agreements (STIPs), and consent decrees (CDs). The MPCA's enforcement actions are necessary to hold the regulated community accountable, maintain a level playing field, and achieve compliance with regulations. Foremost, the MPCA prioritizes preventing violations.

Public assistance and engagement

In addition to planning, regulatory, and policy work, there are several public engagement and assistance programs coordinated by or in partnership with the MPCA. The scope of the following programs extends

beyond materials management and solid waste; however, their contribution to this area across the state is critical.

- **Minnesota GreenCorps**
The [Minnesota GreenCorps program](#), coordinated by the MPCA, aims to preserve and protect Minnesota’s environment while training a new generation of environmental professionals. Each year, the program places AmeriCorps members with host site organizations around the state to help communities increase resilience to climate change. One of the focus areas for projects aims to reduce waste, increase reuse, and increase recycling (including organics).
- **Minnesota GreenStep and Gold Leaf**
[Minnesota GreenStep](#) - which includes cities (original program), Tribal nations (launched in 2014), and schools (launched in 2020) – is a voluntary challenge, assistance, and recognition program to help entities achieve their sustainability and quality-of-life goals. In the 29 best practices of GreenStep, numerous actions are related to building preservation, sustainable building and materials management, and sustainable consumption and waste. Cities can improve their operations and procurement, address concerns over consumer products and packaging, promote reuse and repair, and improve recycling and organics services. As of 2023, there are 146 cities and Tribal Nations participating in the program statewide. The most recent development is the Gold Leaf pilot program, which focuses on pathways for communities to take local climate action through the GreenStep program.
- **Minnesota Technical Assistance Program (MnTAP)**
Pollution prevention fees from Minnesota industrial facilities fund [MnTAP](#), a program at the University of Minnesota School of Public Health that helps businesses reduce waste and pollution and save money. In 2022, 430 businesses across the state received assistance from MnTAP engineers and scientists. Through process changes and improvements, businesses reduced 500,000 pounds of waste, and these companies are saving \$1.27 million annually.

MPCA financial assistance

The MPCA administers a wide variety of materials management and solid waste grants. Most are competitive, but there are pass-through funds distributed directly to counties to assist with the cost of waste reduction, reuse, recycling, and composting programs. Competitive grant programs aligned to a specific program focus are described in greater detail in the related section of this report (i.e., prevention of wasted food and food rescue, recycling market development, etc.).

SCORE grants

Select Committee on Recycling and the Environment (SCORE) grants are available to help counties offset costs associated with sustainable materials management and solid waste activities. The formula for the SCORE grant allocation to each county is statutorily determined and starts with a base payment prorated to the 2001 SCORE allocation amount before increasing based on population. Local revenue continues to make up most of the program funding, with 58.2 percent of solid waste funding coming from local revenue in 2021 and 19.3 percent from SCORE dollars. Other revenue sources include material sales, collection fees, or additional solid waste service fees levied directly by the county. During the 2023 Legislative session, the Legislature approved directing 3 percent of the Solid Waste Management Tax (SWMT) to SCORE each year in addition to the regular legislative appropriations (currently \$18.45 million per year). The increase will result in an estimated \$3.45 million additional distributed through SCORE grants annually for fiscal year 2023-2024 and \$3.65 million additional per year for fiscal year 2025-2026. The two most significant expenditures for SCORE funding in the 2021

SCORE report are "Administration" (32.8%) and "Recycling" (33.6%). There is a clear opportunity for additional funds for waste reduction and reuse efforts, as only 1.2 percent of program funding went towards this work.

Local Recycling Development Grants

The Local Recycling Development Grants (LRDG) are used in the Metro Area to develop new local recycling and composting programs. Grant amounts must be matched, and all grant funds must be used for new activities or to enhance or increase the effectiveness of existing activities in the county. Information on the grants is included in the county's annual reporting.

Environmental Assistance grants

The Environmental Assistance (EA) grant program is competitive. It provides financial assistance for researching, developing, and implementing projects or practices related to all aspects of sustainable materials management, waste management, and pollution prevention. The MPCA defines grant round focuses and priority projects annually based on agency and program priorities and needs.

Greater Minnesota Waste Reduction, Reuse, Recycling, and Composting grants

The Greater Minnesota Waste Reduction, Reuse, Recycling, and Composting (GM WRRRC) grant program is competitive and awards projects that increase the efficiency and effectiveness of waste reduction, reuse, recycling, and composting programs. Applicant eligibility for this program focuses on Minnesota counties, cities, townships, and Tribes located outside of the Metro Area and requires cities to have a population of less than 45,000. Before 2023, this program was limited to only recycling and composting; however, the MPCA recognized the importance of investing in waste reduction and reuse in Greater Minnesota as well.

Solid Waste Processing Facilities Capital Assistance Program

The Solid Waste Processing Facilities Capital Assistance Program (CAP) provides financial and technical assistance to local governments to encourage investment in the sustainable management of solid waste. CAP has provided over \$100 million to assist more than 100 projects in Minnesota since 1985. The objective of CAP is to recover materials and energy from waste and to minimize land disposal of municipal solid waste (MSW) through waste reduction, reuse, recycling, composting source-separated organic materials (SSOM) or yard waste, resource recovery, waste separation, and waste processing. During the 2023 Legislative Session, CAP was expanded to allow for additional project eligibility, including waste reduction and reuse, and increased funding incentives to grow project and program impacts.

Goals and measurement

This report addresses three types of solid waste: MSW (including source separated materials and mixed waste (MMSW)), industrial waste, and C&D waste. The WMA does address all types of solid waste; however, historically there has been an emphasis on measuring and managing MSW. Most rules, laws, fees, and taxes are aimed at MSW disposal. The focus and goals of state and local programs in the future need to ensure all materials—MSW, industrial, and C&D—are managed to their highest and best use.

Each type of solid waste has a different tax structure according to the SWMT law (Chapter 297H) (Table 1). Non-MMSW is much cheaper to dispose of, with a fee of only sixty cents per cubic yard, whereas commercial MMSW has a 17 percent state service fee, and residential MMSW has a 9.75 percent service fee. Counties can also tax waste separately.

Table 1. Minnesota waste fees shows how the SWMT is applied for different waste types

Waste type	Fee
MMSW – residential	9.75% of service fee
MMSW – commercial	17% of service fee
MMSW – self haul	17% of tip fee
Non-MMSW (C&D, industrial, medical)	\$0.60 per cubic yard of container

The last [statewide MSW waste characterization study](#) conducted by the MPCA was in 2013. The top three categories of MSW were paper (25%), plastics (17%), and organics (31%). While the MPCA is in the process of performing an up-to-date statewide study, there have been smaller studies conducted at individual WTE facilities as a part of their air permit requirements. These facilities include Hennepin Energy Recovery Center (HERC) (2017), Perham Resource Recovery Facility (2018), Pope Douglas WTE Facility (2019), and Olmstead WTE Facility (OWF) (2019). It is important to note these studies were conducted in different years, in different counties, and were not weighted by the amount of garbage sorted; however, for purposes of a high-level comparison, the data has been averaged across the studies. The top categories remained the same, with similar amounts – paper (25%), plastics (19%), and organics (28%). In September 2023, the MPCA received funding from the U.S. EPA’s Solid Waste Infrastructure for Recycling grant program authorized by the Save Our Seas 2.0 Act and funded through the Bipartisan Infrastructure Law. The MPCA intends to use some of this funding for an updated statewide waste composition study.

Resource management report

The MPCA will be completing a resource management report in the next two years that is due to the Legislature on July 15, 2025. The report will include data summarizing current and future trends for waste generation, waste prevention, reuse, recycling, and disposal. It will also examine the infrastructure, programs, and policies needed to see a 90 percent reduction of waste sent to landfills and WTE facilities. There will also be a focus on coordination opportunities with public and private partners and recommendations for reducing environmental and human health impacts – especially in EJ areas of concern – from materials management and solid waste.

Select Committee on Recycling and the Environment

The MPCA uses the [SCORE report](#) to tell a more complete story of the state’s solid waste system. The SCORE report is posted annually on the agency website. SCORE uses data from all 87 counties and the Western Lake Superior Sanitary District (WLSSD) to detail trends in waste generation, management, and disposal. SCORE data trends are used to develop policy and solid waste plans. Using U.S. EPA’s Waste Reduction Model (WARM), the SCORE program has calculated greenhouse gas emissions (GHGe) at a county level for individual materials and management methods since 2019. Providing these calculations supports decision-making driven by more than weight-based measurements.



At the time of this report, the [2021 SCORE report](#) (January 1, 2021 to December 31, 2021) was the most recent publication of this data. Key findings from the 2021 SCORE report included:

- MSW tonnage across the state increased by 1.4 percent.
- Minnesota counties were able to report material reuse for the first time and documented 4,082 tons during this first year. Tracking reuse separately from recycling allows the MPCA to represent environmental benefits from this type of management over others.
- Minnesota saved 4.25 million metric tons of carbon dioxide equivalent (MTCO₂E) due to its materials and waste management practices, roughly equivalent to reducing the annual emissions of 902,000 passenger vehicles. Reducing waste, reusing materials, and recycling reduce GHGe, while landfilling increases them.

Recycling rate goals and progress

Since 1989, the Minnesota Legislature has been establishing goals and requirements related to recycling for the state. These include:

- **Metro Area recycling goal**
Each of the seven counties in the Metro Area must recycle a minimum of 75% (by weight) of total MSW they generate by 2030.
- **Greater Minnesota recycling goal**
Each of the Greater Minnesota counties must recycle a minimum of 35% (by weight) of total MSW they generate by 2030.

In 2021, Minnesota posted a combined organics and recycling rate of 42.2%, a 1.9% decrease from 2020. The Metro Area counties reported a 45.2% recycling rate, and Greater Minnesota counties reported a 38.3% recycling rate.

Environmental impact target

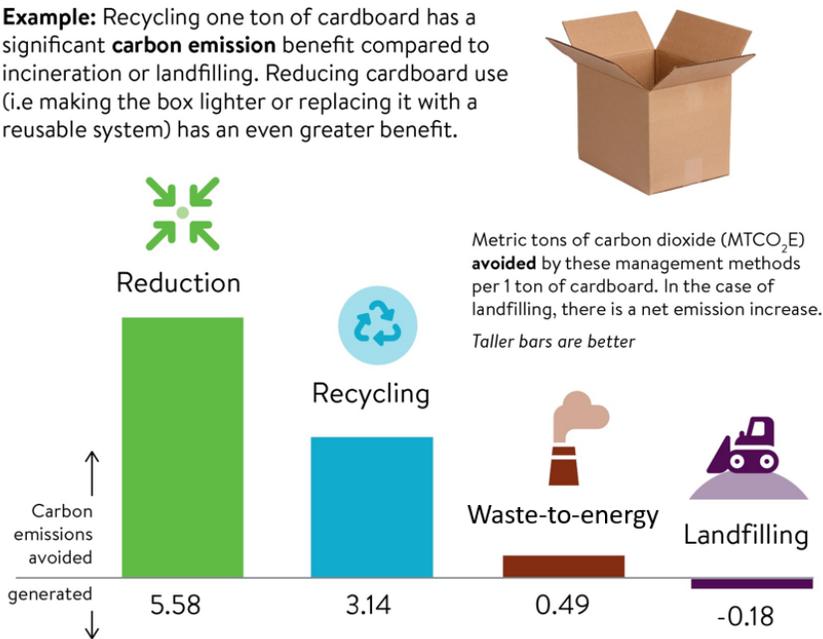
In the most recent [Metro Policy Plan \(2022-2042\)](#), the MPCA created an environmental impact target for counties in the Metro Area based on complete life cycle assessment (LCA). Under this environmental impact target, weight-based accounting for waste reduction, reuse, recycling, WTE, and landfill disposal is translated into GHGe generated or avoided. In this way, counties still report and work to meet their 75% recycling rate goal, but the environmental impact target documents overall changes in GHGe based on all county efforts and programming.

By tracking progress with GHGe (currently the most accessible proxy for environmental impact), in addition to the recycling rate, counties can invest in upstream activities and report on those efforts, meaning a county can choose to do more waste reduction or reuse to reduce their GHGe more significantly and progress further on meeting their environmental impact goals, than solely focusing on recycling to achieve their recycling rate. Using the U.S. EPA's WARM to model scenarios for materials management and identify which offers the most significant reduction in GHGe is the most accurate and accessible option for tracking environmental impacts currently at the agency. However, the MPCA would like to build staff and program LCA capacity in the future to account for other environmental effects like toxicity reduction, water use, and energy use.

It is increasingly clear that goals need to be adjusted statewide to better reflect and account for all harms of materials throughout their life cycle. Recognizing that for many products and materials the most significant impact comes from their production, simply recycling at end-of-use will result in notably less benefit. As seen in Figure 3 with the cardboard example, recycling one ton of cardboard will only reduce emissions by 3.14 MTCO₂E compared to reduction strategies that will reduce emissions by 5.58 MTCO₂E.

Figure 3. How we manage materials matters

Example: Recycling one ton of cardboard has a significant **carbon emission** benefit compared to incineration or landfilling. Reducing cardboard use (i.e making the box lighter or replacing it with a reusable system) has an even greater benefit.



Opportunities

- **Require waste composition studies at solid waste facilities statewide on a recurring basis.** Without a required frequency and rotation, data collection on statewide waste composition has been limited and outdated. Performing waste composition studies at a set number of solid waste facilities on a regular, rotating schedule will maintain this dataset so it is accurate and valuable, documenting generation rates and material type breakdowns. Understanding the composition of MSW, C&D, and industrial waste streams is also critical for measurement, performing LCA, and accounting for the environmental impacts of these streams.
- **Expand waste reporting to require measurement of all waste streams (MSW, C&D, Industrial).** Expanding statewide reporting and investing in tracking systems to include all waste streams will ensure more comprehensive data that accurately represents the generation and flow of waste in Minnesota. There currently needs to be more in the availability of data and the accuracy of measurement, which limits opportunities for trend analysis, assistance and expansion of resources, and policy development to reduce the environmental and human health impacts of solid waste.
- **Develop a guidance for consistently incorporating EJ in solid waste permit review and issuance.** The solid waste permitting program needs to develop a guidance to consistently inform, meaningfully engage, and solicit input from historically underserved communities that are most at-risk with solid waste projects that may affect them. If a facility is in a documented EJ area, staff should work with those communities to determine additional steps needed to identify disproportionate impacts, minimize those impacts, and ensure area residents are involved. Steps may include informational public meetings, collaboration with community leaders, and additional methods of community outreach before and during a public notice period.

- **Update solid waste rules to adapt to the changing climate.**
Solid waste programs must be able to respond to flood events, crop failures, livestock die-offs, or diseases that create large amounts of waste in a timely and safe way. Issues such as these are becoming more common with climate change affecting Minnesota. Adapting to a changing climate includes, but is not limited to, updating the landfill design rules so they are equipped to handle more significant rain events, having appropriate protections for frequent freeze/thaw events and heavy rain events, and updating design standards for leachate storage ponds. This may also include updating monitoring standards for groundwater at landfills and best practices for land application of leachate to avoid water pollution.
- **Update the certificate of need rules to be current with solid waste management practices.**
Certificate of need (CON) ensures that no additional MMSW disposal capacity will be permitted and added to the system unless needed. The MPCA commissioner must certify need for additional landfill capacity only to the extent that there aren't other feasible and prudent disposal options. Current CON rules are inconsistent with a recent court decision that stated CON can only be issued after environmental review is complete. The CON rules, and possibly other related rules, need to be updated to ensure the process is transparent and consistent with recent court decisions.
- **Require reporting from businesses that manage their recyclables.**
Current reporting requirements have a gap with commercial, industrial, and institutional recycling. Significant agency staff time is dedicated to requesting recycling data from these businesses on a local and state level. An update to include these businesses in annual reporting requirements will improve the accuracy of recycling data statewide and improve efficiencies for data collection.
- **Update county SCORE spending requirements and increase funding levels to strengthen environment and community benefits.**
Current language regarding county use of SCORE grants is broad. While it notes funds may be used to "reduce the amount of solid waste generated," waste reduction and reuse efforts have not received the same level of fund allocation as recycling. Counties are required to implement waste reduction and reuse programming, but without targeted funding, there is not a comparable incentive to invest in these efforts, as most SCORE dollars currently go to support recycling and administrative activities. Additional funds are needed to support counties fulfilling their waste reduction and reuse obligations beyond recycling. With expanded resources, counties will have the ability to truly move the needle on preventing waste at its source through grants to businesses, institutions, nonprofits, and communities in areas that typically provide the most environmental benefits and have historically received less funding and attention. Additionally, adding a requirement that counties spend equivalent resources in areas of concern for EJ will support statewide and agency equity initiatives, bringing services and support to areas where they have been historically lacking.

Program focuses



Life cycle impacts

While adopting an SMM framework, the agency completed a consumption-based emissions inventory (CBEI) that identified several consumption categories that contribute significantly to Minnesotans' climate pollution (i.e., GHGe). Staff working in these program areas focus on the full life cycle impacts of these materials and products while recognizing these items generate the greatest environmental impacts during their manufacturing or production. Therefore, priority is placed on projects and policies that advance waste or source reduction first before management at end-of-use.

Another critical consideration in the life cycle impacts of products is the use of toxic chemicals in manufactured materials. The WMA calls for a reduction in the toxicity of waste generated. Reducing or removing toxics from products preventatively as a part of the design and production phase ultimately reduces the toxicity of waste generated when a product is disposed. The MPCA's Toxics and Pollution Prevention Evaluation Report (TPPER), published every four years, explores pollution prevention and toxicity reduction in greater detail.

Prevention of wasted food and food rescue

Overview

When food is wasted, all the resources used to produce it, such as agricultural land, water, and energy, are wasted too. Wasted food also generates significant environmental impacts, such as climate pollution, degradation of freshwater, degradation of soil quality, and degradation of air quality. Reducing one ton of food from going to waste (e.g., intentional meal planning and food storage, rescuing or donating excess food from restaurants and grocery stores to food shelters, and gleaning less than perfect produce from farms) saves approximately 20 times more GHGe than composting that same amount of food waste. According to the Natural Resources Defense Council (NRDC), if just one-third of the food that is now thrown away could be redirected to people, it would more than cover unmet food needs across the United States. Households are the biggest contributor to this waste, making prevention of wasted food one of the most significant ways that everyday Minnesotans can mitigate climate change.

Updates and accomplishments

- **Partnerships and networking groups**

The MPCA staff continue to work with organizations and citizens by encouraging them to reduce the amount of food they are wasting or to donate surplus food so it is eaten instead of needing to be managed as a waste stream. The agency is involved with networking groups in Minnesota and nationally that collaborate on food-related strategies, often partnering with health departments, counties and cities, and other organizations to remove barriers and increase the ease of food rescue initiatives. There is growing interest and investment throughout Minnesota in activities to prevent wasted food and support more food rescue, including some counties adding dedicated positions for this work. Best practices and fact sheets on food donation were created for food inspectors to have resources they can share when speaking with constituents and broaden the reach of this messaging.

- **Grants**

Currently, the agency has \$500,000 each year to award as grants to organizations working on preventing wasted food and food rescue projects. The grants have been very successful, with over \$3 million in requested funds for each of the three grant rounds that have been completed so far. Most of the work done in prevention of wasted food and food rescue has been concentrated in areas of concern for EJ. An additional \$3.5 million was allocated to prevention of wasted food and food rescue grants during the 2023 Legislative session. These one-time funds will notably expand the number of funded projects in this area. Besides MPCA grants, there are starting to be other funding opportunities for this focus; for example, several federal grant dollars have become available to fund prevention programs.

- **Minnesota GreenCorps projects**

The Minnesota GreenCorps program, coordinated by the MPCA, places members serving in the program at host sites around the state to preserve and protect Minnesota's environment. Prevention of wasted food and food rescue projects have been a strong focus in recent years, allowing organizations to strengthen their efforts in this area with support from a member.

Opportunities

- **Require the reduction of wasted food, annual reporting, and proper food management for large generators of wasted food.**

Requiring commercial generators to manage their food and food waste in more sustainable ways (such as following the newly released [U.S. EPA Food Scale](#)) has proven to be effective in reducing food that is wasted, rescuing more, and increasing opportunities for food waste to create a valuable by-product. Generators of large amounts of wasted food would no longer be allowed to dispose of it without first following the preferred options in the food scale; they would need to implement strategies to prevent food from being wasted in the first place and donate all surplus food that is edible and meets health and safety requirements. Additionally, entities would need to annually report on the methods they are using and the quantities of reduction, food donation, and organics management occurring. Requiring commercial entities to follow this food scale can be phased in over time as infrastructure is built to handle the influx of additional material. With the new funds from the Legislature to increase the prevention of wasted food and food rescue, as well as manage organic waste, this requirement is a logical next step.

- **Establish carbon offset credits for food donation and rescue.**

Carbon offsets are tradable "credits" tied to efforts that lower the amount of carbon dioxide in the atmosphere. By purchasing credits, an individual or entity can fund projects that help mitigate climate change instead of altering their operations or actions to reduce their carbon emissions. Establishing a carbon offset program for food donation and rescue would allow organizations working in this area to receive funding through the sale of credits. One grant awarded to the Northfield Community Action Center through the MPCA's Prevention of Wasted Food and Food Rescue grant program is exploring this possibility currently.

Sustainable building materials management

Overview

There are clear opportunities for Minnesota to improve sustainability efforts for buildings, accounting for the embodied carbon of materials and structures. These strategies include changes to the physical materials and their use (i.e., design, manufacturing, and reuse) and to the buildings (i.e., design, maintenance, and preservation). For example, reuse of buildings with an average level of energy performance consistently offers immediate climate pollution reductions compared to more energy efficient new construction using new materials. Therefore, research and discussions focus on opportunities for expanding and supporting more building preservation and reuse statewide. In addition to these upstream strategies, more intentional building removal options to optimize material reuse and recycling, like structural moves or deconstruction, significantly reduces environmental impacts. Deconstruction can be as simple as removing rather than demolishing cabinetry or as involved as dismantling a whole building. Non-structural deconstruction, or salvage, is reclaiming high-value materials such as appliances, doors and windows, lighting fixtures, cabinets, and other finishing materials. Structural deconstruction retains structural components, such as framing lumber, sheathing, bricks, and hardwood flooring, for reuse or recycling.

Updates and accomplishments

- **External workgroup**

Starting in 2019, the agency convened a year-long process involving interested parties. The [Sustainable Building Group \(SBG\)](#) worked to develop recommendations for reducing the environmental impacts of the entire building system, prioritizing activities and strategies that aim to extend the useful life of existing buildings and materials. The SBG reached consensus on five final recommendations for the state:

1. Create a statewide grant program for building preservation projects.
2. Create a statewide rebate program for reused building materials in new building construction and renovation projects.
3. Establish a statewide, state-funded deconstruction training program that accompanies deconstruction and demolition licensing.
4. Create three tiers of deconstruction ordinance templates that cities/counties can select from and adopt.
5. Implement a statewide diversion requirement for C&D waste for new construction, additions, renovations, and building removal. Active engagement with and support of organizations, businesses, and local units of government working to improve sustainable building and materials management continues even after the formal workgroup concluded.

- **Grants and infrastructure**

During the 2023 Legislative session, \$2 million was allocated for statewide sustainable building and materials management grants. While these are one-time funds and not a recurring grant program, they are notable as the first time the state has dedicated this level of funding to projects in this focus area. Local units of government, nonprofit organizations, and for-profit businesses across Minnesota have voiced firm commitments to pursuing efforts that reduce the environmental impacts of the built environment through increased building preservation, material reuse, and building deconstruction. This funding will support this work.

Within the Metro Area, there are currently three counties providing grants for structural moving, deconstruction, and building material reuse. Two additional counties, one in the Metro Area and one in Greater Minnesota, are in the process of exploring these types of grants in the future. Reuse warehouses for building materials have also proven to be a successful strategy statewide for collecting, storing, and redistributing items into the communities. A couple Greater Minnesota counties provided strong models for others to mirror for this type of operation, with several counties currently building or pursuing funding to develop reuse warehouses. Additional statewide funding will ensure these opportunities become available across other regions in Minnesota.

- **Resource development**

The MPCA staff created and supported the development of several resources. A Building Material Management Plan tool is available for organizations across the state and, specifically, local units of government to include in their permitting requirements. When using the tool, contractors list the material types, quantities, and management methods for a given project. Data collection related to construction, renovation, and building removal projects is limited, so this tool is a first step to expanding the availability of that information.

In Minnesota, there are at least six nonprofit organizations providing deconstruction services. Local units of government expressed interest in working with them but requested support from the state developing a request for proposal (RFP). A Deconstruction RFP template is now available to simplify and streamline this process.

- **Environmental product declarations (EPDs)**

The Environmental Standards Procurement Taskforce was authorized by the 2023 Legislature and established on October 1, 2023 by commissioners of the Department of Administration (Admin) and the Minnesota Department of Transportation (MnDOT). The Legislature directed the taskforce to examine the implementation of a program requiring vendors of certain construction materials purchased by the state to:

- Submit EPDs, third-party certified labels that detail the material production life cycle environmental impacts of the materials, to state officials as part of the procurement process.
- Meet standards established by the commissioner of Admin that limit GHGe impacts of the materials.

The taskforce will examine and make recommendations on what additional materials should be subject to requirements, what factors should be considered in establishing the GHGe standards, the schedule for development, the use of financial incentives to reward vendors, and details for a new grant program at Admin that will assist manufacturers obtaining EPDs. A pilot program must be established by July 1, 2024 that seeks to obtain LCA estimates from vendors. After the taskforce provides recommendations, a maximum acceptable global warming potential for eligible materials in new construction and renovations of state buildings of a certain size must be established for concrete (no later than January 15, 2026) and carbon steel rebar, structural steel, asphalt paving mixtures, and concrete pavement (no later than January 15, 2028).

Opportunities

- **Establish an ongoing statewide sustainable building and materials management grant program.**
Recognizing the momentum across the state related to the built environment and reducing the impacts of its materials and wastes, it is essential to secure additional funds that will remain available. Historically, there has been less focus on and investment in building materials and C&D waste compared to MSW, making this a clear opportunity. This funding would invest in building preservation and maintenance, structural moving, reincorporating used building materials in construction and renovation, deconstructing buildings that need to be removed, material reuse buildings at solid waste facilities, and supporting markets for reused and recycled building materials.
- **Establish a statewide deconstruction requirement for state and local government-owned buildings.**
Establish a statewide requirement that all state and local government-owned building removals must first be assessed to determine if full or partial deconstruction is possible and safe based on the structure and its materials – if possible, full or partial deconstruction methods need to be followed. There are instances where a structure needs to be removed, but government entities must lead by example by maintaining valuable materials for future use.
- **Establish a statewide diversion requirement for building materials management for new construction, additions, renovations, and building removal.**
While local ordinances present an important opportunity for increasing deconstruction, establishing a statewide diversion rate for building projects is a strong complement. Building materials management plans track material categories and amounts for a project, specify management methods for each material, and identify the specific end-market and contact. A strong diversion requirement should include both recycling and reuse (e.g., 75% of non-hazardous material recycled and 10% of non-hazardous material reuse). It can also specify different targets based on building types (e.g., residential vs commercial, age of buildings, etc.).

Consumer product reuse

Overview

The overarching goal for reducing the climate and environmental impacts of consumer products in Minnesota is to pursue and advance strategies that extend the useful life of these items, namely through reuse (including resale, repair, rental, and sharing). Reuse is a waste reduction strategy as it keeps existing items in use, decreasing the demand for new production and reducing associated pollution and waste. Reuse Minnesota's 2022 impact report highlights the economic and social benefits of reuse across the state, with over 13,000 reuse businesses accounting for 45,000 local jobs and generating between \$3.1 and \$4.7 billion in annual revenue. Reuse also expands access to items that may otherwise be unaffordable or impractical to individually own, and related training and local events contribute to a strong sense of community. There is a thriving reuse network across Minnesota with a lot of potential for growth, including thrift and vintage clothing stores, tool and toy libraries, electronics repair and resale businesses, and secondhand retailers for home furnishings and appliances. Counties in both the Metro Area and Greater Minnesota are increasingly offering community reuse events, such as clothing and media swaps and fix-it clinics, for people to learn how to repair broken items. Some of the most successful and impactful reuse strategies are not new, innovative, or expensive technologies. Revitalizing these strategies, determining the requirements or incentives that best support them, and raising awareness or comfort with them is an important path forward for the state.

Updates and accomplishments

- **Partnerships – Reuse Minnesota**

The MPCA staff maintain a strong partnership with Reuse Minnesota, a nonprofit that supports a statewide network of reuse practitioners through education, advocacy, and promotion. Reuse Minnesota fills a unique role in the state as the only organization specifically working to grow the reuse economy and remove barriers to necessary systems and infrastructure. Reuse Minnesota is an important complement to the entities focused on recycling and waste management. Several counties and cities across the state are also involved with Reuse Minnesota to connect with reuse organizations, share ideas for expanding reuse programming and events, and gain access to resources and educational materials.

- **Grants**

During the 2023 Legislative session, \$2.4 million was allocated for statewide waste reduction and reuse grants. While these are one-time funds and not a recurring grant program, they are notable as the first time the state has dedicated this level of funding to projects in this focus area. During 2022 and 2023, reuse projects were supported through the agency's EA grant program as a pilot to confirm interest and demand for more funding. The two grant rounds during that pilot period received requests for over \$1.5 million with diverse project focuses, including fix-it clinics, tool libraries, reusable food ware, computer repair training, and textile mending classes.

- **Digital Fair Repair**

During the 2023 Legislative session, the Digital Fair Repair bill was passed into law. Currently recognized as one of the most comprehensive Right to Repair bills in the United States, this legislation requires electronics manufacturers to make available to individuals and independent repair shops documentation, parts, software, and tools necessary to repair their own equipment. Minnesota's Fair Repair Coalition has been working on this legislation for nearly a decade, and the MPCA provided support for this bill through letters and participating in committee hearings. The regulations take effect July 1, 2024, and apply to all covered products sold after July 1, 2021. The Attorney General has the authority to investigate and enforce violations of the law.

Opportunities

- **Establish an ongoing statewide waste reduction and reuse grant program.**

Historically, there has been more funding allocated to management methods lower on the waste hierarchy, making a clear opportunity to balance that with funding for waste reduction and reuse. This ongoing funding would invest in resale, repair, rental, and sharing infrastructure, education, and business operations and development statewide. Grants would target areas that show the greatest environmental impact using an SMM approach.

- **Update requirements regarding government surplus to increase reuse.**

A lack of clarity in current statutory language regarding government surplus property management has resulted in limitations in the distribution and reuse of items, particularly for local units of government. There is an opportunity to reduce waste and support the continued use of government property by clarifying definitions and streamlining the processes for state and local government.

- **Expand coverage for Digital Fair Repair.**

Building on the legislation passed during the 2023 Session, Minnesota can remove some of the previously exempt items to broaden access and increase the potential environmental benefits of this law. This expansion would involve adding power tools, lawn and garden equipment, and agricultural equipment as covered products.

Sustainable purchasing

Overview

Sustainable purchasing, also known as sustainable procurement or environmentally preferable purchasing (EPP), aims to reduce the amount of state and local government purchasing overall, along with incorporating criteria to improve the environmental and social sustainability of products and services in contracts. Reduced purchasing stems from operational decisions to continue using existing supplies and assets and investing in reusable options instead of single-use (e.g., pallets or containers for transporting recurring supplies orders instead of cardboard boxes, dishes and utensils in facility cafeterias and common spaces instead of disposable versions, etc.). Updates to contracts can include requirements like third-party certifications (e.g., Electronic Product Environmental Assessment Tool (EPEAT) for electronics) or product specifications (e.g., percent of recycled content in office paper, banning of chemicals that are harmful to the environment and human health, etc.). These strategies are a critical opportunity for reducing the direct and indirect emissions across the state. According to Minnesota's CBEI, climate pollution associated with Minnesota state and local government purchasing accounts for approximately 8.5 percent of the entire state's consumption-related emissions. Improving the sustainability of goods and services contracts is also important for reducing toxic chemicals in products, reducing waste generation, and advancing recycling markets.

Updates and accomplishments

- **Priority contracts**
Minnesota's state Sustainable Purchasing Program is a collaboration between the MPCA and the Department of Administration's Office of State Procurement (OSP). The Sustainable Purchasing Program currently prioritizes 19 state contracts for the inclusion of sustainability requirements, based on a spend analysis that identified the contracts responsible for the greatest percentage of total state expenditure and the greatest environmental impact related to the products available through that contract. Over half of these priority contracts are fully meeting the Sustainable Purchasing Program's sustainability requirements based on available third-party certifications and environmental criteria.
- **Partnerships - Sustainable Purchasing Leadership Council (SPLC)**
The Sustainable Purchasing Program remains an active member of the SPLC, a national member-based organization offering education, networking, and assistance for sustainable purchasing, and participates in monthly peer learning groups. SPLC's programming guides agency staff and the state enterprise to leverage the state of Minnesota's procurement for positive environmental and social benefits.
- **EPEAT Purchaser Award**
The EPEAT Purchaser Awards recognize excellence in the sustainable procurement of information technology products. The state of Minnesota was given a purchaser award for the eighth year in a row in 2022 because of the Sustainable Purchasing Program's efforts to require sustainability as a part of electronic goods contracts.

Opportunities

- **Establish a baseline measure and annual reporting of state government procurement scope 3 emissions.**
While scope 1 and scope 2 emissions are more typically tracked and targeted, scope 3 emissions present a significant opportunity for reduction. Scope 1 emissions account for generation from sources owned or directly controlled by the state, for example, emissions from driving gas-powered state fleet vehicles. Scope 2 emissions account for generation from indirect sources

associated with the purchase of energy, heating, and cooling, for example, emissions resulting from energy generation used for electricity in state buildings. Finally, scope 3 emissions, sometimes called value chain emissions, account for generation from sources not produced by the state but resulting from activities of other entities to meet the state's demand. Examples of scope 3 emissions include life cycle emissions of products purchased by the state, like electronics or food. State government needs to invest in the necessary software and staffing to require reporting of scope 3 emissions for purchases made through the state's goods and services contracts. The software subscription would be integrated with existing state emissions tracking and reporting, enabling the inclusion of a sustainable procurement module and establishing benchmarks for internal analysis of progress and goal scoping.



Single-use plastics

Overview

The greatest concerns for plastics include toxicity, plastic pollution, and the climate impacts associated with continued manufacturing of plastics designed for single use, namely packaging and food service items (i.e., straws, utensils, condiment packets, and other accessories). Like many other consumer products, the greatest life cycle impacts of these plastics occur during the raw materials extraction and production of the item. Plastic pollution can be both larger litter that enters the environment more easily due to its light weight and microplastics, which are extremely small pieces of plastic debris typically resulting from the breakdown of consumer products or outputs from manufacturing processes. Addressing and reducing accumulation of litter and microplastics is increasingly a priority across the state and internationally due to environmental, animal, and human health risks. The most impactful strategies for addressing concerns with plastics typically involve actions to reduce dependence on single-use through waste reduction and non-toxic, durable reuse models. According to the environmental nonprofit Upstream, 561 billion disposable food service items (i.e., straws, utensils, condiment packets, and other accessories) are used every year in the United States, resulting in 4.9 million tons of waste. Food service items are one example of many that contribute heavily to plastic pollution and have clear opportunities for more sustainable options.

Updates and accomplishments

- **Public education and outreach**

Through outreach events, like the Eco Experience at the annual Minnesota State Fair, the MPCA encourages the public to make changes to their personal habits and swap out single-use items in favor of reusables. During the Fair, the agency offered a prize giveaway of a reusable cutlery set to individuals who chose to partake in educational “bingo” to show how easy it is to carry your own reusables and decline disposables.

- **Minnesota Reusables Coalition**

The Minnesota Reusables Coalition (MRC) develops and supports infrastructure, policy, and partnerships to advance reusable food ware and packaging systems across the state. While their focus extends beyond eliminating single-use plastics to all disposable options, their vision for addressing this concern with reusable and refillable systems presents a clear path forward. Current coalition participants include local nonprofits, for-profit businesses, and local units of government.

- **Plastics innovation and recycling**

In response to concerns about single-use plastic, entities across the United States are exploring innovations, workforce development, market development, and behavior change to bolster plastics recycling. The MPCA has participated in report reviews and feedback groups for proposals in development by entities like Circular Great Lakes and The Midwest Sustainable Plastics Innovation Regional Engine (M-SPIRE).

Opportunities

- **Require reusable food ware for dining on-site.**

As a first step towards statewide reduction or phase-out of single-use food ware, businesses that allow customers to eat on-site must use reusable food ware (e.g., bowls, plates, food trays, cups, lids, utensils, etc.) to serve customers eating on the premises. This may benefit from a phased implementation with assistance and funding to ensure establishments needing support with this type of transition have adequate resources and time to add staffing or equipment for on-site collection, cleaning, and sanitation.

- **Require reusable food and drinkware at state and local government buildings and events.**

Transitioning state and local government buildings (owned or leased) and events from single-use to reusable food and drinkware is an essential way for government to model this consumption shift and invest in the infrastructure needed to support it.

- **Adopt “Skip the Stuff” requirements for food service establishments and delivery.**

Currently, food service establishments will provide single-use plastic and other single-use food service items along with food orders even when customers haven’t requested them. “Skip the Stuff” requirements state that these items should not be included with food orders, including take-out and delivery, unless specifically requested as a part of the order. This requirement also reduces business costs by not purchasing and distributing items that aren’t ultimately used.

- **Ban polystyrene foam use for food ware and packaging.**

Polystyrene foam (Styrofoam) is one of the most prevalent types of plastic litter because of its high use and light weight. Polystyrene also presents health concerns from a toxicity perspective, both from the microplastics that come from the material and chemicals that leach when it is heated. Banning polystyrene reduces environmental and human health risks, encouraging establishments to use other sustainable materials available – ideally reusable, but at least recyclable and compostable if reuse isn’t an option.

- **Implement programs for agricultural plastic and boat wrap recycling.**

Within Minnesota, both agricultural plastic and boat wrap are notable sources of single-use plastic. Agricultural plastic is used to store agricultural feedstocks such as hay and silage and cover greenhouses and hoop houses. Plastic film is also used as an important protection for boats during the harsh winter months. In both cases, the use of this plastic film or wrap is vital for protecting and extending the useful life of items; however, it is a significant waste source. Implementing a program to collect and recycle these materials would reduce disposal and could establish strong end markets for this type of plastic film.



Waste diversion and material recovery

Product stewardship is the idea that manufacturers are stewards of the products they put into the world and take responsibility for preventing harm from those products. A subset of that is extended producer responsibility (EPR), where manufacturers help pay for the costs of managing their products after their useful life — either by providing repair and refurbishment options, administering take-back programs, or by paying for collection and recycling programs. As a result of legislative initiatives, Minnesota has EPR programs for e-waste, architectural paint, mercury thermostats and displacement relays, and rechargeable batteries. Several other products, such as solar panels, carpet, packaging, and mattresses, are candidates for product stewardship programs.

Product stewardship: Electronics

Overview

The Minnesota Electronics Recycling Act, sometimes referred to as the “e-waste law,” was enacted in May 2007 and updated during the 2016 Legislative session to address the increasing amount of electronics waste generated in Minnesota and the rising costs associated with properly managing that waste from households at the time. The law takes a producer responsibility approach that engages the manufacturers in the collection and recycling of certain electronic products. By internalizing the costs of end-of-life management, this more economically efficient approach to providing collection and recycling offers incentives for manufacturers to implement green design practices in the first place. The Minnesota Electronics Recycling Act annually registers collectors, recyclers, and manufacturers of covered electronic devices (CEDs), including any brand of video display device, computer, laptop, tablet, and peripherals (i.e., keyboards, printers, or other devices used with a computer), fax machines, DVD players, and VCRs. Manufacturers support collection and recycling of CEDs from households in Minnesota and then report on how they met their recycling obligation, whether by purchasing Minnesota household pounds recycled by registered recyclers within the program year, using credits, or paying a recycling fee.

While electronics require energy during use, a significant portion of the environmental impacts and climate pollution associated with these products are during the raw material extraction, processing, and manufacturing. Extending the useful life of electronics through repair and refurbishment is critical to reducing climate impacts, and ensuring recycled materials are used in new manufacturing reduces the need for virgin materials.

Updates and accomplishments

- **E-waste collection and recycling**

The MPCA e-waste program communicates with local government and private collectors, recyclers, and manufacturers for annual due dates and feedback on the e-waste program. The annual recycling obligation for manufacturers varies annually, as it is calculated using the average weight collected for recycling over the two previously completed program years. In Program Year 15 (July 1, 2021 - June 30, 2022), the obligation was over 16.4 million pounds. During that year, 19.3 million pounds of covered household electronics were collected by recyclers, showing there is more than enough pounds of CEDs available for manufacturers to meet their obligation. To meet their assigned annual recycling obligations, manufacturers helped fund the recycling of 15.2 million actual pounds of collected weight, which converts to 17.4 million effective pounds available to meet the manufacturer's obligation once the non-Metro multiplier is applied. A manufacturer can earn recycling credits for each pound of CEDs it recycles beyond its assigned obligation from outside of the 11-county metropolitan area, and each pound of CEDs collected from outside the 11-county metropolitan area is counted as 1.5 pounds towards the recycling obligation. Since the manufacturers' obligations do not cover all the pounds of e-waste collected and manufacturers are not covering all the associated collection and recycling costs, local governments and consumer are still covering considerable costs.

- **Sponsored collection events**

Under its statutory obligation to promote collection in rural areas, the program financially sponsored a household e-waste collection event with White Earth Nation and Becker County in the spring of 2023. The event collected 54,514 pounds of e-waste, 80 percent of which was cathode ray tube containing devices. These devices have proven historically difficult for consumers to dispose of due to both their weight and relative high cost to recycle. Prior to the 2023 event, there were sponsored events in Lake of the Wood County in 2021 and in Hubbard, Murray, and Otter Tail Counties in 2019.

Opportunities

- **Update Minnesota's Electronics Recycling law to clarify cost responsibility.**

Minnesota's Electronics Recycling law needs to be revised so consumers and collectors (e.g., local units of government) are not covering recycling and transportation costs; instead, manufacturers fully cover them as intended under the 2016 law changes.

- **Update Minnesota's Electronics Recycling law for flame retardant plastic screening.**

E-waste plastic can contain flame retardants linked to a myriad of health effects impacting mental and physical development, reproductive development, and potentially resulting in cancer. If sent for recycling, the e-waste plastic containing these flame retardants can be reincorporated into products like cookware and children's toys, leading to unsafe exposure of chemicals. A revision is needed to require that manufacturers develop and fund capacity to screen and segregate, to the greatest extent possible, collected (past) products containing organohalogens in excess of 1,000 ppm concentration by weight and implement that screening technology in the collection system in Minnesota. Some recyclers already have this equipment; however, the expectation going forward would be that all recyclers implement up-to-date screening technology as electronics composition evolves.

Product stewardship: Paint

Overview

Passed in 2013, the Minnesota Paint Stewardship Law requires producers of architectural paint sold in the state to individually or through a stewardship organization implement and finance a statewide paint stewardship program. PaintCare, Inc. currently manages it and broadly seeks to decrease the amount of waste paint generated, promote its reuse, and facilitate the collection, transport, and processing of architectural paint for recycling. PaintCare supports both public and private collectors while also reimbursing Minnesota counties for covered expenses related to paint collection, transportation, and processing. Minnesota's paint reuse rate is consistently the highest among all PaintCare states.

Updates and accomplishments

- **Statewide collection sites**
At the end of 2022, Minnesota had 265 permanent, year-round drop-off sites, with 94.6 percent of Minnesota residents living within 15 miles of a permanent collection site and 97.9 percent of residents when collection events and seasonal sites are included. This surpasses the established 90 percent convenience goal.
- **Architectural paint collection and reimbursement**
Since program implementation in late 2014, the program has been responsible for the collection of over 12 million gallons of architectural paint, consistently meeting the program goal for the volume of paint collected and recycled annually. Since program implementation, it has also reimbursed Minnesota counties more than \$23 million for paint collection, management, and transportation activities.
- **Legislative language updates**
During the 2023 Legislative session, the Minnesota Paint Stewardship Law was updated to establish the stewardship organization's program must not maintain a financial reserve in excess of 75 percent of its annual operating expenses; otherwise, the program must submit a proposed plan amendment.

Opportunities

- **Update the Architectural Paint Product Stewardship Law to cover aerosol paints.**
PaintCare does not currently cover the costs of collecting and processing aerosol paints in any state. Within Minnesota, the HHW Programs that currently collect waste aerosols spend a considerable amount of time and money each year to manage them. Aerosols are the highest cost waste stream to manage in HHW programs, next to electronics and the architectural paints currently covered by PaintCare.

Product stewardship: Rechargeable batteries

Overview

Minnesota's Rechargeable Batteries and Products laws prohibit rechargeable batteries and products with non-removable rechargeable batteries from being disposed of in mixed municipal waste and require manufacturers to cover the costs of collecting and managing these items at end-of-life. This requirement can be met by manufacturers or their representative organizations implementing permanent collection programs. Reports are due every odd-numbered year on the estimated number of rechargeable batteries sold in the state by each manufacturer and the number of batteries collected during the previous two years.

While Minnesota was a leader in passing a rechargeable battery law, battery chemistry and the manufacturing and retail landscape have changed significantly over the years. This includes a significant increase in embedded and large format (i.e., high energy) batteries over 300 watt-hours used in e-mobility, power tools and equipment, and portable energy storage. These are subject to special MnDOT requirements and very expensive to manage. Under the existing laws, HHW sites do not have the resources to safely handle these batteries. Lithium-ion batteries are now the dominant rechargeable battery chemistry. Their high energy density makes these batteries more prone to starting fires, raising concerns over the safety of HHW and solid waste sites. Numerous fires have occurred in transport vehicles and buildings related to the collection, transportation, storage, and processing of waste and recyclables in Minnesota.

Updates and accomplishments

- **Collection and recycling**
Manufacturers can meet the requirements for collection by becoming a licensee of Call2Recycle or developing their own program. Within Minnesota there are currently six individual manufacturers and Call2Recycle operating a statewide program on behalf of many battery and product manufacturers collecting and reporting through the program. While battery collection is available at numerous retail stores, county HHW programs accounted for 90 percent of the collected rechargeable batteries in 2022.
- **Training for county HHW staff**
In recent years, HHW programs have had three fires requiring response by a fire department and several smaller fires due to lithium batteries at the facilities. In response to this, MPCA staff have conducted safe handling trainings and work with programs to develop a standard operating procedure (SOP) for safe management of all lithium batteries.
- **Education campaigns for residents**
Hennepin, Ramsey, and Washington counties created a “Be A Battery Hero” slogan and materials directing households to bring all batteries to HHW drop off sites. In addition to these Metro Area counties, well over half of Minnesota’s population have received the materials. MPCA staff are now working with the content creators to expand the use of these materials by all HHW programs with a goal of providing consistent messaging to households on proper battery management throughout the state’s HHW programs. MPCA staff and county HHW programs are collaborating with Macalester College on an extensive education program for Minnesotans.
- **Regional and national dialogues**
The MPCA staff are actively engaged in dialogues at both a regional and national level to address the challenges and risks associated with lithium batteries. The agency has also participated in U.S. EPA-led working groups, along with coordinating a set of six national webinars presented through the North American Hazardous Materials Management Association (NAHMMA). These dialogues and presentations center on consumer and collector awareness of battery chemistry and safety issues, as well as an evaluation of whether federal waste management laws need to be revised to address safe handling, transport, and recycling.

Opportunities

- **Update Minnesota’s Rechargeable Batteries and Products law.**
Minnesota’s Rechargeable Batteries law needs to be revised to expand program access statewide, increase the number of rechargeable batteries collected and recycled, cover collection costs, educate consumers about safe battery use and available collection, enhance enforceability, and increase collector safety.

- **Establish electric vehicle (EV) battery product stewardship.**
While Minnesota’s rechargeable battery laws cover all sizes, chemistries, and applications, the current and anticipated future management systems for EV batteries may have unique program components and responsibilities that are not fully aligned with provisions of laws and rules that are primarily applicable to portable power batteries. Evaluation is needed to ensure EV battery coverage or identify additional program updates and necessary legislation.

Product stewardship: Solar

Overview

As Minnesota’s clean energy economy grows to meet the demand for carbon-free power, there need to be strategies in place to extend the useful life of these products and responsibly manage them at end-of-life. Minnesota currently has around 4 million solar panels in operation and is expected to install millions more in the coming decades. While solar panels are expected to last 25 to 30 years, damaged and defective panels are already coming out of service, and owners sometimes choose to upgrade their panels before the end of their expected life. Retired panels currently become waste that needs to be managed. Managing other waste streams in Minnesota, such as e-waste, has demonstrated it is crucial to be proactive in developing comprehensive programs including repair, reuse, and recycling.

Most of the environmental impacts and climate pollution associated with solar panels are during the raw material extraction, processing, and manufacturing of them. While there are notable benefits of solar power generation, it is still critically important to capture the embodied energy and material resources in panels rather than discard them and continue producing new. Use, reuse, and recycling of solar panels is beneficial and necessary.

Updates and accomplishments

- **Research and external workgroup**
From mid-2018 to early 2023, MPCA staff conducted research, surveys, and presented to state and national groups. The agency also convened a group of interested parties covering a broad range of issues and in-depth evaluation of four policy models for solar panel end-of-life management. Following this thorough process, a product stewardship model was identified as the strongest option for managing these products in Minnesota based on the workgroup’s review of the four policy models. The MPCA received the 2020 Minnesota Solar Energy Industries Association (MnSEIA) Agency Excellence Recognition Award for partnering with MnSEIA and the broader solar industry for education through working groups and trainings.
- **Product stewardship legislation and study**
Solar panel product stewardship legislation was drafted and introduced in 2022 as part of the Governor’s legislative package. During that Legislative session, the language did not move forward. However, further discussions with interested parties resulted in the development of a solar panel study proposal for the 2023 Legislative session. Funding for this study was approved. The intent is to better quantify the installation and retirement rates for panels and assess the statewide infrastructure needs for managing panels coming out of service. When the infrastructure study is complete, a policy working group will review the study and make financing, infrastructure, and policy recommendations to the Legislature by January 15, 2025.

Opportunities

- **Establish a solar panel stewardship program for Minnesota.**
Develop a law creating a program and financing framework for a manufacturer-led product stewardship program. Collection, repair, reuse, and recycling will help prevent dump sites and reduce the amount of disposal of solar panels. Program elements can be tailored to provide employment and economic development opportunities for areas and populations that will benefit most from employment in the renewable energy sector, along with goals for manufacturers to design solar panels for repair, disassembly, recycling, and with less toxic material.
- **Establish product stewardship programs for all renewable energy technologies.**
Expand solar product stewardship concepts to wind power and other renewable energy technologies to ensure reuse and recycling are established as an expectation and implemented effectively ongoing.

Product stewardship: Packaging and paper products

Overview

Product stewardship, or in this case specifically EPR, for packaging and paper products (PPP) focuses on making producers legally and financially responsible for the complete life cycle of their products and packaging. Currently, consumer brands operate without requirements or incentives to account for and reduce the environmental impacts of their PPP in terms of the initial design, the amount used, and whether it is used, reused, and disposed of properly. Strong EPR models aim to reduce climate and environmental impacts through overall reduction of single-use options as a priority. When PPP is needed, EPR helps drive reductions in the quantity of materials used to create the PPP and more sustainable material selections in initial design and manufacturing. Increased use of non-toxic, durable reusable packaging and food ware and investment in reuse systems and infrastructure is the next key component of effective EPR. Finally, EPR can also be used to support waste diversion through investments in recycling infrastructure, improved collection, and stable markets.

Currently Minnesota does not have an EPR law in place for PPP.

Updates and accomplishments

- **EPR for PPP legislation and workgroups**
EPR is gaining momentum within Minnesota with both community and government workgroups pursuing legislation. Starting in 2021, the Partnership on Waste and Energy (PWE), which includes Hennepin, Ramsey, and Washington counties, contracted with the Product Stewardship Institute (PSI) to develop language for a PPP EPR bill. This process included a workgroup of interested parties, including representatives from packaging and retail, waste management, environmental organizations, reuse and recycling entities, and local and state government. The MPCA participated in meetings and provided technical and data support to the workgroup process. Another workgroup coordinated by Sierra Club North Star Chapter and Eureka Recycling, a nonprofit zero waste organization and social enterprise recycler, is also leading efforts to advance EPR legislation and infrastructure in Minnesota.

Opportunities

- **Implement a statewide EPR program for PPP.**
Implement an EPR program for PPP that operates through a producer responsibility organization (PRO), prioritizing a strong emphasis on waste reduction and reuse strategies, including an ongoing, statewide funding pool for these upstream strategies. This program should also require increased use of sustainable, non-toxic materials and recycled content in products and support infrastructure needed to capture and manage PPP that is currently difficult to recycle. Finally, based on the needs across the state, the EPR program should cover the cost of recycling and organics management to recover all PPP that can't be reduced or reused.
- **Update Minnesota's Toxics in Packaging law.**
Minnesota's Toxics in Packaging law needs to be updated to strengthen the protections through changes outlined in the Toxics in Packaging Clearinghouse (TPCH) updated Model Legislation of 2021, which includes per- and poly fluoroalkyl substances (PFAS), ortho-phthalates, and criteria and process for adding new chemicals to the statute going forward. A critical consideration of EPR for PPP is toxicity, making this an important addition to an EPR for PPP program.

Recycling market development

Overview

Recycling market development (RMD) helps create and maintain demand for recyclables by developing markets for materials and stimulating demand for products made with recycled content. RMD exists to help divert materials from the waste stream by moving recyclable materials through the system of collection and processing and then to end-use markets where they are made into new products.

Recycling positively contributes to Minnesota's economy with over 27,000 direct jobs at companies using recycled materials in manufacturing and generating almost \$8 billion in wages and salaries.

Recycling recovers valuable material that would otherwise be lost to disposal. In most cases, it takes less energy to make a product from recycled material than from newly mined or harvested raw material. For example, it takes 95 percent less energy to make an aluminum can using mostly recycled aluminum than with fully virgin aluminum. The energy savings and GHGe reduction associated with recycling is important to combat climate change and reduce environmental impacts.

Updates and accomplishments

- **Grants**
The agency has \$800,000 each biennium to award for RMD grants. A volunteer group of industry partners and members of the public, the RMD Working Group, identified materials that needed the most support for recycling and those materials – mixed paper, glass, and organics – became priority materials when evaluating the first two rounds of grant applications. Seven grants totaling \$600,000 have been completed to-date.
An additional \$5 million was allocated to RMD grants during the 2023 Legislative session. These one-time funds will notably expand the number of funded projects in this area.
- **Minnesota recycling manufacturing losses**
Minnesota has lost critical recycled content manufacturing businesses recently, including:
 - Gerdau Ameristeel closed its steel mill in St. Paul that used scrap metal (525,000 tons per year)
 - Verso Paper closed its recycling and virgin paper plant in Duluth (100,000 tons per year); ST Paper & Tissue purchased the plant in the summer of 2021 where they are now making recycled paper napkins and other tissues, but only at half of the capacity of Verso Paper
 - Rexam/Ball closed their aluminum can plant in St. Paul (2 billion cans per year)

- Brotex no longer accepts Minnesota carpet for recycling (20 million pounds per year)
- Westrock in St. Paul closed the half of their paper recycling plant that produced medium density cardboard (loss of 216,000 tons per year) to ensure a closed-loop system in which recyclable materials are used in place of virgin materials, Minnesota must maintain and grow its local capacity to collect, process, and invest in end markets. Local markets also maintain strong pricing by ensuring there isn't an oversupply of recyclables collected without demand for that content in new manufacturing.
- **Plastic film recycling plant**
The MPCA staff worked with a coalition of Minnesota agricultural and food businesses called [MBOLD](#) to bring a plastic film recycling plant, Myplas, to Minnesota. This new facility, located in Rogers, aims to recycle 90 million pounds of low- and high-density polyethylene packing and film annually and, when fully operational, will add 250 new jobs.
- **Recycling Education Committee**
The Recycling Education Committee (REC) includes haulers, Material Recycling Facilities (MRFs), local and state government, and other regional organizations and associations focused on increasing recycling through more consistent and coordinated education. REC created and updated the [Recycling Outreach Guide](#) in 2020 to promote consistent state-wide messaging about recycling best practices to increase capture rates and lower contamination levels in curbside and drop-off recycling. The guide includes an "Always/Never" list developed in part through a survey of the state's MRFs.

Opportunities

- **Implement a statewide deposit refund program.**
Deposit refund programs have proven effective for recovering containers. With this model, consumers pay a small fee at purchase and get it back when they return the used containers to redemption centers. States with deposit refund systems recover far higher percentages of used containers than Minnesota without this type of program in place. It can be a useful tool for reviving and incentivizing refillable container systems. It is also beneficial for increasing recycling rates of used containers and preventing plastic pollution or litter. Deposit refund is a tried-and-true model used for many container types in the past, and it offers a strong complement to EPR with reuse/refill and cleaner recycling streams.

Organics management

Overview

While upstream efforts to prevent wasted food and rescue food are more impactful, composting organic waste is preferable to landfilling from a climate perspective because it generates lower levels of methane. Composting organic waste also creates a valuable product that, when incorporated into soil, improves soil fertility and health, conserves water through increased retention and transfer, reduces erosion, and sequesters carbon. Minnesota currently has ten large-scale SSOM compost sites permitted to accept food waste, although not all are accepting material at this time, and more than 115 sites that collect yard waste only. The statewide organics program works to expand access to collection, processing capacity, and markets for compost, and provides technical assistance to compost site operators, local governments, and members of the public.

Managing contact water has been a barrier to compost development, mainly due to elevated levels of PFAS found in contact water. Preventing contact water generation or properly treating contact water is costly for compost operators. More frequent and heavier precipitation events due to Minnesota's changing climate will continue to exacerbate the difficulty of managing compost contact water,

necessitating continued support for compost facilities to reduce, manage, and treat their contact water. More information on Minnesota’s plan to protect communities and the environment from PFAS is available in [Minnesota’s PFAS Blueprint](#), published in 2021.

Updates and accomplishments

- **Organics collection and processing**

Many communities are developing programs and plans to expand both residential and commercial collection of organics. As of 2022, the agency estimated over 20 percent of residents had access to curbside organics recycling. The number of organics collection sites throughout the state also continues to grow, expanding access and the state’s overall capacity to manage organics. The need for increased organics processing capacity including transfer stations and SSOM composting sites will continue to grow as residential and commercial organics collection grows.

- **Anaerobic digestion**

Interest in anaerobic digestion (AD) as a strategy to manage organic waste, particularly food waste, continues to grow in Minnesota. There are 59 anaerobic digesters in Minnesota at wastewater treatment facilities and many operations at dairy farms. So far, one AD facility at a wastewater treatment plant has accepted de-packaged food waste on a short-term, trial basis. Permitting of anaerobic digesters is dependent upon the feedstock accepted, the size of facility, the technology of digester, and the use of digestate. AD permitting may trigger environmental review according to [Minn. R. 4410.4300, subp.5](#). The MPCA is currently contracting an LCA study that includes AD and composting as two management methods, with the intent of clarifying environmental benefits of these two management methods.

- **Wood waste**

Emerald Ash Borer (EAB) and increasing severity and frequency of storms due to the climate crisis have resulted in more tree removal and concerns for wood waste management. The MPCA partnered with the Environmental Quality Board (EQB), the Department of Natural Resources (DNR), and the Department of Agriculture (MDA) to release [a report on EAB](#) in 2019 and a summary of [recommended actions](#) in 2020. The five recommended actions include:

- Slow the spread – through detection and monitoring, biological control, biodiversity, etc.
- Support communities – with technical assistances, incentives and financial resources, and emergency response.
- Transition ash forests – by providing technical assistance and financial resources.
- Manage ash wood material – incentives for ash wood markets and wood processing.
- Lead, engage, and collaborate – to designate an EAB taskforce and continue to expand research.

Prevention strategies and prioritizing the wood for its highest and best use as a solid material are preferred and need investment, but there is also growing interest in opportunities for different wood waste strategies, such as biochar. MPCA staff continue to monitor ongoing research into biochar applications.

- **Grants**

During the 2023 Legislative session, \$5 million was allocated for statewide organics management grants. These one-time funds will notably invest in infrastructure needs and capacity for organics. There was also \$4 million allocated for statewide wood waste management grants. \$3 million of this funding is required as a grant to the owner of a biomass energy generation plant in Shakopee. The plant uses waste heat from generating electricity in the malting process and will purchase a wood dehydrator to facilitate disposal of wood that is infested by EAB. An additional \$16.562 million was allocated for Saint Paul Cogeneration to continue funding their wood waste management.

- **Compostable labeling updates**

In 2023, the Legislature expanded labeling requirements for compostable plastic bags to cover all food-service items and packaging. This bill will ensure clarity for retailers, restaurants, and residents regarding which products are compostable. More explicit labeling will also reduce contamination and operational costs of composting facilities and increase marketability of the finished product.

Opportunities

- **Require organics curbside collection or drop-off sites by city size and distance from an organics facility or transfer station.**

Develop a phased approach to requiring cities of a specific size and within a certain distance of an SSOM composting facility or transfer station to establish regular curbside collection. For smaller and more rural areas, the approach would be establishing centralized drop-off sites. Both strategies are a vital part of statewide organics management efforts. Expanding access to organics drop sites is essential when high barriers to collection exist, and the convenience of curbside collection reduces participation barriers for residents, leading to higher organics diversion rates.

- **Require businesses generating large volumes of organics to participate in organics recycling.**

Commercial and industrial entities that generate large volumes of organics have an opportunity to reduce their environmental impacts and often reduce their disposal costs by first preventing food from going to waste, then rescuing food, and finally recycling food waste. (Recycling is not subject to the state SWMT). This recommendation should have a phased-in approach in areas within a certain distance of organics facilities or transfer stations, likely starting in the Metro Area or other large population centers.

- **Require the use of compost during public construction projects.**

Compost helps landscapes better protect groundwater and surface water while also preventing erosion. Thus, requiring compost during public construction projects is important from a sustainability and water pollution perspective, as well as being a valuable step in stabilizing statewide compost markets through a more consistent demand and use.

- **Establish consistent terminology and messaging for compostable products.**

Building on the compostable labeling updates in 2023, it will be important to adopt consistent language and promotional messaging about the acceptability of compostable products in both residential and commercial organics collection programs and processing facilities.

- **Expand compost operator best practice training for noxious weeds and invasive species.**

As compost programs continue to expand, it will be essential to strengthen and establish consistent compost operator training statewide and collaborate with other agencies and industry partners to ensure proper development of best practices for managing noxious weeds and invasive species to minimize their spread.



Waste management

Household hazardous waste

Overview

HHW programs collect, manage, and properly dispose of hazardous wastes from households. In addition to keeping hazardous chemicals out of municipal waste streams and the environment, these programs also provide education on how to purchase, store, and safely manage household chemical products and offer useable products for reuse. Minnesota's HHW reuse programs coordinated by the counties are some of the best in the nation by ensuring adequate staffing to assess each product put on the self, saving money needed for disposal, and providing a valuable service for the public.

As the climate crisis continues, natural disaster events will increase both in frequency and in severity. Immediately following a natural disaster event, HHW mitigation or clean-up efforts begin with Incident Command System (ICS) coordination to determine needed services (i.e., debris segregation and removal or containing potential chemical releases that may impact groundwater contamination).

Updates and accomplishments

- **Statewide training and guidance**
Minnesota is unique for having state-level HHW staff to support collection programs. Safety is the foundation of HHW facilities and programming, given the variety of toxic and dangerous waste accepted and managed daily. The MPCA coordinates HHW-specific training, covering Occupational Safety and Health Administration (OSHA), MnDOT, and Hazardous Categorization trainings. Annually, there are over 400 HHW staff trained and certified, and there have been zero permanent injuries in the program for over 30 years. Additionally, the agency coordinates updating over 55 standard operating procedures (SOPs) related to safe operations and audits all HHW facilities every one to three years to confirm compliance.
- **HHW collection**
Approximately 400,000 participants brought in more than 14.5 million pounds of waste in 2022 through county HHW collection. Examples of HHW collected include paint, aerosols, solvents, adhesives, pesticides, acids, antifreeze, used oil, and household cleaners. There are also specific focuses like mercury collection and pharmaceutical collection programs. County programs have collected a significant amount of mercury over the past 30 years. Agency staff also participated in a mercury total maximum daily load (TMDL) project to increase the amount of mercury collected by HHW programs and reduce the amount landfilled. The collection network for pharmaceuticals began in 2007 and has grown to over 450 collection sites statewide. This approach was unique compared to all other states that first developed an EPR program to achieve this level of service and convenience.

- **HHW reuse**
Over 12 percent of the products collected by county HHW programs are reused and go back to the local community for free. In 2022, statewide HHW programs saved over \$850,000 in waste transport and disposal fees by giving away usable products. The dollar value of the products provided free to the community is considerably higher. HHW programs gave away approximately 98,000 gallons of latex and oil-based paint in 2022, equaling approximate savings of \$3.4 million to local households.
- **EPR partnership and support**
The MPCA HHW staff supports the development and implementation of EPR programs that include wastes collected through county HHW programs. This includes assisting with challenging contracting processes and confirming payment by manufacturers to the HHW programs managing the waste at end-of-life.
- **Reporting and program reimbursements**
The agency has been collecting cost, participation, and waste collection data from HHW programs across the state for over 25 years. Participation data is used in the formula to allocate approximately \$600,000 annually between Greater Minnesota counties, which currently offsets approximately 10 percent of program costs.

Opportunities

- **Implement a statewide EPR program for additional products collected by HHW programs.**
To help offset the increasing cost of providing HHW collection, education, and waste management services, responsibility to manage these products at end-of-life needs to be shifted to the original manufacturers and brand owners. EPR programs are currently available for some items, but a new program is needed for the remaining HHW collected, such as cleaning products, yard chemicals, and automotive products.
- **Require private waste management companies to financially contribute to the cost of managing hazardous waste.**
Assess the ability of private waste management to financially contribute to the cost of managing hazardous waste given the efforts of county programs help to reduce safety and toxicity concerns at these solid waste facilities.
- **Implement a mercury lamp phase-out program.**
Fluorescent lights are toxic given the mercury vapor contained in the bulbs. While Minnesota has long banned mercury thermostats and other products, fluorescent lights are still widely available, even with safer, more efficient LED options. Implementing a mercury lamp phase-out program that would end the sale of fluorescent lamps across the state will reduce unnecessary risk of exposure to mercury through HHW programs and other environments.

Waste-to-energy

Overview

WTE converts waste into usable heat, electricity, or fuel through a variety of processes. Both state statute and the U.S. EPA's waste management hierarchy identify WTE as preferable to land disposal based on the following reasons:

- WTE facilities recover recyclable materials in the waste stream both before and after combustion, while landfills do not recover any materials.
- Pharmaceuticals are destroyed during the combustion of waste, whereas at a landfill, these compounds and other contaminants end up in leachate, eventually go to a wastewater treatment facility, and ultimately in surface water because there currently are not treatments to remove them from the wastewater.

- Landfills and WTE facilities have similar per ton GHGe profiles while operating, but once closed, WTE facilities stop emitting immediately, while landfills continue to emit GHGe for decades after closure resulting in triple the amount of GHGe than WTE.
- Landfill emissions are not as stringently regulated as WTE facilities. WTE facilities operate under strict air emission requirements that are periodically updated based on risk evaluations and the availability of updated technology to improve controls. Emissions standards will continue to become more stringent for WTE.
- WTE generates heat and power that contributes to the power grid across the state. Without WTE facilities, additional power must be generated through other methods, which can include burning natural gas or coal to make up the difference. Landfills do not generate power, although a few landfills capture the energy created by burning the methane produced at the facility.

While WTE facilities have benefits compared to landfilling, the waste hierarchy prioritizes waste reduction, reuse, recycling, and composting over WTE. Landfills and WTE facilities located in or near environmental justice areas have a negative impact on communities already overburdened by pollution. Air emissions from WTE facilities, while meeting state and federal standards, contribute to the overall impacts experienced by neighboring communities.

Updates and accomplishments

- **Community concerns**
WTE remains at the center of energy/waste policy nexus and debate, locally and nationally. Within Minnesota, there has been notable community opposition to the HERC with calls for its closure. Hennepin County is looking at options and timelines for the possible closure of HERC. As a part of these efforts, there have also been calls for altering the waste management hierarchy. Currently, the U.S. EPA is evaluating its waste management hierarchy as a part of broader research, given the hierarchy was originally created several decades ago. The U.S. EPA is also working on updates to its U.S. Environmentally-Extended Input-Output (USEEIO) models that develop estimates for the potential impacts – environmental and economic – associated with the production or consumption of goods and services. Communications from the U.S. EPA have noted the potential for changes in how it assesses certain disposal technologies for both the hierarchy and WARM based on this work and the latest available data and information.
- **Restriction on disposal challenge**
Landfills in the Metro Area challenged the MPCA’s authority to enforce ROD. The law states that MMSW generated in the seven-county Metro Area cannot be disposed of in a landfill unless all WTE capacity is fully utilized. The final decision maintained the agency’s authority, but the litigation was not settled before Great River Energy (GRE) closed its WTE facility in Elk River in 2019, in part due to a lack of waste deliveries. GRE closing resulted in the MPCA needing to allow additional expansion at Metro Area landfills to manage over 308,000 tons of MSW previously managed at GRE. In May 2021, the Metro Area landfills and the MPCA signed a settlement decree acknowledging the MPCA’s authority regarding ROD.

Landfills: Environmental protection

Overview

While efforts continue to prioritize waste reduction strategies, the reality is there is a current need for the collection, transfer, and disposal of waste. Therefore, the state has a responsibility to ensure solid waste facilities and processes have the most robust environmental protections possible. These protections, or engineered controls, include landfill liners, landfill cover systems, and groundwater monitoring. The purpose of these engineered controls is to prevent contaminants in solid waste from being transported into the environment through air, surface water, or groundwater, where they can

negatively impact human health. Many of the constituents in solid waste that pose health risks have been known for a long time; however, as scientific research progresses, new contaminants are being discovered. Recent examples of these contaminants include 1,4-dioxane and PFAS. PFAS, a group of more than 5,000 human-made chemicals, is manufactured to be persistent in the environment, and there are few available, practical treatment options. Depending on the type of landfill (i.e., MSW, Industrial, C&D, etc.) and waste accepted for disposal, controls vary through the solid waste permitting process. Over time, it's important to revisit these controls and the rules stipulating their use to determine whether updates are needed to improve protections.

According to the U.S. EPA, MSW landfills are the third-largest source of human-related methane emissions in the United States, resulting from the decomposition of organic material in landfills. In addition to upstream reduction strategies, a critical step for addressing climate impacts at landfills is to pursue efforts and implement rules to reduce methane and other emissions on-site.

Updates and accomplishments

- **Establishment of intervention limits**
The MPCA continues to implement intervention limits (ILs) for landfills for contaminants that have new Health Risk Limits (HRL) established by the Minnesota Department of Health (MDH) such as 1,4-dioxane. These ILs are used in conjunction with groundwater monitoring to determine if contaminants from landfills are impacting groundwater. In partnership with MDH and the U.S. EPA, agency staff also develop new engineered controls and regulations to ensure necessary protection, working with regulated parties for implementation.
- **Minnesota PFAS Blueprint and Monitoring Plan**
As previously mentioned, the MPCA and multiple state agencies partnered in the development of the Minnesota PFAS Blueprint, published in 2021. As a follow-up, the agency created the [PFAS Monitoring Plan](#) in 2022, which summarizes a path forward for PFAS monitoring at solid waste, wastewater, and stormwater facilities, hazardous waste landfills, facilities with air emissions, and sites in the Brownfield or Superfund programs. The agency outlined plans for identifying locations and processes for PFAS monitoring, prioritizing some landfills to complete sampling in groundwater monitoring wells. MPCA has taken samples at prioritized landfills, while others are completing their own studies and reports. These sampling efforts are currently ongoing.

Opportunities

- **Reduce PFAS in leachate that is land applied.**
Landfills located in rural areas may lack access to sufficient wastewater treatment infrastructure due to cost barriers, leaving land application as the only currently available method for leachate management. Land application of leachate has a higher potential to impact the environment than disposal at wastewater treatment facilities. Alternative treatment methods need to be implemented to transition towards removing PFAS in any leachate that is land-applied. As a first step, pilots are currently underway at a couple landfills in Minnesota to test technologies for treating PFAS.
- **Establish ongoing PFAS sampling at landfills.**
There is clear benefit to continuing PFAS sampling at landfills beyond the current efforts. The data collected in the PFAS Monitoring Plan will help MPCA and regulated facilities prepare for the transition of PFAS from unregulated contaminants of concern to being part of the regulated suite of substances under state and federal environmental laws. As this work advances, the plan recommends state agencies consider the necessary and appropriate changes to program activities, including monitoring or sampling requirements, permit limits, and best management practices.

- Update Minnesota rules for industrial waste disposal to increase protections.**
Minnesota rules related to the disposal of industrial waste need to be updated to formalize necessary protections for industrial landfills in the state. When originally established, these rules envisioned industrial waste monofills, but in the decades since, industrial waste landfills have evolved to operate more similarly to MSW landfills. Additional protection has been included in solid waste permits, but updates to the rules formalize these changes and standardize the necessary controls based on current operations.
- Establish air emissions tracking requirements for landfills statewide.**
To better document and quantify the environmental and human health impacts of landfilling in comparison to other disposal methods, Minnesota should establish air emissions (e.g., air toxics and GHGe) tracking requirements for landfills across the state. Currently, there is limited data gathered on methane emissions from landfills on a national level by organizations such as [Carbon Mapper, Inc.](#) At this time, Carbon Mapper includes information on the Burnsville, Elk River, and Inver Grove Heights landfills.
- Establish limits for GHGe at landfills, with requirements to implement best available capture technologies and practices.**
Minnesota should set a limit for GHGe at landfills, which are comprised of approximately 50 percent methane and 50 percent carbon dioxide. Methane is extremely potent, roughly 28 times more effective at trapping atmospheric heat than carbon dioxide. Alongside a limit, a requirement is needed for landfills to use the most effective technologies and best, most sustainable practices for collecting and treating landfill gas, such as converting into energy.

On-site (illegal) disposal

Overview

On-site disposal of MSW, either burning or burying, has been an ongoing practice for many years despite being the least preferable form of handling waste due to lack of controls to mitigate the significant pollution created and risks to human health. Low-temperature fires used in backyard burn barrels, fire pits, and stoves produce a lot of smoke, carbon monoxide, carbon dioxide, nitrogen oxides, and smaller amounts of more poisonous chemicals such as benzene, dioxins, lead, and mercury. State law regulates open burning and prohibits it in most cases, with farmers as the primary exception being able to burn or bury very limited types of household garbage (unless banned by local ordinance). Local units of government play a critical role in educating Minnesota residents about the fact that it is illegal to burn prohibited materials (which is nearly all materials found in modern garbage), the risks of burn barrels, and how to change disposal practices. Thirty-three counties in Minnesota have formally banned garbage burning at the local level, where garbage service is reasonably available to all residents. Enforcing laws against burning is more straightforward for police, conservation officers, and other enforcement officers when all burning of MSW is banned.

Updates and accomplishments

- Estimated decline in on-site disposal**
Based on the data collected and estimates generated through the SCORE reports, illegal disposal decreased significantly since the 1990s when over 145,000 tons of MSW were assumed to be disposed of on-site. The estimated amount of on-site disposal was down to 45,665 tons in 2021. The MPCA and local units of government have used a variety of burn barrel buy-back programs and outreach and education efforts to successfully change behavior. However, after a steep decline in the 1990s and early 2000s and reduced state and local resources focused on behavior change, the amount of illegal onsite disposal has stayed relatively the same since 2013.

- **Burning enforcement**

The primary focus of enforcement in this area is the burning of prohibited materials. The MPCA issues several enforcement actions each year, involving a penalty and complete clean-up of the enforcement site, disposal options for future waste, and education on the risks to human health and the environment. The MPCA continues to support and partner with counties, local law enforcement, and the DNR in responding to prohibited burning complaints and attending local governmental trainings to educate contractors, waste management personnel, and haulers on proper waste management and disposal.

Opportunities

- **Update restrictions for on-site disposal to prohibit it statewide.**

State law should be amended to prohibit on-site disposal (burning or burying) of MSW throughout the entire state without exception. The exemption for farm property should be eliminated as it does not protect the environment and human health, is an anachronism, and leads to confusion and difficulty with enforcement.

Construction and demolition landfills

Overview

C&D waste is generated during construction, renovation, and demolition. These wastes include concrete, asphalt, bricks, wood products, roofing, drywall, plaster, carpet, plastics, metals, and other wastes. When building materials aren't reused or recycled, most of it goes to C&D landfills. In Minnesota, there are over 90 landfills or portions of landfills that are constructed without liners or leachate collection systems that accept or have accepted C&D waste. Without a liner or leachate collection system in the landfill, leachate will ultimately end up in surrounding groundwater.

Minnesota's current C&D waste regulations lack engineered components to prevent soil and groundwater contamination, and monitoring found pollutants in groundwater around unlined C&D landfills that exceed standards to protect human health and the environment. A new C&D landfill rule is being proposed to ensure stronger protections given:

- C&D waste is not inert.
- Prevention of pollution is always preferred over management and remediation.
- Unlined landfills release leachate into groundwater.
- The [2019 Groundwater Report](#) identified system-wide impacts to the groundwater, which indicates that changes to the rules and regulations are necessary.
- There are currently three unlined C&D landfills that have impacted residential drinking water sources; these sites have received alternative drinking water sources.
- Minnesota's groundwater is a precious and sensitive resource.
- Minnesota does not allow groundwater to be degraded beyond its highest use, which is drinking water.

Updates and accomplishments

- **External workgroup**

Starting in 2019, the agency convened a multi-year workgroup process. The [Rule Advisory Panel \(RAP\)](#) included representation from private and public C&D landfills, environmental consultants and groups, residents, and research or academic entities. The agency discussed and sought advice from the RAP members on topics directly related to C&D landfills and the potential content of the new C&D rule, including but not limited to landfill design and operation, prevention aspects, and water quality.

- **Regional surveys and documentation review**

The MPCA staff conducted surveys of all U.S. EPA Region 5 and neighboring Midwest states regarding their management of C&D materials. The results showed that most of the states with similar demographics to Minnesota manage C&D materials in lined landfills to ensure environmental protection. The agency also conducted a thorough review of applicable rules, Statement of Need and Reasonableness (SONAR), statutes, and guidance documents related to current C&D waste management, groundwater protection, and landfill design and operation to develop major rule concepts in support of the MPCA's updating of C&D management rules.

Opportunities

- **Update regulations to ensure C&D landfills are protective of the environment and human health.**

C&D landfill regulations need to be updated to prevent further contamination of groundwater and surrounding land, by including requirements that all landfills be lined with leachate collection systems, be capped with an impermeable cover, have more stringent operating-location and closure requirements, and require groundwater monitoring and financial assurance to facilitate proper closure and mitigate potential future liabilities. These updates should also include eliminating the unlined C&D permit by rule (PBR) sites.

- **Provide assistance for a more protective integrated C&D waste system.**

To support the necessary statewide transition to a more protective integrated C&D waste system, technical assistance and funding resources are needed. This type of investment will build on efforts to reduce the amount of C&D materials being sent to landfills and ensure the landfills receiving C&D waste for disposal are designed and maintained to protect Minnesota's groundwater and drinking water.

Landfill closure/post-closure tracking and monitoring

Overview

Landfills must be monitored and maintained even after they stop accepting waste to minimize potential environmental impacts. The Landfill Cleanup Act of 1994 created a state-run program, the Closed Landfill Program (CLP), that assumed control of certain closed MSW landfills that met legislatively set eligibility requirements (requirements largely based on waste types accepted and when they closed) to monitor, maintain, and—if necessary—clean up contamination. The CLP oversees 112 facilities, with a total 114 eligible for inclusion. For all other landfills, state and federal regulations require landfill operators to continue maintenance and monitoring requirements for at least 20 years after a landfill closes. This is known as the post-closure care (PCC) period. For MSW landfills, the PCC period is set for a minimum of 30 years. However, even after this period is completed, landfills may still present a risk to human health and the environment. Currently, Minnesota solid waste rules do not outline specific landfill requirements for the time that extends beyond the PCC period.

Landfills generate GHGe as organic waste decomposes. While the generation rate of emissions decreases after a landfill is closed and cover is established, after the PCC period, emission rates may still be significant. The covers on closed landfills are vulnerable to erosion from severe storm events, which are becoming more frequent in Minnesota due to the climate crisis. The increase in storm frequency and severity going forward will make it necessary to continue to monitor and maintain landfill covers well beyond the PCC period to ensure the protection of groundwater.

Updates and accomplishments

- **Ongoing monitoring and reporting**

Many landfills that closed during the late 1990s and early 2000s are beginning to reach the end of their required 20-year or 30-year PCC period. Of the approximately 90 closed landfills not in the CLP, less than a third received official closure documents from the MPCA. This regulatory document enables tracking for how long a facility has been in PCC and whether the facility still presents an ongoing risk to the environment. The MPCA has been monitoring and evaluating closed landfills on a case-by-case basis to ensure necessary steps are taken to protect the environment, including the possibility of extending the PCC period. The agency has standardized a permit requirement for landfills to submit a Post-closure Care Summary Report prior to the end of the post-closure period. This requirement is being incorporated into landfill permits as they are reissued.
- **Work group and guidance**

The MPCA staff established a work group to investigate the issue of landfills reaching the end of their PCC period and how to ensure adequate environmental protections into the future. The work group developed guidance for the regulated parties based on experiences from other states and recommendations from national research groups on landfills. This guidance will establish expectations for landfill management beyond the PCC period and categorize areas MPCA staff will evaluate when a landfill wishes to exit PCC.
- **Unified Environmental Covenant Act (UECA) clarification**

The MPCA worked with the Legislature in 2021 to clarify that the UECA (Minn. Stat. § 114E) can be used to establish institutional controls at landfills. This clarification provides the MPCA with an additional tool to use to limit property use that may harm the environment in areas where solid waste has been disposed. A restrictive covenant (RC) template for using the UECA was developed but has not been used to-date.

Opportunities

- **Establish a tracking system to identify landfills nearing end of post-closure care.**

Establish a tracking system to proactively identify landfills reaching the end of their individual PCC periods to better collaborate with the facility owner prior to termination of their care period and evaluate potential for exiting post-closure.
- **Establish clear regulations for when closed landfills can exist the formal post-closure period.**

The solid waste disposed of in landfills will continue to pose environmental and human health risks beyond the current 20-year or 30-year period, and having established rules will further the ability to maintain adequate protections. This includes a requirement for approval from the MPCA commissioner to terminate the PCC period for solid waste disposal facilities based on gas, leachate, and ground and surface water monitoring results. The developed guidance outlines how the agency evaluates these facilities, but codifying the process into rule formalizes and standardizes it.



Community engagement survey

In May 2023, the MPCA had a month-long community engagement period for this report, where individuals could submit feedback on the topics of most interest and concern for materials management and solid waste in Minnesota. The most common themes from the community feedback were reviewed with agency staff and Management to account for those focuses within the report opportunities and agency recommendations. Table 2 summarizes the responses received from the public and interested parties through the survey.

Table 2. Policy report community engagement

Most common topics in feedback	Main theme(s)
1. Organics management	<ul style="list-style-type: none"> • Scale up or require organics collection/drop-off statewide • Clarify definitions and labeling for compost/ compostables • Establish clear standards and priority for AD • Develop a statewide plan and resources for wood waste • Expand support for food to animals
2. Plastics and packaging	<ul style="list-style-type: none"> • Reduce or ban single-use plastics and Styrofoam (statewide or dine-in food establishments)
3. EPR	<ul style="list-style-type: none"> • Implement EPR for packaging and food ware, pairing with a deposit refund/bottle bill • Pursue EPR for other product categories, including renewable energy products and technologies
4. Reuse	<ul style="list-style-type: none"> • Incentivize or require switch to reusables/refillables in place of single-use • Invest in reuse systems and infrastructure • Address barriers to public or government donation
5. Recycling	<ul style="list-style-type: none"> • Establish statewide list of recyclables and standards • Expand options for difficult to recycle items • Expand collection and education
6. Building materials and waste	<ul style="list-style-type: none"> • Invest in and require deconstruction and material reuse
7. Prevention of wasted food	<ul style="list-style-type: none"> • Expand funding for prevention of wasted food and require food donation/rescue



Recommendations

Policy recommendations

The MPCA is prioritizing seven focus areas related to sustainable materials management and solid waste efforts based on:

- The potential to reduce climate impacts.
- The opportunities to account for principles of EJ.
- Interest expressed through the community engagement survey.
- Agency resources and strategic planning for the next four-year reporting period.

Of the 49 opportunities detailed throughout the report sections and summarized below, the ten listed under these seven priority focus areas are the MPCA’s recommendations for the state to pursue in the next several years (Table 3). For these recommendations to be successfully implemented, more work needs to be done to confirm the full scope, understand resource needs and engage partners, and secure additional funding to assist state agencies and offer competitive grants and pass through dollars for local programs.

Table 3. Priority focus areas and recommendations for the state to pursue in the next several years

Priority focus areas	Recommendations
<p>Reduce the environmental and climate impacts of Minnesota’s food system, primarily through:</p> <ul style="list-style-type: none"> • The prevention of wasted food and food donation and rescue strategies to increase Minnesotans’ access to healthy, quality food. • Increasing use of composting to improve soil health. 	<p>1. Require the reduction of wasted food, annual reporting, and proper food management for large generators of wasted food.</p> <p>Generators of large amounts of wasted food would no longer be allowed to dispose of it without first following the preferred options in the food scale; they would need to implement strategies to prevent food from being wasted in the first place and donate all surplus food that is edible and meets health and safety requirements. Additionally, entities would need to annually report on the methods they are using and the quantities of reduction, food donation, and organics management occurring.</p>

Priority focus areas	Recommendations
<p>Invest in more robust data collection and analysis statewide for materials management and solid waste systems to:</p> <ul style="list-style-type: none"> • Better communicate trends. • Proactively identify opportunities for increased environmental protections and program efficiencies. • Accurately summarize the climate impacts of state consumption and waste. 	<p>2. Require waste composition studies at solid waste facilities statewide on a recurring basis. Performing waste composition studies at a set number of solid waste facilities on a regular, rotating schedule will maintain this dataset so it is accurate and useful, documenting generation rates and material type breakdowns.</p> <p>3. Expand waste reporting to require measurement of all waste streams (MSW, C&D, Industrial). Expanding statewide reporting and investing in tracking systems to include all waste streams will ensure more comprehensive data that accurately represents the generation and flow of waste in Minnesota.</p>
<p>Invest in reuse, rental, and repair infrastructure with an emphasis on replacing single-use products and packaging with reusable/refillable systems.</p>	<p>4. Establish an ongoing statewide waste reduction and reuse grant program. This ongoing funding would invest in resale, repair, rental, and sharing infrastructure, education, and business operations and development. Grants would target areas that show the greatest environmental impact, using an SMM approach.</p>
<p>Reduce the environmental and climate impacts of Minnesota’s buildings and materials through:</p> <ul style="list-style-type: none"> • Building preservation, maintenance, and deconstruction to enable more building material reuse. • Prioritizing reductions in the embodied carbon of building materials. • Investments in reuse and recycling market development. 	<p>5. Establish a statewide deconstruction requirement for state and local government-owned buildings. There are instances where a structure needs to be removed, but government entities must lead by example by first assessing if full or partial deconstruction is possible and safe based on the structure. If possible, full or partial deconstruction methods need to be followed.</p>
<p>Implement EPR programs for consumer products and packaging, prioritizing toxicity reduction and management of hazardous and problem materials, shifting the primary obligation for impact reduction and management to brand owners and manufacturers.</p>	<p>6. Implement a statewide EPR program for PPP. Implement an EPR program for PPP that operates through a PRO, prioritizes and funds source reduction and reuse strategies, requires use of sustainable, non-toxic materials and recycled content, supports infrastructure to capture difficult to recycle PPP, and, based on statewide needs, covers the cost of recycling and organics management for products that can't be reduced or reused.</p>

Priority focus areas	Recommendations
	<p>7. Implement a statewide deposit refund program. A tried-and-true model used for many container types in the past, deposit refund offers a strong complement to EPR with reuse/refill and cleaner recycling streams.</p>
<p>Establish statewide access to recycling services - including traditional recyclables and organics - that are easily understood and equitable to all communities and types of residences (i.e., multifamily).</p>	<p>8. Require organics curbside collection or drop-off sites by city size and distance from an organics facility or transfer station. Develop a phased approach to requiring cities of a certain size and within a certain distance of an SSOM composting facility or transfer station to establish regular curbside collection. For smaller and more rural areas, the approach would be to establish centralized drop-off sites.</p>
<p>Update and add new regulations for solid waste recovery and disposal facilities (MSW, Industrial, and C&D) to adapt processes and procedures to align present-day and anticipated scenarios better. Regulations should address:</p> <ul style="list-style-type: none"> • The types of wastes captured in the waste streams. • Chemicals of concern and environmental and human health risks identified and anticipated. • The changing climate. 	<p>9. Develop a guidance for consistently incorporating EJ in permit review and issuance. The solid waste permitting program needs to develop a guidance to consistently inform, meaningfully engage, and solicit input from historically underserved communities that are most at-risk with solid waste projects that may affect them.</p> <p>10. Establish clear regulations for when closed landfills can exist the formal post-closure period. Minnesota needs to establish clear regulations and criteria for how to manage closed landfills once they transition outside the current program requirements and post-closure period established in rule, including a requirement for approval from the MPCA commissioner for the termination of the PCC period based on gas, leachate, and ground and surface water monitoring results.</p>

Materials management and solid waste opportunities

Policy, funding, and program opportunities are included in the individual report sections with additional context and summarized in a single list below. Each opportunity is categorized with one or more of the following labels:

- Opportunity selected as one of the MPCA’s ten recommendations: **RECOMMENDATION**
- Opportunity requires legislative action to enact policy: **LEGISLATIVE**
- Opportunity requires MPCA action, including changes to process or procedure: **MPCA**
- Opportunity requires funding allocation: **FUNDING**
- Opportunity aligns with state and MPCA priorities: **ENVIRONMENTAL JUSTICE**; **CLIMATE**; **DATA**
- Opportunity involves upstream activities (reduction or reuse) or activities at end-of-life (recycling, organics management, disposal): **UPSTREAM STRATEGIES**; **END-OF-LIFE MANAGEMENT**

Current system, roles, and measurement

- **Require waste composition studies at solid waste facilities statewide on a recurring basis.**
RECOMMENDATION **LEGISLATIVE** **DATA**
Performing waste composition studies at a set number of solid waste facilities on a regular, rotating schedule will maintain this dataset so it is accurate and useful, documenting generation rates and material type breakdowns.
- **Expand waste reporting to require measurement of all waste streams (MSW, C&D, Industrial).**
RECOMMENDATION **LEGISLATIVE** **FUNDING** **DATA**
Expanding statewide reporting and investing in tracking systems to include all waste streams will ensure more comprehensive data that accurately represents the generation and flow of waste in Minnesota.
- **Develop a guidance for consistently incorporating EJ in permit review and issuance.**
RECOMMENDATION **MPCA** **ENVIRONMENTAL JUSTICE**
The solid waste permitting program needs to develop a guidance to consistently inform, meaningfully engage, and solicit input from historically underserved communities that are most at-risk with solid waste projects that may affect them.
- **Update solid waste rules to adapt to the changing climate.**
MPCA **CLIMATE** **END-OF-LIFE MANAGEMENT**
Adapting to a changing climate includes, but is not limited to, updating the landfill design rules so they are equipped to handle larger rain events, having appropriate protections for frequent freeze/thaw events and heavy rain events, updating design standards for leachate storage ponds, and updating monitoring standards for groundwater at landfills and best practices for land application of leachate to avoid water pollution.
- **Update the certificate of need rules to be current with solid waste management practices.**
MPCA **END-OF-LIFE MANAGEMENT**
Current CON rules are inconsistent with a recent court decision that stated CON can only be issued after environmental review is complete. The CON rules, and possibly other related rules, need to be updated to ensure the process is transparent and consistent with recent court decisions.

- **Require reporting from businesses that manage their recyclables.**

LEGISLATIVE DATA

An update to include commercial, industrial, and institutional businesses in annual reporting requirements will improve the accuracy of recycling data statewide and improve efficiencies for data collection.

- **Update county SCORE spending requirements and increase funding levels to strengthen environment and community benefits.**

LEGISLATIVE FUNDING ENVIRONMENTAL JUSTICE UPSTREAM STRATEGIES

Additional funds are needed to support counties fulfilling their waste reduction and reuse obligations beyond recycling. Additionally, adding a requirement that counties spend equivalent resources in areas of concern for EJ will support statewide and agency equity initiatives, bringing services and support to areas where they have been historically lacking.

Prevention of wasted food and food rescue

- **Require the reduction of wasted food, annual reporting, and proper food management for large generators of wasted food.**

RECOMMENDATION LEGISLATIVE CLIMATE DATA UPSTREAM STRATEGIES

Generators of large amounts of wasted food would no longer be allowed to dispose of it without first following the preferred options in the food scale; they would need to implement strategies to prevent food from being wasted in the first place and donate all surplus food that is edible and meets health and safety requirements. Additionally, entities would need to annually report on the methods they are using and the quantities of reduction, food donation, and organics management occurring.

- **Establish carbon offset credits for food donation and rescue.**

CLIMATE UPSTREAM STRATEGIES

Establishing a carbon offset program for food donation and rescue would allow organizations working in this area to receive funding through the sale of credits.

Sustainable building

- **Establish an ongoing statewide sustainable building and materials management grant program.**

FUNDING UPSTREAM STRATEGIES END-OF-LIFE MANAGEMENT

This funding would invest in building preservation and maintenance, structural moving, reincorporating used building materials in construction and renovation, deconstructing buildings that need to be removed, material reuse buildings at solid waste facilities, and supporting markets for reused and recycled building materials.

- **Establish a statewide deconstruction requirement for state and local government-owned buildings.**

RECOMMENDATION LEGISLATIVE UPSTREAM STRATEGIES

There are instances where a structure needs to be removed, but government entities must lead by example by first assessing if full or partial deconstruction is possible and safe based on the structure. If possible, full or partial deconstruction methods need to be followed.

- **Establish a statewide diversion requirement for building material management for new construction, additions, renovations, and building removal.**

LEGISLATIVE UPSTREAM STRATEGIES END-OF-LIFE MANAGEMENT

A strong diversion requirement should include both recycling and reuse (e.g., 75% of non-hazardous material recycled and 10% of non-hazardous material reuse) and can specify different targets based on building types (e.g., residential vs commercial, age of buildings, etc.).

Consumer product reuse

- **Establish an ongoing statewide waste reduction and reuse grant program.**

RECOMMENDATION FUNDING CLIMATE UPSTREAM STRATEGIES

This ongoing funding would invest in resale, repair, rental, and sharing infrastructure, education, and business operations and development. Grants would target areas that show the greatest environmental impact using an SMM approach.

- **Update requirements regarding government surplus to increase reuse.**

LEGISLATIVE UPSTREAM STRATEGIES

There is an opportunity to reduce waste and support the continued use of government property by clarifying definitions and streamlining the processes for state and local government.

- **Expand coverage for Digital Fair Repair.**

LEGISLATIVE UPSTREAM STRATEGIES

Building on the legislation passed during the 2023 Session, Minnesota can remove some of the previously exempt items (i.e., power tools, lawn and garden equipment, and agricultural equipment) to broaden access and increase the potential environmental benefits of this law.

Sustainable purchasing

- **Establish a baseline measure and annual reporting of state government procurement scope 3 emissions.**

MPCA CLIMATE DATA

State government needs to invest in the software and staffing needed to require reporting of scope 3 emissions for purchases made through the state’s goods and services contracts.

Single-use plastics

- **Require reusable food ware for dining on-site.**

LEGISLATIVE UPSTREAM STRATEGIES

As a first step towards statewide reduction or phase-out of single-use food ware, businesses that allow customers to eat on-site must use reusable food ware (e.g., bowls, plates, food trays, cups, lids, utensils, etc.) to serve customers eating on the premises.

- **Require reusable food and drinkware at state and local government buildings and events.**

LEGISLATIVE UPSTREAM STRATEGIES

Transitioning state and local government buildings (owned or leased) and events from single-use to reusable food and drinkware is an essential way for government to model this consumption shift and invest in the infrastructure needed to support it.

- **Adopt “Skip the Stuff” requirements for food service establishments and delivery.**

LEGISLATIVE UPSTREAM STRATEGIES

“Skip the Stuff” requirements state that single-use plastic and other single-use food service items should not be included with food orders, including take-out and delivery, unless specifically requested as a part of the order.

- **Ban polystyrene foam use for food ware and packaging.**
LEGISLATIVE UPSTREAM STRATEGIES
Banning polystyrene reduces environmental and human health risks, encouraging establishments to use other sustainable materials available – ideally reusable, but at least recyclable and compostable if reuse isn’t an option.
- **Implement programs for agricultural plastic and boat wrap recycling.**
LEGISLATIVE END-OF-LIFE MANAGEMENT
Implementing a program to collect and recycle these materials would reduce disposal and could establish strong end markets for this type of plastic film.

Product stewardship: Electronics

- **Update Minnesota’s Electronics Recycling law to clarify cost responsibility.**
LEGISLATIVE END-OF-LIFE MANAGEMENT
Minnesota’s Electronics Recycling law needs to be revised so consumers and collectors (e.g., local units of government) are not covering recycling and transportation costs; instead, manufacturers fully cover them as intended under the 2016 law changes.
- **Update Minnesota’s Electronics Recycling law for flame retardant plastic screening.**
LEGISLATIVE END-OF-LIFE MANAGEMENT
A revision is needed to require that manufacturers develop and fund capacity to screen and segregate, to the greatest extent possible, collected (past) products containing organohalogens in excess of 1,000 ppm concentration by weight and implement that screening technology in the collection system in Minnesota.

Product stewardship: Paint

- **Update the Architectural Paint Product Stewardship Law to cover aerosol paints.**
LEGISLATIVE END-OF-LIFE MANAGEMENT
Aerosols are the highest cost waste stream to manage in HHW programs, next to electronics and architectural paints, showing a clear opportunity for product stewardship and an update to the law.

Product stewardship: Rechargeable batteries

- **Update Minnesota’s Rechargeable Batteries and Products law.**
LEGISLATIVE END-OF-LIFE MANAGEMENT
Minnesota’s Rechargeable Batteries law needs to be revised to expand program access statewide, increase the number of rechargeable batteries collected and recycled, cover collection costs, educate consumers about safe battery use and available collection, enhance enforceability, and increase collector safety.
- **Establish EV battery product stewardship.**
LEGISLATIVE END-OF-LIFE MANAGEMENT
While Minnesota’s rechargeable battery laws cover all sizes, chemistries, and applications, the current and anticipated future management systems for EV batteries may have unique program components and responsibilities that are not fully aligned with provisions of laws and rules that are primarily applicable to portable power batteries.

Product stewardship: Solar

- **Establish a solar panel stewardship program for Minnesota.**
LEGISLATIVE **UPSTREAM STRATEGIES** **END-OF-LIFE MANAGEMENT**
Develop a law creating a program and financing framework for a manufacturer-led product stewardship program for solar that includes collection, repair, reuse, and recycling.
- **Establish product stewardship programs for all renewable energy technologies.**
LEGISLATIVE **UPSTREAM STRATEGIES** **END-OF-LIFE MANAGEMENT**
Expand solar product stewardship concepts to wind power and other renewable energy technologies to ensure reuse and recycling are established as expectation and implemented effectively ongoing.

Product stewardship: Packaging and paper products

- **Implement a statewide EPR program for PPP.**
RECOMMENDATION **LEGISLATIVE** **UPSTREAM STRATEGIES** **END-OF-LIFE MANAGEMENT**
Implement an EPR program for PPP that operates through a PRO, prioritizes and funds source reduction and reuse strategies, requires use of sustainable, non-toxic materials and recycled content, supports infrastructure to capture difficult to recycle PPP, and, based on statewide needs, covers the cost of recycling and organics management for products that can't be reduced or reused.
- **Update Minnesota's Toxics in Packaging law.**
LEGISLATIVE **ENVIRONMENTAL JUSTICE** **UPSTREAM STRATEGIES**
Minnesota's Toxics in Packaging law needs to be updated to strengthen the protections through changes outlined in the Toxics in Packaging Clearinghouse (TPCH) updated Model Legislation of 2021, which includes PFAS, ortho-phthalates, and criteria and process for adding new chemicals to the statute going forward.

Recycling market development

- **Implement a statewide deposit refund program.**
RECOMMENDATION **LEGISLATIVE** **UPSTREAM STRATEGIES** **END-OF-LIFE MANAGEMENT**
A tried-and-true model used for many container types in the past, deposit refund offers a strong complement to EPR with reuse/refill and cleaner recycling streams.

Organics management

- **Require organics curbside collection or drop-off sites by city size and distance from an organics facility or transfer station.**
RECOMMENDATION **LEGISLATIVE** **END-OF-LIFE MANAGEMENT**
Develop a phased approach to requiring cities of a certain size and within a certain distance of an SSOM composting facility or transfer station to establish regular curbside collection. For smaller and more rural areas, the approach would be to establish centralized drop-off sites.
- **Require businesses generating large volumes of organics to participate in organics recycling.**
LEGISLATIVE **END-OF-LIFE MANAGEMENT**
Commercial and industrial entities that generate large volumes of organics have an opportunity to reduce their environmental impacts and often reduce their disposal costs by first preventing food from going to waste, then rescuing food, and finally recycling food waste.

- **Require the use of compost during public construction projects.**
LEGISLATIVE **END-OF-LIFE MANAGEMENT**
 Requiring compost during public construction projects is important from a sustainability and water pollution perspective, as well as being a valuable step in stabilizing statewide compost markets through a more consistent demand and use.
- **Establish consistent terminology and messaging for compostable products.**
MPCA **END-OF-LIFE MANAGEMENT**
 Building on the compostable labeling updates in 2023, it will be important to adopt consistent language and promotional messaging about the acceptability of compostable products in both residential and commercial organics collection programs and processing facilities.
- **Expand compost operator best practice training for noxious weeds and invasive species.**
MPCA **END-OF-LIFE MANAGEMENT**
 As compost programs continue to expand, it will be essential to strengthen and establish consistent compost operator training statewide and collaborate with other agencies and industry partners to ensure proper development of best practices for managing noxious weeds and invasive species to minimize their spread.

Household hazardous waste

- **Implement a statewide EPR program for additional products collected by HHW programs.**
LEGISLATIVE **END-OF-LIFE MANAGEMENT**
 To help offset the increasing cost of providing HHW collection, education, and waste management services, responsibility to manage these products at end-of-life needs to be shifted to the original manufacturers and brand owners.
- **Require private waste management companies to financially contribute to the cost of managing hazardous waste.**
LEGISLATIVE **END-OF-LIFE MANAGEMENT**
 Assess the ability of private waste management to financially contribute to the cost of managing hazardous waste given the efforts of county programs help to reduce safety and toxicity concerns at these solid waste facilities.
- **Implement a mercury lamp phase-out program.**
LEGISLATIVE **ENVIRONMENTAL JUSTICE** **UPSTREAM STRATEGIES**
 Implementing a mercury lamp phase-out program that would end the sale of fluorescent lamps across the state will reduce unnecessary risk of exposure to mercury through HHW programs and other environments.

Landfills: Environmental protection

- **Reduce PFAS in leachate that is land applied.**
MPCA **END-OF-LIFE MANAGEMENT**
 Alternative treatment methods need to be implemented to transition towards removing PFAS in any leachate that is land-applied. As a first step, pilots are currently underway at a couple landfills in Minnesota to test technologies for treating PFAS.

- **Establish ongoing PFAS sampling at landfills.**

MPCA END-OF-LIFE MANAGEMENT

The data collected in the PFAS Monitoring Plan will help both MPCA and regulated facilities prepare for the transition of PFAS from unregulated contaminants of concern to being part of the regulated suite of substances under state and federal environmental laws, which may include monitoring or sampling requirements, permit limits, and best management practices.

- **Update Minnesota rules for industrial waste disposal to increase protections.**

MPCA END-OF-LIFE MANAGEMENT

When originally established, these rules envisioned industrial waste monofills, but in the decades since, industrial waste landfills have evolved to operate more similarly to MSW landfills. The rules need to be updated to formalize necessary protections and standardize controls.

- **Establish air emissions tracking requirements for landfills statewide.**

LEGISLATIVE CLIMATE DATA

To better document the environmental and human health impacts of landfilling in comparison to other disposal methods, Minnesota should establish air emissions (e.g., air toxics and GHGe) tracking requirements for landfills across the state.

- **Establish limits for GHGe at landfills, with requirements to implement best available capture technologies and practices.**

LEGISLATIVE CLIMATE END-OF-LIFE MANAGEMENT

Minnesota should set a limit for GHGe at landfills and a requirement for landfills to use the most effective technologies and best, most sustainable practices for collecting and treating landfill gas, such as converting into energy.

On-site (illegal) disposal

- **Update restrictions for on-site disposal to prohibit it statewide.**

LEGISLATIVE END-OF-LIFE MANAGEMENT

State law should be amended to prohibit on-site disposal (burning or burying) of MSW throughout the entire state without exception.

Construction and demolition landfills

- **Update regulations to ensure C&D landfills are protective of the environment and human health.**

MPCA END-OF-LIFE MANAGEMENT

C&D landfill regulations need to be updated to prevent further contamination of groundwater and surrounding land, by including requirements that all landfills be lined with leachate collection systems, be capped with an impermeable cover, have more stringent operating-location and -closure requirements, and require groundwater monitoring and financial assurance to facilitate proper closure and mitigate potential future liabilities. These updates should also include eliminating the unlined C&D PBR sites.

- **Provide assistance for a more protective integrated C&D waste system.**

FUNDING END-OF-LIFE MANAGEMENT

Technical assistance and funding resources are needed to build on efforts to reduce the amount of C&D materials being sent to landfills and ensure the landfills receiving C&D waste for disposal are designed and maintained to protect Minnesota's groundwater and drinking water.

Landfill closure/post-closure tracking and monitoring

- **Establish a tracking system to identify landfills nearing end of post-closure care.**

MPCA DATA END-OF-LIFE MANAGEMENT

Establish a tracking system to proactively identify landfills reaching the end of their individual PCC periods to better collaborate with the facility owner prior to termination of their care period and evaluate potential for exiting post-closure.

- **Establish clear regulations for when closed landfills can exit the formal post-closure period.**

RECOMMENDATION **LEGISLATIVE** END-OF-LIFE MANAGEMENT

Minnesota needs to establish clear regulations and criteria for how to manage closed landfills once they transition outside the current program requirements and post-closure period established in rule, including a requirement for approval from the MPCA commissioner for the termination of the PCC period based on gas, leachate, and ground and surface water monitoring results.

Appendix A: Maps of solid waste permitted activities in Minnesota

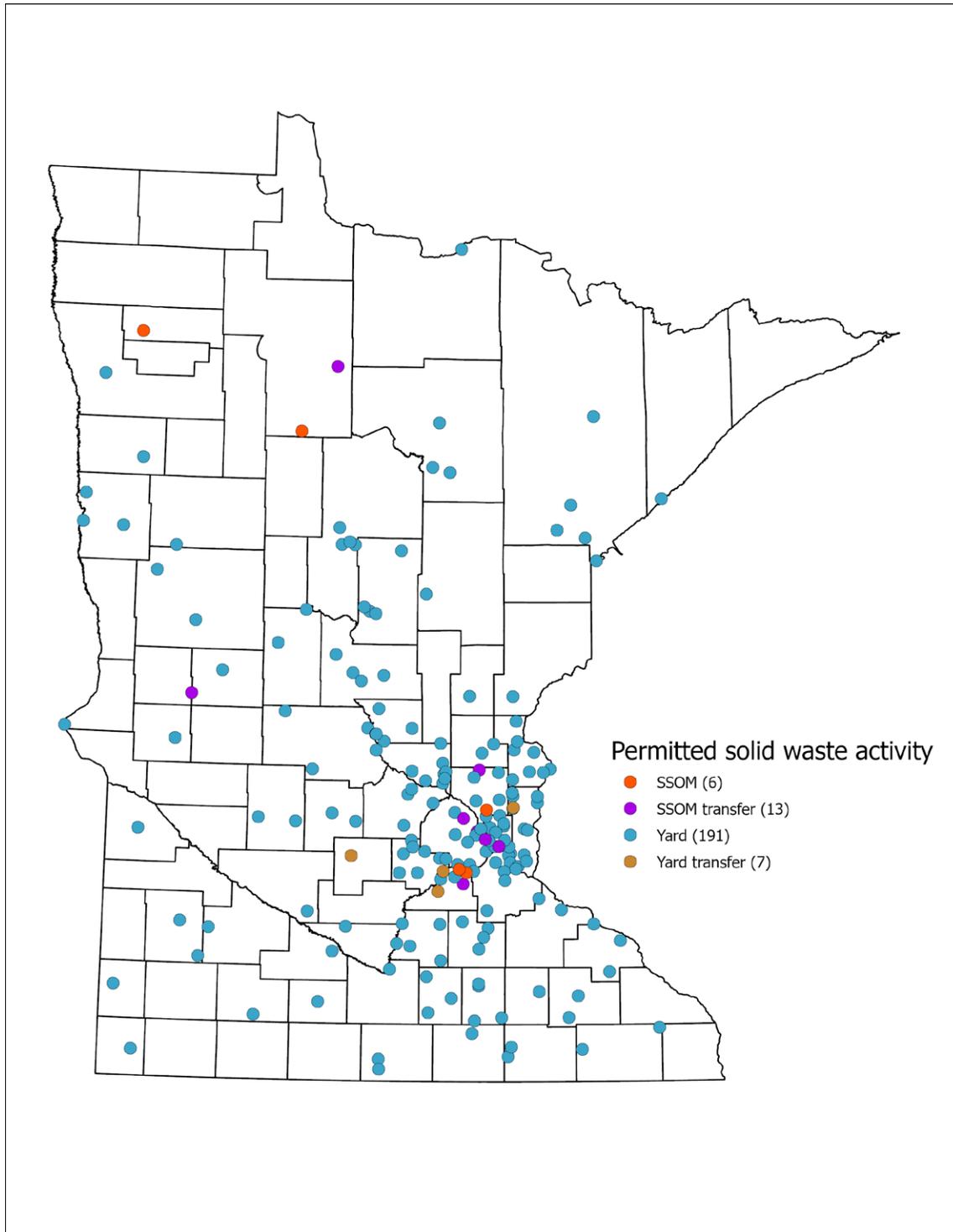
The MPCA solid waste program uses a variety of regulatory tools to guide the management, treatment, and disposal of solid waste in Minnesota. These tools include individual permits, general permits, PBRs, and beneficial use determinations. Regulators examine site-specific conditions to ensure individual permit requirements for a facility provide the appropriate environmental protections as specified by Minnesota solid waste rules. Facilities that receive individual permits include landfills (MMSW, Industrial, and C&D), combustor ash disposal facilities, refuse-derived fuel (RDF) processing facilities, SSOM composting facilities, and larger solid waste transfer facilities.

Facility locations in the following maps were identified using the highest accuracy measuring method available to the MPCA. This location information is primarily from GPS, address matching, and digitized mapping methods which provide a high amount of accuracy in portraying the correct location of the facility. Location information also comes from multiple sources, including information submitted by the facility owner, information determined by MPCA staff, and information derived based on the location of the facility.

A single facility may appear on multiple maps as they likely have more than one permitted activity. It is also possible for a facility to have a permitted activity, but they may be inactive or not accepting material at this time.

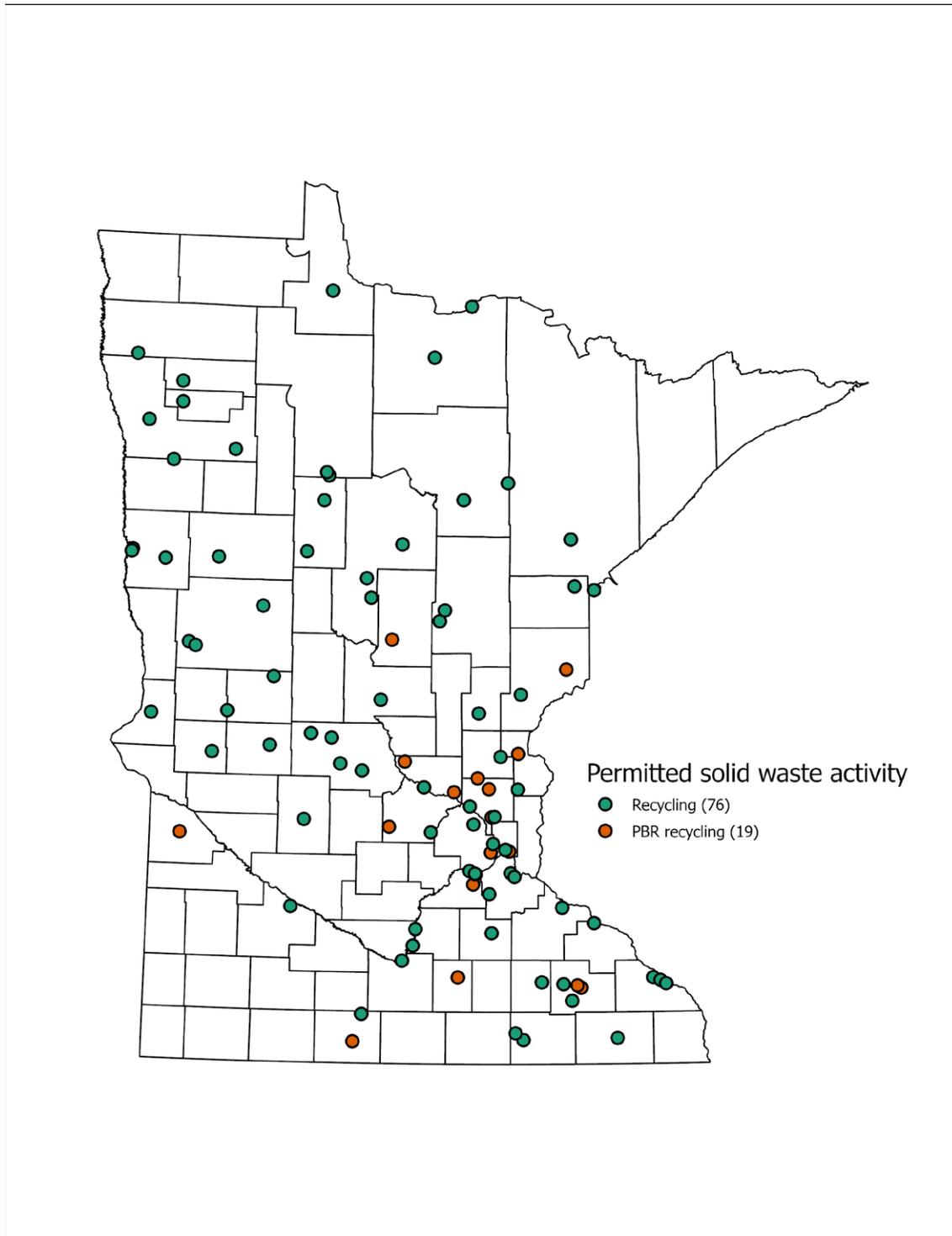
Composting activity map

Figure A-1. Map of all permitted composting activities across the state of Minnesota. For the purposes of this map, SSOM refers to sites that are permitted to accept food waste. There are 191 permitted yard waste composting areas and six SSOM composting areas.



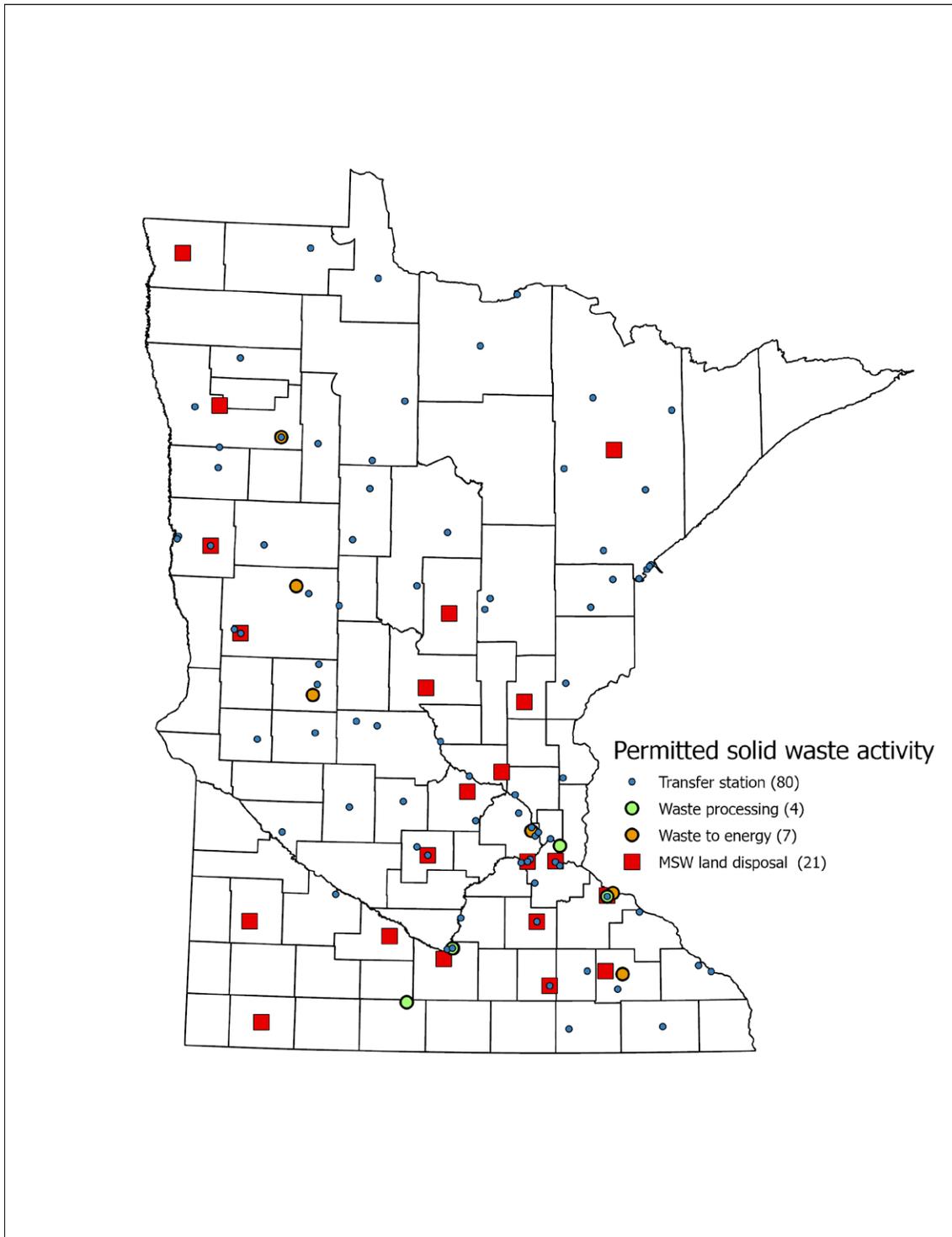
Recycling activity map

Figure A-2. Map of all permitted recycling activities across the state of Minnesota. For the purposes of this map, “Recycling” refers to any site that collects, stores, sorts, or transfers recycling materials. There are 76 permitted facilities with recycling activities (in addition to other waste activities) and 19 PBR sites with recycling activities. A facility that transfers, stores, or rearranges *only* recycling materials qualifies for a PBR.



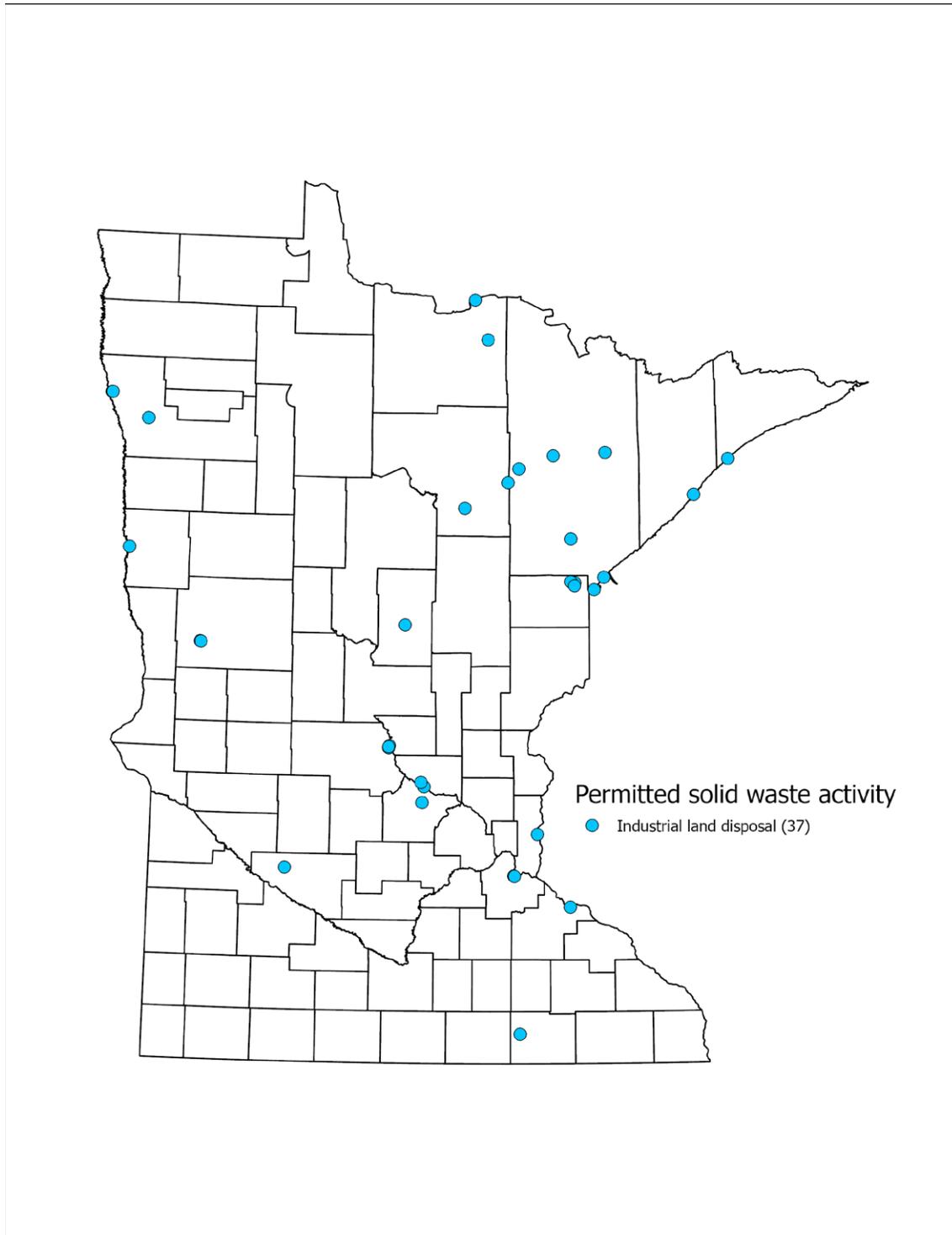
MSW land disposal map

Figure A-3. Map of all permitted MSW disposal areas across the state of Minnesota, including WTE and RDF waste processing facilities. There are seven permitted WTE facilities and four RDF waste processing facilities. The 80 transfer stations include PBR facilities. PBR transfer stations are only allowed to handle up to 120 cubic yards of material at any time. Larger transfer stations must obtain a solid waste permit. There are 21 permitted MSW land disposal areas.



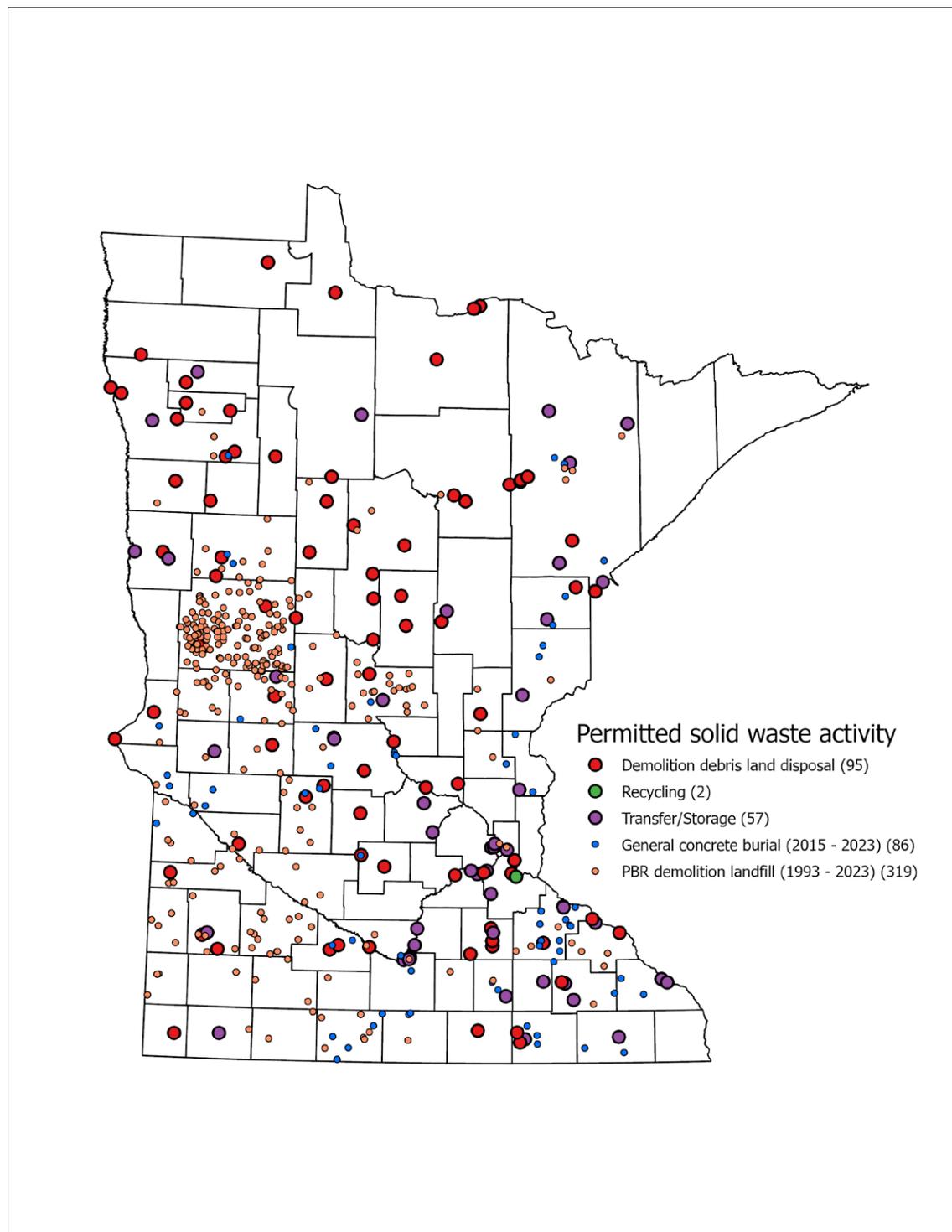
Industrial land disposal map

Figure A-4. Map of all permitted industrial land disposal areas across the state of Minnesota. Industrial land disposal areas include coal ash disposal and industrial monofills. There are 37 permitted industrial land disposal areas.



Demolition debris land disposal map

Figure A-5. Map of all permitted demolition debris land disposal facilities along with transfer and recycling facilities across the state of Minnesota. There are 95 individual permitted demolition land disposal areas. PBR demolition debris land disposal areas can have up to 15,000 cubic yards of material at one site for less than 12 consecutive months, while general concrete burial land disposal areas are limited to only uncontaminated concrete up to 5,000 cubic yards. Since the last report in 2019, there have been 30 new PBR sites and 23 general concrete burials.





Appendix B: Progress on 2019 policy report recommendations

Since the 2019 policy report was submitted to the Legislature, the MPCA has made progress on some of the recommendations published in that version of the report. There are also recommendations from 2019 that have been included in this report as priorities that the agency would like to continue to see progress towards going forward.

Each of the 2019 policy report recommendations has a status indicating whether it is:

- Not started
- In progress (i.e., work has begun on the recommendation and parts of the strategy may be complete)
- Completed
- On hold
- Canceled

Reference the 2019 report for the complete recommendation language and details.

Table 4. 2019 policy report recommendations and progress

#	2019 policy report recommendations	Status	Progress since 2019
1	Continue to coordinate with Tribes to identify appropriate partnership opportunities in solid waste.	In progress	The MPCA is planning to use a coordination document developed in 2020 for sustainable materials management and solid waste and will continue to coordinate with the Tribes. The document will be evaluated and modified as needed as the MPCA continues to seek feedback from the Tribes. Agency staff have also reviewed existing grant statutes and RFP language to ensure tribal nations are eligible; the Greater Minnesota Waste Reduction, Reuse, Recycling, and Composting grant statute (Minnesota Statute §115A.565) was amended to include tribal nations.
2	Develop a guidance for consistently incorporating EJ in permit review and issuance.	In progress	Water and air permitting at the MPCA have worked on incorporating EJ into permitting activities, but solid waste is in the earlier stages. A solid waste permitting-specific process or guidance is needed. This recommendation is also included in this current policy report.

#	2019 policy report recommendations	Status	Progress since 2019
3	Produce small area climate model projections for Minnesota.	In progress	During the 2021 Special Session, the Legislature appropriated funding for the MN Department of Commerce to complete an agricultural weather study that was contracted to the University of Minnesota. Background information and discussion of progress made to develop dynamically downscaled climate projections, including online resources, an interactive tool, and dedicated trainings are included in this June 2022 report .
4	Update solid waste rules to adapt to the changing climate.	Not started	Active rulemaking for updating solid waste rules to address climate impacts hasn't been initiated; however, the agency is starting to look at all MPCA rulemaking projects to account for potential climate impacts. This recommendation is also included in this current policy report.
5	Consult with interested parties to develop product stewardship programs to address electronic waste, household mercury-containing lamps, LED lighting, and potentially incandescent lighting due to lead content.	In progress	The MPCA provided input as counties and external partners have been working on updated e-waste statutory language. Legislation for some of these products is also in various stages of development. The agency has not separately pursued developing legislation for these additional product stewardship programs.
6	PFAS: Focus on prevention.	In progress	Minnesota's PFAS Blueprint and PFAS Monitoring Plan detail work being done by the agency. In 2021, a law was passed to prohibit PFAS in food packaging, effective January 1, 2024, including containers applied to or providing a means to market, protect, handle, deliver, serve, contain, or store a food or beverage. There is also a ban for PFAS in Class B foams for fighting flammable liquid/gas or solvent-based product fires, generally effective January 1, 2026. In 2023, a law was passed called Amara's law. Starting January 1, 2025, there are 11 products that cannot be sold in the state if they contain "intentionally added" PFAS, including carpets or rugs, cleaning products, cookware, cosmetics, dental floss, fabric treatments, juvenile products, menstruation products, textile furnishings, ski wax, and upholstered furniture. This legislation also includes reporting requirements for manufacturers to identify and quantify products with PFAS present by January 1, 2026. Starting January 1, 2032, there is a complete ban where no products can be sold with "intentionally added" PFAS unless determined unavoidable by rule.
7	PFAS: Prioritize continued research and testing and implement treatment/management methods.	In progress	Minnesota's PFAS Blueprint and PFAS Monitoring Plan detail work being done by the agency.

#	2019 policy report recommendations	Status	Progress since 2019
			In addition to monitoring and treatment pilots at landfills, the MPCA Toxics Reduction program has been exploring testing methods and engaging companies on results with PFAS in products and packaging. The program tracks development of alternatives as well.
8	Explore the extent to which toxics are recycled in the waste stream and methods to remove toxic chemicals from circulation.	In progress	The MPCA created a guidance document for registered electronics recyclers and manufacturers on determining whether materials derived from eligible electronic devices that are sent for disposal are eligible to meet manufacturer obligation in select circumstances under the Minnesota Electronics Recycling Act. Some e-waste recyclers have invested in technology that enables them to separate out plastics that contain flame retardants and there is a process where the MPCA can allow certain amounts of material to be landfilled. At this point the agency hasn't taken steps to pursue funding for financial assistance in this area.
9	Establish Minnesota waste prevention and reuse business development and growth grants.	In progress	<p>The MPCA EA grants were used to pilot to grant rounds focused on waste reduction and reuse for 2022 and 2023. During the 2023 Legislative session, one-time grant funding was allocated for waste reduction and reuse during 2024 and 2025. The agency would like to secure ongoing funds to continue this program into the future.</p> <p>Both the CAP and the Greater Minnesota grants program statutes were amended to expand eligibility to include waste reduction and reuse as well.</p> <p>This recommendation is also included in this current policy report.</p>
10	Set management goals for specific materials that are high priority based on life cycle environmental impacts.	In progress	<p>The MPCA now includes capture rates as a part of the annual SCORE report, which shows how much of a certain material is being disposed of in the state with the opportunity for managing it in a more sustainable way (i.e., reduction, reuse, recycling). The agency is working on using this information more effectively to guide decision-making and priorities.</p> <p>The MPCA is also interested in strengthening life cycle modeling and analysis skills within its program teams but hasn't been able to hire someone with that developed skillset to-date.</p>
11	Create and support a Sustainable Food Management Council.	In progress	The intent of this recommendation was to have a formal group meeting on a regular basis to discuss policy and budget initiatives need. While that has not happened, the MPCA has convened several groups for short periods over the past several years. The Cross Agency Working Group on Food, convened by former Governor Dayton, continues to meet quarterly to collaborate on education projects.

#	2019 policy report recommendations	Status	Progress since 2019
12	Establish a food management hierarchy (Minn. Stat. Statute §115A).	On hold	The MPCA drafted legislative language for a food management hierarchy, however it did not advance.
13	Require sustainable materials management of organics from large food generators.	In progress	The MPCA received ongoing funding for both prevention of wasted food grants and organics-focused projects and studies. While a requirement has not been established at this point, the agency remains interested in this opportunity and the benefits of pairing it with improved reporting and a ban on disposal. This recommendation is also included in this current policy report.
14	Expand Metro Area requirement that yard waste is collected in compostable bags statewide.	Canceled	The MPCA has not pursued a statewide requirement and has not received feedback that this is a priority with local units of government or the public.
15	Amend compostable product labeling requirement to include all packaging/products.	Completed	During the 2023 Legislative session, labeling requirements for compostable plastic bags was expanded to cover all food service items and packaging. This bill is anticipated to reduce confusion for retailers, restaurants, and residents regarding which products are compostable. This will also reduce contamination and operational costs of composting facilities and increase marketability of the finished product.
16	Explore appropriate waste reporting to measure all waste.	In progress	Measuring and reporting all waste (including MMSW, C&D, and industrial waste disposal, recycling, reuse, and waste reduction) to accurately represent the waste flow — from generation to disposal — in Minnesota remains a priority for the MPCA. At this point the agency has made several small steps towards this goal, although it remains primarily focused on the MSW stream. Progress includes: <ul style="list-style-type: none"> Using the U.S. EPA’s WARM to add GHGe estimates by county starting in the 2019 SCORE report. Adding material reuse (including resale, rental, and repair) reporting to the SCORE reporting forms as of 2021. Completing an updated volume-to-weight conversion report for certain materials in 2021. Adding an environmental impacts target to the 2022 Metro Policy Plan. This recommendation is also included in this current policy report.
17	Perform waste composition study on a routine basis (Statute 115A).	In progress	The MPCA received funding from the U.S. EPA’s SWIFR grant program authorized by the Save Our Seas 2.0 Act and funded through the BIL. The MPCA intends to use some of this funding for an updated statewide waste composition study.

#	2019 policy report recommendations	Status	Progress since 2019
			This recommendation is also included in this current policy report.
18	Measure and report C&D and industrial waste through annual reporting.	Not started	<p>There has not been a change to the statewide reporting structures to gather additional data. At this time, the MPCA continues to only track materials and waste managed through the solid waste system as current statutes do not require or incentivize a focus on other areas. Further investment in data staffing, policy clean-up, quality assurance, and accountability is needed.</p> <p>The agency completed a waste visualization study at several C&D landfills to better document the types of materials disposed of at these facilities. Discussions have also taken place with the MnDOT to better understand and track what happens to construction materials that are used on-site for their statewide projects.</p>
19	Create standardization of permit nomenclature and data entry.	In progress	The MPCA is in the process of creating online services for solid waste and hazardous waste permitting as a part of Governor Walz's tracking for the One Minnesota Plan to transition all MPCA permit programs online by December 31, 2023. This will improve the user experience by providing more guidance in the permit application process, ensure data integrity, enable transparency in the process of permit issuance (timeliness to review and issue permits), and enable data accessibility for the public in future initiatives. This work is slotted for a launch date in early 2025 due to some delays.
20	Develop permitting system to emphasize the goals of the Waste Management Hierarchy.	Not started	
21	Develop a closure/post closure tracking and monitoring system including facility conditions necessary for exiting post closure care.	In progress	<p>The MPCA formed a workgroup in 2019 to review the status of the Solid Waste program's closure and post-closure care (C/PCC) processes and identify gaps. The agency also developed a guidance document for how MPCA staff will evaluate landfills at the end of post-closure care to determine the next steps, for example whether they move into more custodial care. At the time of this report, the guidance document was nearly finalized, with a distribution plan in development.</p> <p>This recommendation is also included in this current policy report.</p>
22	Develop standardized language and protocols for the use of restrictive covenants based on the Uniform Environmental Covenants Act. (UECA)	Completed	Authorization to use the UECA was finalized during the 2021 Legislative session. A restrictive covenant (RC) template for using the UECA was developed but has not been used to-date.