

Packaging Extended Producer Responsibility Advisory Board

Wednesday, July 15, 2026

1:00 – 4:00 PM CT

[MS Teams](#) | Phone conference ID: 414 815 001# | Call in (audio only) +1 651-395-7448

Meeting Location: Room 100, MPCA St Paul Offices, 520 Lafayette Rd N., St. Paul, MN 55155

If attending in person, RSVP to packaging.mPCA@state.mn.us by Noon CT on Friday, July 10

Agenda

Time	Topic	Speaker	Type	Page
1:00 p.m.	Call to Order Roll Call / Attendance Meeting Logistics Approve Agenda Approve June 17 Meeting Summary	Chair Reinhardt/PSI	Action	2
1:10 p.m.	Needs Assessment: Preliminary Results on Current Programs	Eunomia	Information	22
2:10 p.m.	Subcommittee Report: Waste Reduction & Reuse (combined) – Meeting with Eunomia*	Gabbie Batzko-Conley	Information	7
	Subcommittee Report: Recycling – Meeting with Eunomia*	Jon Steiner	Information	9
2:40 p.m.	Break			
2:50 p.m.	Updates from Circular Action Alliance (CAA)	CAA	Information	
3:05 p.m.	Updates from MPCA	MPCA	Information	
3:10 p.m.	Rulemaking Request for Comments (RFC)	Vice Chair Holsinger/PSI	Action	11
3:55 p.m.	Public Comment			
4:00 p.m.	Adjourn			

**Presentations supplied to subcommittees by Eunomia for discussion start on page 32.*

Packaging EPR Advisory Board

Meeting Summary

Virtual via Microsoft Teams or in-person at the MPCA St. Paul Office | 3 hours

Wednesday, June 17, 2026 | 1:00 p.m. – 4:00 p.m. CT

Recording available at: <https://www.pca.state.mn.us/events-and-meetings/packaging-extended-producer-responsibility-advisory-board-meeting-2026-06-17>

Attendance

Board Member Attendance

Present (9 members required for quorum)			Absent
Gabbie Batzko-Conley	Kirk Koudelka	Mac Sellars	Bill Keegan
Sara Bixby	Gregory Melkonian	Jon Steiner	Shannon Pinc
Megan Daum	Shoshana Micon	Sydney Harris	
Kate Davenport	Victoria Reinhardt (Chair)	Allie Sauers	
Miriam Holsinger (Vice Chair)	Maggie Schuppert	Sam Holl	

Allie Sauers, Shoshana Micon, Maggie Schuppert, and Megan Daum were in attendance after roll call was completed.

Guest Presenters: Andy Green, Eunomia; Kris Coperine, CAA

Agency Staff: Mallory Anderson, Quinn Carr, Aubrey Sondrol, Colleen Hetzel, Annika Bergen, John Gilkeson, Susan Heffron, Elizabeth Kuzila, Maggie Wenger, Gwendolyn Jenkins

PSI Staff: Darla Arians, Jennifer Schultz

Participants: Mike Anderson, Mary Kosuth, Lindsay Gothard, Lori Olinger, Elizabeth Balkan, Dylan Reisig, Leah Batstone-Cunningham, Ben Anderson, Callie Lehman, Ella Thirroueiz, Logan Wikstrom, Hannah Prael, Drew Hatzenbihler, Luke Edlund, Mike Robertson, Kayla Christensen, Brian Martinson, Peter Hargreave, Jim Velky, Apurupa Gorthi, Lucy Mullany, Kevin Morris, Norman P. Soberano, David Ring, Devin O'Herron, Todd Bornholdt, Peter Bierbaum, Cait Harrington-Smith, Andrea Guevara, Grace Altier, Tyler Power, Rachel Fullmer, DeNeile Cooper, Suna Bayrakal, Josh Allen, Eric Nelson, Francis Veilleux, Bruce Nustad, Andrea Albersheim, Laura S. Hann, Tony Kwilas, Kala Fisher, David Keeling, Hannah-Grace G. Henson, Julie Ketchum, Ashley Carrasco, Sally Hopley, Conner Ball, Gregg Felber, Annebelle Klein, David Stephens, Alejandro Torres, Megan Hennen, Sarah Edwards, Kyla Fisher, Matt Chmielewski, Julie Gilbertson, Anna Walsh, Micah Hamstra, Nick Sandberg, Michelle Hunt, Dr. Naomi Kramer.

Note, participants attending virtually who choose not to list their names have been left off to document an accurate attendance count.

Meeting notes

Call to order

Darla Arians conducted a roll call.

Present: Batzko-Conley, Reinhardt, Koudelka, Bixby, Davenport, Harris, Holl, Holsinger, Melkonian, Sellars, Steiner

Absent: Keegan, Pinc

Note: Allie Sauers, Shoshana Micon, Maggie Schuppert, and Megan Daum were in attendance after roll call was completed.

Following the roll call, Chair Reinhardt welcomed Sam Holl to the Advisory Board. Holl, Facility Director for Ramsey/Washington Recycling & Energy, fills the seat vacated by Steve Vrchota of Pope/Douglas Solid Waste Management following his retirement.

The Chair also introduced Darla Arians and Jennifer Schultz of the Product Stewardship Institute (PSI), who will support MPCA with advisory board administration and facilitation.

Approve agenda

Sam Holl motioned and Kate Davenport seconded. Darla Arians conducted a roll call vote.

Yes: Batzko-Conley, Reinhardt, Daum, Davenport, Harris, Holl, Melkonian, Micon, Sauers, Schuppert, Sellars, Steiner

No: Bixby

Absent: Keegan, Pinc

Approve meeting summary

Sydney Harris motioned and Jon Steiner seconded. Darla Arians conducted a roll call vote.

Yes: Batzko-Conley, Reinhardt, Bixby, Daum, Davenport, Harris, Holsinger, Melkonian, Micon, Sauers, Schuppert, Sellars, Steiner

Abstain: Holl

Absent: Keegan, Pinc

Reimbursement rate concepts

Statutory overview

Presented by Mallory Anderson, MPCA

MPCA reviewed the Advisory Board's role in the needs assessment and outlined statutory requirements for service provider reimbursement.

Reimbursement approaches

Presented by Andy Grant, Eunomia

Eunomia presented three reimbursement approaches—invoice on costs incurred, group averages based on costs incurred, and flat fee on necessary costs—with examples from other states and Canadian provinces. Discussion covered the pros and cons of each approach, whether collection and processing costs should be bundled or separate, statutory constraints, data confidentiality, dispute resolution, and the potential for a hybrid model.

CAA updates

Presented by Kris Coperine, CAA

CAA reported that its Minnesota Interest Holder Engagement Tour is underway, with four material recovery facilities (MRFs), transfer stations, and compost facilities visited to date and more stops planned in coming weeks. A reminder was shared that the Responsible End Market (REM) Standard public comment period runs through July 7, 2026.

Agency updates

Presented by Mallory Anderson and Aubrey Sondrol, MPCA

Board membership

MPCA noted a vacancy on the Advisory Board for a community-based nonprofit environmental justice organization.

Rulemaking

MPCA reported that the request for comments was published May 26, 2026, with a 59-day comment period closing July 24, 2026. This is the first of three public comment opportunities. Two Advisory Board meetings fall within the comment period (June 17 and July 15). Members were reminded to create their accounts for submitting comments well in advance, as the system is being updated. Both individual members and the Advisory Board as a body are encouraged to submit comments.

Subcommittee chair updates

Waste Reduction subcommittee

Presented by Gabbie Batzko-Conley

The Waste Reduction and Reuse Subcommittees met jointly and plan to do so again for the next Eunomia presentation. Future discussions on the rulemaking Request for Comments will be held separately by each subcommittee.

The group received a presentation from Eunomia. Key takeaways included that the analysis will examine a single pathway over five- and ten-year timeframes. Eunomia noted that, because most states do not have return-rate targets, its research is focused on identifying best-in-class return rates for each product category. The analysis also will not consider material substitutions. The presentation sparked a good discussion, with members noting the value of creative thinking.

Reuse subcommittee

Presented by Sydney Harris

The Subcommittee Chair supports holding a separate meeting to discuss the rulemaking Request for Comments rather than combining with the Waste Reduction Subcommittee. There has also been a suggestion to invite a guest speaker from the Reusable Packaging Association to hear the group's perspective on the proposed rules.

Recycling subcommittee

Presented by Jon Steiner

The Recycling Subcommittee received a presentation from Eunomia on the needs assessment report structure. Discussion focused on potential survey data gaps, discrepancies between findings from CAA facility visits and Eunomia survey data, and possible follow-up needs. Eunomia also provided an update on covered material tiers based on stakeholder input. Members also discussed bale quality criteria. Some expressed frustration at being asked to hold questions while presentations were recorded for other subcommittees.

Composting subcommittee

Presented by Jon Steiner (substitute for Shannon Pinc, excused)

The Composting Subcommittee received a presentation from Eunomia on the needs assessment report structure and covered materials list. Some members noted that certain content felt outside the scope of composting and highlighted overlap where some materials may be either recycled or composted.

Subcommittee structure & process

Presented by Mallory Anderson

Compliance with Minnesota's Open Meeting Law

MPCA announced that subcommittee meetings will be restructured to meet the requirements of Minnesota's Open Meeting Law. Going forward, meetings will be publicly posted and conducted in a manner consistent with full Advisory Board meetings, with at least one member present in person. All board members and members of the public are welcome to attend. Subcommittee reports will be streamlined and included in monthly Advisory Board packets.

RFC Review & Comment Process

MPCA outlined the process directed by the Advisory Board Chair and Vice Chair for developing and submitting Advisory Board comments on the Request for Comments (RFC). Subcommittees will convene additional meetings prior to the July 15 Advisory Board meeting to review the RFC and formulate responses. Subcommittee chairs will compile and submit feedback to the Vice Chair for consolidation into a unified document. The Advisory Board will then review and vote on the consolidated comments before the July 24 submission deadline. MPCA staff may provide logistical support only and are not permitted to participate in discussions or assist with compiling feedback.

Roles & responsibilities

Presented by Darla Arians (PSI)

Overview of Roles

An overview was provided of the roles of the Advisory Board, subcommittees, Eunomia, MPCA, and PSI in the needs assessment and rulemaking process. In brief:

- Subcommittees provide informal input and discussion but do not issue official recommendations.
- The Advisory Board may submit formal written comments as a body during public comment periods.
- Eunomia conducts the analysis and incorporates feedback into its work.
- MPCA oversees the needs assessment process and holds final decision-making authority over scope and methodology.
- PSI supports meeting planning, facilitation, and documentation of Advisory Board feedback.?

Input Process

PSI clarified how different forms of input are captured and used throughout the needs assessment process. Verbal feedback provided during subcommittee and Advisory Board meetings informs the analysis on an ongoing basis but does not require a formal written response. Formal written comments submitted by the Advisory Board will receive a written response from MPCA. Individual comments submitted during public comment periods will be considered alongside all other public input received.

Public comment

No public comments were offered.

Notes compiled by: Jennifer Schultz (PSI)

[Minnesota's Packaging Extended Producer Responsibility Advisory Board](#)

Waste Reduction Subcommittee and Reuse Subcommittees

Packaging EPR Advisory Board

Meetings held

The Waste Reduction Subcommittee and Reuse Subcommittee held combined meetings.

Monday, June 22, 2026 – Start 10 a.m. - End 1 p.m. CT (*ended early as the full three hours wasn't needed*)

Waste Reduction subcommittee members present: Gabbie Batzko-Conley (chair), Miriam Holsinger, Gregory Melkonian

Waste Reduction subcommittee members absent: Megan Daum, Sydney Harris

Reuse subcommittee members present: Allie Sauers, Mac Sellars

Reuse subcommittee members absent: Megan Daum, Sydney Harris

Guests at meeting: Colleen Hetzel (MPCA), Annika Bergen (MPCA), Elizabeth Balkan (Reusable Packaging Association), Tim Debus (Reusable Packaging Association)

Wednesday, July 8, 2026 – Start 1 p.m. - End 3 p.m. CT

Presenters: Will Shanks (Eunomia)

Waste Reduction subcommittee members present: Gabbie Batzko-Conley (chair), Gregory Melkonian, Miriam Holsinger

Waste Reduction subcommittee members absent: Megan Daum, Sydney Harris

Reuse subcommittee members present: Allie Sauers, Mac Sellars

Reuse subcommittee members absent: Megan Daum, Sydney Harris

Guests at meeting: Colleen Hetzel (MPCA), Annika Bergen (MPCA), Molly Flynn (MPCA) Kristen Peterson (MPCA), Cristina Villella (MPCA), Kris Coperine (CAA), Sonya Dattaray (CAA), Sarah Edwards (Eunomia), Tim Debus, Molly Jansen, Katelyn Heflin

Overview of key meeting topics

Monday, June 22, 2026 – Start 10 a.m. - End 1 p.m. CT

- Reusable Packaging Association (RPA) presented on key considerations and possible priorities for extended producer responsibility (EPR) with reusable packaging systems. This was requested on behalf of the Advisory Board members.
- Subcommittee members reviewed the rulemaking request for comment (RFC) and provided input on topics related to source reduction/waste reduction (including refill) and reuse. Information from the group was recorded and comments will be compiled with those developed by the rest of the board and included in a report out to be done at the Advisory Board meeting by Vice Chair Holsinger.

Wednesday, July 8, 2026 – Start 1 p.m. - End 3 p.m. CT

- Overview of preliminary needs assessment findings from Eunomia’s ongoing analysis of source reduction (waste reduction), including future potential
 - Overview of the amount of generated material at covered entities in Minnesota
 - Breakdown of material categories (glass, flexible plastic, rigid plastic, metal, fiber) with the highest-ambition scenarios applied for source reduction, which doesn’t account for material substitution
 - Discussion of limitations related to refill
 - Initial analysis of up-front capital expenditure cost estimates, which don’t account for the material savings long-term (often included in the operational expenditure)
- Overview of preliminary needs assessment findings from Eunomia’s ongoing analysis of reuse, including future potential
 - Overview of the amount of generated material at covered entities in Minnesota
 - Breakdown of B2C packaging (more dominant) and food service packaging with the highest-ambition scenarios applied for reuse for both 5- and 10- years
 - Proposal for an overall reuse rate after 5- and 10-years
 - Overview of estimated costs for highest-ambition scenarios, including both capital expenditure and operating expenditure, which don’t account for the economies of scale or material savings long-term

Recycling Subcommittee

Packaging EPR Advisory Board

Meetings held

Thursday, July 2, 2026 - Start 10 a.m. - End 1 p.m.

Presenters: John Carhart (Eunomia)

Recycling subcommittee members present: Jon Steiner (chair), Sara Bixby, Kate Davenport, Sam Holl, Miriam Holsinger, Bill Keegan, Gregory Melconian, Shoshana Micon

Recycling subcommittee members absent: n/a

Guests at meeting: Mallory Anderson (MPCA), Molly Flynn (MPCA), Susan Heffron (MPCA), Elizabeth Kuzila (MPCA), Ella Thirrouiez (Eunomia), Kris Coperine (CAA), Rachel Fullmer, Katelyn Heflin, Laura S Hann, Lucy Mullany

Overview of key meeting topics

- Overview of preliminary needs assessment findings from Eunomia’s ongoing analysis of recycling programs, including estimated recycling access statistics and preliminary curbside recycling collection yields.
 - Estimated single family recycling access rates
 - Estimated multi-family recycling access rates
 - Draft figures of the pounds per households (with curbside recycling) by region for compostable packaging, metal, glass and other glass-like materials, plastic – rigid, and paper and fiber
- Subcommittee members asked questions regarding the preliminary findings and provided additional information for Eunomia’s consideration.
- Subcommittee members reviewed the rulemaking request for comment (RFC) and provided input on topics related to recycling. Information from the group was recorded and comments will be compiled with those developed by the rest of the board and included in a report out to be done at the Advisory Board meeting by Vice Chair Holsinger.

Composting Subcommittee

Packaging EPR Advisory Board

Meetings held

Tuesday, June 30, 2026 - Start 2:30 p.m. - End 4 p.m.

Composting subcommittee members present: Shannon Pinc (chair), Sam Holl, Maggie Schuppert, Jon Steiner

Composting subcommittee members absent: n/a

Guests at meeting: Mallory Anderson (MPCA), Annika Bergen (MPCA), Molly Flynn (MPCA), Nathan Reinbold (MPCA), Gwen Jenkins (MPCA), Miriam Holsinger (Eureka Recycling), Kris Coperine (CAA), Norman Soberano, Gorthi Apurupa, Alexander Trulove, Grace Altier

Overview of key meeting topics

- Subcommittee members reviewed the rulemaking request for comment (RFC) and provided input on topics related to composting. Information from the group was recorded and comments will be compiled with those developed by the rest of the board and included in a report out to be done at the Advisory Board meeting by Vice Chair Holsinger.

Advisory Board Consolidated Rulemaking Comments

DRAFT

July XX, 2026

Re: Request for Comments – Packaging Waste and Cost Reduction Act Rulemaking (Revisor’s ID No. R-04992)

Dear Commissioner Kessler and Assistant Commissioner Koudelka,

Thank you for the opportunity to comment on the Minnesota Pollution Control Agency's Request for Comments regarding implementation of the Packaging Waste and Cost Reduction Act (PWCRA).

We, the Packaging extended producer responsibility advisory board, made of 17 individuals representing a wide range of impacted parties provide the following comments for consideration in the rulemaking process

Definitions

- It would be beneficial to better define and provide parameters for the terms “education”, “outreach”, “accessibility,” and “public awareness”.
- It is recommended that the term “accessible” is used both in terms of the ease of which one can use a service, as well as ADA standards.
- Clarify what it means to be “capable of being managed in a reuse system”: reusables are not prohibited if they don't meet high return rates right away. Reusables are “capable of being managed in a reuse system” if they are participating in a managed system that is on track to meet return rate targets in the future. (Note: the subcommittee has also discussed recommending that MPCA publish an interpretation document on this topic so producers & CAA can have clarity ASAP.)
- Clarify that the definition of Covered Materials includes untreated, non-recyclable organic materials that are not BPI or ASTM 6400 certified such as wet OCC, napkins, soiled food packaging like pizza boxes, broken pallets/wood packaging shredded for composting, etc.

Exemptions (Questions 2(a)–2(c))

We support the Agency’s effort to carefully define exemption pathways so that they remain narrow, well-justified, and consistent with the intent of the PWCRA. Exemptions should be rare and only applied when there is clear, documented evidence that legal health or safety requirements make waste reduction, reuse, recycling, or composting infeasible.

2(a) Hazardous or flammable products under OSHA requirements

We recommend that exemptions under Minnesota Statutes, section 115A.1441, subdivision 16(11), only be granted when a producer demonstrates all of the following:

- A specific federal OSHA Hazard Communication Standard requirement directly prohibits redesign, reuse, recyclability, or compostability of the packaging;
- The restriction is mandatory and not based on voluntary industry practice or interpretation;
- No technically feasible alternative packaging exists that would meet both safety requirements and waste reduction goals;

- The exemption applies only to the specific portion of packaging that is affected by the requirement, not the entire product system; and
- The exemption is time-limited and subject to periodic review as packaging technology and alternatives evolve.

An example of this would be packaging for materials routinely directed toward Minnesota's household hazardous waste management facilities should be classified as exempt. 40 CFR Part 261 Subpart D defines and lists hazardous wastes. Even when emptied through daily use, the packages may still fail to meet the definitions of RCRA empty (40CFR 261.7) or DOT empty (49 CFR 173.29).

We recommend that producers be required to submit the following documentation:

- Citation of the specific federal or state requirement;
- Engineering or technical analysis demonstrating infeasibility of redesign;
- Assessment of alternative packaging options considered;
- Explanation of why reuse or recyclability cannot be achieved;
- Planned efforts to move to reuse or recyclability in the future; and
- Any relevant lifecycle or safety data supporting the request.

Examples of materials that would not fall under this category are household cleaners, automotive material containers or lawn and garden product containers that do not contain hazardous materials or special handling or management practices from the general public.

Items that may become unsafe if handled improperly, such as pressurized containers, also would not be considered hazardous but should be considered for alternative collection to minimize the hazards.

2(b) Health and safety requirements preventing redesign

We recommend applying the same narrow standard for exemptions under Minnesota Statutes, section 115A.1453, subdivision 6. A packaging system should only qualify for exemption where a specific, binding health or safety requirement directly prevents redesign for reuse, recycling, or composting.

We further recommend that the rule explicitly clarify that the following do **not** constitute valid grounds for exemption:

- Cost or economic burden;
- Existing manufacturing practices;
- Supply chain constraints that can be addressed through redesign; or
- Market preferences for existing packaging formats.

Producers should be required to demonstrate that compliance with health and safety requirements cannot be achieved through alternative packaging design or material substitution.

The Advisory Board also recommends harmonizing standards with those of other states.

2(c) "Unsafe and unsanitary" paper products

We recommend that the Agency define "unsafe and unsanitary" narrowly and clearly, stating explicitly which paper products or use qualify and tie this definition directly to demonstrable health risks that cannot be mitigated through standard processing practices.

At a minimum, this category should include materials contaminated with infectious or regulated medical waste; and

We do **not** recommend including:

- Typical food-soiled paper that can be processed in composting systems;
- Wax or coatings that are currently accepted in existing composting infrastructure; or
- Materials that could be managed through improved sorting or processing.

We also recommend that eligibility for this category be tied directly to the approved covered materials collection lists to ensure consistency across the program and prevent conflicting interpretations across jurisdictions.

Collection Lists (Questions 3(a)–3(j))

The collection lists established under the PWCRA will be one of the most important determinants of program success because they define what materials are considered recyclable or compostable in Minnesota. These lists should be grounded in real-world system performance and should reflect what can actually be recovered at scale within Minnesota's recycling and organics systems.

We recommend that a material only be included on a collection list if it meets **all** of the following conditions:

- Meaningful access to collection exists for a substantial majority of Minnesota residents, including both single-family and multifamily households;
- Materials can be sorted at commercial scale using existing materials recovery technology;
- Adequate processing capacity exists to manage collected material;
- Adequate responsible end markets exist that convert recovered material into usable feedstock for new products;
- The material can be recovered with minimal contamination levels and demonstrated environmental benefit; and
- No safer or higher-order waste management option (such as reuse or reduction) is reasonably available at scale.

This approach ensures that recyclability is based on actual system performance rather than theoretical or emerging capabilities.

3(a) Availability of collection services

We recommend that "current availability of collection" be defined as consistent, reliable, and convenient access to recycling or organics collection for the vast majority of Minnesota households, including single-family and multifamily residences. Collection should be broadly available across the state and not be based on limited pilot programs, geographically isolated services, or voluntary drop-off opportunities that serve only a small portion of the population.

Recycling and organics collection thresholds should be evaluated separately to reflect differences in infrastructure, processing capacity, and program maturity. While organics collection continues to expand across Minnesota, recycling collection is well established and should be expected to meet a higher standard of accessibility.

For recycling, we recommend that collection be as accessible and convenient as trash service wherever existing infrastructure supports it. A material should not be considered recyclable unless residents have practical and reliable opportunities to place it in the recycling system. Designating materials as recyclable without meaningful access to collection creates consumer confusion, increases contamination, and undermines confidence in the recycling system.

Ch. 115A.1441 Sub14 Drop-off Collection Site includes a standard of being open to the public a minimum of 12 hours weekly throughout the year. While the rules can't change statutes, it's a very low threshold for "current availability" and one that argues for additional considerations about proximity to population centers.

There should be an allowance for an implementation or phase-in plan for moving covered materials from an alternative collection designation to a collected material designation as the systems evolve. This would allow some facilities to collect and process materials on alternative collection lists in their curbside streams as some facilities may evolve prior to others.

There should be allowance for financial considerations given for materials on an alternative collection list due to factors related to payloads, distances, processing challenges, etc.

3(b) Access to processing infrastructure

We recommend that access to processing infrastructure be defined based on population coverage and system redundancy, rather than distance alone.

Key considerations should include:

- Percentage of the state population served by processing capacity;
- Availability of multiple processing facilities to ensure system resilience;
- Geographic distribution of capacity across Greater Minnesota and the Twin Cities metro; and
- Ability to manage materials without creating long-term bottlenecks.

A convenience metric for curbside and alternative collection (drop site) should be proposed by individual Counties and in their required Solid Waste Plans. These Plans are required by law and approved by the Agency, which can set minimum requirements for convenience.

The FTC Green Guidelines use the term vast majority and is set at 60%. 60% seemed like a minimum – slightly more than a simple majority – not a vast number. 60% should be a minimum and much higher should be the goal, even if it takes many years and plan implementations to reach the goal.

3(c) Sorting capacity and technology

A material should be included on a compostable collection list if it meets the state labeling law for compostable products. <https://www.revisor.mn.gov/statutes/cite/325E.046>

Sorting capacity should be demonstrated at commercial scale performance, not theoretical or pilot-scale capability.

We recommend that the Agency require evidence that:

- Materials can be reliably sorted at existing MRFs;
- Sorting yields are consistent and reproducible across facilities;

- Contamination levels remain within acceptable operational thresholds; and
- Material recovery rates are sufficient to support adequate stable responsible end markets.

3(d) Responsible end markets

Responsible end markets are essential to determining whether a material is truly recyclable. While ideally there are at least three responsible end markets available for each commodity, where this is not feasible there should be assurance that the responsible end markets available are stable and adequate at handling the supply of recycled materials.

We recommend that the MPCA define responsible end markets to include minimum performance standards, including a requirement that a substantial portion of incoming material is converted into usable recycled feedstock that displaces virgin material.

A material should not be considered recycled simply because it is accepted at a processing facility or exported for unknown disposition.

We strongly recommend that the rules establish a material yield minimums for responsible end markets. Yield should be defined as the percentage of inbound material that is converted into usable recycled output and/or not disposed of as waste.

Facilities with consistently low yields, high residual disposal rates, primarily fuel or chemical outputs, or outputs primarily directed to landfill or energy recovery should not qualify as responsible end markets.

We recommend that responsible end markets be required to report the following in a way that allows proprietary information to be kept confidential:

- Incoming material by commodity type;
- Output of recycled feedstock;
- Residuals sent to disposal or energy recovery;
- Final destinations of recovered materials; and
- Independently verified material yield data.

While the above are consistent with responsible compostable markets, these markets should also include

- Facilities producing finished compost that meets applicable state and federal standards
- Demonstrated end-use markets in agriculture, landscaping, erosion control, soil health, and habitat restoration
- Ongoing demand for finished compost product
- Periodic waste audits/characterizations to evaluate criteria such as volumes, contamination, and other critical data

If the Agency does require certification of Responsible End Markets, there should be an on-ramp period to reduce disruptions while Markets get certified.

3(e) Residuals, contaminants, and toxic substances

We recommend that thresholds for residuals and contaminants be based on:

- Processor acceptance specifications;

- Worker health and safety considerations;
- Impact on recycled material quality; and
- Ability to produce marketable recycled feedstock.

Materials that introduce persistent toxic substances or significantly degrade recycling outcomes should not be included on collection lists including but not limited to

- PFAS and other persistent chemicals
- Heavy Metals
- BPI, the primary US certifier of compostable products, and the only qualified certifier for the State of Minnesota currently, already includes the following toxicity testing as part of the certification process:
 - Ecotoxicity; heavy metals, PFAS & other intentionally added fluorinated chemicals

Contaminants- the plan must be very clear on what it means when discussing contaminants. Any item not typically collected & processed at a given facility but ended up there by mistake, is a contaminant for that given system. Contaminants in the compost stream could mean toxic substances but also means covered materials found in the compost stream that are not certified compostable products.

Contamination:

- The contaminant threshold at a compost facility for residual and contaminant should be relatively open and be adjusted downward over time as phase-in's for Producers' complaint materials (by 2032) become the norm in the marketplace and material streams.
- Tight initial contamination and residual limitations may result in less compostable packaging materials being accepted, stunting the initiative.
- The PRO should work with contracted Compost Facilities to assess & acquire necessary equipment to deal with the potential influx of contamination that will come from opening new services in new communities with new products, until education and behavior is matured
- Include utensils in the covered material lists to reduce the likelihood of contamination from disposable plasticware in the compost stream.

3(f) Quantity of recoverable material

We recommend that inclusion on collection lists be based on meaningful statewide recovery potential.

Materials should only be included when sufficient quantities exist to justify system investment, infrastructure development, and stable responsible end markets. This prevents inclusion of niche or low-volume materials that cannot be effectively managed at scale.

Compostable recovered quantity priority should be given to

- Food-service packaging commonly collected with food scraps
- Compostable products that improve organics diversion rates
- Materials that reduce contamination compared with conventional alternatives

3(g) Future conditions

We recommend that the Agency consider future conditions such as:

- Changes in recycling and sorting technology;
- Expansion or contraction of end markets;

- Shifts in packaging design trends;
- Evolving environmental and health standards.
- Market development and expansion of composting collection programs
- The definition of Covered Materials should be expanded to BPI certified (or future certifiers to the ASTM standards) materials that are not packaging materials but are directly associated with covered compostable packaging materials for food such as ‘to-go’ utensils, plates, napkins, toothpicks, etc..
- Any retailer of unpackaged produce sold in MN should be required to only offer for use certified compostable bags that meet the specs for compost facilities and durable compostable bag co-collection programs. (this would provide the ‘return packaging’ for compostable packaging and food scraps and result in less bags in the waste and recycle streams)

3(h) Additional criteria

We recommend that additional criteria include:

- Reuse and reduction potential;
- Compatibility with existing recycling systems;
- Environmental justice considerations related to system access and burden distribution.
- Material yield performance; and

3(i) Alternative collection systems and convenience

We recommend that alternative collection systems meet a standard of equivalent convenience and accessibility to traditional recycling and organics systems.

Minimum considerations should include:

- Geographic accessibility across all regions;
- Reasonable distance for residents - with consideration for local norms (i.e. in Greater Minnesota all residents need to have personal vehicles so traveling a distance is less of a barrier);
- Consistent and reliable collection opportunities;
- Clear and accessible public education; and
- No financial or logistical barriers for participation.

3(j) Measurement of alternative collection systems

We recommend that materials collected through alternative systems be subject to standardized measurement and reporting requirements, including:

- Audited tonnage reporting;
- Material composition verification;
- Contamination rates;
- Final destination of materials; and
- Recovery or disposal outcomes.

These requirements are essential to ensure that alternative collection systems deliver measurable environmental benefits and are not used to avoid accountability.

4. Statewide Requirements and Measurement (Questions 4(a)–4(c))

Statewide performance requirements under the PWCRA should be designed to ensure that the program delivers measurable environmental outcomes, not simply administrative compliance. We strongly support the Agency’s authority to define how performance targets are measured and encourage the development of metrics that reflect actual material recovery, reuse, and reduction in disposal.

For reuse measurements, consider using established standards, such as those by PR3 as a benchmark while until enough systems are built and data collected for localized benchmarks.

When setting reuse and return rates, consider splitting these up across distinct, yet broad, categories and phasing each in over time. Categories could be determined by geography, type of system (i.e. closed vs open, B2B vs B2C, etc), material format, or other factors.

When return and reuse rates and future goals are set, allow an on-ramp period that allows for growth of reuse industries. On-ramp periods typically encompass at least 3 – 5 years with in-between milestones to allow adequate time for research, innovation, and growth.

Performance targets for compostable packaging should utilize a periodic waste sort conducted by the Producers at select (representative) facilities. The data should be used to extrapolate capture rates for each material targeted. The representative, periodic waste sorts should be conducted by the PRO, frequently enough to establish baseline data and changes over time, perhaps 1 waste sort per year & reducing that frequency when the data show improvement or consistently high performance.

4(c) Considerations for statewide requirements

The statewide requirements established by the Agency—including reuse rates, recycling rates, composting rates, post-consumer recycled content (PCRC) requirements, and waste reduction targets—will determine whether the PWCRA drives meaningful system transformation or simply reflects existing practices. These requirements should be ambitious enough to encourage producers to redesign packaging, invest in collection and processing infrastructure, expand reuse systems, and increase demand for recycled materials.

When establishing statewide requirements, we recommend that the Agency consider the following principles:

- Set performance targets that drive continuous improvement over time rather than codifying current market conditions.
- Establish timelines that provide regulatory certainty while allowing sufficient time for infrastructure investments and market development.
- Prioritize waste reduction and reuse, consistent with Minnesota’s waste management hierarchy, while establishing strong recycling, composting, and recycled content requirements for materials that remain in the system.
- Ensure that targets are supported by robust measurement and verification requirements, including standardized reporting and independent third-party audits.
- Periodically review and update statewide requirements as infrastructure, technology, and end markets evolve to encourage continued innovation and improvement.

Statewide requirements should be designed to produce measurable environmental outcomes, including reductions in packaging waste, increased adoption of reusable packaging systems, higher-quality recycling and

composting, and greater use of post-consumer recycled content. Success should be measured by actual reductions in virgin material use and disposal, increased recovery of materials into new products, and sustained investment in the infrastructure needed to support a circular economy.

5. Stewardship Plans and Annual Reporting (Questions 5(a)–5(d))

Stewardship plans and annual reports will be central to ensuring accountability under the PWCRA. These documents must provide sufficient detail for the Agency, stakeholders, and the public to evaluate whether producer responsibility organizations (PROs) are achieving statutory goals and delivering measurable environmental outcomes.

We recommend that stewardship plans and annual reports be structured around standardized, transparent, and auditable reporting requirements that allow for consistent comparison across PROs and over time.

Plans should clearly link proposed actions to measurable outcomes rather than general program descriptions.

Data protection for stewardship plans and annual reports should follow state and federal confidential business information protections at a minimum.

The PRO should be able to point to, reference, and/or promote existing education and outreach materials and programs when tasked with increasing public awareness.

The PRO should be able to submit plan amendments at any time, with clear justification.

5(b) Annual report clarification

The annual report should provide sufficient detail for the MPCA, local governments, service providers, producers, and the public to evaluate whether the program is meeting its statutory obligations and delivering meaningful environmental outcomes. To support transparency and accountability, the Agency should establish standardized reporting requirements that allow for year-over-year evaluation of program performance.

At a minimum, annual reports should include:

- Material-specific collection, recycling, composting, and reuse rates;
- Progress toward each statewide performance requirement established under the PWCRA, including waste reduction, reuse, recycling, composting, and post-consumer recycled content targets;
- Contamination rates and material quality by commodity;
- Information on toxicity in materials and progress towards toxics reduction goals.
- Detailed information on responsible end markets, including material destinations and, where available, material yield;
- Investments in collection, processing, reuse infrastructure, education, and market development;
- Producer reimbursement amounts by service category and methodology;
- Program expenditures, including administrative costs; and
- Any significant changes to program operations or performance.

The Agency should require the use of standardized reporting methodologies and consistent performance metrics to enable meaningful year-over-year comparisons and independent evaluation of the program's effectiveness.

5(c) Verification of costs and reimbursement rates

We recommend that the Agency require PROs to provide detailed, auditable financial reporting sufficient to verify costs and reimbursement rates, including:

- Producer fee structures and methodologies, including any efforts towards eco-modulation;
- Reimbursement rates by service category;
- Contracts with service providers and processors (or summarized standardized data where confidentiality is required);
- Administrative and programmatic expenditures;
- Infrastructure investments supported by producer funding; and
- Independent financial audits conducted on a regular basis.

These requirements are essential to ensure that producer fees are being used efficiently and that public funds embedded in the system are delivering environmental value.

5(d) Stewardship plan and plan amendment process clarification

- How the goals of toxicity reduction and product redesign for waste abatement would be reported, verified and measured.
- How the Registered Producers compliance/non-compliance with toxicity reduction and product redesign is reported to the stakeholders and the public.
- How to report how non-compliant Registered Producers plan to come into compliance for the stakeholders and the public.

6. Additional Rulemaking Recommendations

The Law, and any subsequent changes, will most certainly impact County's required Solid Waste Plans and likely their Facility Permits and Facility Annual Reports as well. As a result it will also likely impact any contracts for covered services. It would be presumptive that ordinance amendments, which often either drive the Plans/contracts or support those efforts, would not be done as a result of the Law or changes to it. All of those actions on behalf of a County – or community - will come with a cost to the County that will be measured in terms of workload, professional services and money, and it will be substantial.

Under [MS115A.1455](#), and referenced Statutes therein, identifies reimburse rates and factors to be considered in the Stewardship Plan Reimbursements. Those don't accommodate "group averages" and "tariff" (flat rate) approaches to reimbursement as identified by Eunomia in its June presentation to the Advisory Board. Nor do they require the PRO or consultant (Eunomia) hired by the PRO to judge if the service providers participating in an open market or through competitive bidding for contracts are overcharging or using non-efficient spending. The statute references an optimal level of convenience and service. Competition among service providers has and will continue to drive pricing to the levels needed to address convenience and to provide service appropriate for population density, distance traveled, variations in inputs (e.g., fuel, parts availability under federal tariffs, etc.) access to facilities, additional services requested by customers, and so forth.

Post-Consumer Recycled Content Measurement and Verification

The rules should establish clear and verifiable methods for measuring post-consumer recycled (PCR) content.

PCR claims should reflect the use of actual post-consumer material recovered through recycling systems—not accounting mechanisms that cannot demonstrate a physical connection between recovered material and finished products.

The MPCA should require producers to verify PCR content through robust chain-of-custody systems that track recycled material from collection through processing and into the manufacture of new products. Verification should include standardized reporting and independent third-party certification.

The rules should also clarify that recycled content claims must be based on material physically incorporated into products sold into the Minnesota market. Mass balance accounting approaches that do not use physical traceability to allocate recycled content should not satisfy Minnesota's recycled content requirements unless they can demonstrate an equivalent level of transparency, accountability, and environmental integrity.

Clear measurement standards will create a level playing field for producers, strengthen confidence in recycled content claims, and ensure producer investments support actual recycling infrastructure.

System Performance Measurement

Across all elements of implementation, we encourage the Agency to prioritize measurable environmental outcomes over activity-based metrics. Key performance indicators should focus on:

- Actual material recovery and yield;
- Reduction in waste generation;
- Expansion of reuse systems and reuse cycles;
- Reduction in contamination rates; and
- Strengthening of stable, transparent end markets.

Collection or participation alone should not be treated as success unless it results in verified downstream recovery.

Continuous Improvement

Finally, we recommend that the rules include a clear mechanism for periodic review and update of key program elements, including collection lists, performance standards, and market definitions.

Given the rapid evolution of packaging formats, processing technology, and end markets, the PWCRA will require adaptive management to ensure that rules remain aligned with real-world conditions and continue to support meaningful environmental progress over time

Provide support for reuse

There is no clear incentive for reuse/waste reduction and no way to cover the costs that would allow for innovation. With minimal existing infrastructure, it could be hard to justify building and transitioning to reuse. Reports should give guidance on funding, the time needed for consumer habits to change, and on how to find systems that are specific to an area's cultural needs.

Presentation on needs assessment preliminary findings



June 30, 2026

Pre-Read Material for July Advisory Board Meeting



Scope of Presentation

Eunomia will present preliminary findings from the current assessment of Minnesota's source reduction, reuse, and recycling systems and considerations for the future state analysis.

The following slides provide an overview of the topics to be covered. Certain sections contain placeholders where analyses are still underway; these results are expected to be finalized and incorporated in advance of the Advisory Board meeting on July 15. As additional analysis is completed and quality assurance reviews are conducted, some figures and findings may be subject to revisions.

Advisory Board Discussion and Input

We welcome the Advisory Board's feedback on the assessment approach and preliminary findings presented. In particular, we are interested in:

- Perspectives on how Extended Producer Responsibility (EPR) could support greater recycling, reuse, and circularity within specific sectors, regions, or communities.
- What successful implementation of EPR would look like from stakeholders' perspectives.
- Potential barriers, challenges, and practical considerations that would need to be addressed to achieve these outcomes.
- Additional data sources, insights, or stakeholder perspectives that should be considered as the analysis is finalized.



Current State of Source Reduction and Reuse in Minnesota



Current State of Source Reduction

Approach

- Conducted qualitative assessment of measures being undertaken by producers **in the US**
- Key Limitation: Lack of comprehensive, time-series dataset that tracks packaging weight within Minnesota

Findings

- General trends indicate per-unit reduction in waste generation, however growth in consumption may outweigh this
- Lightweighting is the most widely used source reduction strategies, primarily in beverages, personal and home care, and food products
- Material substitution is unlikely to reduce total waste
- Adoption of strategies continues to remain uneven across brands and product categories
- Strategies like concentration and right-sizing can change product visibility, functionality and consumer perception, which raises concerns for brands and discourages broader uptake
- Policy frameworks can facilitate more consistent and market wide adoption - by incentivizing standardization of packaging formats or promoting harmonized designs. This can reduce implementation costs, improve consumer facilities and create even playing field for all producers



Current State of Reuse

Approach

- Conducted interviews of covered entities (public schools and university, stadiums, and marathons) and reuse operators (rWorld, Ahimsa, and Good-to-Go Cups) to map existing reuse system
- Captured information on reuse model, infrastructure, system capacity, waste diversion rates, capture rates, contamination, and sources of financing for covered service
- Key limitations include: (1) absence of a centralized system for collecting and reporting reuse-related data; (2) reuse ecosystem is relatively small and fragmented so case studies only represent a subset of existing activities for a small number of years of operations

Findings

- In terms of volume, closed-loop reuse dominates
- Reuse activity is concentrated in food service applications, which includes replacing single-use cups, containers, trays with reusable food service ware
- Public funding has been an important enabler for reuse adoption, with many covered entities incentivized to pilot programs after receiving county or state grants to offset key costs
- Existing programs generally have reported high return rates, positive consumer acceptance, suggesting that well-designed reuse system could support broader adoption.
- Infrastructure requirements, upfront capital costs, operational complexity and stakeholder coordination are key barriers to expanding the current reuse system at scale
- Centralized infrastructure to support increased reuse (e.g., rWorld) could scale rapidly
- Most significant reuse is happening at non-covered entities (e.g., pallets, industrial containers)



Current State of Minnesota's Recycling System: Initial Results



Single Family Curbside Recycling Access

This table shows initial estimates of single family access to curbside recycling services across Minnesota.

	TCMA	NC	NE	NW	SE	SW	Total
Households with organized collection (%)	607,004 (65%)	75,537 (32%)	4,676 (4%)	28,228 (19%)	44,954 (18%)	38,726 (39%)	799,125 (45%)
Households with subscription collection (%)	323,843 (35%)	50,029 (21%)	57,858 (54%)	35,230 (24%)	62,103 (25%)	2,857 (3%)	531,920 (30%)
Percent of households without curbside recycling collection (%)	2,014 (0%)	111,113 (47%)	44,483 (42%)	81,813 (56%)	145,225 (58%)	56,824 (58%)	441,472 (25%)
Total	100%	100%	100%	100%	100%	100%	100%



Estimated Multi Family Recycling Access Rates

This table shows initial estimates of multi-family access to curbside recycling services across Minnesota.

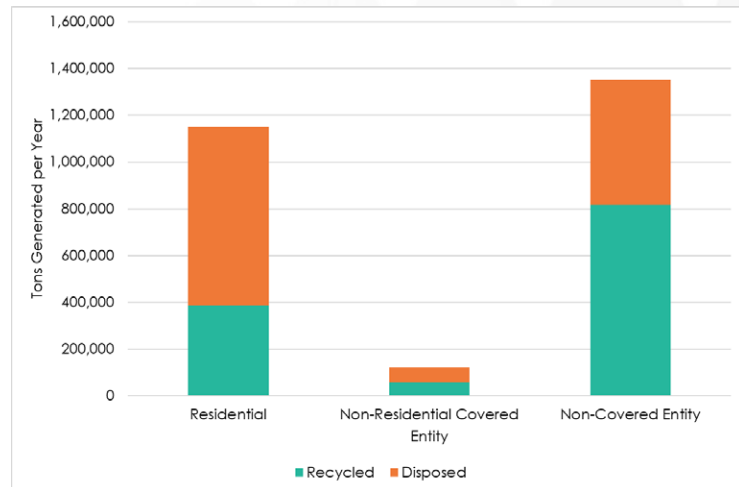
This is difficult to ascertain from non-organized areas, and additional information on compliance with recycling ordinances would be helpful. So far, Eunomia has reached outreach to: St. Louis County, Stearns County, Washington County, Clay County, Blue Earth County.

	TCMA	NC	NE	NW	SE	SW	Total
Percent of households with organized collection (%)	45%	In progress	In progress	In progress	In progress	In progress	In progress
Percent of households with subscription collection (%)	55%	In progress	In progress	In progress	In progress	In progress	In progress
Percent of households without recycling collection (%)	0%	In progress	In progress	In progress	In progress	In progress	In progress
Total	100%	100%	100%	100%	100%	100%	100%



Recycling and Disposal Graph – by Entity

- Using SCORE data, the waste characterization study, and yields collected through survey and outreach, covered material generated, recycled and disposed have been estimated.
- Residential stream accounts for 43% of covered material generated, non-residential covered entities account for 5%.



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Recycling Rate Results – Residential

Material	Recycling rate
Paper and fiber	52%
Plastic - rigid	21%
Plastic - flexible	0%
Glass and other glass like material	TBC
Metal	29%
All covered materials	34%

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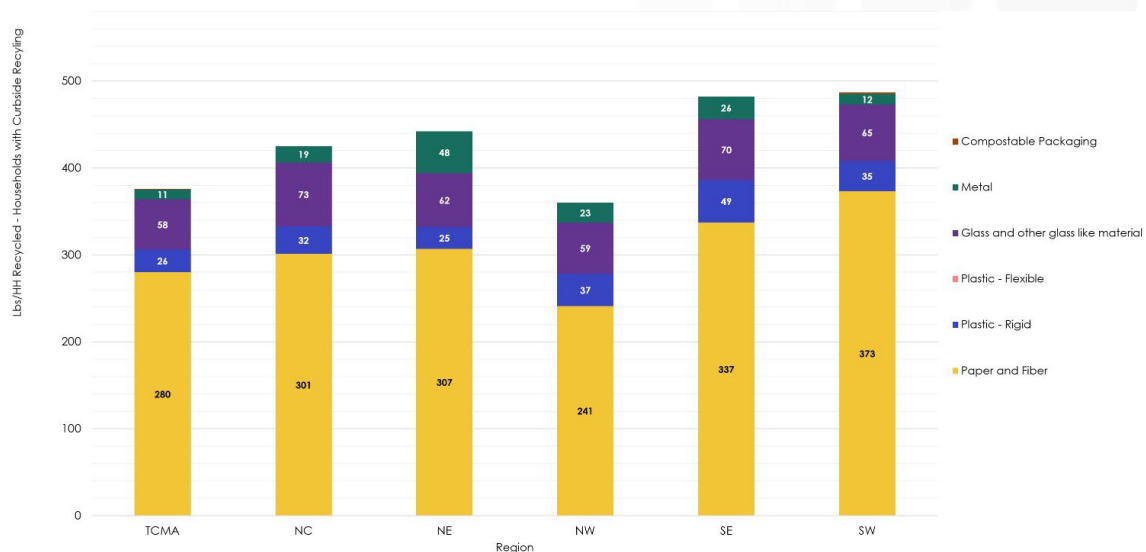
Recycling Rate Results – Full Needs Assessment by Entity

Material	Residential Entities	Non-Residential Covered Entities	Non-Covered Entities	All Covered Material
Paper and fiber	52%	65%	76%	54%
Plastic - rigid	21%	24%	33%	21%
Plastic - flexible	0%	2%	5%	0%
Glass and other glass like material	TBC	TBC	TBC	TBC
Metal	29%	48%	56%	31%
All covered materials	34%	65%	76%	54%



Collection per Household - Covered Materials

- Paper and fiber is about 2/3 of collection.
- Yields vary between 350 lbs. per household to just under 500 lbs. per household.



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Operational Considerations for Future State Analysis



Modeling Objective

- **Overview**
 - Eunomia will estimate the performance, cost, and benefits of a future recycling system in Minnesota under EPR.
 - Eunomia will evaluate future EPR scenarios at 5 and 10 years.
 - There are several operational considerations which impact the system's performance and cost.
- **Today's discussion**
 - Review the operational factors and interventions that could be included in the model.
 - Gather Advisory Board input on priorities, opportunities, and implementation challenges.
- **Next steps**
 - Refine the modeling approach based on feedback.
 - Develop and assess preferred scenarios for future presentation.

Questions to think about when reviewing following slides:

- What have we missed?
- Is this ambitious enough?
- What at a high level is this likely to achieve?
- Are there any other material specific actions to include?



Quantifiable Recycling Improvements: Access



- Short term = 0 - 5 years
 - Note: Complexity added part way through as the requirement for all materials to be 100% reusable, recyclable, or compostable comes into effect.
- Medium term = 5 - 10 years

Short- term	Initial access initiatives that can be established quickly, these include: 1 Expanding recycling access to all locations which have garbage services 2 Curbside and Alternative Collection List for select recyclables 3 Alternative collection mechanisms for less readily recyclable materials
Med- term	More advanced access initiatives, these include: 1 Expanding recycling access to <i>all</i> locations 2 All materials collected that meet the Curbside or Alternative Collection List are covered



Lists – four lists, two time periods

Note: This is an illustrative example.

0-5 Year				5-10 Year		
	Commingle d Curbside	Alternative Collection	Not Collected	Minimum (Curbside or drop-off)	Other Alternative	Not Collected
PET Bottles	✓			✓		
LDPE Bottles, Jugs, Jars		✓		✓		
Aerosols		✓		✓	←	
PE Plastic Film			✓		✓	←



Quantifiable Recycling Improvements: Configuration



Short-term	Changes to how collection systems are run, managed and supported: 1 Improved education and marketing 2 Increased outreach, particularly in multi-family settings
Med-term	Changes to how collection systems are run, managed and supported: 1 Different streams rolled out for new households (e.g., dual stream) 2 Recycling services at select public spaces



Quantifiable Recycling Improvements: Infrastructure



Short term	Improvements and investments to infrastructure, limited by timescale 1 Existing MRF/compost facility equipment upgrades for improvement in sorting efficiencies of currently collected material. New MRFs can be invested in at this time but likely not operational before the first five years 2 Capex for new recycling commodities (e.g., glass, lower value rigid plastics, cartons)
Med-term	Improvements and investments to infrastructure, more audacious 1 New MRF infrastructure online, particularly in areas where there is limited access in the baseline, but will be expanded to in the long term. 2 Secondary sorting for rigid plastics (e.g., Plastic Recycling Facilities) 3 New recycling facilities (sorting and reclaimers)





About Eunomia

Eunomia is an independent sustainability consultancy driven by a genuine passion to make a positive change to the clients we work with and the communities they operate in. Founded in 2001, we have been pioneers in the sector - early advocates for helping NGOs as well as leading public and private sector organisations in the UK and overseas to adapt their approach and adopt more sustainable processes.

Our consultants are experts in the field, deeply immersed in the subject with the technical knowledge and skill to offer clients innovative, clear and practical recommendations. We are committed to finding solutions to better protect the planet, while supporting the wider aims and needs of our clients.

Each client is treated as an individual, with consultants taking the time to understand their objectives and how best we can support them. This personal service ensures a strong relationship is forged, based on honest and regular communication. It also ensures if these objectives change, there is the flexibility to adapt.

As an established leading independent consultancy, clients can have complete confidence that consultants will offer evidence-led solutions based on robust, impartial thinking that offer both pragmatic and positive outcomes.

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Subcommittee presentations



June 23, 2026

Pre-Read Materials for July Subcommittees



Recycling Subcommittee Pre-Read



Recycling Subcommittee - July 2

Overview

Eunomia will present preliminary findings from its ongoing analysis of recycling programs, including:

- Estimated recycling access statistics
- Preliminary curbside recycling collection yields (e.g., pounds collected per household)

Subcommittee Input Requested

Subcommittee members are asked to provide feedback on the preliminary findings, including:

- Whether the estimates align with local experience and operational knowledge
- Any data considerations, assumptions, or contextual factors that should be incorporated into the analysis



In Progress Estimated Single Family Recycling Access Rates

- Using survey data and secondary research on jurisdictions with more than 10,000 people, an estimated 75% of households statewide have access to curbside recycling services – however this requires refinement for gaps in responses – more input requested for North Central, Southeast and Southwest as they vary from prelim results.

	TCMA	NC	NE	NW	SE	SW	Total
Percent of households with organized collection (%)	65%	31%	4%	19%	18%	39%	45%
Percent of households with subscription collection (%)	35%	18%	54%	24%	25%	3%	30%
Percent of households without curbside recycling collection (%)	0%	51%	42%	56%	58%	58%	25%
Total	100%	100%	100%	100%	100%	100%	100%
Total Proportion of Households with Curbside Recycling Service	100%	51%	58%	44%	42%	42%	75%
Counties requiring more data/confirmation – in progress – if city does not have an explicit response from municipality, county surveys and is less than 10,000 population, assumed no service until additional data found		Mille Lacs	Koochiching		Blue Earth Faribault Fillmore Houston	Cottonwood Meeker Murray Redwood/Renville	

Estimated Multi Family Recycling Access Rates

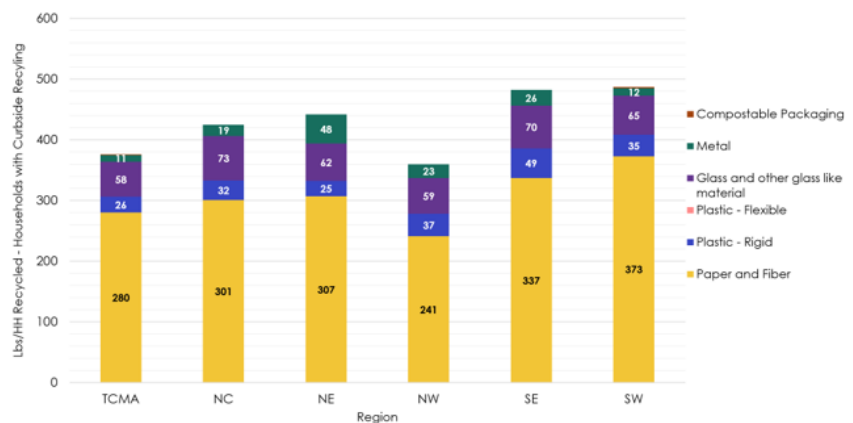
- Difficult to ascertain from non-organized areas, additional information on compliance with recycling ordinances would be helpful.
- Outreach to: St. Louis County, Stearns County, Washington County, Clay County, Blue Earth County

	TCMA	NC	NE	NW	SE	SW	Total
Percent of households with organized collection (%)	45%	In progress	In progress	In progress	In progress	In progress	In progress
Percent of households with subscription collection (%)	55%	In progress	In progress	In progress	In progress	In progress	In progress
Percent of households without recycling collection (%)	0%	In progress	In progress	In progress	In progress	In progress	In progress
Total	100%	100%	100%	100%	100%	100%	100%



Preliminary draft figures – call for refinement

- Lbs per household for recycling figures ranging from ~350 lbs/hh to 490 lbs per hh for households with curbside recycling
- Continuing refinement, particularly on:
 - Glass recycling quantities, accounting for alternative daily cover (ADC), non-glass residue (NGR)
 - Metal packaging – splitting of packaging versus other metals
- Additional outreach to Northwest, could be related to mixed waste sorting taking the place of recycling in some locations?





Reuse and Waste Reduction Subcommittee Pre-Read



Reuse and Waste Reduction Subcommittee – July 8

Overview

Eunomia will present preliminary analysis from its ongoing analysis of reuse and source reduction, including:

- Future potential for source reduction
- Future potential for reuse

Subcommittee Input Requested

Subcommittee members are asked to provide feedback on preliminary analysis, including:

- Any data considerations, assumptions, or contextual factors that should be incorporated into the analysis



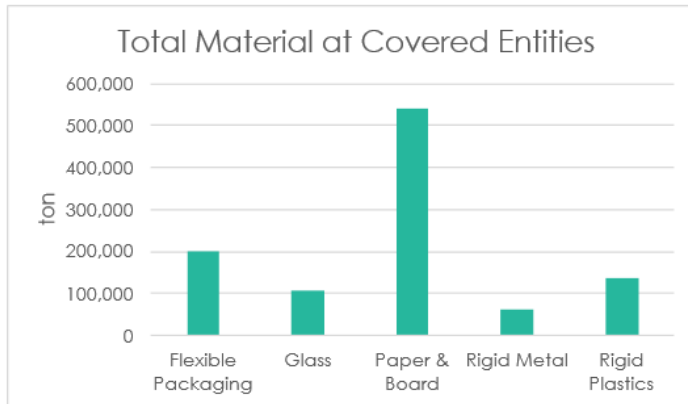
Part 1: Potential for Source Reduction

What do these slides show?

- This deck shows what a highest-ambition scenario could deliver.
- We are presenting so that MPCA can ultimately set performance targets.
- It focuses on **B2C (business to consumer) packaging** (FSW (food service ware) is mostly considered with reuse) and **lightweighting** (although plastic analysis considers elimination and rightsizing too).
- Material substitution not considered, as discussed.
- We focused analysis on high-impact products/formats, and didn't study many other formats. Therefore these results are very high ambition for certain formats, and zero ambition for other formats. This evens out so results are therefore both achievable and high ambition.
- The figures in this deck show material at covered entities only.
- We are still researching costs.



How much material is there? (covered entities)



- Note: some of these numbers are subject to change pending discussions with MPCA on waste characterization study
 - Flexible plastic numbers look too high
- Paper/board is mostly paper products which we have not considered for source reduction



Glass

There is an estimated 107,000 tons of glass generation. Approximately two-thirds of this is beverage bottles.

	Proportion of total glass
Flavored Alcoholic Beverages	5%
Beer & Cider	34%
Spirits	5%
Soft Drinks	7%
Wine	17%

- Without even considering lightweighting of non-bottle glass formats, these measures could achieve a total glass reduction of 18%
- This is probably optimistic but not overly so



The average beer bottle weighs 230g. Lightweight bottles weigh 150g

We assumed 29% average weight reduction for high ambition



The average wine bottle weighs 550g. Lightweight bottles weigh 420g – can even get down to 250g

We assumed 24% average weight reduction for high ambition



The water/soda bottle weighs 260g. EU equivalents weigh 190g weigh 420g

We assumed 29% average weight reduction for high ambition



Flexible Plastic

There is currently uncertainty in flexible plastic generation (see above slides in Section 1).

We re-purposed the detailed analysis we did in California.

We labelled each plastic format as low/medium/high potential for source reduction.

We estimated average source reduction potential for each plastic format, as well as market share.

Format	Proportion of flexible plastic	Suitability for source Reduction	Maximum Source Reduction Potential
Flexible Bag - Low Barrier (Nonfood)	0%	Medium	23%
Flexible Bag - Low Barrier (Food)	43%	Low	
Flexible Bag - Medium Barrier (Nonfood)	7%	Low	
Flexible Bag - Medium Barrier (Food)	36%	Low	
Flexible Bag - High Barrier (Food)	1%	Low	
B2C E-Commerce Transport Packaging	12%	Medium	8%

- Source reduction potential is probably <1%.
- Although there are uncertainties based on the baseline waste flow.
- Much of the flexibles we use are grocery/produce bags. It is difficult to 'source reduce' these outside elimination/refill (see later).



Rigid Plastic

Same method as flexible plastic.

Format (sample)	Proportion of rigid plastic	High Suitability in CalRecycle?	Sum of In-Scope SR Potential
Tray and Film - Low Barrier (Nonfood)	0%	Medium	11%
Tub and Lid - Light Weight (Nonfood)	0%	Medium	29%
Plastic Jar and Lid -Minimum Preservation (Food)	1%	Medium	11%
Clamshell (Nonfood)	0%	High	23%
Clamshell (Food)	9%	Medium	23%
Bottle and Cap (Nonfood)	4%	High	13%
Bottle and Cap (Food)	14%	Medium	11%

1. Source reduction potential is approximately 7%.
2. This analysis can at best be approximate – there are thousands of plastic formats and it is not clear what the remaining potential is in many cases (average versus best-in-class).
3. Hard to say whether this is overly optimistic.



Metal

There is an estimated 60,000 tons of metals generation.

Approximately one-quarter of this is suitable for source reduction (i.e., food). Most of the remainder (beverage) has been assumed already source reduced.

Both alternatives to 3-piece steel can are likely quite niche.

We assumed an average 20% weight saving by moving out of 3-piece.

1. **Focusing only on metal food packaging, total source reduction of metal could be 5%.**
2. This is not considered overly optimistic.

Three major types of metal food container:



Three-piece steel can.
The industry standard: stronger
Base seamed to body which adds weight
Used in many applications



Three-piece steel can.
Currently not widespread
More expensive to produce
15-30% lighter than 3-piece



Aluminum can
Not as strong as steel, but much lighter
More expensive than steel
Typically used for shorter cans like pet food



Fiber

There are 520,000 tons of fiber-based packaging and paper products.

About 1/3rd of this is fiber-based packaging

E-commerce accounts for approximately 80,000 tons – this is where we focused research

Our work in the EU suggests delivery boxes can comfortably be reduced by 16% overall by reducing the longest length.

This would result in 3% overall source reduction impact

This may be a conservative estimate

There may be other low hanging fruit – we are digging deeper



Refill

The evidence regarding the potential for source reduction via refill is conflicting.

In the UK, Aldi were achieving 30% market penetration of refill for certain products.

However, most other trials have failed because of low user uptake or retailer resistance

Refill is likely to remain niche, **apart from...**

Supermarket/produce bags (somewhere 5-20% of flexible household plastic).

By leveraging taxes, bans, education or other instruments, MPCA could significantly move people towards reusing their own produce and shopping bags.



[Home](#) > [Environment](#) > [Waste and recycling](#) > [Waste management](#)

Press release

Plastic bag use falls by more than 98% after charge introduction

Figures show massive decrease in number of single-use bags sold by main retailers since 2014.



Source Reduction Summary

	Flexible Packaging	Glass	Paper & Board	Rigid Metal	Rigid Plastics	Total
Total Material (k tons)	200	107	539	61	136	1,044
Source Reduction Impact	0.1%	18%	3%	5%	7%	5%
Refill Impact	15%					
Source Reduction + Refill Impact (k tons)	30	20	13	3	9	74
Source Reduction + Refill Impact	15%	18%	3%	5%	7%	7%

Evidence suggests that a high-ambition scenario, employing other policies to move away from bags at supermarkets, could achieve 7% source reduction.





Part 2: High Ambition Reuse Scenario

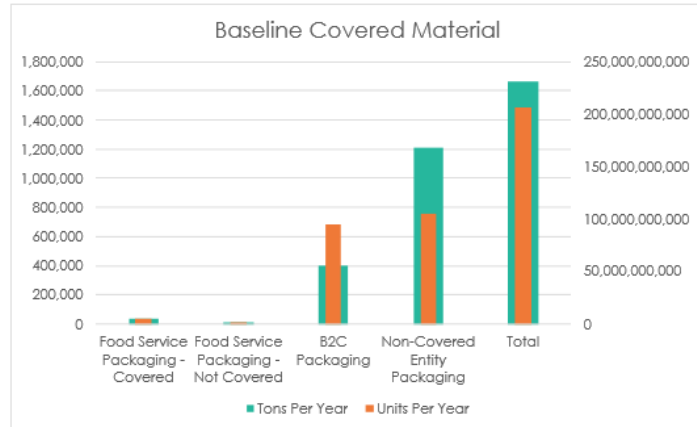
What do these slides show?

This deck shows what a highest-ambition scenario could delivery, and how much it would cost

It focuses on B2C packaging and food service packaging at covered entities, as these are the major sources of covered material at covered entities.

How much stuff is there? (covered entities)

- This study is approximate: we have done a rough baseline in lieu of access to full waste characterization
- (However, comparing it to California and SCORE, we have reasonable confidence)
- Weight is dominated by B2C packaging over food service packaging
- Units are also dominated by B2C packaging over food service packaging



What does a high-ambition scenario look like? – B2C Packaging

B2C Packaging

- We know, from various studies, which products are suitable for reuse: Beverages; Dry Foods; Personal Hygiene; Sauces/Dressings; Ready Meals; Oils; Deli Foods; Confectionary/Bakery
- In a high-ambition scenario, we believe the following are achievable

	Reuse Market Share (Year 5)	Justification	Reuse Market Share (Year 10)	Justification
Beer/Cider	10%	1. There are 11 major bottling lines in MN – this is equivalent to converting one. 2. According to our research in CA, it takes about 5 years for a major B2C pilot to develop.	34%	1. This is all local bottling capacity converted to reuse 2. Scaled down to consider only urban population
Soft Drinks/Water	5%	1. There are 40 major bottling lines in MN producing an estimated 40% of consumption. This pilot would convert 5 of these lines to reuse in 5 years. 2. Having multiple brands take part in the pilot is necessary to test inter-operability	30%	1. This is all local bottling capacity converted to reuse
Dry food, personal care etc.	0%	1. There are no functioning reuse systems at scale elsewhere. 2. Develop pilots without any significant reuse penetration	10%	1. There is little evidence suggesting this is not possible – could be higher 2. The locality of filling is not a limiting factor here



What does a high-ambition scenario look like? – Food Service Packaging

Food Service Packaging

- We know that closed-loop systems where washing can happen on-site are most suitable for transition to reuse
- In a high-ambition scenario, we think the following are achievable

	Reuse Market Share (Year 5)	Justification	Reuse Market Share (Year 10)	Justification
K-12 Schools, Public Colleges, Prisons (closed loop)	20%	1. Time is needed to generate administrative will and for service contracts to renew (this assumption could be more ambitious)	80%	1. There is little technical reason that this cannot be close to 100% (this assumption could be more ambitious)
Quick-service restaurants,	0%	1. Open-loop food service ware should be trialed and slowly	20%	1. This is about one-third of consumption in the twin cities, so is highly ambitious
Private/community colleges	0%	1. Assume less control than public schools	50%	1. Assume less control than public schools but still high ambition

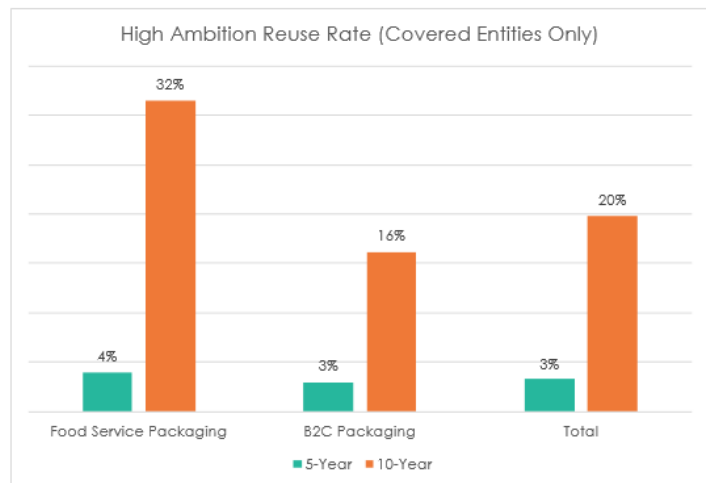


What overall reuse rate does this achieve?

- After five years, a high-ambition scenario could achieve 5% reuse rate by focusing on rapid roll-out of beverage reuse (3x less ambitious than California)
- After ten years, we think reuse could achieve 20% market share
- Overall, the reuse rate is driven by B2C packaging, because there's a lot more of it than food service packaging

Note:

- This chart shows reuse rate for tons, but units is similar
- These results are indicative while we wait for the full baseline waste flow
- These reuse rates do not include non-covered entities (doesn't impact this analysis, where costs only consider new, covered entity reuse)



What is the cost of high ambition?

		5-Year	10-Year
Food Service Packaging	Reuse Rate (weight)	4%	31%
	Reuse Rate (units)	4%	32%
	Total Program Period Cost	\$120,710,728	\$1,095,274,746
	Tons avoided over program period	3,879	37,051
B2C Packaging	Reuse Rate (weight)	4%	18%
	Reuse Rate (units)	1%	11%
	Total Program Period Cost	\$179,829,531	\$2,006,333,495
	Tons avoided over program period	36,688	250,941
Total	Reuse Rate (weight)	4%	19%
	Reuse Rate (units)	2%	18%
	Tons avoided over program period	40,567	287,992
	Total Program Period Cost	\$300,540,259	\$3,101,608,242
	Cost per ton	\$7,408	\$10,770

- Cumulative spend would be \$300 million up to and including Year 5
- Cumulative spend would be \$3.1 billion up to and including Year 10
- This is approximately 5-10x the cost of DRS per unit, and approximately 10x the cost of recycling
- Operating expense (OPEX) is the dominant contributor
- These costs do not consider economies of scale or savings from avoided single use packaging (which could be significant)
- On a per-unit basis, these costs align with our analysis in other places



About Eunomia

Eunomia is an independent sustainability consultancy driven by a genuine passion to make a positive change to the clients we work with and the communities they operate in. Founded in 2001, we have been pioneers in the sector - early advocates for helping NGOs as well as leading public and private sector organisations in the UK and overseas to adapt their approach and adopt more sustainable processes.

Our consultants are experts in the field, deeply immersed in the subject with the technical knowledge and skill to offer clients innovative, clear and practical recommendations. We are committed to finding solutions to better protect the planet, while supporting the wider aims and needs of our clients.

Each client is treated as an individual, with consultants taking the time to understand their objectives and how best we can support them. This personal service ensures a strong relationship is forged, based on honest and regular communication. It also ensures if these objectives change, there is the flexibility to adapt.

As an established leading independent consultancy, clients can have complete confidence that consultants will offer evidence-led solutions based on robust, impartial thinking that offer both pragmatic and positive outcomes.

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