What's in California Landfills: Measuring Single-Use Packaging and Plastic Food Service Ware Disposal 2025

Final Findings

Appendix 2 – Public Comments Received

December 2025

Public Comments and Data Availability

CalRecycle is committed to conducting the Material Characterization Study required by the Plastic Pollution Prevention and Packaging Producer Responsibility Act (the Act), Senate Bill 54 (Allen, Chapter 75, Statutes of 2022) through a public process. As such, all public feedback is reviewed and actively considered to improve the study and help California achieve the goals of the Act. This appendix includes all public comments received by CalRecycle, including those sent to the CalRecycle Solid Waste Characterization inbox and CalRecycle Packaging inbox, regarding the contents of the What's in California Landfills: Measuring Single-Use Packaging and Plastic Food Service Ware Disposed Of (2025) - Preliminary Findings (DRRR-2025-1755) publication, during the open comment period from July 1, 2025, to November 12, 2025.

For accessibility purposes, images, figures, tables, and data (non-text items) have not been included in this Appendix and are denoted as "Non-text item(s) included in body of email are not reproduced here" or "Non-text items incorporated into documents submitted to CalRecycle are not reproduced here." To see the original letter, submit a public records request through the CalRecycle Public Records Center. External sources of data submitted by various organizations can also be made available by submitting a Public Records Act request. External data was not integrated into CalRecycle's analysis and is not validated nor endorsed by CalRecycle.

July 2025

Comment 1:
Name: Walter Reiter
Date received: July 23, 2025
Source: Email (wreiter@epsindustry.org)
Email includes attachments: Yes
Comment: Dear CalRecycle:
Attached please find EPS Industry Alliance's concerns and observations regarding the 2025 Material Characterization Study released in late June 2025. (What's in California Landfills: Measuring Single-Use Packaging and Plastic Food Service Ware Disposed 2025)

Thank you for the opportunity to submit this feedback and please let me know if I can provide additional information or if you would like to further discuss these concerns.
Walter

Walter A. Reiter, III
Director, Advocacy & Regulatory Affairs
EPS Industry Alliance
Phone: 800-607-3772
Mobile: 410-340-5047
Email: wreiter@epsindustry.org
1298 Cronson Blvd, Ste. 201

Crofton, MD 21114
www.epsindustry.org

Attachment text:
Department of Resource Recycling and Recovery
1001 Eye Street
Sacramento, California 95814
Via email only
packaging@calrecycle.ca.gov

Re: Concerns regarding the SB 54 Material Characterization Study released June 30, 2025

CalRecycle:
Thank you for releasing the Material Characterization Study (MCS 2025) and thank you for considering these comments and observations regarding values reported for expanded polystyrene (EPS) transport packaging.

The EPS Industry Alliance is the North American trade association for the expanded polystyrene industry. Our members manufacture EPS transport packaging used to protect durable and temperature sensitive goods. EPS is essential for safe and efficient transportation of electronics, appliances, furniture and other heavy but delicate products. EPS is also essential for shipment of pharmaceuticals, laboratory samples, fresh foods and produce.

EPS transport packaging is a rigid, non-flexible material sometimes identified with #6 under the Resin Identification Code system.

We recognize that MCS 2025 report aligns with the material categories list developed under SB 54 rulemaking. EPS transport packaging would be properly characterized as 24 P42P “Plastic PS (#6) Other Expanded/Foamed Forms.” However, the description of this category in Appendix 1 of MCS 2025 includes in that category items such as: “foam rolls, convoluted foam, foam netting, foam tubing.” These descriptors are not associated with EPS or any EPS packaging application known or utilized in the industry.

These terms more accurately describe flexible foam formats made of expanded polyethylene (EPE), not EPS. EPS is a rigid, molded material, while EPE is flexible and commonly used for protective tubing, corner protectors, and wrap — all of which could be visually mistaken for EPS in the field.

The lack of explicit differentiation between EPE and EPS raises concerns that some portion of the reported EPS tonnage in MCS 2025 may reflect misclassified EPE. This has direct implications for material-specific policy development and fee assessments under SB 54.

A review of the reported data and a comparison with the values reported in the 2018 Material Characterization Study further establish the likelihood of significant

misclassification of expanded polyethylene and perhaps other foams as EPS in MCS 2025.

This possibility is made far more probable upon comparison of MCS 2025 with MCS 2018 as set out in the table below:

Study Year	Combined EPS Transport and Food Service Estimate	Source/Category
2018	87,147 tons	"Other Rigid Plastic (#6 PS and Other Rigid Foamed Plastics)" (2018 Waste Characterization Study)
2025	206,210 tons	24_P42P (EPS transport): 187,115 tons 24_P23P (EPS foodware): 19,095 tons

Despite a more than doubling (2.37X) in reported EPS-related tonnage, the 2025 MCS does not reference the 2018 study or provide any reconciliation or rationale for this dramatic increase.

The Appendix to the 2025 MCS raises further concerns regarding the likelihood of misclassification. Although there are references to field methodology and visual identification protocols, there is no mention of guidance for differentiating EPS from EPE and there is no reference to training or an identification guide or the provision of samples or even photographs for the surveyors. These materials typically do not carry resin identification codes, further challenging surveyors to accurately characterize the materials.

SB 54 imposes legal, enforceable requirements regarding rates and values. CalRecycle is charged with developing methodology to calculate these rates. The regulated community has neither access to nor the ability to compel entities outside the regulated community to produce the data necessary to establish compliance with the statutory requirements. Proposed regulations limit the source of data that can be used to demonstrate compliance and empowers CalRecycle to make the ultimate determination as to the reliability of data.

It is reasonable to presume that, notwithstanding the concerns and observations regarding the 2025 MCS, this report and the possible errors would lead to an arbitrary determination of the regulated community's compliance or non-compliance with statutory requirements.

Without clarification on the material survey process and reconciliation of the drastic reported differences, this 2025 MCS should not be utilized to determine compliance with the statute or assess the performance of the producer responsibility organization.

Thank you for your attention to these important technical issues. CalRecycle's continued commitment to science-based policy development is appreciated. Please contact us if we can provide any additional information or answer any questions.

Respectfully,
Walter Reiter
Director Advocacy
EPS Industry Alliance

October 2025

Comment 2:
Name: Walter Reiter
Date received: October 27, 2025
Source: Email (wreiter@epsindustry.org)
Email includes attachments: Yes; Non-text items incorporated into documents submitted to CalRecycle are not reproduced here.
Comment: CalRecycle,
Attached please find comments identifying concerns of mischaracterization and over-counting in the revised draft of the material characterization study.

Thank you for your time and consideration and please contact me with any questions or requests for additional information.

Sincerely,

Walter Reiter

Walter A. Reiter, III
Director, Advocacy & Regulatory Affairs
EPS Industry Alliance
Phone: 800-607-3772
Mobile: 410-340-5047
Email: wreiter@epsindustry.org
1298 Cronson Blvd, Ste. 201
Crofton, MD 21114
www.epsindustry.org

Attachment text:
Department of Resource Recycling and Recovery
1001 Eye Street
Sacramento, California 95814

Via email only
packaging@calrecycle.ca.gov

Re: Misidentification of Expanded Polystyrene (EPS) Transport Packaging

What's in California Landfills: Measuring Single-Use Packaging and Plastic Food Service Ware Disposed (2025)

CalRecycle:

A review of the Material Characterization Study 2025 (MCA 2025) and Appendix 1 – Detailed Methodology and Data Tables (Appendix 1) of that report clearly indicates that the value reported for expanded polystyrene 24_P42P is over-reported and includes material that is not “PS (#6) Other Expanded/Foamed Forms”.

The examples provided in Appendix 1 at page 22 include items such as: “foam rolls, convoluted foam, foam netting, foam tubing.” These descriptors are not associated with EPS.

The terms rolls, convoluted, netting, and tubing, as illustrated below, describe flexible foam formats made of polyethylene (PE) or polyurethane (PU).

Image Text (left):

CA.Waste.Characterization

Commissioned by CalRecycle from Cascadia, its purpose is to provide baseline data on the extent to which covered materials are currently ending up in landfills.

Covered Material Category	Waste Characterization Rpt #1 (Jun-2025)	Waste Characterization Rpt #2 (Sept-2025)
P42P Other Expanded Foamed Forms	55,400 tns 1.4%	68,405 tns 1.6%

Appendix Detail

Count	Class	Type	Form	Combined CMC Code	Sorting Rule	Examples
59	Plastic	PS (#6)	Other Expanded/ Foamed Forms	24_P42P	Means expanded/foamed forms that are marked and identified as polystyrene (#6) items that do not fit into any other category that are single-use packaging or plastic single-use food service ware.	Foam blocks; Polystyrene sheets; Foam rolls; Convoluted foam; Foam netting; Foam tubing; Wine shippers

Image Text to Right:

Polyethylene Foam (#4)

Polyethylene Foam (#4)

Convoluted Foam

Ester or Ether Polyurethane (#7)

Also Polyethylene (#4)

Polyethylene Foam (#4)

This has direct implications for material-specific policy development creating the potential of error. and fee assessments under SB 54 and renders MCS 2025 invalid as a basis for determination of compliance, fee setting, recycling rate, or other use.

Thank you for your attention to these important technical issues. CalRecycle's continued commitment to science-based policy development is appreciated. Please contact us if we can provide any additional information or answer any questions.

Respectfully,

Walter A. Reiter, III
Director, Advocacy and Regulatory Affairs
EPS Industry Alliance

Comment 3:
Name: Veronica Pardo (California Resource Coalition)
Date received: October 28, 2028
Source: October 28, 2025 Public Meeting (Zoom)
Attachment(s): No
Comment: I wanted to ask about one of your example, tequila is not a CMC and we wanted to ask how you differentiated BCRP from CMCs?

Comment 4:
Name: Steven Day (Kubota)
Date received: October 28, 2028
Source: October 28, 2025 Public Meeting (Zoom)
Attachment(s): No
Comment: I saw this was collected over two days, was there a test for seasonality?
Was it investigated on the back end?
Did I see that businesses and multi-family homes were combined for picking the locations?
Was there any separate analysis for lubricant packaging like motor oil?

Comment 5:
Name: Walter Reiter (EPS Industry Alliance)
Date received: October 28, 2028
Source: October 28, 2025 Public Meeting (Zoom)
Attachment(s): No
Comment: Can you explain for weight to volume conversion was used to apply the composition of material sorted?

Comment 6:
Name: Tim Buwalda (Circular Matters)
Date received: October 28, 2028
Source: October 28, 2025 Public Meeting (Zoom)
Attachment(s): No
Comment: I want to address that notion of true zeros and the change of methodology from previous studies. Is this an approach if that is being used other studies and do you know if this is affecting your results?

Comment 7:
Name: Nick Lapis (Californians Against Waste)
Date received: October 28, 2028
Source: October 28, 2025 Public Meeting (In person)
Attachment(s): No
Comment: Was surprised how high the wood composition. Are these crates and they disproportionately skew the number?
The second highest wood category was treated wood waste, and I thought that was weird because I wouldn't expect that to be used as packaging.
One last question, looking at the definition of CMCs, there are exclusions, and those exclusions are still being discussed in rulemaking. How did you address that?
How did you handle that, for example for OTC products?
Are we using last year's categories for the MCS (2024)?

Comment 8:
Name: Faith Conley
Date received: October 28, 2028
Source: October 28, 2025 Public Meeting (In-person)
Attachment(s): No
Comment: We have serious concerns for the preliminary study. We replaced true zeros which inflated the disposal for cartons, and this unfairly decreases the recycling rate. We are trying to maintain standards set in SB 343. We want to achieve circular economy goals. We ask that the Department returns to ASTM standards and standard practices, and suggest combining aseptic and gable-top into a single category.

November 2025

Comment 9:
Name: Jordan Fengel
Date received: November 12, 2025
Source: Email (Jordan.Fengel@cartoncouncil.org)
Email includes attachments: Yes
Comment: Hello,

Thank you for the opportunity to provide comments regarding the SB 54 Revised Preliminary Findings Report DRRR-2025-1757.

If you have any questions or would like to discuss this further with me, please feel free to reach out.
Best regards,

Jordan

Jordan Fengel
Executive Director
Carton Council
Phone: +1 940-220-0585
www.recyclecartons.com

Attachment text: Memorandum
TO: CalRecycle Waste Characterization Team via email at wastechar@calrecycle.ca.gov
RE: SB 54 Revised Preliminary Findings Report DRRR-2025-1757
DATE: November 12, 2025

The Carton Council of North America is composed of four leading carton manufacturers - Elopak, Novolex, SIG, and Tetra Pak. Formed in 2009, the Carton Council works to deliver long-term collaborative solutions to divert valuable cartons from the landfill and ensure the desired fiber material from recovered cartons is used beneficially in manufacturing new products.

The Carton Council reviewed CalRecycle's revised preliminary report titled "What's in California's Landfills: Measuring Single-Use Packaging and Plastic Food Service Ware Disposed 2025" released on September 30, 2025, and would like to offer feedback for consideration by CalRecycle to inform its revisions for the final report.

First, the Carton Council believes that CalRecycle's decision to change analytical methods in this latest revised preliminary report from the analytical methods it used in all of the previous waste composition studies conducted by CalRecycle resulted in significantly overestimating the statewide generation quantities for any covered material category (CMC) that is not commonly found in waste samples, including the two cartons CMCs. CalRecycle, in the revised preliminary report, noted the change in results was not due to additional data, but its choice of a change in analytical methods, stating:

> "Analytical methods in the revised preliminary report were updated to assume data followed a Dirichlet distribution, which is appropriate for compositional data. This method does not allow the composition of any material type to be zero in any sample. As such, analytical methods must correct for samples with missing material types."

Our understanding of CalRecycle's approach to dealing with samples where there truly were zero cartons found was to replace those samples with artificially created "samples" created by CalRecycle by averaging other samples together. This "correction" resulted in replacing samples in which no cartons were found ("true zero samples") with artificial "greater-than-zero" samples, thereby inflating the final results calculated by CalRecycle. For example, of the 62 samples taken from self-haul loads, aseptic cartons were only found in 8 samples and gable-top cartons were only found in 7 samples. This means that CalRecycle replaced 54 zeros for aseptic cartons and 55 zeros for gable-top

cartons with new non-zero figures, which obviously would greatly inflate the quantity of cartons beyond that actually observed in self-haul loads.

ASTM International develops and maintains globally recognized standards, including

D5231 − 92 (Reapproved 2024) − Standard Test Method for Determination of the Composition of Unprocessed Municipal Solid Waste. This standard is widely recognized and used for conducting waste characterization studies in the United States. The formula in the standard for computing the mean percent “r” of each component is the same formula that CalRecycle has used for years, before the revised draft report, which for component “j” (i.e., CMC “j”) is:

$$rj = \frac{\sum_{\mathrm{i}} c\mathrm{ij}}{\sum_{i} wi} \quad (1)$$

Where:

- *c* = weight of particular component
- *w* = sum of all component weights
- *i* = 1 to *n*, where *n* = number of selected samples
- *j = 1* to *m*, where *m* = number of components

Source: (1) “2018 Facility-Based Characterization of Solid Waste in California”, CalRecycle, May 15, 2020

The impact of CalRecycle departing from the recognized industry-standard approach is shown in the table on the following page, which shows cartons disposal data reported by CalRecycle over time, including the June 30 draft report using the recognized approach compared to CalRecycle’s new approach in the September 30 revised draft report.

CalRecycle Disposed Waste Composition Report Data for Cartons

Disposal Report Published	Date	Total Disposal Tons	Aseptic Cartons %	Aseptic Cartons tons	Gable-top Cartons %	Gable-top Cartons tons	Cartons %	Cartons tons
What's in California's Landfills: Measuring Single-Use Packaging and Plastic Food Service Ware Disposed 2025 (revised preliminary DRRR-2025-1757 new methodology)	9/30/2025 draft	40,035,748 (2024)	0.14% (2025)	57,344 (2024)	0.21% (2025)	84,452 (2024)	0.35% (2025)	141,796 (2024)
What's in California Landfills: Measuring Single-Use Packaging and Plastic Food Service Ware Disposed 2025 (preliminary findings DRRR-2025-1755)	6/30/2025 draft	40,035,748 (2024)	0.096% (2025)	38,608 (2024)	0.168% (2025)	67,412 (2024)	0.265% (2025)	106,020 (2024)
2021 Disposal Facility-Based Waste Characterization Data Tables (DRRR-2024-1737)	6/2024	39,878,983 (2021)	0.1% (0.107%) (2021)	42,647 (2021)	0.1% (0.127%) (2021)	50,588 (2021)	0.234% (2021)	93,235 (2021)
2018 Facility-Based Characterization of Solid Waste in California (DRRR-2020-1666)	5/15/2020	39,304,457 (2018)	0.1% (0.071%) (2018)	28,002 (2018)	0.1% (0.119%) (2018)	46,766 (2018)	0.190% (2018)	74,768 (2018)
2014 Disposal-Facility-Based Characterization of Solid Waste in California (DRRR-2015-1546)	10/6/2015	30,864,279 (2014)	not reported	not reported	not reported	not reported	0.3% (0.338%) (2014)	104,408 (2014)
California 2008 Statewide Waste Characterization Study (IWMB-2009-023)	8/2009	39,722,818 (2007)	not reported	not reported	not reported	not reported	not reported	not reported

This table shows how far out of line the latest estimates for cartons are based on data that CalRecycle has historically reported for cartons found in disposed waste in California. The most direct comparison of the impact of CalRecycle's changing analytical approaches, based on an identical underlying data set, is the 8.4 percent tonnage increase in all covered material when comparing the June 30 and September 30, 2025, draft reports. For cartons, the impact is even greater than for all covered material, with the apparent tonnage of cartons disposed now being reported as 33.7 percent more than in the June 30 report.

Our understanding is that this change is due solely to the new analytical approach and not new data. The new analytical approach disproportionately impacts irregularly observed CMCs, such as cartons, because as more zeros were observed, the more they were replaced with non-zero values. This inflation of estimated disposal harms irregularly observed CMCs because an inflated denominator in a recycling rate calculation results in lower reported recycling rates than is actually the case.

The Carton Council also consulted with The Recycling Partnership (TRP), which collects waste generation data nationwide from households (recycling plus disposal quantities) but does not collect data from non-residential generators. TRP estimates total cartons generation nationally at single and multifamily residences to be 422,553 tons/year.

California's share of U.S. households is 11.5 percent. Assuming California has similar per-capita generation of cartons to the national average, California total residential cartons generation would be 48,756 tons per year. This estimate seems realistic to the Carton Council. We expect the commercial sector to result in far fewer cartons than the residential sector, as cartons are primarily used by the consumer and generated in residential settings. Therefore, a conservative estimate, assuming that the commercial sector generates half that of the residential sector, would be approximately 73,000 tons generated (the commercial estimate added to TRP's residential estimate). Recycling of cartons would reduce this estimate even further. Even if one assumed no cartons were recycled in California (in order to set an outside bound), one would expect the maximum amount of cartons that could be disposed in California would be approximately 73,000 tons. This estimate derived from national data is approximately half CalRecycle's estimate in the most recent draft report (141,796 tons). We present this national data point only to demonstrate how out-of-scale the draft report's upwardly revised cartons estimate is.

Finally, the Carton Council consulted with a Ph.D. statistician from the Statistical Laboratory at the University of California, Davis, and they likewise expressed concerns that CalRecycle's approach to resolving zeros in the data set with using a "randomized" approach disproportionately affects lower proportion commodities such as cartons. Overall, the statistician felt that CalRecycle's methodology lacks justification and a methodology that does not introduce bias should be used. See the attached letter.

The Carton Council therefore asks that CalRecycle use an analytical method that is better suited for waste composition data analysis, follows standards and common practices for waste composition studies, and results in more accurate estimates. As is indicated above, it is critical that such estimates be as accurate as possible so that

producers are not unfairly penalized for not achieving goals that are based on faulty analytical procedures.

We appreciate your consideration of our comments and look forward to more accurate results in the final report. We also would like to encourage CalRecycle to combine the two cartons categories into one as this will lessen data analysis irregularities for cartons in this and other similar composition studies.

Sincerely,

[signature]
Jordan Fengel,
Executive Director, Carton Council North America

UC Davis Department of Statistics in the College of Letters and Science
Andrew Blandino PhD, Senior Statistician, Stat Lab
November 10, 2025
To whom it may concern,
I am writing this letter to seek clarification on the statistical methods used in the composition estimates of CMC proportions found on p. 40 of Appendix 1 in DRRR-2025-1757. Based on the description of the steps in that document, I anticipate the following problems for statistical inference:

1. “Randomized” samples to correct for the ‘zero problem’ for compositional outcomes.
    a. Fundamental alteration of the independence of samples.
    b. Seems to disproportionately affect the lower proportion estimates.
2. Usage of a Bayesian regression model framework (“brms”)
    a. Invalidates the modeling results as Frequentist (unless clarified).
3. Monte Carlo confidence intervals based on normality
    a. Maximum likelihood estimator questionable in lieu of above points.
    b. Theoretical justification of confidence intervals not clear.

My concern with the above methodology is that it lacks theoretical justification, to my knowledge, to ensure unbiased estimation of population proportions for all sectors and CMC categories and accurate confidence intervals. Well known formulas that do satisfy unbiased estimation and accurate confidence intervals can be found in Cochran (1977) as a viable option, for example. I request that CalRecycle please provide references in support of their current methodology that satisfy the previously mentioned criterion.
Sincerely,
[signature]
Andrew Blandinom, PhD

What's in California Landfills: Measuring Single-Use Packaging and Plastic Food Service Ware Disposed Of – 2025 - Appendix 1 – Detailed Methodology and Data Tables - Revised Preliminary Findings (CalRecycle Publication Number DRRR-2025-1757). (2025, September 30). California Department of Resources Recycling and Recovery.

Cochran, W.G. (1977) Sampling Techniques. 3rd Edition, John Wiley & Sons, New York
530-752-2296 tel

4118 Mathematical Sciences Building, Davis, CA 95616
Email: ablandino@ucdavis.edu
statistics.ucdavis.edu

Comment 10:
Name: Bani Dhaliwal
Date received: November 12, 2025
Source: Email (Bani@calpsc.org)
Email includes attachments: Yes
Comment: Hello CalRecycle Waste Characterization Team,
Attached are CPSC's comments on the SB 54 Revised Preliminary Findings.
Please don't hesitate to reach out if you have questions.
Thank you,
Bani Dhaliwal (she/her)
921 11th Street, Suite 700
Sacramento, CA 95814
C: (916) 633-9549
Email: Bani@calpsc.org

Attachment text: November 12th, 2025
CalRecycle Waste Characterization Team
Submitted via email: wastechar@calrecycle.ca.gov
RE: CPSC Comments on SB 54 Revised Preliminary Findings

Dear CalRecycle Waste Characterization Team,

The California Product Stewardship Council (CPSC) is excited to comment on the SB 54 Material Characterization Study (MCS) Revised Preliminary Report, published September 30th, 2025. We commend CalRecycle and its consultants for the rigor and transparency of this statewide study which lays out the analytical foundation for the implementation of Senate Bill 54 (Allen, 2022), the Plastic Pollution Prevention and Packaging Producer Responsibility Act. As an organization that has championed producer responsibility policies over a decade, CPSC supports the Department's commitment to establishing a reliable data baseline. During the October 28th, 2025, public meeting, multiple stakeholders including Californians Against Waste, the Carton Council, and the EPS Industry Alliance raised parallel concerns regarding sampling representation, classification accuracy, and the applicability of CalRecycle's revised statistical methodology. These discussions highlight the importance of refining analytical transparency before the adoption of the final dataset. CPSC cites several areas methodological uncertainty and data interpretation warrant further refinement before the findings are finalized and integrated into regulatory decision making:

1. Sampling Scope and Representativeness

    While the study accomplished statewide coverage across 16 landfills and 313 samples, the limited sample size and voluntary site participation may not fully capture California's geographic and sectoral diversity. Certain rural and inland regions especially those with unique waste profiles and limited recycling infrastructures appear underrepresented. This disparity could affect material

distribution estimates, particularly for self-haul and mixed commercial loads. Stakeholders confirmed during the meeting that facilities advanced in the selection process only if they met daily-vehicle thresholds (five residential packer trucks, ten commercial loads, twelve self-haulers, and two transfer trailers). These thresholds, while practical, systematically favor high-throughput urban sites and exclude low-volume jurisdictions. CPSC recommends that CalRecycle disclose sample-weighting adjustments, clarify representativeness criteria, and plan for expanded regional coverage in the 2028 update.

2. Resin Identification and Data Traceability

CalRecycle acknowledged during the public meeting that the spectroscopic data was collected separately from the composition dataset and were not used to adjust the reported proportions. This separation reduces the analytical utility of the results and should be corrected in subsequent iterations. CPSC advocates linking future laboratory results to anonymized sample identifiers and sectors, enabling CalRecycle and the PRO to correlate polymer type with market behavior and end-of-life manage potential.

3. De-packaging and Food Contamination Effects

The “covered material disposed with goods inside” categories reveal significant contamination of recyclable packaging with food and residual products. Yet, the report does not quantify the proportion of weight attributable to contamination. Over-inclusion of such materials could distort baseline recycling potential and lead to inaccurate performance metrics. CPSC requests that CalRecycle provide adjusted tonnage estimates excluding contaminants and clearly state assumptions used in extrapolating de-packaged material weights statewide.

4. Weight-to-Volume Conversion Factors

While useful for system-capacity planning, the report provides little information on precision, variance, or excluded categories for the weight-to-volume factors. These metrics are crucial for modeling packaging density and storage requirements. CPSC recommends including sample sizes, standard deviations, and methodology for rare categories to improve reliability of subsequent capacity and fee analyses.

CPSC appreciates CalRecycle’s leadership in conducting this foundational study and acknowledges its importance for establishing SB 54 (Allen) baselines, and we urge the agency to incorporate the clarifications above prior to finalizing the report on December 27, 2025. A transparent, methodologically sound dataset is essential to ensure equitable and science-based implementation of California’s Packaging EPR program.

CPSC looks forward to continued collaboration through the ongoing regulatory development.

Sincerely,
Joanne Brasch, Director of Advocacy and Outreach
California Product Stewardship Council

CPSC Mission Statement

To shift California's material economy from a linear model that subsidizes resource extraction, including ratepayer financed collection and disposal, towards a circular economy that relies upon producer-financed and managed recovery programs overseen by state agencies with all participants compensated for their contributions, while improving the health and well-being of all Californians.

Comment 11:
Name: Carol Patterson
Date received: November 12, 2025
Source: Email (patterson@fpi.org)
Email includes attachments: Yes
Comment: On behalf of the Foodservice Packaging Institute and our members, thank you for the opportunity to submit comments on the SB 54 Material Characterization Study Revised Preliminary Report.

We appreciate your consideration of our comments and would be pleased to discuss these points in greater detail at your convenience.

Sincerely,
Carol

Carol Patterson
Vice President, Government Relations
Foodservice Packaging Institute
tel (571) 424-3478
web www.fpi.org

Attachment text: *Submitted via email to wastechar@calrecycle.ca.gov*
RE: SB 54 Revised Preliminary Findings Report

November 12, 2025

Thank you for the opportunity to provide feedback concerning the SB 54 Material Characterization Study (MCS) Revised Preliminary Report.

Founded in 1933, the Foodservice Packaging Institute (FPI) is the leading authority on foodservice packaging in North America. FPI supports the responsible use of all foodservice packaging, while advocating an open and fair marketplace for all materials. Our core members include raw material and machinery suppliers as well as packaging manufacturers, which represent approximately 90 percent of the industry. Additionally, a number of distributors and purchasers of foodservice packaging are part of FPI's affiliate membership.

The foodservice packaging industry is committed to reducing the impact of its products on the environment and is dedicated to increasing their recovery. FPI has several special interest groups that bring together the supply chain to develop and promote economically viable and sustainable recovery solutions for foodservice packaging. These special interest groups include the Paper Recovery Alliance, Plastic Recovery Group, Paper Cup Alliance and Foam Recycling Coalition. More information on these groups and their efforts can be found here. <https://www.recyclefsp.org/>

Below are FPI's comments on CalRecycle's SB 54 MCS Revised Preliminary Report as published on September 30, 2025.

SB 54 MCS Revised Preliminary Report Findings

FPI notes that CalRecycle's decision to change the statistical analysis applied in the revised study may have had a disproportionate impact on categories with small sample quantities.

The revised report applies a Dirichlet model, which does not allow any material type to be zero in a sample. To accommodate this, CalRecycle appears to have replaced true zero values with estimates derived from averaging other samples. This adjustment may artificially inflate generation amounts for low-volume materials, raising questions about the suitability of this approach for SB 54 MCS.

From a food service ware perspective, the revised estimates show significant increases in several categories, including:

- Aluminum foil molded containers (24_M3N/P)
- PP utensils (24_P19P)
- Rigid PS utensils (24_P27P)
- PLA plastics and polymers designed for compostability: rigid items (24_P47P)

FPI recommends reviewing the impact of this methodology on small-volume materials and considering whether the original approach, which has been used consistently in prior studies, should be reinstated.

Study Material Sorting List

Next, we recognize the challenge of providing accurate sorting guidance while CMCs guidance evolves. Most recently, September 8, 2025, CMC publication introduced a new CMC and updated guidance, significantly affecting polycoated and plastic-coated foodservice packaging.

For example:

- June 2025 Draft Guidance directed all polycoated or plastic-coated covered materials (including paperboard) to category 24_PF7P.
- September 2025 Guidance revised this approach and introduced 25_PF17P and specifying:
    - 25_PF10P: Means paperboard with a plastic component. This category includes polycoated or other plastic-coated paperboard items that are only coated on a single side.
    - 25_PF17P: Means paperboard laminated on two sides with a plastic coating or lining

Given these ongoing changes, we request clarification on how sorting data will be validated to align with the most recent CMC guidance.

Additionally relating to data accuracy and sorting, we are concerned with the consolidation of CMCs with and without plastic components into combined sorting categories for the SB 54 MCS.

Applicability for use in Determining Recycling Rates

FPI is concerned about the implications of SB 54 MCS data on recycling rate calculations under SB 54. Per the latest draft of the SB 54 proposed regulatory text, Section 18980.3.2. Methodology for Recycling Rate Determination, (b)(4) states (with emphasis added):

> *(4) The Department shall consider the following sources of data when calculating recycling rates:*
>
> > *(A) Data from a PRO regarding recycling and generation of covered materials, submitted pursuant to section 42052 of the Public Resources Code.*
> >
> > *(B) Data reported by facilities registered with the Recycling and Disposal Reporting System pursuant to section 18815.1 through 18815.13 of this division.*
> >
> > *(C) Data provided by local jurisdictions, producers, or other entities.*
> >
> > *(D) Data described in paragraph (2) of subdivision (b) of section 42061 of the Public Resources Code that it deems relevant. D<u>ata may include information obtained through characterization studies, needs assessments, and other studies.</u>*

We request that CalRecycle clarify how MCS data will be validated if used for determining compliance.

Based on our comments above, we respectfully request that CalRecycle review the recent changes to analytical methods and clarify how data will be updated to reflect the latest CMC guidance. Additionally, we seek information on how this data will be applied in determining recycling rates under SB 54.

Thank you for considering our comments. We are available to discuss these points further and look forward to your response.

Sincerely,
[signature]
Carol Patterson
Vice President, Government Relations
cpatterson@fpi.org

Comment 12:
Name: Kate Doherty
Date received: November 12, 2025
Source: Email (kdoherty@palletcentral.com)
Email includes attachments: Yes
Comment: Good afternoon,
Please find a comment letter from the National Wooden Pallet and Container Association attached.

Thank you,
Kate Doherty

Director of Government Affairs
National Wooden Pallet & Container Association
225 Reinekers Lane, Suite 560, Alexandria, VA 22314
T: 703-519-6104
E : kdoherty@palletcentral.com
Attachment text: Department of Resources Recycling and Recovery (CalRecycle)

Zoe Heller, Director
Public Affairs Office
1001 I Street (MS 22-B)
Sacramento, CA 95812-4025
November 12, 2025

Re: SB 54 Material Characterization Study Revised Preliminary Findings Report (Publication # DRRR-2025-1757)

The National Wooden Pallet and Container Association (NWPCA) appreciates the opportunity to provide comments on CalRecycle's SB 54 Material Characterization Study Revised Preliminary Findings for consideration in the finalization of the report. This study is an integral step in carrying out rulemaking for SB 54 as the legislature intended, as having accurate data is essential to conclusions for implementation.

As set forth in our prior comment submittal, since wooden pallets are not single-use, such are not "covered material" under a plain reading of SB 54. The wood pallet industry claims the world's highest recycling rate of any packaging material, with over ninety-five percent (95%+) of wooden pallets are repaired, remanufactured, and recycled into other useful materials—not landfilled[1].

Peer-reviewed studies confirm the landfill avoidance rates accomplished by the wooden pallet industry. Two examples which will be referenced throughout this argument are the "2021 Disposal-Facility-Based Characterization of Solid Waste in California" (DRRR-2024-1737)[2] by CalRecycle and the peer-reviewed "Investigation of Wood Pallets Landfilled and Recovered at US Municipal Solid Waste Facilities" by Shiner et al[3]. However, the SB 54 Material Characterization Study Revised Preliminary Findings (the "Report") fails to align with historical data, which could lead to incorrect conclusions.

Aside from the fact that wooden pallets do not jurisdictionally fall within the confines of SB 54, the Report fails to substantiate tonnage as a fair representation to rank materials in the waste stream. Using tonnage, the Report ranks wood as the third highest disposed of material by class, and the untreated wood category as the second highest disposed material. This is despite the documented fact that wood weighs much more than the materials it is being compared to. CalRecycle acknowledged this fact in the October 28th hearing. These incorrect comparisons lead to a grossly unfair fee structure.

Table E-1. Estimated Disposal of Covered Material, By Material Class

This table shows the estimated annual disposal tonnage (column 2) and the percentage of total statewide material disposal (column 2) for covered material within each material class. Column 4 shows the CMC within each material class estimated to have the largest amount of material disposed of.

Material Class	**Annual Disposal Estimate of Covered Material (tons)**	**Percentage of Total Estimated Covered Material Disposal**	**Highest Tonnage Covered Material Category in Material Class**
Paper and Fiber	3,929,375	46.5%	Cardboard
Plastic	3,123,797	36.9%	Flexible and Film Items
Wood and other Organic Materials	811,999	9.6%	All Untreated Forms
Metal	432,265	5.1%	Non-aerosol Containers
Glass	154,149	1.8%	Bottles and Jars
Ceramic	5,564	0.1%	Small - Two or more sides measuring 2" or less

Material Class	**Material Type**	**Material Form**	**Annual Disposal estimate (statewide tons, mean)**	**Estimated Proportion of Total Statewide Disposal**
Paper and Fiber	OCC	Cardboard	2,042,929	5.10%
Wood and Other Organic Materials	Wood	All Untreated Forms	703,062	1.76%
Plastic	Other/Mixed Plastics	Flexible and Film Items	650,085	1.62%
Paper and Fiber	Multi-Material Laminate	Other Forms	549.429	1.37%
Paper and Fiber	Paperboard	All Forms	487,428	1.22%

Additionally, despite historical recognition, the Report does not differentiate the "untreated wood" category. The examples given for the "untreated wood" category include wooden crates, boxes, and pallets. However, this critical recognition is essential to provide a more detailed look at wood packaging products in the waste stream.

CalRecycle's 2021 study found that "clean pallets and crates" make up 1.4% of the yearly waste stream at a total of 569,758 tons, representing both municipal solid waste

(MSW) and construction and demolition waste (C&D). To make an accurate comparison between the CalRecycle study and the Shiner study, pallet and crate waste must be evaluated separately.

Shiner's study estimated that the percentage of pallets to crates in the waste stream was 32.0% in the Western Region. That results in pallet waste stream estimations of 182,394 tons in California. To determine the pallet waste stream estimation in California from Shiner, we first must estimate the number of pallets going to California. This can be done by taking the overall number of pallets sold (1,199,000,000) and multiplying by the percentage of the overall population represented by California (11.6%[4]), resulting in 139,084,000 pallets. If we take 5% of that number to estimate the number of pallets going to landfills, we get 6,954,200 pallets. Assuming a pallet weighs 50 lbs., that equals 173,855 tons.

Comparing CalRecycle 2021 to Shiner yields reasonable results. However, because it is unclear what the "wood and other organic materials" category fully consists of, it is impossible to accurately benchmark data in the Report to previous studies.

	Shinder Study: California	CalRecycle 2021	Preliminary findings
Tonnage Untreated wood	N/A*	N/A*	703,062
Tonnage of Pallets and Crates		569,578	Unconclusive
Tonnage of just Pallets	173,855	182,394	Unconclusive

Furthermore, this Report's failure to break down the untreated wood category leads to the unsubstantiated conclusion that wood packaging is amongst the top disposed materials. This clearly contradicts historic data from CalRecycle and Shiner. CalRecycle's 2021 waste stream study did not provide a summary of "untreated wood" but rather several subcategories that would fall under untreated wood, including "clean dimensional lumber", "clean engineered wood", and "clean pallets and crates." Compared to other wood categories in this study, pallets and crates make up the smallest subgroup of untreated wood products, at only 23% of all untreated wood in overall waste stream.

Wood Type	Volume (tons)	Relative %
Clean Dimensional Lumber	1,118,977	46
Clean Engineered Wood	751,487	31
Clean Pallets and Crates	569,758	23

Inspecting the Shiner study for "untreated wood" by evaluating pallets, crates, and construction wood, it suggests that pallets constitute 3% of the National proportion and 2% in the West.

Table 12. Regional Breakdown of Tons of Wood Waste Per MSW Facility that Landfilled Wood in 2016

Waste Type	All regions	Midwest	South	Northeast	West
Pallets	267	190	513	186	37
Crates	407	182	817	149	164
Construction Wood	8,225	2,173	18,326	5,070	1,715
Treated Wood	2,591	567	5,742	215	1,275
Yard Waste	2,354	69	4,423	70	2,370
Other	1,050	429	2,373	271	233

Finally, it is critical to account for the wider context of packaging in the landfills instead of merely assessing the total weight of the material in the final Report in order to accurately proportion fees. In the case of wooden pallets, reporting only the tonnage could lead to conclusions that wood packaging is discarded at high rates. However, when looking at wider context, data confirms that less than 5% of wooden pallets end up in landfills, proving they are reusable, not single use.

Total Pallets sold nationally = 1,199,000,000[5]
Scaled by population (roughly 11.6%), total pallets sold into California = 139,084,000
Weight of the average pallet = 50 lbs / 0.025 tons
Weight of pallets sold into California = 3,477,100 tons
Weight of pallets in the landfill = 173,855 tons

Percentage of pallets landfilled in California = 5%

[1]https://bioresources.cnr.ncsu.edu/wpcontent/uploads/2021/01/BioRes_16_1_1496_Shiner_HAG_Investig_Wood_Palllets_Landfill_Recovery_17119.pdf

[2] https://www2.calrecycle.ca.gov/Publications/Details/1738

[3]https://bioresources.cnr.ncsu.edu/wpcontent/uploads/2021/01/BioRes_16_1_1496_Shiner_HAG_Investig_Wood_Palllets_Landfill_Recovery_17119.pdf

[4] https://www.census.gov/library/stories/state-by-state/california.html

[5] Hobbs et al. (2025). “Wooden pallet market COVID,” BioResources (2025), https://bioresources.cnr.ncsu.edu/wpcontent/uploads/2025/03/BioRes_20_2_3047_Hobbs_HG_Investig_Wooden_Pallet_Market_during_Covid_19_24072.pdf

Comment 13:
Name: Kimberly Davis
Date received: November 12, 2025
Source: Email (Kimberly.Davis@bpiworld.org)
Email includes attachments: Yes
Comment: Dear CalRecycle,
Please find BPI’s comments in response to the SB 54 Revised Preliminary Findings attached in a PDF and in the email body below:

The Biodegradable Products Institute (BPI) is North America’s leading organization representing certified compostable materials, products, and packaging, with over 600 member companies worldwide and tens of thousands of certified products. BPI is the

foremost association for the circular bioeconomy who convenes the compostable product value chain, and facilitates inclusive discourse to create consensus on actionable, science-backed standards, claims, and policy. Our certification program has verified tens of thousands of items using ASTM standards as a baseline, with additional requirements to prohibit PFAS, promote clear labeling, and sensible eligibility criteria, all to help to keep organic waste out of landfills.

BPI appreciates the opportunity to comment on the *What's in California Landfills: Measuring Single-Use Packaging and Plastic Food Service Ware Disposed (2025), Revised Preliminary Findings,* however we are seeking clarity on the specific methodology used for identifying products assigned to the compostable plastics categories (24_PP44 and 24_PP45). It seems that compostable plastics were over-represented in this study, and for a few reasons, we seek to learn more information about this analysis.

1. Appendix 1 [1] indicates the sorting rule is for plastic products "designed and marked for compostability" in both the rigid and flexible categories. It is difficult to know how this was addressed in practice, because, despite California having some rigorous statutory requirements for compostable products to prevent greenwashing, it is currently difficult to enforce. It is not clear that additional steps to discount greenwashed products were taken.
2. Furthermore, Appendix 1 states that "shipping pouches" were an example of a compostable product. Shipping pouches are not designed to be associated with food or food waste, and they therefore do not comply with the requirement in PRC 42357(g)(1)(E) that requires the product to be associated with desirable organic wastes. These products would also not be eligible for certification at BPI, as they do not meet the BPI eligibility criteria.[2] They therefore should not be considered in the compostable plastic category.
3. It is not clear how compostable paper products were counted in this study. In Appendix 1, the plastic category indicates that "plates" were an example of plastic products, but those are almost always a fiber-based product. Were fiber-based products attributed to the plastic categories?
4. The most current market data [3] indicates that global capacities for biodegradable resins is around 1 million tons. This would be the maximum amount of material that *could* be produced, noting that actual manufacturing volumes could be less depending on market needs, and noting that not all of this material is made into compostable products. If this is compared against the global capacity for conventional plastics of 440 million tons, biodegradable plastics, at the most, are just under 0.25% of the plastics market. It's hard to estimate what fraction of this 0.25% is converted to compostable products, as these materials go into other applications, so it is a conservative upper limit.

   The waste characterization [4] indicates that products identified as compostable plastics are 0.1% of the waste stream overall, and relative to the conventional plastics (7.7% of the waste stream), the material characterization indicates compostable plastics are 1.3%. In the most conservative case, this is still more than 5 times the expected amount of compostable plastics.

We thank you for the opportunity to inquire about the method and approach taken in this report to ensure a representative and transparent outcome. Please reach out to us with any questions or concerns; we look forward to a continued dialogue.

Sincerely,
Kimberly Davis

[1] https://www2.calrecycle.ca.gov/Publications/Download/1945
[2] https://bpiworld.org/eligibility
[3] https://www.european-bioplastics.org/market/
[4] https://www2.calrecycle.ca.gov/Publications/Download/1944

Kimby Davis
(she/her)
Policy Associate
1-888-274-5646 Ext. 37
kimberly.davis@bpiworld.org
bpiworld.org
Attachment text: California Department of Resources Recycling and Recovery (CalRecycle)
1001 I Street Sacramento, CA 95814
Re: SB 54 Revised Preliminary Findings

To CalRecycle,

The Biodegradable Products Institute (BPI) is North America's leading organization representing certified compostable materials, products, and packaging, with over 600 member companies worldwide and tens of thousands of certified products. BPI is the foremost association for the circular bioeconomy who convenes the compostable product value chain, and facilitates inclusive discourse to create consensus on actionable, science-backed standards, claims, and policy. Our certification program has verified tens of thousands of items using ASTM standards as a baseline, with additional requirements to prohibit PFAS, promote clear labeling, and sensible eligibility criteria, all to help to keep organic waste out of landfills.

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1. Appendix 1[1] indicates the sorting rule is for plastic products "designed and marked for compostability" in both the rigid and flexible categories. It is difficult to know how this was addressed in practice, because, despite California having some rigorous statutory requirements for compostable products to prevent greenwashing, it is currently difficult to enforce. It is not clear that additional steps to discount greenwashed products were taken.

2. Furthermore, Appendix 1 states that “shipping pouches” were an example of a compostable product. Shipping pouches are not designed to be associated with food or food waste, and they therefore do not comply with the requirement in PRC 42357(g)(1)(E) that requires the product to be associated with desirable organic wastes. These products would also not be eligible for certification at BPI, as they do not meet the BPI eligibility criteria.[2] They therefore should not be considered in the compostable plastic category.
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The waste characterization[4] indicates that products identified as compostable plastics are 0.1% of the waste stream overall, and relative to the conventional plastics (7.7% of the waste stream), the material characterization indicates compostable plastics are 1.3%. In the most conservative case, this is still more than 5 times the expected amount of compostable plastics.

We thank you for the opportunity to inquire about the method and approach taken in this report to ensure a representative and transparent outcome. Please reach out to us with any questions or concerns; we look forward to a continued dialogue.

Sincerely,

Kimby Davis
Policy Associate
Biodegradable Products Institute
kimberly.davis@bpiworld.org

[1] https://www2.calrecycle.ca.gov/Publications/Download/1945
[2] https://bpiworld.org/eligibility
[3] https://www.european-bioplastics.org/market/
[4] https://www2.calrecycle.ca.gov/Publications/Download/1944

Comment 14:
Name: Emily Coven
Date received: November 12, 2025
Source: Email (emily.coven@circularaction.org)
Email includes attachments: Yes

Comment: Please find Circular Action Alliance's public comment on the SB 54 Material Characterization Study Revised Preliminary Findings attached. Thank you in advance for your consideration of these comments.

Emily Coven
California Executive Director
emily.coven@circularaction.org
415.378.1915

Attachment text: Nov. 12, 2025
Submitted electronically to wastechar@calrecycle.ca.gov
Dan Brown, Acting Policy Director
Department of Resources Recycling and Recovery (CalRecycle)
Policy Development and Analysis Office
1001 “I” Street, MS-24B
Sacramento, CA 95814
RE: Comments on SB 54 Material Characterization Study Revised Preliminary Findings Report

Dear Mr. Brown,

Thank you for the opportunity to review and comment on the revised draft report released on Sept. 30, 2025. We appreciate the extensive effort behind this statewide waste composition study—the field sampling, the categorization work, the compilation of hundreds of sample datasets, and the responsiveness to feedback throughout this process.

Our comments below reflect a desire to support developing the most robust and reliable disposal estimates possible, given the important role these numbers will play in establishing baseline recycling rates to be used in implementing the Plastic Pollution Prevention and Packaging Producer Responsibility Act, as codified in the California Public Resources Code at Sections 42040-42084 (Senate Bill 54). We offer these observations in the spirit of collaboration and with the goal of helping ensure the final methodology is transparent, statistically sound, and operationally durable.. We offer these observations in the spirit of collaboration and with the goal of helping ensure the final methodology is transparent, statistically sound, and operationally durable.

Observations on the Revised Analytical Approach

We noticed that the September draft introduces a new analytical method (Dirichlet distribution) for handling compositional data and addressing the large number of zeros present across categories. This appears to be a significant departure from the approach used in the June 2025 draft and in past CalRecycle studies.

We recognize that zero-heavy datasets can be challenging and that compositional data requires thoughtful handling. At the same time, the shift to a methodology that replaces all zero values and generates 1,000 synthetic datasets raised a few concerns for us regarding interpretability, sample independence, and the potential effects on categories observed infrequently in the field.

We would appreciate any additional detail CalRecycle can share about:

- The rationale for selecting this approach over other compositional data methods
- Any references, guidance, or statistical literature that informed the decision
- Whether CalRecycle has evaluated how this method performs relative to more traditional ASTM-consistent techniques
- Applying this method to previous characterizations to determine the differences and changes between the most current report and previous ones

The analytical reasoning will help us better understand and support the implementation of SB 54 and accurately communicate the methodology to our participant producers.

Effects of Zero Handling and Randomization on Disposal Estimates

The replacement of zeros through sample averaging appears to have had a notable impact on disposal estimates, particularly for lower-prevalence packaging categories and plastics. For some covered material categories (CMCs), estimated disposal increased by more than 100%—and in a few cases by more than 1,000%—between the June and September drafts.

We understand that estimates can shift as methods refine, and we appreciate the challenge posed by categories that are rarely observed in the waste stream. At the same time, these large variations prompted us to seek clarity on how the new approach treats sparse data and whether alternative techniques might limit such inflation while still addressing zero value constraints.

If possible, we would welcome:

- Any sensitivity analysis comparing June (ASTM-aligned) and September (Dirichlet-based) outputs
- Additional insight into how CalRecycle assessed the potential magnitude of methodological impacts on low-volume material categories
- Information on whether CalRecycle explored zero-aware modeling approaches that preserve sample independence

Consistency With Historical Trends

In reviewing the September estimates alongside past CalRecycle waste characterization studies, we observed that overall total disposed CMC tons along with several material disposal tonnages—particularly for plastics—are substantially higher than previously reported values. For example, HDPE container disposal would reach the highest level seen in any CalRecycle dataset.

We recognize that differences across studies can reflect genuine changes in disposal behavior, methodological updates, or improved categorization. We would appreciate any clarification CalRecycle can provide on how it interprets these differences and whether CalRecycle believes the higher disposal values reflect real statewide conditions or methodological effects from the new approach.

Consolidation of Plastic vs. Non-Plastic Categories

We also noticed that while the contractor collected field data distinguishing plastic from non-plastic forms of similar items, the September draft presents disposal results at a consolidated level. We understand this may be due to sparsity issues or broader reporting considerations.

Because SB 54 requires material-specific recycling rates—particularly for plastics—we would appreciate insight into:

- The rationale for combining these two categories
- Whether CalRecycle intends to publish plastic and non-plastic forms separately in the final report
- Whether additional disaggregated results will be available
- Whether any data limitations or confidence interval concerns influenced the consolidation
- Access to more data granularity, if available, which would be very helpful for producer planning and internal modeling

Misalignment Between the CMC Definitions in the CalRecycle CMC Guidance Document and Study Material Sorting List – Appendix 1: Potential Impact on Recycling Rate Determinations

When the RFP titled “SB 54 Disposal Facility-based Material Characterization Study DRR24008” was issued in May 2024, CAA was keenly interested **in Appendix A, Table 3: Material Sorting List and Definitions by Category**, as this was the first time CalRecycle had provided indicative definitions of individual CMCs. More specifically, CAA responded to **Addendum 3 of DRR24008** with specific questions that aimed to clarify how plastic-coated fiber substrates would be represented in the various fiber sort categories/CMCs to be used for the Material Characterization Study (MCS). This included but was not limited to **Kraft Paper (24_PF1N/P)**, **Molded Fiber (24_PF214N/P)**, **Paperboard (24_PF10N/P)**, **White Paper (24_PF11N/P)**, **Other/Mixed Paper (24_PF12N/P)** and **Multi-Material Laminates (24_PF7P)**.

Reponses from CalRecycle clearly indicated that if a paper format had a plastic coating (either single-sided or double-sided), it would be characterized to the applicable fiber sort category that best represents that format. For example, a single-sided or double-sided polycoated paperboard cup would be sorted to the sort category “**Paperboard (24_PF10N/P)**.” Similarly, a molded fiber food service ware container with plastic coating would be reported to the sort category “**Molded Fiber (24_PF214N/P)**.” With respect to plastic-coated paper substrates, the sort category “**Other/Mixed Paper (24_PF12N/P)**” would be limited to fiber formats that do not fall under any of the other fiber/paper sort categories listed above it on sort category list.

When the draft CalRecycle CMC Reporting Guidance Document was released in early June 2025, CAA was surprised to see that the definitions of the various fiber/paper CMCs had changed with respect to the classification of paper substrates with plastic coatings as compared to the answers CAA received to our questions on fiber sort categories used in the MCS. Based on conversations with CalRecycle, it is our

understanding that just prior to the start of the field work, changes were made to how plastic-coated paper substrates were to be classified during the material characterization study. Accordingly, any plastic-coated paper substrate would no longer be sorted to the applicable paper format that best matched its form, but would instead be reported to the sort category "**Multi-Material Laminates (24_PF7P**)."

Although CAA was concerned about changes to how plastic-coated paper substrates are characterized, we were at least pleased that the changes brought CalRecycle's CMC Reporting Guidance into alignment with the MCS of covered materials disposed at landfills. In fact, given that all plastic-coated paper substrates were to be reported to the CMC "**25_PF7P - Paper/Fiber - Multi-Material Laminate**," CAA proposed creating a new CMC for any plastic-coated paperboard. Our intention was to isolate this material from other plastic-coated paper/fiber substrates as new and emerging end markets for polycoated paperboard show promising developments. CalRecycle accepted our proposal and created a new CMC called "**25_PF17P - Paper/Fiber - Multi-Material Laminate - Paperboard with a Plastic Coating/Lining**" bringing the total number of CMCs to 95. Our intention was to isolate this material from other plastic-coated paper/fiber substrates as new and emerging end markets for polycoated paperboard show promising developments. CalRecycle accepted our proposal and created a new CMC called "**25_PF17P - Paper/Fiber - Multi- Material Laminate - Paperboard with a Plastic Coating/Lining**," bringing the total number of CMCs to 95.

With the publication of the final CalRecycle CMC Reporting Guidance document on Sept. 2, 2025, and further updates on Sept. 8, there are notable changes to some of the fiber/paper categories that will create a misalignment between the results in the Material Characterization Study and the CMC Reporting Guidance, which will impact which CMCs producers would report under. In the updated CMC Reporting Guidance document, only double-sided plastic-coated fiber would be reported to either "**25_PF7P - Paper/Fiber -Multi-Material Laminate**," or "**25_PF17P - Paper/Fiber - Multi-Material Laminate - Paperboard with a Plastic Coating/Lining**." Paper substrates that are coated with plastic on only one side would be reported to the applicable fiber CMC with a plastic component. For example, paperboard with a plastic coating on a single-side of the covered material would be reported to the CMC "**25_PF10P - Paper/Fiber - Paperboard - All Forms w/ plastic component**." The same would apply to other paper material types and forms including Kraft Paper, Molded Fiber, White Paper and Other Mixed Paper substrates that have a plastic coating on one side being reported to the "with plastic component" variant of those CMCs.

This misalignment of producer reporting categories with MCS categories has potential implications for the comparability of recycling rates that CalRecycle is mandated by statute to publish by Jan. 1, 2026, pursuant to PRC 42061(b). While disposal of CMCs in California landfills forms only part of the data inputs into the denominator of the recycling rate calculation, it is important that both the numerator and the denominator are aligned, and that the recycling rates that are calculated reflect the actual materials that producers report to these CMCs. CAA is open to supporting CalRecycle, where appropriate, to ensure that this is achieved.

Treatment of an Evolving Scope of Exclusions in SB 54 Draft Regulations

Given the significance of the study results as an input into the recycling rate calculations for each CMC, the determination of which packaging and food service ware items are considered covered materials under SB 54 is critical to developing accurate disposal quantities. Given that there have been changes to the scope of exclusions as presented in the various iterations of the draft regulations during the study period, it is not clear how this changing scope has been reflected in the study results. More importantly, it is critical that CalRecycle be able to adjust the study results to reflect the actual scope of exclusions once these are finalized. CalRecycle indicated during the public meeting that it had designed the study to be able to account for this issue, which is very positive. CAA looks forward to discussing with CalRecycle how such changes to the scope of covered materials in the final regulations will be accounted for when or if using the results of this study in developing the recycling rates pursuant to PRC 42061(b).

Opportunities for Continued Collaboration

We greatly appreciate CalRecycle's openness in releasing data and methodology summaries to interest holders. We believe the following steps could support mutual alignment as the final report is prepared:

- Sharing additional technical documentation on the September analytical approach, if available
- Clarifying the statistical assumptions behind the zero-replacement method and
- confidence interval calculations
- Discussing the potential for supplemental sensitivity analyses comparing outputs
- across multiple methods
- Continuing to explore ways to incorporate additional mixed-load data in future years,
- given that transfer trailers represent a large share of statewide disposal and the current
- revised report sample reflects an overall proportion of less than 9% of mixed-load data
- Ensuring the alignment of sorting categories with CMC reporting definitions and
- examples so that recycling rates calculated for CMCs accurately reflect the covered
- materials reported to them
- Clarifying how changes to the scope of covered materials in the final regulations will be accounted for when using the results of this study in developing the recycling rates pursuant to PRC 42061(b) We offer these suggestions respectfully and with the understanding that CalRecycle must balance methodological rigor with tight statutory timelines.

We value the significant resources CalRecycle has invested in developing these statewide disposal estimates, and we appreciate the opportunity to offer feedback. Our goal is to support the development of a durable, transparent, and statistically sound foundation for SB 54 recycling rate calculations.

We look forward to continued dialogue and are happy to collaborate further, provide additional detail on the observations above, or participate in any technical discussions if helpful.

Thank you again for your time, effort, and partnership.

Sincerely,
[signature]
Emily Coven
California Executive Director
Circular Action Alliance