

HB 1033 Advisory Council – Meeting 8 Agenda May 7, 2024

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Meeting Goals

- Review research about policy options in WA and broader US
- Generate recommendations to the legislature

Date & Time

May 7th, 2024 10:00 AM – 12:00 PM, [Zoom](#)

Agenda Overview

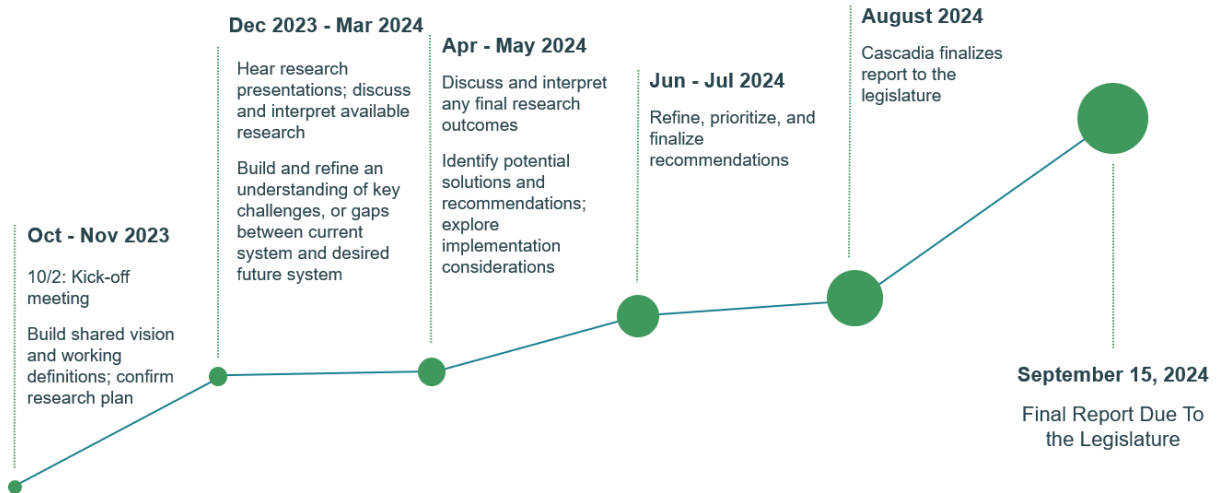
Total duration = 120 minutes

Duration	Agenda Item
10 min	Welcome, agenda, & objectives
5 min	Where we've been and where we're headed <ul style="list-style-type: none">• Research update – key takeaways• Challenge themes

Duration	Agenda Item
25 min	<p>Research presentation</p> <ul style="list-style-type: none"> • Compostable Products Management Policy Research Summary • Discuss: <ul style="list-style-type: none"> ○ What does this research tell us about what is working to achieve “the state’s goal of managing organic materials, including food waste, in an environmentally sustainable way that increases food waste diversion and ensure that finished compost is clean and marketable?” ○ How well do the policies and the enforcement of the policies presented in the research manage compostable products and address contamination? ○ What gaps remain, and what solutions could fill them?
15 min	<p>Department of Ecology Presentation: HB 2301</p>
45 min	<p>Solutions Discussion & Look Ahead</p> <ul style="list-style-type: none"> • Review previous solutions (for challenge theme #6 – compost marketability) • Generate solutions for 2 themes: <ul style="list-style-type: none"> • Theme #1: Consumer confusion around compostable products leads to increased contamination. Consumers face confusion and barriers at product disposal exacerbated by labeling, lookalikes, and inconsistent collection processes among jurisdictions. • Theme #4: There uncertainty around enforcement of labeling and/or use of products. Concerns over funding for enforcement and who will be accountable. • Discussion questions: <ul style="list-style-type: none"> • How would you build out and add more detail to the list of initial solutions related to this theme that were previously raised by this committee? • What is missing from the list of initial solutions?
5 min	<p>Public comment</p>
5 min	<p>Closing remarks and preview next steps</p>

Looking Ahead

Committee Timeline



Objectives for Remaining Meetings

JUNE MEETING

- Review previously generated solutions (Themes #1 and #4)
- Generate solutions for remaining 4 challenge themes
- Look holistically at solutions generated and consider criteria (impact, feasibility, equity, cost, co-benefits), gaps, and unintended consequences

After June meeting: First round of voting via MURAL on recommendations

JULY MEETING

- Refine and prioritize recommendations to legislature
- Hear final feedback on the list of recommendations and conduct final round of voting on final recommendations
- Capture any final considerations and notes on agreement/ disagreement

Memorandum

To: Compostable Products Advisory Committee
From: Cascadia Consulting Group
Date: May 7, 2024
Subj: Compostable Products Management Policy Research Summary

Purpose & Methodology

This memo addresses the following research topics detailed in [HB 1033](#):

- (h) Current laws related to compostable products and the enforcement of these laws;**
- (j) Policy options addressing contamination of organic waste streams and to increase the use of reusable and refillable items.**

The intent of this memo is to provide the Advisory Committee with information about how compostable products are managed in other states as well as in other countries to identify lessons learned from other jurisdictions, as well as models for policies and enforcement and incentive mechanisms that may be applicable to Washington.

Discussion Questions for Consideration

- What does this research tell us about what is working to achieve *“the state’s goal of managing organic materials, including food waste, in an environmentally sustainable way that increases food waste diversion and ensure that finished compost is clean and marketable?”*
- How well do the policies and the enforcement of the policies presented in the research manage compostable products and address contamination?
- What gaps remain, and what solutions could fill them?

Methodology

Overview of Research Methods

To gather information about compostable product management policies and enforcement mechanisms the Cascadia research team conducted a variety of interviews and additional research:

- **Eight interviews with Advisory Committee members** representing cities and counties in Washington State.
- **Ten interviews with jurisdictions and compost facilities outside of Washington State** and throughout the U.S. where compostable products are or have been accepted in the organics stream.
- **Desktop research on policies and programs** for compostable products management with a focus on what is happening in other countries.

Cascadia partnered with Full Circle Environmental to conduct interviews with states, local governments, and additional facilities outside Washington. All interviews completed for this research are outlined in Table 1 below. Interview questions are included in Appendix A: Organic Materials Management Facility & Jurisdictional Interview Guide, and responses are summarized in the following sections. Additional details from the interviews with jurisdictions and facilities located outside Washington are included in Appendix B: Expanded Summary and Key Findings from Interviews with Jurisdictions and Facilities Outside Washington, and additional information about international organics management programs is included in Appendix C: Composting Standards and Compostable Packaging in the EU, Canada, and Asia. Note that not all interviewees responded to all questions, and responses to some questions varied significantly in specificity and consistency between respondents.

Table 1. Jurisdictions and Facilities Interviewed

Jurisdictions and Facilities	Location
A1 Organics	Eaton, CO
CalRecycle	California
City of Boulder	Boulder, CO
City of Kirkland	Kirkland, WA

Jurisdictions and Facilities	Location
City of Olympia	Olympia, WA
City of Richland	Richland, WA
City and County of San Francisco	San Francisco, CA
City of Seattle	Seattle, WA
City of Spokane	Spokane, WA
City of Tacoma	Tacoma, WA
Eastern Sanitary Landfill Organics Facility (Baltimore County)	White Marsh, MD
Maryland Department of the Environment	Baltimore, MD
Minnesota Pollution Control Authority	Saint Paul, MN
Oregon Metro	Portland, OR
Pierce County	Pierce County, WA
Prince George's County	Upper Marlboro, MD
Shakopee Mdewakanton Sioux Community Organics Recycling Facility	Shakopee, MN
Yakima County	Yakima County, WA

Findings

Overarching Findings

- **Compostable product labeling laws are a policy used by several states**, including Washington, to manage compostable products and specifically to remove lookalike products from entering the system and reduce consumer confusion. These laws are relatively new and data on their effectiveness is not yet available as states figure out enforcement strategies. Enforcement is a challenge, and facilities continue to see lookalike products, specifically plastic film and other plastics, coming into their facilities.
- **Extended Producer Responsibility (EPR) laws** that cover compostable products are another strategy employed by states to manage compostable products. Determining and defining what materials are covered under EPR laws as well as conducting a needs assessment are key components of this policy option. Collecting information from composters is also critical in understanding what is needed for collection and investments for infrastructure.
- **Current contamination reduction strategies** (in addition to labeling laws) primarily include **outreach, technical assistance, and fees and load rejections** applied to haulers and/or generators where contamination is above a certain threshold. In Washington, jurisdictions noted the potential use of truck cameras, AI technology, and automated generator feedback to address contamination.
- While some local governments have policies requiring single-use products to be recyclable or compostable, many interviewees noted that they prefer and have or are starting to **encourage reusable products over compostable products** whenever possible. Moving toward reusables circumvents concerns about compostable products introducing PFAS, microplastics, and other potentially harmful chemicals into runoff from organic materials management facilities and their finished compost products.
- **Incentives and technical assistance are needed to support the development of reuse programs** and required infrastructure in communities, such as partnerships with commercial reusables collection service providers and wash hubs.

Research Summary

This section summarizes findings from the research about existing laws for managing compostable products, as well as policy and other strategies to reduce contamination and increase reuse. It also summarizes additional concerns and considerations around compostable product management shared by interviewees.

Policies for Managing Compostable Products

Relatively few laws exist in the U.S. related explicitly to the management and regulation of compostable products, though there are laws related to compostable product labeling and contamination reduction. Like Washington, other jurisdictions are grappling with similar questions and challenges around how to manage these products and evolving their policies and standards as new information becomes available. Some jurisdictions interviewed noted that when statewide policies begin to limit compostable products, local governments are put in the position of policing purchasing, creating additional administrative burdens for enforcement, and maintaining accepted material lists amid an ever-changing product landscape.

COMPOSTABLE PRODUCT LABELING LAWS

Several states, including Colorado, California, Maryland, Minnesota, and Washington have passed compostable product labeling laws intended to combat deceptive labeling practices, reduce consumer confusion, and reduce contamination levels in organic material feedstocks. These laws, however, are relatively new, and data on compliance and enforcement is not yet available. Anecdotally, San Francisco noted seeing fewer deceptively labeled single-use food serviceware products since the California statewide labeling law came into effect; however, their organics processor continues to report the same, or even increased, levels of plastic film and other single-use plastic contamination.

In Washington, the Department of Ecology is currently working on enforcement strategies under the degradability packaging labeling requirements and will begin enforcement this July. As outlined in the law, enforcement will primarily be based on complaints received. Additionally, recently passed legislation [HB 2301](#) amends the current labeling requirements in Washington:

- Requires compostable products other than film bags, other film products, and food service products to meet a scientific standard for composting in an industrial setting (non-ASTM standards are allowed). Film bags, other film products, and food service products must still be certified to ASTM D6400, D6868, or have a fiber-based substrate of at least 98 percent fiber (no plastic or polymer additives or coatings).

- Prohibits non-compostable plastic film bags from using botanical motifs (such as brown, green, or beige vines or leaves).
- Allows non-compostable plastic film bags to use green, beige, or brown for stripes smaller than 0.25-inches that are used as visual aids and for logo/brand identity purposes.
- Requires products labeled as “home compostable” to also be certified by ASTM for industrial composting settings, are verified by a third-party certifier, and are backed by valid and reproducible scientific evidence to support a claim of home compostability.
- Specifies protocols for the concurrent enforcement of product degradability labeling requirements in the event that cities and counties choose to enforce labeling requirements, including requiring notification to Ecology.

In 2021, California passed [AB 1201](#), which regulates labeling of all compostable products (not just plastic), and is currently under implementation. Under this law, compostable products must be:

- Distinguishable from non-compostable products
- Certified by a third party
- Be free of PFAS
- Designed to be “associated with the recovery of desirable organic wastes”
- Accepted for use in organic agriculture by January 2026

Additionally, AB 1201 required CalRecycle to determine whether compostable products could be collected separately (bifurcated) from other organics, and through a statewide survey of commercial compost facilities, they determined that bifurcated collection is not feasible. As a result, compostable products will not be accepted for sale or use in California after 2026 unless the timeline is extended or compostable products are considered acceptable feedstock under the USDA’s National Organics Program (NOP). The Biodegradable Packaging Institute (BPI) has [petitioned](#) NOP for the inclusion of compostable products as feedstocks, and the National Organics Standards Board (NOSB) has a meeting on April 30th at which this topic will be discussed.

EXTENDED PRODUCER RESPONSIBILITY

Compostable products management is especially relevant in states with new **extended producer responsibility (EPR) laws for packaging** as they determine which materials will be included on their statewide accepted materials lists. For example, compostable products are excluded from the minimum list of covered products as part of Colorado’s packaging EPR law ([HB 22-1355](#)) passed in 2022, and Circular Action Alliance, the designated producer responsibility organization (PRO), is not funding the collection or sortation of compostable products. Conversely, California’s packaging EPR law ([SB 54](#)) passed in 2022, requires all covered products to be recyclable, compostable, or reusable, while Oregon’s EPR policy ([SB 582](#)) passed in 2021 covers some but not all compostable products.

For products to be defined as compostable and listed as an accepted product under the SB 54 covered material category (CMC) list in California, they must meet the definition of compostability defined by AB 1201 (see definition above) and be accepted by at least 50% of processing facilities. CalRecycle has not yet finalized the state's CMC list. San Francisco is seeking the inclusion of compostable products as covered materials so they can still be sold and help meet the City's zero waste goals.

Additionally, CalRecycle noted that according to a recent statewide study, every compost facility in the state screens out plastics, including compostable plastics, as contamination has been the top issue for composters. The California Department of Food and Agriculture has reported that farmers report receiving finished compost that is unacceptable due to contamination.

While Washington has not yet passed a statewide EPR law, most of the jurisdictions interviewed noted that they support EPR policies, such as the ReWRAP Act proposed in the most recent legislative session (HB 2049/SB 6005). This bill would require covered products in Washington to be recyclable, compostable, or reusable.

Lastly, needs assessments are an important consideration for EPR policies and are used to study critical information on packaging and infrastructure to determine what is needed to support a state's desired waste goals. A [report](#) published by the Closed Loop Partners Composting Consortium in January 2024 highlighted three main concepts a needs assessment should include:

- **Understand the current landscape of compostable packaging** to prevent unintended consequences. Namely, according to Ameripen and the Association of Packaging and Processing Technologies, the **compostable packaging industry is expected to grow 16% annually through 2023, which is four times faster than traditional plastic packaging**. As such, states that study the impact of this market growth will be better suited to determine and plan for future collection and infrastructure needs.
- **Collaborate with composters** to measure collection, capacity, equipment, and operating costs so that EPR policies are economically viable for all processors.
- **Establish suitable collection and processing infrastructure** by identifying gaps in the current system and modeling future scenarios to determine what upgrades are needed for existing composting infrastructure to accept new feedstocks, such as compostable packaging.

CONTAMINATION REDUCTION STRATEGIES

Some jurisdictions and organic materials management facilities interviewed use various methods to manage contamination in inbound material ranging from **education and technical assistance** to **fees and load rejection**.

Additionally, collection systems vary between jurisdictions, which impacts roles and responsibilities for implementing strategies to reduce contamination. For example, in

Washington, several interviewees noted that the municipality hauls organic materials and contracts with organic materials management facilities to process the material. Others reported having contracts only with haulers and not processors. Most jurisdictions have stipulations in their contracts, whether with the haulers or processors, on what materials are accepted. In most cases, interviewees in Washington noted that the materials included in their contracts are determined by what the contracted organic materials management facilities will accept.

In Washington, the majority of jurisdictions interviewed use customer outreach and education as well as cart-tagging (“oops tags”), written notices, and eventual removal of collection containers for repeat offenders to reduce contamination. Several jurisdictions noted the potential for AI technology and tuck cameras designed to detect contamination and automated generator feedback as an opportunity to reduce contamination. Under Washington’s HB 2301, fining residents for contamination is not allowed.

Outside of Washington, several interviewees indicated that stringent policies and contract terms to hold haulers and organics generators financially accountable for contaminated loads have helped reduce contamination associated with accepting compostable products. Facilities that track which haulers are depositing loads can then attribute contamination to specific haulers, jurisdictions, or generators and hold them financially accountable. Haulers and jurisdictions are then incentivized to implement outreach programs to decrease contamination.

Some facilities have the authority to reject contaminated loads and force the hauler to take back and pay for disposal of the load, as well as pay a contamination fine. SMSC Organics Recycling Facility in Minnesota has established a 5% contamination limit for incoming loads, enforced by visual inspections and spot checks, which has been helpful in reducing contamination levels. Alternatively, the Maryland Department of the Environment requires that the contamination rate of inbound feedstocks cannot exceed 10% at permitted facilities. Food waste and yard waste are collected separately within Oregon Metro, which allows for more efficient contamination reduction processes applied to the food waste stream before it gets combined with yard waste.

In its most recently negotiated solid waste contract, San Francisco allowed their franchised waste hauler, Recology, to levy contamination charges on organics generators. Recology also operates the processing facilities that receive much of San Francisco’s organic materials and has the authority to fine and reject loads from haulers with over 5% contamination.

GENERATOR AUDITS

Through its Refuse Separation Compliance Ordinance ([Ord. No. 300-18](#)), San Francisco requires Recology to audit high volume waste generators every three years, and businesses or multifamily properties that have contamination levels above specific thresholds for each waste stream (5% for the organics stream based on a visual

inspection) are required to engage a “Zero Waste Facilitator” to support contamination reduction at their own expense. Some businesses meet this requirement by hiring staff to properly sort through all the waste generated onsite.

Policy Options and Incentives to Increase Reuse

Despite some local governments implementing policies requiring single-use products to be recyclable or compostable, many interviewees (including jurisdictions and facilities) prefer and several actively **encourage reusable products over compostable products** whenever possible. For food serviceware specifically, many jurisdictions interviewed are working to reduce all single-use items, even if they are compostable or recyclable. Interviewees also noted that moving toward reusables circumvents concerns about compostable products introducing PFAS, microplastics, and other potentially harmful chemicals into runoff from organic materials management facilities and their finished compost products.

BANS, FEES, AND SOURCE REDUCTION REQUIREMENTS

Jurisdictions across the country have implemented policies specifically aimed at reducing single-use packaging. The advocacy organization Upstream has compiled several resources and [model policies and ordinances](#) to support waste reduction and promote reuse in food service businesses and includes model policies for:

- Providing single-use accessories only upon customer request
- Requiring reusable foodware for dining on premises
- Charging fees for non-reusable beverage cups and food containers
- Requiring reusable beverage cups at events
- Prohibiting non-reusable cups at government facilities
- Prohibiting sale or distribution of non-compliant foodware
- Prohibiting use of non-compliant foodware
- Prohibiting use of expanded polystyrene products
- Source reduction in government purchasing

Several jurisdictions, mostly in California, have passed ordinances to require reusables for onsite dining, including Marin County, the Cities of Berkeley, Truckee, Pacifica, Half Moon Bay, Arcata, and several others in California, and Bainbridge Island and Bellingham in Washington. Multiple jurisdictions in Washington have also implemented food packaging ordinances, including the Cities of Seattle, Burien, and Edmonds. The City of Seattle ([Municipal Code 21.36.086](#)) requires dine-in restaurants and food service businesses to use compostable items or durable serviceware for dine-in service, recyclable or compostable packaging for take-out service, compostable single-use straws, utensils, and portion cups, and prohibits plastic coated brown paper packaging. The City of Burien requires all food service businesses to use and provide compostable food service products and packaging ([Ordinance 709](#)). Similarly, starting in June of this

year, the City of Shoreline will require all food service establishments serving or selling food to use reusable plates, bowls, cups, utensils, and condiment containers for on-site dining and commercially compostable plates, bowls, cups, and utensils for takeout and to-go orders ([Ordinance 990](#)). The City of Edmonds has also banned single-use plastic food service items (Ordinance [4139](#) and [4145](#)).

Washington has already implemented statewide laws banning expanded polystyrene products ([RCW 70A.245.070](#)) and requiring businesses to provide certain single-use food serviceware items upon request only ([RCW 70A.245.080](#)).

California and Maine's EPR laws also include single-use plastic source reduction provisions to encourage reuse. Maine's source reduction targets in draft rules are currently under consideration. California's [SB 54](#) requires producers to source reduce single-use plastics by 25% by 2032 relative to a 2023 baseline, and no less than 10% of this reduction can come from refill, reuse, or outright elimination.

INCENTIVES AND ASSISTANCE

In addition to bans, fees, source reduction, or other regulatory requirements, many jurisdictions, including several interviewees, are also using voluntary incentives and technical assistance to support reuse in their communities. For example, Seattle and San Francisco are encouraging businesses to switch to reusables via current outreach and assistance initiatives as well as providing grants to purchase reusable serviceware. They are also investing in commercial reusables collection and washing infrastructure, with companies such as r.World and Turn, and working with large event venues to explore switching to reusable cups.

Maryland is developing a large-scale pilot program to equip all public facilities and USDA-supported enterprises (e.g., highway rest stops, schools, prisons, and public hospitals) along a major highway corridor with an extensive fleet of reusable serviceware, which would be collected, washed off site, and recirculated. Building the reuse market at scale will help them meet the State's climate, transportation, waste, and workforce development goals. Boulder is also partnering with Deliver Zero to provide reusable takeout containers for restaurants, and with r.World to equip the jurisdiction's events and large venues with reusable serviceware.

Additional Considerations for Compostable Products Management

JURISDICTIONS

Jurisdictions outside of Washington noted concerns similar to those raised by organic materials management facilities related to the management of compostable products. However, jurisdictions face unique tensions as compostable products are sometimes seen as a means to help achieve aggressive waste diversion and recovery goals.

- **Rapid product and marketing changes:** jurisdictions and businesses are motivated to use compostable products because they are perceived as more sustainable by residents and consumers, and the appearance of sustainability influences product and packaging design. However, this has caused several problems, including a proliferation in the marketplace of non-compostable lookalike single-use products, which are difficult to differentiate and cause higher contamination levels at organic materials management facilities. Keeping up with rapidly evolving packaging designs and marketing terminology is difficult for local and state governments and facilities and exacerbates consumer confusion. Several interviewees noted the administrative and enforcement burden in identifying acceptable compostable products amid an ever-changing product landscape. San Francisco specifically has worked extensively with CalRecycle to create better labeling laws for compostable products, though California organic materials management facilities continue to report high rates of contamination from non-compostable lookalike products and screen out compostable and non-compostable plastics prior to processing.
- **Organics collection program changes:** several facilities and jurisdictions interviewed have made the decision to stop accepting compostable products in their programs after previously accepting them, due to the high rates of contamination they experienced. The City of Boulder and its processor, A1 Organics, noted that contaminants used to represent up to 20% of the material by volume arriving at their processing facility¹, but that number has declined substantially since the change to no longer accept compostable products. Notably, this shift can be challenging and costly for jurisdictions to communicate to residents and businesses. Oregon Metro also stopped accepting compostable products in the region's organics streams after having previously accepted them. Metro struggled to find new organics processors when their previous contract ended in 2015, and as a result, they began looking into digesters as a potential processing solution. Ultimately, this caused Metro to stop accepting compostable products, which enabled several organics facilities to begin processing material generated by Metro jurisdictions.
- **Zero waste goals:** jurisdictions and businesses are motivated to use compostable products because they appear sustainable to residents and consumers, regardless of their actual environmental impacts. Several interviewees noted that local governments, large sports facilities, and event venues in their regions are leaning on the use of compostable products as a means of achieving and publicizing their commitments to sustainability without consulting organic materials management facilities about the impacts to their operations.

¹ Note that the contamination reduction strategies outlined in the section above include rejecting loads with contamination levels of 5% or 10%, highlighting that 20% is a high volume of contamination.

- **Lifecycle impacts:** in general, interviewees wanted to better understand the lifecycle impacts of compostable products to inform decisions around their use and management and improve environmental outcomes, especially since some [lifecycle analyses](#), like those conducted by Oregon’s Department of Environmental Quality (DEQ), show that many common compostable single-use products have greater negative environmental impacts than similar non-compostable alternatives.
- **Microplastics and chemicals of concern:** jurisdictions and organic materials management facilities alike are concerned about the presence of PFAS and other harmful chemicals found in some certified compostable products. PFAS-related drinking water standards and “hazardous waste” designations recently set by the EPA, as well as upcoming federal and state regulations covering consumer products containing PFAS, could also have implications for the management of compostable products. Jurisdictions and facilities interviewed were also concerned about the impacts of microplastics generated via the processing of non-compostable single-use lookalikes.

ORGANIC MATERIALS MANAGEMENT FACILITIES OUTSIDE OF WASHINGTON

Organic materials management facilities interviewed outside of Washington echoed many of the same concerns and experiences as facilities in Washington, especially related to contamination and the increased costs and challenges associated with accepting compostable products.

- **Contamination:** consumers struggle to distinguish between compostable products and non-compostable lookalikes, and facilities that accept compostable products experience high rates of contamination. According to interviewees, labeling laws have not helped clarify the compostability of products to consumers because of the continued prevalence of greenwashing terms such as “biodegradable” and “plant-based.”
- **Processing time:** compostable products often require more time to break down and/or do not always fully break down under site conditions². Multiple facilities noted that different temperature, moisture, and timing conditions are optimal for breaking down compostable plastic versus fiber products, making processing them together a challenge. Additionally, plastics made of PLA break down best under high heat, shorter composting processes. In contrast, molded fiber breaks down best under low heat and longer composting processes that support the necessary microbial and fungal activity needed to break down cellulose.
- **Processing costs:** facilities that provided information about financial impacts of contamination estimated that anywhere from **10 to 25% of operating costs** are

² This differs from the interview results conducted with compost facilities in Washington State, where facilities that accept compostable products noted that these materials do fully disintegrate under their processing conditions.

devoted to removing and disposing of contamination, and one interviewee estimated that some facilities send up to 25% of incoming material to landfill due to high contamination.

- **Compostability requirements:** Government policies and organizational initiatives that require food serviceware and other products to be compostable or recyclable were common across interviewees but are problematic for organics management facilities. Cities often design their solid waste contracts to accept as many items as possible, requiring processors to accept non-recyclable and non-compostable items that hinder facilities' operational efficiency.
- **No increase in captured food waste or value to finished compost:** while compostable liner bags make it easier, and more likely, for residents and businesses to divert food waste, interviewees generally agreed that other compostable products have not demonstrably increased the amount of food waste being recovered, and neither bags nor other products provide any benefits to organics facilities' operations or finished products.
- **Accepted materials inconsistency:** organic materials management facilities usually accept materials from multiple jurisdictions and sectors, and when only some of the jurisdictions they serve accept compostable products, it creates confusion, especially for residents or workers who travel between jurisdictions where accepted materials lists may differ. Facilities also strive to maintain specific material characteristics and produce consistent grades of finished compost, which becomes more difficult and costly when accepted material lists vary across multiple jurisdictions within their watershed.
- **Shifting focus to pre-consumer food waste:** several facilities noted interest in depackaging equipment as a means to capture the large volumes of food waste generated at businesses like grocery stores, distributors, and food manufacturers, where they feel the opportunity is greater than for post-consumer food waste. Some facilities are also looking into adding depackaging machinery to support general contamination reduction.

International Organic Materials and Compostable Products Management Examples

Several countries have had organic materials management policies and programs for many years, however policies and enforcement related to compostable products vary widely and it is unclear in many cases whether compostable products are accepted or what impacts they have on finished compost. Additional information from research about international organics management policies and programs on several European countries, South Korea, and Canada is included in Appendix C.

In Europe, some programs accept all types of certified compostable products (for example some municipalities in Italy, where compostable plastic is widely used). Others

do not allow “packaging” or “biodegradable packaging” (for example in the U.K.) but may allow the use of compostable bags for collection (for example in Spain). Others expressly disallow certain types of compostable products such as compostable plastic but are not explicit about whether other types of fiber-based compostable products are acceptable (for example some municipalities in the Netherlands and Germany). There have been some studies conducted on the contamination rates and how well compostable products break down in organic materials management facilities with differing results, but in general definitive data about the impacts of compostable products is lacking.

There has also been debate about compostable products management. In the U.K., a 2021 government [“call for evidence”](#) on standards for a range of biodegradable, compostable and bio-based plastics received responses that compostable plastics should only be encouraged in very specific circumstances, and that these plastics should rely on the relevant certification standards for industrial composting (but not home composting).

In Canada, most municipal programs do not accept compostable plastic products, though several accept fiber-based compostable products. Some municipalities allow the use of compostable bags for organic material collection, though some specifically note that they are screened out in the same manner as regular plastic bags. South Korea has banned food waste to landfill since 2005 and has a high rate of food waste recovery with a unique approach to collection. Residents must purchase specific yellow plastic bags to collect their food waste which use RFID technology when disposed in automatic bins to charge residents by weight. It is unclear whether compostable products are accepted in the organics stream, and it appears that these plastic bags are not compostable and used only for collection before being screened out.

Appendix A: Organic Materials Management Facility & Jurisdictional Interview Guide

Questions

GENERAL PROGRAMS & OPERATIONS

- 1) What processing facilities receive organic materials from your jurisdiction?
- 2) Do you have a contract with a hauler(s)/processor(s)?
- 3) How is organic material collected for each sector (i.e., collected directly by the hauler/processor, collected by the City and taken to the processing facility, etc.)?
- 4) Are residents and/or businesses required to have organics collection service, or is it optional? If optional, do you have any data on subscription rates?
- 5) Is organics collection paid for separately, embedded in overall utility rates, or handled in another way?
- 6) From which sectors/generators in your jurisdiction does the facility currently accept organic materials?
 - a) Residential
 - b) Commercial
 - c) Industrial
 - d) Agricultural
- 7) Which types of feedstock does the facility currently accept?
 - a) Yard waste
 - b) Food waste
 - c) Agricultural waste
 - d) Compostable products (please describe material and type: fiber and plastic, bio bags, bowls, clamshells, utensils, straws, etc.)

8) Do you have stipulations in your contracts about what materials the processing facility must accept? Please describe.

If they do accept compostable products,

9) What type(s) of compostable products are accepted (i.e. PLA compostable plastic, collection bags/liners, paper food service ware, etc.) at the facility or included in your residential and/or commercial organics recycling program?

10) When did you begin accepting compostable products as part of the organics stream?

11) Why did you decide to accept compostable products?

12) What feedback have you received from your local processor about accepting compostable products as part of the organics stream?

13) Do you have any standards or requirements for compostable products (i.e., required certifications, etc.)?

14) Have you observed (either anecdotally or with data) that food waste diversion has increased since your jurisdiction began accepting compostable products?

If they used to accept compostable products but no longer do,

15) When did you stop accepting compostable products as part of the organics stream?

16) Why did you decide to stop accepting compostable products?

17) How has that change impacted City operations or waste management planning, if at all?

18) Do you have any compost market development efforts, for example, does your jurisdiction or others nearby purchase finished compost from the processor? What is it used for?

INCENTIVES, LAWS, & ENFORCEMENT

19) What existing State and/or local laws and regulations guide the collection and processing of organics?

20) How do State or local laws govern the management of compostable products? Are there any laws specifically governing the labeling of compostable products?

21) Do you provide any financial, contractual, regulatory, or other incentives to get your local processor to accept compostable products in the organic materials stream? Are you aware of any other jurisdictions that do?

- 22)How are the above laws, as well as any pertinent regulations and policies, enforced? And how are the enforcement mechanisms supported (e.g. budget, staffing, regulatory funding models, etc.)?
- 23)Have the enforcement mechanisms been effective? What successes and barriers have they faced?
- 24)What are the consequences of being out of compliance? What instances of non-compliance have occurred?

CONTAMINATION REDUCTION & POLICY

- 25)What other policies does your jurisdiction utilize to reduce organics contamination? What approaches have been the most / least successful?
- 26)Do you have any other programs or policies to encourage reuse/refill? Do you have any data to show whether they have led to overall waste reduction, increased diversion, or reduced contamination?
- 27)Are you considering other policy approaches (e.g., EPR) for managing compostable products and their associated challenges?
- 28)Are policy goals in other areas (e.g., climate change mitigation, toxics reduction, water quality, etc.) factored into decisions about compostable products? How so?
- 29)What local or State policy approach(es) would you employ to reduce organics contamination if barriers such as time, money, and capacity were not issues?

OTHER

- 30)Is there anything else you'd like us to know?
- 31)Do you know of any other jurisdictions we should be talking to? If so, can you share contact information for relevant jurisdictions?

Appendix B: Expanded Summary and Key Findings from Interviews with Jurisdictions and Facilities Outside Washington

Jurisdictions

Lifecycle Impacts

Jurisdictions are interested in better understanding the real-world environmental impacts of compostable products to inform decisions around their use and management and achieve improved environmental outcomes.

- Jurisdictions are curious about how the lifecycle impacts of *landfilled* compostable products compare with *landfilled* non-compostable alternatives. Many compostable products end up in the landfill, either directly via municipal solid waste or after being removed as contamination by organic materials management facilities.
- Many jurisdictions have been investigating and striving to understand the environmental benefits of compostable products. Some jurisdictions have arrived at conclusions that have informed related policy and programmatic decisions, while others are seeking additional information.
- Jurisdictions and facilities alike are worried about the presence of PFAs and other toxins found in some certified compostable products, as well as the pervasiveness of microplastics stemming from processing non-compostable lookalikes.
- PFAs-related drinking water standards and “hazardous waste” designations recently set by the EPA—as well as upcoming federal and state regulations covering consumer products containing PFAs—could all have implications on the management of compostable products.

ADDITIONAL DETAILS FROM INTERVIEWS

- In 2019, San Francisco removed ice cream cartons, gable top cartons, and coffee cups from the approved compost list because of concerns over microplastics stemming from the processing of these items at organics facilities. When it comes to PFAs, San Francisco is trusting BPI’s testing processes to identify PFAs and exclude products that contain them.

- Colorado’s packaging EPR law is looking at best management practices for compostable products and how they can support the overall goals of the solid waste system. However, compostable products are not included on the minimum list of covered products, so “the PRO is not funding the collection or sortation of compostables, just their manufacture and processing.” – City of Boulder & A1 Organics
- Oregon Metro referenced the lifecycle analyses conducted by the Oregon Department of Environmental Quality, which demonstrated that many common compostable single-use products have a higher negative environmental impact than similar non-compostable alternatives.
- The Minnesota Pollution Control Agency plans to hire a specialist in lifecycle analysis to help the State more accurately assess the role of compostable products in achieving Minnesota’s environmental goals, amongst other things.
- All jurisdictions and facilities interviewed are very interested in reviewing the findings of Washington’s Compostable Products Advisory Committee.

Prioritizing Reusables

Local jurisdictions, state governments, and organic materials management facilities all actively encourage reusable products over compostable products whenever possible. When it comes to food serviceware, jurisdictions are striving to reduce the need for all single-use items (compostable or otherwise). More than one interviewee acknowledged that moving toward reuse circumvents concerns about compostable products introducing PFAs into the runoff from organics facilities and their finished compost products.

ADDITIONAL DETAILS FROM INTERVIEWS

- San Francisco is encouraging businesses to switch to reusable dishes via current outreach and assistance initiatives. They also provides grants for businesses to help them procure reusable serviceware, and have ten staff conducting multilingual outreach to recruit and support businesses.
- San Francisco is investing in commercial reusables collection and washing infrastructure, with r.World and Turn as the two main providers, and some of their largest events and venues are exploring the switch to reusable cups.
- “A reuse culture would be much preferable to our facility than a world of compostable single-use products.” – SMSC Organics Recycling Facility
- There is a lot of movement around reuse and using more durables, especially in Portland, and Oregon Metro is encouraging it.
- The Bureau Chief for Solid Waste at Baltimore County pushed back on accepting compostable products and compostable liner bags due to potential confusion with lookalikes. They would prefer reusables instead.

- The State of Maryland is developing a large pilot program to equip all public facilities and USDA-supported enterprises (such as highway rest stops, schools, prisons, and public hospitals) along a major highway corridor with reusable serviceware, which would be collected, washed offsite, and recirculated. Building the reuse market at scale would help “meet State goals around climate, transportation, waste, and workforce development.”
- The City of Boulder is seeking to leverage the fact that its organics processor (A1 Organics) is no longer accepting compostables as an opportunity to leapfrog single-use entirely and promote reuse.
- The City of Boulder is partnering with Deliver Zero to provide reusable takeout containers for restaurants, and with r.World to equip the jurisdiction’s events and large venues with reusable serviceware. An offsite washing facility currently operates in nearby Broomfield, Colorado.

Public Perception and Non-Compostable Lookalikes

Jurisdictions and businesses are motivated to use compostable products because they *appear* sustainable to residents and consumers, regardless of their actual environmental impacts determined by science-based assessments. This desirable appearance of sustainability also incentivizes the proliferation of non-compostable lookalike single-use products.

- The appearance of sustainability is a powerful economic incentive that influences the design of products and packaging in response to consumer preferences.
- Compostable products generally cost more than non-compostable alternatives.
- The market for compostable products and packaging is dynamic and will continue to shift and evolve with new items, materials, designs, and appearances.
- While banning common greenwashing terms might alleviate consumer confusion in the short term, the marketplace could easily adapt to create new product and packaging designs and branding that connote sustainability.

ADDITIONAL DETAILS FROM INTERVIEWS

- Prince George’s Organics Recycling Facility first developed a list of approved compostable products ten years ago but has not been able to keep the list up to date with so many new products on the market.
- “When you start to limit compostables to only certain products, you put local governments in the position of being the purchasing police.” The additional enforcement required becomes burdensome, as does maintaining accepted product lists amid an ever-changing product landscape. – Oregon Metro
- “Better labeling requirements will help, but I think [compostable product] manufacturers will just find new loopholes.” – SMSC Organics Recycling Facility

- Over the years, San Francisco has worked extensively with the State of California to create better labeling laws for compostable products. At the same time, California organic materials management facilities continue to report high rates of contamination coming in from non-compostable lookalike products, and facilities must screen out compostable and non-compostable plastics. – San Francisco and CalRecycle
- “We have had a lot of bad actors with brands trying to greenwash and market products as compostable in California.” – San Francisco
- Cities often design their solid waste contracts to try and recycle everything they possibly can. Local jurisdictions often push for “wishcycling,” requiring processors to accept non-recyclable and non-compostable items, which hinders their operational efficiency. – Minnesota Pollution Control Agency
- “We would compromise our Zero Waste goals significantly if we stopped accepting compostable products - I don’t think our board would stand for that.” – San Francisco
- “Many of our venues and events have been leaning on compostable products to achieve their sustainability goals, and it would take a huge culture shift for them to switch away.” For example, Oracle Park (SF Giants) uses all compostables. – San Francisco
- Oregon Metro has received lots of pushback from sports and entertainment venues that want to be seen as sustainable, and “they equate compostable products with sustainability.” Metro takes a firm stance against this, and it has created some tensions between venues and event-based businesses and the City of Portland, which is trying to enforce the ban on compostable products in the organics stream.
- “As organics diversion has started to increase, ... other types of compostable products and more brands came online, which led to consumer confusion and more contamination. That trend accelerated a lot in 2020.” – A1 Organics

Jurisdiction or Organizational Mandates

Government policies and organizational initiatives that require food serviceware, packaging, and other products to be compostable or recyclable create problematic conditions for compost facilities.

- It is common for organics processing facilities to accept inbound materials from multiple jurisdictions and sectors. When only some of these jurisdictions accept compostable products, it creates public confusion, especially for residents or workers who frequently travel between these jurisdictions.
- Harmonizing lists of accepted feedstocks across the cities, counties, states, and Tribes that comprise an organic materials management facility’s watershed is difficult when the facility does not have the authority to establish this list.

- Facilities strive to maintain specific material characteristics and to produce consistent grades of finished compost, which becomes more difficult and costly when accepted material lists vary across multiple jurisdictions within its watershed.

ADDITIONAL DETAILS FROM INTERVIEWS

- Oregon Metro struggled to find new organics processors when their contract with their processor ended in 2015 and were looking into digesters as a solution. Ultimately, this led them to stop accepting compostable products, which opened the door for a number of processors being willing to accept their organics.
- SB 54, California's extended producer responsibility law for printed paper and packaging, requires all covered products to be recyclable, compostable, or reusable. San Francisco is seeking the inclusion of compostables as covered products, so they can still be "on the shelves" and play a role in meeting the jurisdiction's Zero Waste goals.
- In order for a covered product to be listed as recyclable or compostable under SB 54, it has to be accepted by a specified percentage of processing facilities and there has to be a responsible end market for the material.
- According to a recent statewide study, all organics facilities in California currently screen out compostable plastic products as contamination, including those that officially list them as accepted materials, with compostable plastic bags being the one exception. – CalRecycle
- The City and County of San Francisco passed an ordinance in 2007 requiring commercially provided food serviceware to be recyclable or compostable.
- Recology's organics program isn't technically required to accept compostable products from San Francisco by contract; they have come to an informal agreement to continue accepting them because San Francisco has been a "legacy client."
- A very small number of local jurisdictions in California allow for the collection of compostable products with organics hauling (such as San Francisco and Sacramento). However, the facilities that receive those materials (Recology's Jepsen Prairie and Blossom Valley North facilities for San Francisco) screen out compostable products as contamination. – CalRecycle & San Francisco
- "It's hard when you have a larger city that's requiring the processor to accept large amounts of contamination," in the form of compostable products. "That city is not buying back the compost." – A1 Organics
- Prince George's County Organics Recycling Facility accepts material from across Delaware, Maryland, and Virginia, with other loads coming from Pennsylvania, Ohio, North Carolina, and New York. This geographically large watershed means that the composition of inbound feedstocks is quite variable, making it more difficult to establish a standardized list of accepted compostable products across all the organics collection programs that feed into this facility.

- Hennepin County openly accepts compostable products, which are sent to SMSC Organics Recycling Facility. The City of Minneapolis (which is within Hennepin County) particularly encourages their use through their local ordinance requiring serviceware to be compostable or recyclable. – Minnesota Pollution Control Agency
- “Stadiums and events will generate 80% compostables and 20% food.” – A1 Organics

U.S. Facilities Outside Washington

Processing Time

Compostable products often require more time to adequately process, and some will not fully break down under site conditions.

- Contamination removal methods and composting processes vary by facility, resulting in a wide range of processing pathways and outcomes for PLA and molded fiber compostable products that enter organic materials management facilities.
- Compostable products do not represent a uniform material feedstock. Just as food waste, yard waste, manure, and wood waste might all require different processing techniques and conditions to properly break down into finished compost end products, so do different types of compostable products, such as molded fiber and PLA.

ADDITIONAL DETAILS FROM INTERVIEWS

- “Approved compostable plastics still often require a second pass through the composting process in order to fully break down. With our small list of accepted flatware products - they do break down but take a second cycle to fully compost. Some material is retained, and some goes to landfill.” – Prince George’s Organics Compost Facility
- Compostable bags are an issue. “They don’t break down in 60 days, they get fragmented, and they can hide other contamination.” – Oregon Metro
- “Increasing diversion (in the form of compostable products) has slowed down the composting process. – A1 Organics
- While all the facilities interviewed were familiar with CMA, all except for A1 Organics only included BPI certified products on their accepted lists due to the required presence of a logo. A1 went with CMA because they “want the ones that work,” but stated, “we need both testing processes.”
- Molded fiber products often do not fully compost and create a pulpy mass that gets sent to the landfill, especially items that come in stacked like schools’ paper lunch trays, and cups. – SMSC Organics Recycling Facility

- Plastics made of PLA break down best under high heat, shorter composting processes. In contrast, molded fiber breaks down best under low heat and longer composting processes that support the necessary microbial and fungal activity needed to break down cellulose. – Multiple sources
- Facilities in Maryland that operate at lower temperatures do not accept compostable products. – Maryland Department of the Environment
- Each type of material feedstock (manure, natural wood waste, food scraps, yard waste, etc.) has different State requirements that guide its management and processing. It is up to each organic materials management facility to determine what feedstocks they would like to accept and secure the necessary permits. The Maryland Department of the Environment regulates the composting processes at the facilities and provides the permits. Maryland Department of Agriculture regulates the permitted facilities' operators and finished compost end products.

Food Waste Recovery

Compostable liner bags make it easier, and more likely, for residents and businesses to divert food waste. However, other compostable products have not been demonstrated to increase the amount of food waste being recovered, and neither bags nor other products provide any benefits to organics facilities' operations or finished products.

A newly passed bill in California will require all finished compost end products generated in the state to achieve the certification of USDA's National Organics Program (NOP) 2026. If an organics facility does not get NOP certification, they would not be able to sell finished compost end products in California. Notably, compostable products are not currently allowed as feedstocks for NOP certified compost products.

ADDITIONAL DETAILS FROM INTERVIEWS

- Oregon Metro did not notice any drop in captured food waste volumes after they stopped accepting compostable products across the region in 2015.
- "Compostable hot cups and cold cups are problematic. They aren't breaking down at the facilities and don't help capture food scraps." – Oregon Metro
- "Packaging does not make great compost. It requires other resources at our facility to get it through.... We've got to add all these other organics to [compostable products] to make it happen." – A1 Organics
- According to California's organics bill SB 1383, jurisdictions are allowed to collect organics in compostable plastic bags if the processing facility notifies them to say they can process the bags.
- "We don't need the compostable products, but we see the convenience of compostable bags." – Prince George's Organics Recycling Facility
- Oregon Metro allows liner bags in the compost stream because they enable easier organics management by businesses and keeps their bins clean.

- Many of San Francisco’s residents live in multifamily properties, which are required to have compost service like single-family homes. At these multifamily properties, compostable bags greatly increase convenience and drive higher rates of participation in organics diversion, as shown by a San Francisco study conducted by EcoSafe.
- “I don’t think compostable food serviceware has a significant Zero Waste value. San Francisco cares less about food serviceware and more about liners.”
- “They are a necessary evil. They can be a great tool to help society get food waste out of the landfill. Do compostable products help the composting process? Not even a little bit.” – SMSC Organics Recycling Facility
- Compostable products likely work only in a small scale, completely closed system without lookalikes or non-compostable single-use products – “Yes you do get more food waste. However, it really needs to be set up correctly. Everything has to be compostable at the restaurant, because people will not sort.” – SMSC Organics Recycling Facility
- “Sometimes a load will come in [from a venue, stadium, casino, etc.] and it will just be compostable products, which is not ideal. It is an issue because it needs to be mixed with food waste to break down.” – SMSC Organics Recycling Facility
- “Stadiums and events will generate 80% compostables and 20% food.” – A1 Organics
- When accepting compostable products, “it does take longer, it makes inspections harder, there are 2-3 more steps to process it, there are additional disposal costs, there will inevitably be more contamination because of greenwashing.” – SMSC Organics Recycling Facility
- Anecdotally, Minnesota Pollution Control Agency feels like there is some truth to the claim that compostable products facilitate the capture of more food waste, “but there are reasons to be skeptical.”
- At stadiums, casinos, and other large venues, the organics stream is usually contaminated, and even if it’s not, it’s mostly compostable serviceware and packaging, which is also problematic for processors when not appropriately mixed in with food and yard waste. “No one throws out a \$10 hot dog.” – Oregon Metro (Portland Trail Blazers arena), Minnesota Pollution Control Agency, SMSC Organics Recycling Facility (Minnesota Twins stadium and SMSC casinos), & A1 Organics (Colorado)
- “Very little food is being put in front-of-house compost bins at restaurants, particularly fast food chains,” so any opportunity to capture more food waste via compostable products is small. – City of Boulder

Contamination Reduction Investments

Investment in contamination removal machinery, such as depackagers, can facilitate the capture and diversion of significant quantities of *source separated* food waste, particularly from groceries, food manufacturers, and food distributors.

- Depackaging machinery can be used to support the separate processing of food waste from commercial food processing entities, or as a general contamination reduction tool at commingled organic materials management facilities.
- To the extent compostable products are considered a contaminant by some operations, depackagers and other related equipment can be used to screen out both compostable and non-compostable (disposable) packaging.
- It is important to also look at where food items are packaged, because large quantities of food still contained within its packaging gets discarded.
- Compostable products include many types of food packaging in addition to common food serviceware items.

ADDITIONAL DETAILS FROM INTERVIEWS

- A company called Divert operates a depackaging machine to process organics from other facilities and large volume food waste generators like groceries, distributors, and food manufacturers. They contract with businesses directly and haul packaged food. – Oregon Metro
- “We’re interested in investing in a depackaging machine.... We’ve already had solicitations from a number of grocers and food distributors.... We won’t need to solicit people to bring us their packaged material because they’re already knocking on our door to ask, ‘do you have your machine yet?’” – Prince George’s County Organics Recycling Facility
- SMSC Organics Recycling Facility owns a Scott Equipment turbo separator depackager – “the Thor” – which started processing pre-consumer packaged foods (expired, recalled, extra, etc.) last fall.
- A prominent local hauler just invested in a “Tiger” depackaging machine and is looking to secure new organics service customers like groceries. – A1 Organics
- “Grocery stores will generate a lot of organics and not many compostable products.” This could represent a potential opportunity where compostables can provide convenience to get more organics collected. – A1 Organics
- “30-40% of food scraps by weight comes from grocery stores and food distributors – that’s where we need to be looking, where the food is actually being packaged. That’s where a lot of food scraps are generated.” – OR Metro
- Oregon Metro is also looking at eventually putting in a depackager at their central transfer station and are conducting a study to see how much additional organic material might be captured. The depackager would primarily be aimed at removing BPI certified bags, which are not fully breaking down.

Contamination Reduction Strategies

Facilities can mitigate some of the detrimental impacts associated with accepting compostable products if a significant proportion of operating costs can be spent on

contamination removal, *and* stringent policies are established to hold haulers and organics generators financially accountable for contaminated loads.

- Facilities that track which haulers are depositing inbound loads have the ability to attribute contamination to specific haulers, jurisdictions, or generators and hold them financially accountable, alleviating some of the cost of higher contamination associated with accepting compostable products.
- Accountability measures for the haulers that deliver contaminated loads will not necessarily result in less contamination coming from the original generator. Depending on the data tracking systems used by the haulers and facilities, generators of contaminated organics may or may not be identifiable. Haulers also differ in the level of individualized communications they send to their customers, and jurisdictions have different requirements for the use of “oops tags” and other contamination education tools.

ADDITIONAL DETAILS FROM INTERVIEWS

- SMSC Organics Recycling Facility has done experimentation and exploration about potential markets for OMRI certified compost end products. They determined that the price markup cannot be that much more than other products, which doesn't make the extra handling costs and space allocations necessary for certification worth the effort.
- “I know other facilities are spending as much as 20% of their costs on contamination removal.” – Prince George's County Organics Recycling Facility
- Oregon Metro found that prior to no longer accepting compostable products, “10-25% of operating costs for facilities were devoted to removing and disposing of contamination.”
- Many facilities in Minnesota report having significant added expenses from needing additional processing time, screening, or other steps in their processes to deal with compostable products and manage contamination. As a result, many facilities are considering a shift to taking food-based materials only and no longer accepting compostable products. – Minnesota Pollution Control Agency
- A1 Organics removes contamination using vacuum machines and screens, which works well when contamination rates are low.
- Prince George's County Organics Recycling Facility pre-processes inbound materials using grinders with magnetic heads that can pull out ferrous metals.
- “Dirt Hugger does a great job at contamination removal, but they devote a significant amount of money to do it. They have been the most successful at getting into the agricultural market and supplying farmers.” – Oregon Metro
- Some facilities have the authority to reject or send back contaminated loads. The facilities first try to capture the organics and sort out the contamination, and they then call up the hauler to return, pick up the rejected material, and pay for its disposal. They also assess the hauler or contractor that delivered the load a

contamination fine. – Prince George’s Organics Processing Facility & SMSC Organics Recycling Facility

- SMSC Organics Recycling Facility has established a 5% contamination limit for incoming loads, enforced by visual inspections and spot check opening of compostable bags. “Contamination was a big issue for us six or seven years ago and we were struggling to find markets for finished products.” They then implemented the 5% contamination threshold, inspections/spot checks, and invested in new contamination removal equipment, and contamination levels dropped.
- In its most recently negotiated solid waste contract, San Francisco gave approval for its hauler, Recology, to levy contamination charges on organics generators. Recology also operates the processing facilities that receive much of San Francisco’s organics.
- San Francisco audits high volume waste generators every three years, and business or multifamily units that generate contamination above specific set thresholds (5% by volume or the organics stream) are required to hire a Zero Waste facilitator.
- Recology spends considerable efforts and money on contamination reduction, particularly to remove plastic bags, in both pre-screen processes and when sifting out their overs. – San Francisco
- If contamination is too high, the facility can reject the load and charge the hauler as garbage. Oregon Metro then receives information about the contaminated load (hauler, route, jurisdiction, etc.) and will send a report to that local government. The local government then contacts the hauler to determine responsibility for contamination and address it. Oregon Metro used compliance obligation letters to lay the groundwork for contamination enforcement.
- The Maryland Department of the Environment requires that the contamination rate of inbound feedstocks cannot exceed 10% at permitted facilities.
- The Maryland Department of Agriculture requires that all products sold by permitted organics facilities be lab tested each year for metals, glass, plastics, toxins, large inert materials, and other contaminants. According to these lab tests, “we haven’t had any problems with compostable serviceware not breaking down properly in the finished product. At least, not as of yet.”
- The inspections and testing of finished products done by the Maryland Department of Agriculture have successfully identified contamination and provided important feedback to organic materials management facilities and jurisdictions. This process has effectively preserved the quality of finished compost products.
- The City of Boulder is one partner among many municipalities up and down the Front Range that send materials to A1 Organics. Sometimes, materials get commingled from multiple haulers at a transfer facility before getting sent to A1, which makes attribution of contaminated loads impossible: “We have to put a lot of trust and faith that everyone is doing well and keeping the stream clean before

we can do our inspection to make sure the material is okay. A big challenge is finger pointing around who is responsible for contamination.”

Consumer Confusion

All people struggle to distinguish between compostable products and non-compostable lookalikes, and as a result, facilities that accept compostable products experience high rates of contamination from non-compostable lookalikes.

- The implementation of labeling laws has not helped clarify the compostability of products to consumers because of the continued prevalence of greenwashing terms such as “biodegradable” and “plant-based.”
- Especially for businesses and other entities that purchase compostable products and packaging, having a certified compostable logo to look for can help reduce confusion.

ADDITIONAL DETAILS FROM INTERVIEWS

- “I get questions from customers and cities every day. They are incredibly confused about what can and cannot go into the compost.” – SMSC Organics Recycling Facility
- The Minnesota Twins stadium just switched to procuring a whole new suite of products that they thought were compostable. After purchasing a season’s supply for all their vendors, they checked with SMSC Organics Recycling Facility to see if they are actually compostable. It turns out they were misled and the products are non-compostable, so the stadium will not be able to divert any organics this season because the processors will not take their materials.
- While all the facilities interviewed were familiar with CMA, all except for A1 Organics only included BPI certified products on their accepted lists due to the required presence of a logo. A1 went with CMA because they “want the ones that work.”
- “The public cannot sort at all, and there is very little food coming out of public bins and front-of-house organic waste.” – City of Boulder
- Manufacturers of compostable products have been known to have distribution issues. Subsequently, in order to promptly fill the orders they have received, distributors will sometimes send non-compostable products instead when these supply chain issues occur. That leads to a lot of confusion. – A1 Organics
- Many facilities in Minnesota report having significant added expenses from needing additional processing time, screening, or other steps in their processes to deal with compostable products and manage contamination. As a result, many facilities are considering a shift to taking food-based materials only and no longer accepting compostable products. – Minnesota Pollution Control Agency
- When it comes to commercial organics collection, Duluth County focuses on capturing source separated food waste generated back-of-house. Its program

does not accept compostable products because the processor wants a clean stream. – Minnesota Pollution Control Agency

- Recology’s facilities that process organic material from San Francisco and Sacramento have a hard time distinguishing between the compostables and the lookalikes and have been vocal about contamination caused by compostable products.
- “As organics diversion has started to increase, ... other types of compostable products and more brands came online, which led to consumer confusion and more contamination. That trend accelerated a lot in 2020.” – A1 Organics
- “Our inbound materials went up to about 20% contamination by volume. Compostable products were partially responsible, but not completely.” – A1 Organics
- “I don’t think we’re ever going back to enforce or encourage front-of-house sorting” of organics, but we really want to focus on back-of-house. – City of Boulder
- Vail Ski Resort stopped their front-of-house organics collection due to contamination. Then, they put in personnel to manage the bins that customers access and help them sort, which was very effective, yet expensive.” – A1 Organics

End Markets for Compost

Market feedback and preferences for contamination-free compost have driven facilities and jurisdictions to stop accepting compostable products, which has resulted in notable decreases in contamination rates. Markets for finished compost have slowed down in some areas over the past several years due to widespread increases in contamination.

ADDITIONAL DETAILS FROM INTERVIEWS

- The pandemic-driven increase in compostable products and non-compostable lookalikes in the organics stream “affected our finished compost sales. We had full semi truckloads of compost returned to us that were rejected by bulk wholesalers.” – A1 Organics
- Due to a lack of marketability, contaminated compost was building up at their facility, leading to increased management costs, space costs, and landfill costs to remove it. The entire composting operation slowed down, which was also expensive. “We were running out of space. We had all this contaminated compost” onsite, and “we were getting pinched.” – A1 Organics
- “The quality of our finished product has improved dramatically” since April 2023, when A1 Organics stopped accepting compostable products.
- Oregon Metro struggled to find new organics processors when their contract with their processor ended in 2015 and were looking into digesters as a solution.

Ultimately, this led them to stop accepting compostable products, which opened the door for a number of processors willing to accept their organics.

- Oregon Metro found that prior to no longer accepting compostable products, “10-25% of operating costs for facilities were devoted to removing and disposing of contamination, and as much as 25% of incoming material was being sent to the landfill.”
- A study by Oregon Metro, from before the implementation of its Food Scraps Policy in 2022, found that the region’s organics facilities experience an 11% average contamination rate, by volume, in their inbound feedstocks.
- The Maryland Department of Agriculture tests finished compost end products and has set a 2% threshold for manmade inert contaminants (overs).

System Bifurcation

Some facilities separate food waste and yard waste streams to increase control over the balance of nutrients, size, and moisture content of feedstocks. Such separation and control enables facilities to create multiple types of compost end products that can better meet market demands. However, this separation requires additional permitting, space, time, labor, and equipment.

Separately collecting food and yard waste makes supplying organic feedstocks to a depackager more efficient. Separated collection allows for greater flexibility in organics processing techniques and technologies, enabling a variety of different types of organic materials management facilities to access the feedstocks most suited to their processing methods.

ADDITIONAL DETAILS FROM INTERVIEWS

- Prince George’s County Organics Recycling Facility operates windrows for yard waste only and processes a mix of food scraps and yard waste in Gore-covered aerated static piles. Windrows make Leaf Grow compost, while Gore piles make Leaf Grow Gold.
- SMSC Organics Recycling Facility makes a small volume of OMRI certified compost for Scott’s Miracle Grow pro performance blends from their yard waste only piles. All their food waste is processed in windrows (food waste is 20-30% of windrows composition), while the rest of their yard waste and wood waste is composted through static piles.
- SMSC Organics Recycling Facility has done experimentation and exploration about potential markets for OMRI certified compost end products. They determined that the price markup can’t be that much more than other products, which doesn’t make the extra handling costs and space allocations worth it.
- Recology’s Jepsen Prairie Organics used to have two piles—one OMRI certified and the other non-OMRI—but they could not maintain bifurcation. – San Francisco

- Baltimore County’s organics facility at the Eastern Sanitary Landfill has been taking residential yard waste for ten years, and in January 2024, they added a separate small food waste pile for material collected via the County’s residential collection pilot program.
- “A tiny section of our facility is dedicated to a source-separated food waste stream, but the vast majority (of our feedstocks) are commercial fats, oils, and grease (FOG), yard waste, etc. We have our OMRI listed compost separate because we don’t want any cross contamination on our site.” – A1 Organics
- Food waste and yard waste are collected separately within Oregon Metro, which allows for more efficient contamination reduction processes applied to the food waste stream before it gets combined with yard waste.

Appendix C: Composting Standards and Compostable Packaging in the EU, Canada, and Asia

This section summarizes findings from research to assess international approaches to managing compostable products, including laws, policy frameworks, and enforcement in the European Union and other countries with mature organics collection and management programs.

Italy

FOOD WASTE COMPOSTING PROGRAMS AND ACCEPTANCE OF COMPOSTABLE PACKAGING

- Italy is the EU's most extensive example of food waste composting programs offered in tandem with the acceptance of compostable packaging. Italy's composting sector has been around for at least 30 years, and according to the industry group [Consorzio Italiano Compostatori](#) (CIC), in the last 15 years, the number of composting facilities has increased by 2-3% each year.
- Specifically, Milan serves as a well-documented case study of a food waste collection program that supports the use of compostable packaging. As Italy's second largest city, it has been offering municipal collection since 2012, and is now considered one of the world's leading examples of food waste collection ([Novamont](#)). Approximately 95 kilograms of food waste are collected per inhabitant, with an overall 62.6% waste collection rate ([Zero Waste Cities](#)).
- Compostable plastic packaging (mostly in the form of flexible plastics) is widely used in Italy and accepted in industrial composting facilities. Municipal programs often encourage the use of compostable bags as bin liners by providing households with a free packet of bags at the start of the program. Because Italy has a ban on non-compostable single-use plastic bags, all single-use bags sold in stores must meet the European standard for compostable packaging, EN13432.

IMPLICATIONS FOR COMPOST QUALITY

- The CIC coordinates assessments that examine biodegradation of compostable plastic packaging in a number of Italian biowaste treatment facilities. In 2020, [it was reported](#) that about 900 composition analyses on organic waste had been conducted at more than 550 Italian municipalities. The level of contamination from non-compostable materials across these facilities was below 5% (in waste). A significant

source of contamination (25% of the total amounts of non-compostable materials) came from traditional plastic bags where they are still used for the collection of material.

- When it comes to compostable plastics, [studies conducted in 2017](#) found that at the end of the composting cycle, on average 94.8%-96% of the compostable plastics had degraded. For digestate coming out of anaerobic digestion facilities, further aerobic biological processes were able to completely disintegrate/break down the fragments of both flexible and rigid compostable and biodegradable plastics (compliant with UNI EN 13432).

Spain

FOOD WASTE COMPOSTING PROGRAMS AND ACCEPTANCE OF COMPOSTABLE PACKAGING

- Spain has a new nationwide requirement for all municipalities to collect organic (food) waste starting in 2024. Prior to this, the autonomous community of Catalonia (and its capital city, Barcelona) was the leader in the country for offering municipal collection services, usually in the form of [street bins](#) or pneumatic bins. Compostable packaging is not accepted, but compostable bags are used for the more “emerging” form of door-to-door collection being piloted in certain neighborhoods. The city’s collected material is sent to [Zona Franca Ecoparc](#), where it generates both biogas and finished compost.
- Barcelona also offers [community composting programs and guidance](#). [One study](#) found that the contamination rate of “domestic” collection of material was 22% (as opposed to about 8% in the commercial stream), and attributed this to residents using non-compostable bags to bring their bio-waste to the collection container.

IMPLICATIONS FOR COMPOST QUALITY

- A [2021 study](#) of five composting facilities in Spain looked at microplastic contamination over five months. 94% of microplastic contamination could be attributed to PET, PS, PE, PP, and PVC. No microplastics from compostable bio-based plastics were detected in any of the samples. In composting facilities where the use of compostable biowaste collection bags was well-documented, no microplastics from compostable plastic items could be retrieved. One of the facilities was an anaerobic digestion plant with a post-composting phase. It also found that plastic contamination in the final compost resulted from conventional plastics, and not compostable bio-based plastics.

Germany

FOOD WASTE COMPOSTING PROGRAMS AND ACCEPTANCE OF COMPOSTABLE PACKAGING

- Since 2015, it has been mandatory in Germany for municipalities to offer separate organic waste collection (typically called bio-waste) from households as part of the Law on Closed Cycle Management and Waste Disposal ([Kreislaufwirtschaftsgesetz](#)). This law applies to all regions of Germany, designating municipalities as responsible for providing the collection service. While the law mandates separate collection, the specific systems can vary depending on the municipality. For example, some areas use brown bins for organic waste, while others use compostable bags.
- Berlin has had a program since 2002, with participation requirements expanded in 2019. Its program does [not accept](#) compostable bioplastics, and while instructions do not mention compostable fiber packaging, these are implied to not be accepted due to [messaging](#) such as “No plastics, packaging, films, bags, bioplastics.”

IMPLICATIONS FOR COMPOST QUALITY

- According to a study commissioned by the UBA titled Aufwand und Nutzen einer optimierten Bioabfallverwertung, in 2008 there were around 1,000 composting plants and 85 anaerobic digestion plants in Germany ([UBA](#)).
- A [field study](#) by the Witzenhausen Institute and the University of Bayreuth concluded that certified compostable bags do not pose any challenges to the quality of compost. The researchers analyzed 10 finished compost streams coming from eight different biowaste treatment plants. They found that 98% of the plastic particles found in these piles were derived from conventional, non-biodegradable plastics - in other words, 446 plastic film particles were detected and only eight were from compostable plastics ([TotalCorbion](#)).

Netherlands

FOOD WASTE COMPOSTING PROGRAMS AND ACCEPTANCE OF COMPOSTABLE PACKAGING

- The Netherlands has [“sector-specific plans”](#) that mandate the collection of organic waste such as food waste from households and businesses. Most municipalities in the Netherlands offer curbside collection of organic waste, including food scraps and garden waste, This is often referred to as “GFT” waste (Groente-, Fruit- en Tuinafval). Most municipalities do not explicitly accept compostable packaging in their collection programs. For example, in the Hague, “biodegradable packaging” is not allowed in the food waste composting program, and this seems to imply that

compostable bioplastics are also not accepted. Compostable fiber-based packaging is not explicitly mentioned.

IMPLICATIONS FOR COMPOST QUALITY

- The Netherlands composts material using several large-scale composting facilities. According to a [2019 study](#) conducted by Wageningen University (WUR) found that EN13432-certified compostable plastic products are compatible with the Dutch industrial composting system using shorter composting cycles. Specifically, certified compostable PLA products disintegrated faster than food waste such as orange and banana peels. For example, a PLA plant pot fully disintegrated after 11 days and PLA tea bags fully disintegrated after 22 days, which is significantly below the 12-week disintegration time assumed in the EN 13432 certification for industrially compostable products ([TotalCorbion](#)).

United Kingdom

FOOD WASTE COMPOSTING PROGRAMS AND ACCEPTANCE OF COMPOSTABLE PACKAGING

- The UK's policies for municipal collection of food waste varies by country. As of [legislation passed in 2023](#), separate municipally run food waste collection in England will be mandatory by March 2026. In [Wales](#), [Scotland](#), and [Northern Ireland](#), there is already weekly curbside organics collection in place, although residents are not usually required to use these services.
- The separate collection of compostable plastic packaging is not required under the new legislation, and most municipal programs list "packaging" as a material that is not accepted. There has been considerable debate in the UK over these materials, and the debate has included not just certified compostable packaging but also oxo-degradable plastics, which the government appears to be moving to ban. A 2021 government "[call for evidence](#)" on standards for a range of biodegradable, compostable and bio-based plastics received responses that compostable plastics should only be encouraged in very specific circumstances, and that these plastics should rely on the relevant certification standards for industrial composting (but not home composting).

IMPLICATIONS FOR COMPOST QUALITY

- A [recent study conducted by the Compostable Coalition UK](#) found a five-fold increase in consumers disposing of compostable packaging in their food waste bins when participating households were sent educational resources that encouraged them to check packaging labels, use the food waste bin for disposal of compostable packaging, and explained the composting process. The trial concluded that clear

communication and labeling led to correct disposal, with contamination also dropping throughout the trial period.

- The study also conducted a trial at EnVar, one of the largest composting sites in the UK, to test how compostable packaging was breaking down. Results from this trial showed that the packaging biodegraded successfully, with the resultant compost passing PAS100 certification – the standard for compost in the UK.
- UK municipalities also use anaerobic digestion facilities to process their collected food waste, and these facilities are not compatible with compostable packaging unless they include a digestate composting phase. Currently, as part of its 2026 goals, the UK government does not intend to require anaerobic digestion plants treating food waste to include a composting phase.

Canada

FOOD WASTE COMPOSTING PROGRAMS AND ACCEPTANCE OF COMPOSTABLE PACKAGING

- According to a [2021 EREF study](#), 91% of all Canadians live in an area that has a residential organic waste management program (which includes food waste collection). Specifically, 71% of the population lives in an area with access to curbside source separated organics programs. Participation in these programs is relatively high - across the country, [65% of households](#) reported composting their food waste in 2021. City programs vary in what types of compostable packaging they accept. [Vancouver's municipal collection program](#) allows “food soiled paper” but does not allow plastic bags, cutlery, containers, or packaging labeled as compostable or biodegradable. Similarly, [Toronto's](#) municipal collection program does not accept packaging “made of or lined with a bio-based plastic.” [Calgary's](#) program openly [allows](#) the use of compostable bags, while [Ottawa's](#) program states that compostable bags can be used but “like all other plastic bags, they are separated from the organic waste and sent to the landfill.”
- In 2021 [57% of households](#) reported they were composting their compostable bioplastics, with 86% of these households reporting that it was done through a city or private collection program as opposed to at a depot or at home. Given that most of Canada's cities do not accept compostable packaging, it is not clear where these households are sending this material; they may be using independently operated collection programs, or there may be a disconnect between what is officially accepted by municipalities and what residents put in their bins.
- In 2018, the country's National Zero Waste Council published a [case study](#) on compostable packaging in Canada which found that “with an increased focus on organic waste diversion across Canada, certified compostable packaging has circular economy potential that is not being realized.” The surveyed stakeholders indicated that a wide variety of certified compostable food packaging is in fact being

accepted at compost manufacturing facilities at some locations in Canada. Compostability certification and the use of standardized labeling features were also highlighted as an essential measure to aid in effectively processing compostable packaging.

IMPLICATIONS FOR COMPOST QUALITY

- Given the lack of explicit acceptance of compostable packaging across the country, there is little data about the effects of certified compostable packaging on finished compost quality.

South Korea

FOOD WASTE COMPOSTING PROGRAMS AND ACCEPTANCE OF COMPOSTABLE PACKAGING

- South Korea reports a [95% diversion rate of food waste](#) across the country. The South Korean government first banned sending organic waste to landfills in 2005, then banned dumping leachate into the ocean in 2013 while also instituting universal curbside composting collection that same year.
- Collection is facilitated through the use of special yellow plastic bags, which residents purchase for a small fee (about 20 cents apiece) and use to collect their food scraps. These bags are typically collected multiple days a week (as often as six days a week) from a designated bin on the street. In urban areas like Seoul, the collection bins use scales and RFID technology to weigh food waste and charge residents using an ID card. Residents are encouraged to reduce the weight of the organic waste they deposit by removing moisture first, lowering the fees they pay while also saving on collection costs.
- It is unclear whether the collection bags are made from compostable plastics. Some sources refer to them as “biodegradable”, but it appears they are typically removed during processing of the food waste, which is a combination of composting and anaerobic digestion.

IMPLICATIONS FOR COMPOST QUALITY

Given the lack of explicit acceptance of compostable packaging across the country, there is little data about the effects of certified compostable packaging on finished compost quality.