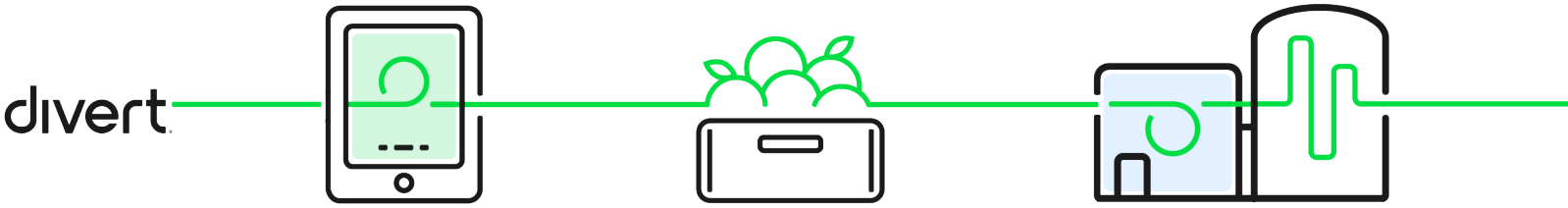
Public Policy Considerations for Organics Processing Systems

How high-recovery depackaging & anaerobic digestion can support legacy composting systems

About Divert

Divert is a circular economy company on a mission to prevent food from being wasted. Since 2007, Divert has played a leading role in addressing the human and environmental crises created by wasted food through its holistic Prevent, Provide, Power® approach. Divert supports nearly 8,000 customer locations across the country, helping food companies reduce greenhouse gas emissions through source reduction and food donation; redirecting unsold, inedible, and uneaten food from landfills; and transforming it into carbon negative renewable energy and organic fertilizer.



Prevent

We invent transformative technologies and create actionable data to help our customers understand and prevent waste.

Provide

We take a people-first approach to food recovery by providing our customers with data-driven solutions and support to optimize their food donations to communities in need.

Power

We promote circularity in the food value chain by converting unsold, non-donatable food products into renewable energy to power communities and fertilizers to enrich local soils.

Divert facilities deploy data-collection technology, high-recovery depackaging, and anaerobic digestion to help food companies comply with landfill diversion laws and meet aggressive prevention, donation, and recovery targets. Divert has recently developed three new Integrated Diversion & Energy facilities in California, Washington state, and North Carolina. These facilities deploy all of Divert's transformative technologies – combining data analytics, high recovery depackaging and processing, as well as agricultural and energy product creation – into integrated locations. Divert's Integrated Diversion & Energy Facilities process 100,000 tons of unsold food products per year, power the equivalent of 4,600 homes with renewable energy, and support the growth of 225 million pounds of common agricultural crops. They also offset approximately 23,000 tons of CO_2 equivalent per year that would otherwise pollute the atmosphere as methane.

Organics public policy should pair legacy composting systems with innovations in depackaging and anaerobic digestion

Organics management and landfill diversion policies have been increasingly implemented across the U.S. The goals are clear: reduce methane emissions caused by wasted food, prevent the needless disposal of critical natural resources, and preserve limited landfill capacity. As policymakers tackle how to accomplish aggressive policy objectives, organics stakeholders have begun to closely examine the benefits of legacy composting systems and new pre-processing solutions such as depackaging that can be paired with composting and anaerobic digestion.

Some stakeholders differ on which approach maximizes the recovery of food diverted from the landfill and which approach minimizes incidental plastic food packaging that's become pervasive in finished compost and soil amendment products. This white paper examines how public policy solutions can maximize the benefits of both types of organics processing solutions. It incorporates industry perspective, academic research, and Divert's own data from its newest Integrated Diversion & Energy Facilities – new investments designed to optimize food recovery and contamination when processing wasted food. It encourages policymakers to simultaneously embrace both legacy composting systems AND high-recovery depackaging and anaerobic digestion technologies.

Overview: Policymakers Should Embrace Legacy Systems and Innovation

1. Legacy composting systems were built for mostly unpackaged, locally generated, and manually manageable yard waste capable of accommodating limited amounts of food. This system still works well but lacks the capacity or infrastructure to address the scale of businesses required to comply with new organics management laws and today's complex commercial food packaging system. State and local policymakers are at the forefront of addressing this issue.
2. Some state and local policymakers have concerns about the effectiveness of mechanical depackaging systems and prefer to place the contamination removal burden on food companies. They propose prohibitions on mechanical depackaging equipment, shifting contamination responsibility upstream by requiring food companies to hand-separate all packaging and incidental contaminants before food can be sent to organics processing. They recognize that legacy composting systems struggle with packaging contamination as diversion rates increase. They believe that the best way to solve the packaging contamination problem is to transition contamination removal responsibility to food companies through more stringent source separation policies.
3. Many state and local policymakers are concerned that prohibitions on mechanical depackaging will deter food companies from collecting and processing packaged products not previously diverted from the landfill. They prefer to address concerns about mechanical depackaging by instituting rigorous permitting processes and outcome-based testing standards. They believe legacy composting systems can be complemented with mechanical depackaging and anaerobic digestion solutions to remove plastics or other contaminants that many compost facilities are not equipped to address. They will accept a small amount of process loss in order to have greater certainty that incidental plastics and packaging from uneaten or unsold commercial food products are kept out of finished compost and soil amendment products.
4. Policymakers should allow mechanical depackaging systems to complement legacy composting systems. They can protect our nation's legacy composting systems by ensuring plastic packaging and other incidental contamination is removed from difficult-to-process commercially generated food before being added to compost or soil amendment products. However, these systems need rigorous permitting standards to ensure that process loss is kept to an absolute minimum.

Our nation's compost processing system works well but was not designed to handle the scale, packaging intensity, and complexity of today's food system

Most legacy compost processing systems were built decades ago around a narrow set of assumptions: wasted food is mostly unpackaged, locally generated, manually manageable, and best handled through a single pathway. These systems were designed to capture easy-to-divert materials that were unnecessarily landfilled. Today, composters continue to divert large volumes of clean, unpackaged organics, while demonstrating that organics recycling can be done at scale. The composting system still has an important role to play, but it was never designed to handle the scale, packaging intensity, and complexity of today's food system.

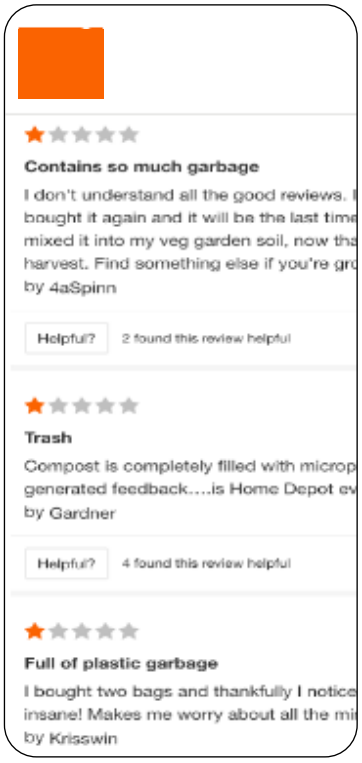
The maturation of the composting industry has coincided with the passage of organics management and landfill diversion laws across the U.S. (11 states and 14 local jurisdictions), resulting in the diversion of more food products than most legacy composting systems can accommodate. Composting has historically been designed around green waste streams such as grass clippings, leaves, landscape trimmings, and tree branches, which supply the structural carbon required for proper aeration, biological activity and moisture control. These green waste materials provide the high carbon-to-nitrogen ratio essential for producing a stable, marketable compost product.

Food waste, by contrast, is highly nitrogen rich, dense, wet, and biologically volatile. Compost systems can only accept a limited proportion of it before the process turns anaerobic, generates off-gassing and odors, and destabilizes product quality. Commercial food waste also contains high amounts of incidental plastic packaging. Many states along the west coast and in New England where organics management laws are most prevalent, have documented instances where composting facilities admitted higher volumes of food waste than the process could responsibly manage, resulting in odor complaints, visible debris, vector attraction, and neighborhood impacts. Composting systems are often limited by insufficient quantities of green waste to keep up with this increasing amount of food material because it can disrupt the carbon-to-nitrogen balance.

Composting continues to play an important role in the diversion of organic materials, but was never designed to carry the full weight of our nation's modern food waste burden. Its purpose is to convert plant-based green materials—and a carefully metered fraction of food waste—into high quality soil amendments.

Contamination from one bag of finished compost purchased in a Seattle-area big box store

Hand sorting compost operation



Contains so much garbage

I don't understand all the good reviews. I bought it again and it will be the last time mixed it into my veg garden soil, now tha harvest. Find something else if you're gr by 4aSpinn

Helpful? 2 found this review helpful

Trash

Compost is completely filled with microp generated feedback....is Home Depot ev by Gardner

Helpful? 4 found this review helpful

Full of plastic garbage

I bought two bags and thankfully I notice insane! Makes me worry about all the mi by Krisswin

Big box store product reviews for commercially available compost sold in Seattle.

As maturing policies require more commercial businesses to divert wasted food products away from the landfill, state and local governments have wrestled with how to maximize organic recovery rates without unintended environmental degradation. The vast majority of composters deploy hand sorting operations to sift through each incoming load and are not equipped to handle the onslaught of commercial food's persistent plastic packaging contamination. As a result, few composters accept commercially generated uneaten or unsold food products because of high amounts of incidental plastic or because they remain enclosed in complex packaging.

Most local jurisdictions recognize this challenge and acknowledge that the compost products created from commercial food sources contain plastic contamination that is ultimately being land-applied. These plastics fragment into microplastics, and once spread, they persist indefinitely, migrate into waterways, and enter the food system. This is not speculative. In addition to local jurisdiction reporting, it is acknowledged in composting industry publications[1] and in studies that rely on self-reported composter data[2]. These local jurisdictions are beginning to explore the best public policy approaches to maximize regional capacity to accept food material and minimize contamination in finished compost and soil amendment products.

1 "Fact Sheet on Microplastics in Food Waste Recycling", November 18th, 2025, Biocycle Magazine

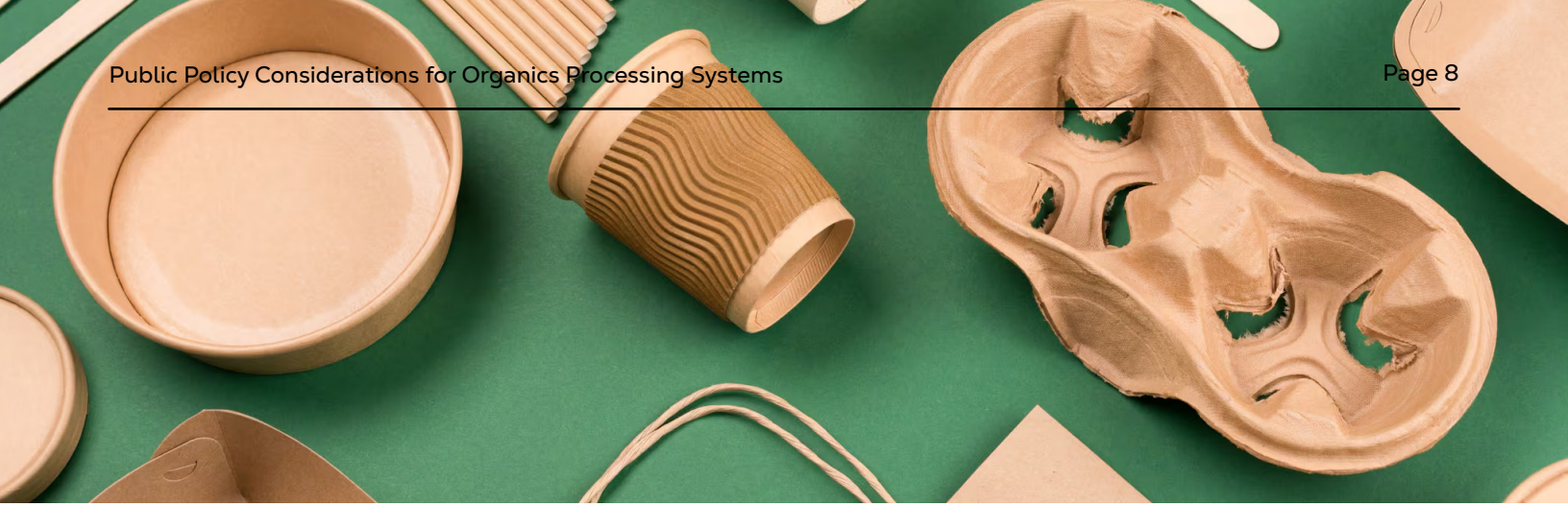
2 A 2024 Composting Consortium study found that plastics contamination continues to be a significant challenge for the industry, with nearly half of composters finding trace amounts of conventional flexible plastic in their finished compost. "Contamination at Composting Facilities", February 2024, Closed Loop Partners (and accompanying March 12, 2024 BioCycle Magazine article).

Biodegradable packaging adds another layer of complexity to the contamination issue

Questions surrounding the acceptance of biodegradable packaging in organic waste streams is another emerging public policy issue under strong consideration by organics professionals. The purpose of this white paper is to examine best practices to prevent food packaging contamination from finished compost and soil amendment products and to maximize the diversion of food material from landfills. Divert facilities rarely encounter the sort of biodegradable packaging typically found in food serviceware. Divert believes that the biodegradable packaging issue will be sufficiently debated and addressed through extended producer liability policy and does not weigh in on a recommended biodegradable packaging policy approach. Instead, this white paper lays out relevant opinions from key composting and environmental advocacy stakeholders.

Currently, the plastics industry is urging the U.S. Department of Agriculture to allow bioplastics and compostable packaging into the organic compost waste stream. The manufacturers of these plastics say that loosening these rules will encourage more people to compost. They believe the shift to biodegradable food packaging will solve the compost contamination problem, because composters will no longer have to deal with the tedious and impossible job of removing incidental packaging by hand. However, recent Los Angeles Times reporting found that most farmers and representatives operating composting facilities disagree, saying “allowing plastic to be considered compost will undermine the purpose of composting, which is to improve soil and crop health.”[3]

3 “Should bioplastics be counted as compost? Debate pits farmers against manufacturers”, Los Angeles Times, July 4, 2025



Los Angeles Times

CLIMATE & ENVIRONMENT

Should bioplastics be counted as compost? Debate pits farmers against manufacturers

Recology's [Greg] Pryor [Director of Landfill and Organics] said the food waste his company receives has increasingly become polluted with plastic. He pointed toward a pile of food waste at his company's composting site in the San Joaquin Valley town of Vernalis. The pile looked less like a heap of rotting and decaying food than a dirty mound of plastic bags, disposable coffee cups, empty, greasy chip bags and takeout boxes. "I've been doing this for more than three decades, and I can tell you the food we process hasn't changed over that time," he said. "Neither have the leaves, brush and yard clippings we bring in. The only thing that's changed? Plastics and biodegradable plastics." He said if the USDA and CalRecycle open the doors for these next-generation materials, the problem is just going to get worse. But, said Pryor, if bioplastic and compostable food packaging manufacturers get their way, the whole system could collapse.

Judith Enck, a former regional Environmental Protection Agency director, and the founder of Beyond Plastics, an anti-plastic waste environmental group based in Bennington, Vt., said the inclusion of compost as an end-life option for packaging in California's new waste management regime was a mistake. "What it did was to turn composting into a waste disposal strategy, not a soil health strategy," she said. "The whole point of composting is to improve soil health. But I think what's really driving this debate right now is consumer brand companies who just want the cheapest option to keep producing single-use packaging. And the chemical companies, because they want to keep selling chemicals for packaging and a lot of so-called biodegradable or compostable packaging contains those chemicals."

Most state and local policymakers allow mechanical depackaging solutions to complement legacy composting systems that cannot remove plastics from commercial food material

Many state and local governments have recognized there is no one-size-fits-all policy model and have left room for multiple organics diversion pathways to serve organics processing needs. Other jurisdictions prefer legacy composting systems to serve these needs, but have struggled to fit increased complexity and volume into their systems. These legacy systems were not designed to accommodate commercial food businesses or implement source reduction and food donation solutions that many new legislative solutions encourage. They were not designed to manage complex food packaging and liquid/semi-solid foods without creating microplastics challenges. They cannot trace compliance errors back to individual businesses or use data to track individual food products and suggest inventory improvements or food donation opportunities. Their sorting procedures are often not sophisticated enough to remove small plastic packaging components that can embed microplastics into finished organic products.

California's SB 1383 landfill diversion law has given businesses flexibility to comply through a variety of means, including self-hauling and innovative processing solutions that can complement the state's legacy collection and hauling systems. This groundbreaking policy has also encouraged local jurisdictions to advance new ratepayer-funded public infrastructure that's better equipped to manage contamination than legacy composting systems.

For years, Washington state jurisdictions have recognized the limits of hand sorting operations and tried to improve consumer behavior through education campaigns designed to stop contamination at the source. Unfortunately, this has not solved the persistent problem of microplastics in finished compost products. As a result, in 2025 the Washington State Department of Ecology proposed new Organics Management Law regulations designed to address the unintended policy challenges of wasted food diversion. The new regulations would require organics processing facilities accepting material with more than 2% contaminants to add pre-processing operations that reduce contamination below the new 2% threshold. The regulations also propose tighter post-processing limits for finished organic products, requiring all finished materials to contain 0.5% or less physical contaminants by dry weight, and no more than 0.1% film plastics by dry weight.

Contamination from one bag of finished compost purchased in a Seattle-area big box store

Some state and local policymakers prioritize strict source separation requirements to overcome legacy composting constraints. They prefer a prohibition on mechanical depackaging due to efficiency concerns.

Within the past year, some public entities and industry representatives, including the State of Vermont, City of Seattle, and U.S. Composting Council, have proposed limits or outright bans on mechanical pre-processing. They favor source separation restrictions that require hand sorting. These policies protect legacy composting systems that might otherwise need costly mechanical depackaging upgrades paid with utility ratepayer increases. These policies force food companies to carefully screen all food products through manual pre-processing that can only be performed at each food manufacturing, retail, or service location where excess food is generated. The intent of these policy proposals is to ensure that food products are screened to a purity standard that will meet legacy composting capabilities. These proposed solutions seek to outright ban any offsite pre-processing equipment designed to remove contamination. They propose permitting mechanical depackaging only for wholly packaged food or for food manufacturers that have complex food packaging. They believe that permitting unpackaged food waste to go into mechanical depackaging systems would result in efficiency losses and result in the needless landfilling of food.

Those who favor this approach assert that packaged and unpackaged foods are different kinds of solid waste and should be treated differently. However, diversion goals cannot be met if food waste is only defined as clean, unpackaged scraps suitable for composting. The food material actually entering the system at scale is often contaminated with incidental plastics, regardless of whether it is encompassed in packaging. It is often commingled with packaged food and incompatible with composting without mechanical separation. Policy must reflect real inbound material flows, not an idealized subset. The dominant volumes of wasted food are not kitchen scraps. They are industrial scale and retail scale packaged food losses that only exist in a form that requires processing. Examples from real operations include 500lbs of yogurt, dairy blends, sauces, and prepared foods with mixed packaging arriving each day from individual retail stores; 1,500 tons of food manufacturer mozzarella arriving each day in fully packaged plastic film, corrugate, and pallets; and 3 million cases of wine arriving bi-weekly that is bottled, labeled, boxed, and shrink wrapped. None of this material can go to compost directly. There is no manual or upstream solution that makes this material compost-compatible at scale. Mechanical separation is not optional. It is a prerequisite.

While it is reasonable to have concerns about mechanical depackaging efficiency, it is unreasonable to place unrealistic purity requirements on food companies to manually remove all inorganic packaging, plastic film, stickers, and ties within each individual location. These proposals place an unnecessary burden on businesses by seeking outcomes that exceed the capabilities of the public or publicly-contracted compost facilities that the regulators operate in their jurisdictions. This would force food companies to use outdated legacy composting systems, even if an offsite service could achieve greater efficiency with lower lifecycle emissions. Businesses that are already struggling to manage additional food product diversion and inflationary food price pressure, would need to achieve absolute purity for difficult-to-process food products by taking on a role typically performed by organics processors. Food industry associations have opposed these proposals, and shared concerns that these services would no longer be permitted.[4] Industry opposition cites unnecessarily restrictive burdens, additional cost, and reduced environmental outcomes.

Food companies bear responsibility in ensuring their products don't cause environmental harm, but food companies are not waste processing businesses. As such, many food companies rely on companies like Divert to remove unrecyclable packaging that comes in direct contact with food so that food material is not unnecessarily lost to the landfill. Divert bins permit unpackaged food products, along with packaging that's in direct contact with food (such as liquids and semi-soft solids). This helps food companies leverage data-collection and analytics to provide valuable insights about excess merchandise and food donation opportunities. Once the data is collected, Divert's advanced depackaging equipment efficiently removes and disposes non-recyclable packaging from recovered food material. This type of system works throughout the United States, Europe, and beyond, so it's unclear why these policymakers resist allowing it to develop in certain regions. The organics processing marketplace should not be limited to the capabilities of a state or local government's incumbent service provider and local and regional systems would benefit from privately-funded complementary depackaging and anaerobic digestion systems.

Some regulators prefer to place the entire contamination removal burden on commercial businesses, but that hasn't stopped persistent levels of contamination at municipal transfer stations like this one. It simply ensures that publicly-supported legacy systems do not have to evolve and manage the complexity of today's food system.

Allowing plastic contaminated material to be spread under the label of compost in order to preserve diversion statistics fundamentally mischaracterizes environmental benefit. This is a policy choice, not an environmental inevitability, and must be explicitly acknowledged rather than obscured behind recovery metrics.

4 Northwest Grocery Retail Association letter to Washington Department of Ecology, December 12, 2025; Washington Food Industry Association letter to Washington Department of Ecology, December 12, 2025; Washington Retail Association letter to Washington Department of Ecology, November 24, 2025; Washington Hospitality Association letter to Washington Department of Ecology, December 12, 2025.

“Blue bin” recycling offers organics policymakers a model to follow

State and local jurisdictions proposing purity standards on businesses might find it challenging to double down on source separation policies that have struggled to address the persistent problem of contamination in compost products. Even with intensive education, businesses and consumers continue to place produce stickers, plastic film, rubber bands, twist ties, liners, and small format packaging into organics bins because these materials are inseparable from how food is purchased and used. Even in mature organics programs, contamination persists despite extensive education campaigns, outreach materials, color coded bins, and enforcement measures.

Some organics policymakers and regulators argue that food waste must be source-separated to a higher purity standard because contamination harms the recycling system; yet recycling systems have evolved to explicitly allow composite materials in every other recycling stream. Curbside recycling programs for cardboard, plastics, and mixed paper illustrate this clearly: municipalities report that cardboard routinely arrives with tape, labels and incidental packaging; and mixed paper still contains plastic windows, staples, and adhesives.

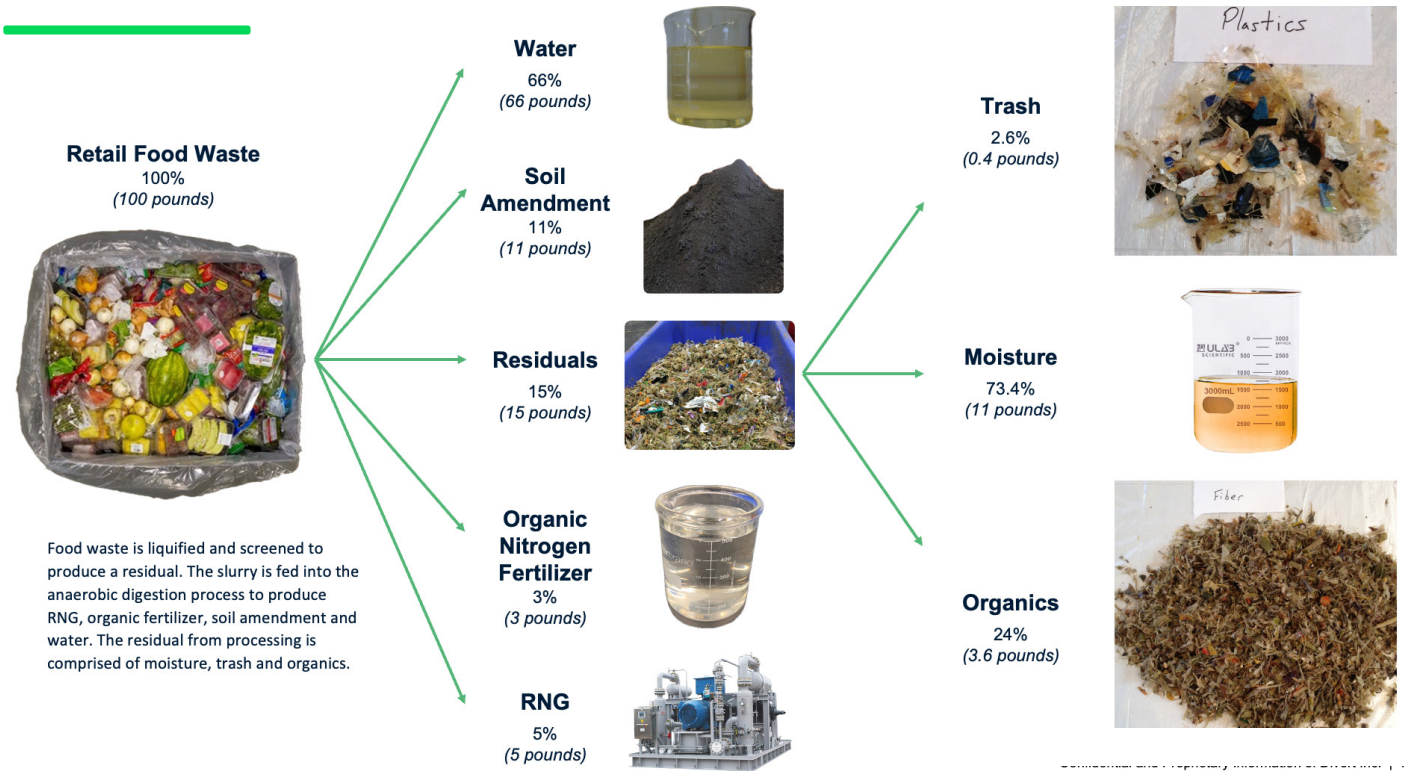
Policymakers cannot build an organics system around an idealized level of precision that no recycling program has ever achieved.[5] When they have done this before, recycling participation plummeted. When the global recycling market attempted to impose strict quality limits due to China’s “National Sword Policy”, the result exposed the reality that upstream consumer behavior cannot be reliably modified to meet ultra-low contamination thresholds at scale. This led to more recyclables ending up in landfills. Likewise, organics processing systems must be designed to handle contamination streams responsibly without allowing them to degrade finished products or introduce pollution into soil and water. This requires shifting the burden downstream from unrealistic purity standards on food companies to requiring organics processing businesses to manage the contaminants inevitably placed into the system.

The current debate around source separation purity in places like Seattle and Vermont should not be about whether composting has value. It does have value for non-contaminated organics streams such as residential food waste. The debate should be about whether the organics management system will be allowed to evolve to reflect the reality of today’s food supply chain, or whether policy will be used to protect legacy models that were designed for a different era. Policymakers can strengthen existing legacy composting systems by allowing high-recovery depackaging systems to complement them. This material will maximize recovery and circularity, because once it is processed it can flow back into legacy composting systems. Meanwhile, a cleaner material-set should continue to flow to legacy composting systems from customers that choose this service. It will also relieve composters from strict contamination standards that will place cost increases on curbside consumer ratepayers.

Excluding mechanical separation equipment does not reduce contamination; it blocks the only pathway capable of responsibly processing these streams.

5 Yale Environment 360, “Piling Up: How China’s Ban on Importing Waste Has Stalled Global Recycling”, March 7, 2019

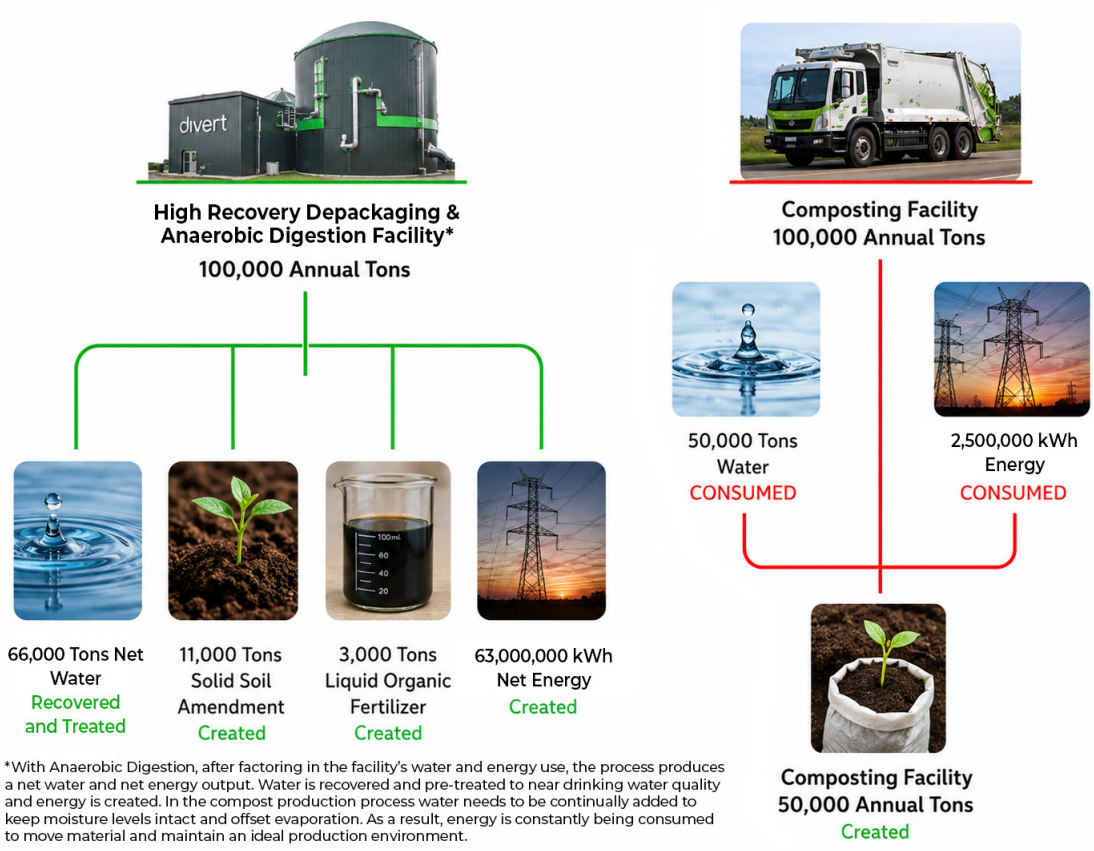
Rigorously permitted high-recovery depackaging systems can meet contamination standards and maximize food recovery



Some policymakers prefer a prohibition on mechanical depackaging because there is a perception that it has low organics recovery rates or that it cannot safely remove plastic contaminants from finished compost or soil amendment products. Concerns about yield loss and contamination should not be overlooked. While these concerns are reasonable, an outright ban on mechanical depackaging would be unnecessarily excessive, considering that some mechanical systems are more efficient at maximizing organics recovery than legacy composting systems. The best way to maximize depackaging efficiency is to have robust permitting processes in place to ensure that equipment is capable of capturing all organic material being processed. The best way to minimize contamination is to have strict performance-based testing standards in place. If these requirements are in place, then mechanical depackaging prohibitions would not be necessary.

The argument that depackaging equipment results in the landfilling of large quantities of unpackaged food contradicts Divert's own data. Divert hired a third-party testing company to provide insight into the efficiency of its high-recovery depackaging process. The goal of the test was to examine a 100lb sample of retail food material typically found in Divert bins and test what percentage by weight that material ends up as beneficial use byproducts and residuals bound for the landfill. The testing was conducted to provide verification for investors seeking clarity on output levels derived from the organics recycling process. This testing procedure validates the efficacy of Divert's high recovery depackaging and anaerobic digestion system.

This process ensures that food product nutrients are maximized to their fullest extent. Food is converted into digestate soil amendment that passes rigid physical contaminant and pathogen testing, while retaining the nutrient value for the composters the product is donated to. Food is also converted to organic nitrogen fertilizer that is sold into the agricultural marketplace. Remaining food nutrients



become carbon negative renewable natural gas (RNG), replacing conventional fossil fuel gas extracted from geologic sources. This gas enters a utility network that serves hard-to-electrify industries in communities that depend greatly on combustible fuels for high-power output.

It's also important to note that almost 4% of the food products are non-digestible fibrous organics. Some regulators have pointed to the volume of organic material mechanical depackaging equipment sends to the landfill as a reason why mechanical depackaging should be avoided. They argue this material will ultimately emit methane in the landfill and should be processed through composting, where it would produce a better environmental outcome. However, during pre-processing, virtually all of food's methane generating capacity is strained out of the process and sent to the anaerobic digester. What remains is lignin-rich organic material, the tough, structural components of plants that are meant to provide mechanical strength and do not break down easily. The degradation of lignin is measured in centuries [6]. These are the pits, hulls, and woody material of plants that have extremely limited energy potential or nutrient value to support plant and food growth. It is simply not possible to extract methane out of these materials in a biologic or mechanical way. If it were possible to degrade lignin through a naturally-occurring biologic process, our trees and forests would not be carbon absorbent; in fact, our trees and other plant life would simply not exist, because it would easily be degraded into liquid and gas by bacteria and fungi.

It's important to dispose of the roughly 4% resultant organic material because this organic material can become intertwined with small plastic packaging fragments during processing. This highlights the danger of overly focusing on process loss to maximize recovery statistics. It's better to landfill this material than to allow this organic and non-recyclable plastic fragment mix to end up hidden in compost products.

These results suggest that process loss may be a valid concern for certain off-the-shelf depackaging systems, but it is not a valid concern for high-recovery depackaging systems that go through rigorous permitting processes. Proposals to outright ban mechanical depackaging are based on the argument that recovery rates would be compromised. This frames microplastics as an acceptable tradeoff

A critical misconception in food waste policy is the belief that maximum food recovery should always be the objective. Process loss is not a failure; it is a deliberate environmental safeguard that protects soil, water, and long-term public health.

6 "Lignin Decomposition", Science Direct, 2020

for diversion, despite their persistence and ecological harm. Any proposals related to depackaging efficacy or recovery rates must explicitly acknowledge the environmental trade off. Higher diversion rates achieved through lenient contamination standards directly result in the continued distribution of microplastics onto land through finished compost and soil amendment products.

In addition, the assumption that commingling unpackaged food with packaged food reduces food waste recovery rates also contradicts Divert's own data. The data Divert collects from individual retail stores demonstrates that depackaging programs result in far higher recovery rates. Divert's own customer data demonstrates food companies ultimately recover 2-4 times more food products that previously went into trash compactors when they switch from a depackaged-only food program to one that also allows difficult-to-process food that remains embedded in packaging. This confirms that food companies are able to maximize landfill diversion and improve source reduction and food donation when they have access to more tailored services that go beyond the infrastructure capabilities of legacy composting systems. Divert's own customer data also suggests that once its prevention and donation work begin, they begin to realize waste prevention gains through source reduction and food donation. [7]

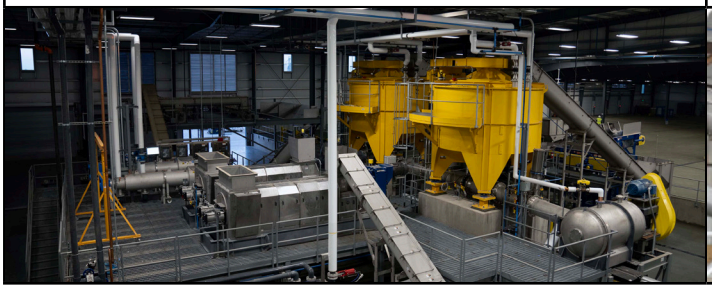
It is important to recognize that process loss represents the frontier of innovation in advanced organics systems. Today's technologies provide the best available means to separate organics from complex packaging streams while maintaining strict contaminant controls, but continued innovation should reduce process loss over time. This evolution can only occur when regulators enable new systems to operate, mature and improve. Standing on the shoulders of existing innovation is how future breakthroughs emerge.

7 Herrick, C. (2024, June 12). "Safeway increases food donations in Northern California by 20%". The Packer. https://www.thepacker.com/news/sustainability/safeway-increases-food-donations-northern-california-20

Mechanical depackaging solutions should meet strict performance-based testing

Less than robust effectiveness in composting and depackaging creates larger reputational challenges for the overall organics processing industry. One challenge in the depackaging arena is that many turnkey, off-the-shelf solutions on the market today offer varying degrees of effectiveness in removing contaminants. There are no one-size-fits-all depackaging solutions, and equipment must be engineered to meet the type of food products expected to be encountered. Divert has engineered its own proprietary depackaging solution to reliably process unsold food on an industrial scale.

The following is a comparison of Divert's proprietary high recovery depackaging solution and common off-the-shelf turnkey solutions. This demonstrates why robust permitting and ongoing testing are critical.

divert	Standard Turnkey Depackaging Equipment
Divert's proprietary technology utilizes industrial scale equipment and hydraulic friction for separation and dewatering to efficiently remove material from food waste.	**Turnkey, or off-the-shelf processing equipment, is easily deployed by bolting onto most operations, but lacks quality standards for produced slurry, leading to contamination.**
1. **Masher:** Depackaging food waste is a difficult process. Divert's technology simplifies this issue by utilizing a hydraulic friction method where the batch blending process solubilizes food while leaving contaminants intact. 2. **Conditioner**: With food waste depackaged into a uniform slurry, contaminants must be removed. A vertical fixed perforated plate is used as the first course screening. A non-contact rotor maintains flux while contaminants are held back. 3. **Tormill:** Slurry has gone through a course screening, but now potential microplastics and impurities are removed. A tight tolerance, high differential pressure screen provides the final step to produce a high-quality slurry that is ready for anaerobic digestion. 4. **Press:** Contaminants removed from the slurry are now concentrated and free liquid is separated. Additional liquids are recovered and contaminants are formed into a residual for disposal.	1. **Throughput:** Turnkey systems are designed to efficiently process large volumes of mixed packaged food waste using mechanical agitation and screening. 2. **Simple:** These systems rely on robust, well understood mechanical components that have been deployed widely. Performance and output quality vary depending on inbound packaging mix, screen selection, and operating parameters that influence plastic carryover. 3. **Flexible format:** Turnkey depackagers can accommodate a wide range of packaging types with minimal presorting, recognizing that flexible films and lightweight plastics are more likely to fragment during mechanical processing and contribute to fine plastic contamination. 4. **Pumpable Slurry:** Produces a slurry for downstream organics processing. Public studies in Vermont have shown that even high separation rates can still leave residual plastics in the resulting slurry. [8]
	

8 "Comparison of two mechanical pre-treatment systems for impurities reduction of source-separated biowaste", El Sevier Waste Management Journal, September 11, 2019 Organics Management Implementation

Addressing Misconceptions in Anaerobic Digestion and Composting

Myth: Composting is a more circular process than anaerobic digestion because it is more efficient at converting feedstock into beneficial use byproducts.	**Fact:** Anaerobic digestion captures methane, is carbon-negative, and produces energy, while composting releases emissions in an uncontained environment, is carbon-positive, and consumes energy and water. A 100,000 ton per year compost processing facility typically consumes 2,500,000 kWh of energy and 50,000 tons of water (or 13.2 million gallons). Divert's 100,000 ton per year anaerobic digestion facility creates 63,000,000 kWh of energy and recovers 66,000 tons of water (or 15.8 million gallons). These figures factor in the net energy and water usage at each type of facility.
Myth: Depackaging equipment is inefficient and leaves large quantities of food that emit methane in a landfill.	**Fact:** Food's methane generating capacity is strained out of the process and anaerobically digested. What remains are the pits, hulls, and woody material of plants meant to provide structural strength, but have no short-term pollutant generating capacity. Recent Divert bin 3rd party digestate testing at a new Divert facility revealed only 3.6lbs of organic material out of 100lbs of collected food is landfilled.
Myth: Depackaging equipment encourages retailers to dispose of recyclable food packaging.	**Fact:** Divert's program penalizes customers when packaging suitable for recycling is found in bins.
Myth: Depackaging equipment shreds packaging, resulting in microplastics in compost/digestate.	**Fact:** Advanced depackaging gently separates packaging from food and sends liquid through multiple screening steps. It can pass the most rigorous microplastics testing (recent 3rd party testing revealed no physical contaminants and performed significantly better than other regional compost products [9]).
Myth: Manual hand sorting favored by some policymakers can ensure finished compost and digestate provide contaminant-free alternatives to mechanical depackaging.	**Fact:** The data from local jurisdictions that require hand sorting tells a different story. One such jurisdiction, the City of Seattle, had a recent organic waste characterization study that revealed 2.1% physical contamination. Its own contamination standards acknowledge that every 100lbs of compost can contain up to approximately 0.5lbs of plastic.[10]
Myth: Anaerobic digestion is not a circular process because the food becomes biogas that is burned.	**Fact:** Third party testing demonstrates that only 5% of a 100lb sample of wasted food products actually becomes gas. Aside from the 5% gas and an additional 4% of landfill-bound plastic and fibrous organic material, 90%+ is circular. The remaining food byproducts are solid digestate, liquid fertilizer, and recoverable water.
Myth: Composting results in better emissions and environmental outcomes than anaerobic digestion.	**Fact:** From an emissions standpoint, Anaerobic Digestion is superior to composting due to less odor and greenhouse gas (GHG) emissions.[11] Nitrogen loss, greenhouse gases (N2O, CO2, CH4), and odorous emissions (H2S, NH3) pose adverse environmental and health effects.[12]

9 Recent third-party testing by Soil Test Farm Consultants (Washington State Department of Ecology's preferred third-party testing service) found 0.0% physical contaminants from the first sample of digestate tested from Divert's newest facility. Soil Test also tested a product sample purchased from the City of Seattle's contracted compost provider. It found 1.41% physical contaminants, 40% above Ecology's physical contaminant limit and six times greater than the state's allowable plastics limit of 0.25%. This amounts to approximately 1 cup of contaminants from each 1 cubic foot bag of finished compost. Land applying this compost across a typical 445-acre farm would be the equivalent of micro-landfilling farmland with 240 cubic yards of contaminants – or six 40-yard dumpsters full of plastic contaminants

10 Seattle's own waste characterization data would indicate that for every 100 pounds of compost, approximately half a pound of plastic contamination is spread onto land, see Seattle Public Utilities letter to Washington State Department of Ecology.

11 "Improving the sustainability of organic waste management practices in the food-energy-water nexus: A comparative review of anaerobic digestion and composting", Science Direct, June 2018

12 "The nitrogen cycle and mitigation strategies for nitrogen loss during organic waste composting: A review", Science Direct, August 2022

Divert's innovative infrastructure solution is built for today's complex food system

Divert's fully Integrated Diversion & Energy facility in Turlock, California opened in December 2024. In this facility, depackaging and contaminant removal is not an afterthought, but a massive component of the plant and its investment. Before food material is ever allowed to enter the digestion tank, it must go through a series of processes to remove contaminants and ensure that organics are not part of process loss.

There is room for legacy systems and innovative technology solutions

In order to meet the latest policy goals, commercial food products are now required to be diverted at a much larger scale. What Divert has built responds directly to today's challenges, while also being future-ready to accommodate continued policy evolution, including more aggressive diversion goals and extended producer packaging responsibility.

Composting should remain an essential part of organics processing, and an additional path for packaged and contaminated food waste strengthens our composting system. When low quality compost is produced due to a "one solution for all" approach, we are left with microplastics in compost, which destroys the downstream market for a critical product to our ecosystem. Asking composting alone to manage the entire food waste stream would compromise environmental performance, regulatory compliance, and market trust. Poor performance and environmental stewardship in the name of food waste diversion is simply bad for the entire industry and threatens all efforts to solve the problem. Our nation's organics processing system requires complementary infrastructure, including high recovery depackaging and anaerobic digestion specifically designed to handle the volume, moisture content, and complexity of current food waste streams without degrading finished products.

We need to show that food waste recycling can be done responsibly when multiple innovative solutions are available to serve a market. Most state and local governments leave room for multiple organics diversion pathways. If the marketplace is choosing alternative services that provide better environmental outcomes, then state and local governments should permit it. Resistance to this evolution is not rooted in environmental protection. It is rooted in institutional inertia and protectionism, at the very moment when these jurisdictions need innovation to address the harder to recycle, higher impact material streams. Instead of seeking to restrict or outright ban new approaches, the industry should construct appropriate guidelines to govern it.