ReFED

From Surplus to Solutions:

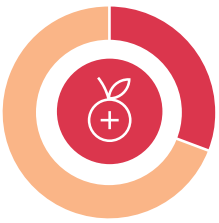
2025 ReFED U.S. Food Waste Report

February 2025

Key Statistics & Insights

Across the food system, **nearly one third of all food is lost or wasted as it makes its way from farms to our plates.** The following data points provide an overview of the extent and impacts of food waste in the United States, with more available throughout these pages and at refed.org. This report represents a landscape assessment, pulling together ReFED data analysis and modeling with external research,[1] supported by qualitative narratives developed through our work with partners across the food waste ecosystem. We intend to reproduce it annually to help stakeholders across sectors and areas of expertise understand key statistics, insights, and points of progress on the issue.

How Much Surplus Food Is There?



73.9M

Total tons of surplus food generated in 2023

31% of U.S. food supply

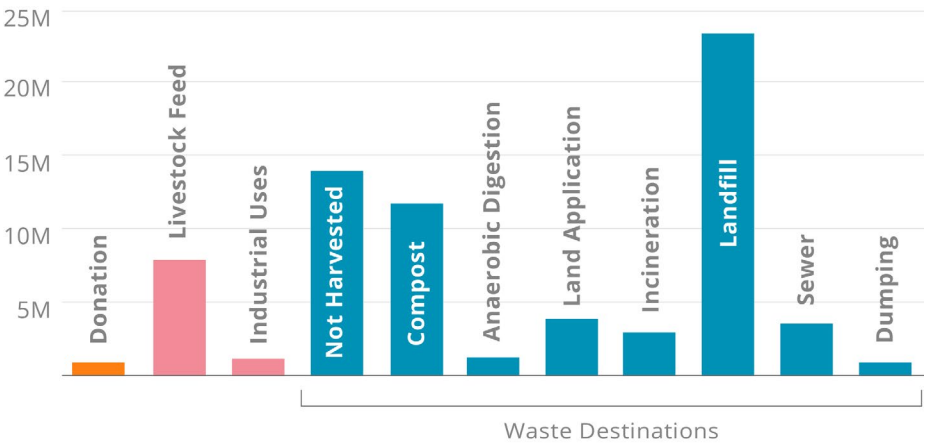
$382B

Value of surplus food generated in 2023

442

Pounds of surplus food per capita

Where Does Surplus Food End Up?



2%
Is donated

9%
Goes to livestock feed

85%
Goes to waste destinations

KEY DEFINITIONS

Surplus Food: All food that goes unsold or unused by a business or that goes uneaten at home or restaurants—including food and inedible parts that are donated, fed to livestock animals, repurposed to produce other products, or go to any of the destinations represented in food waste.

Food Waste: Uneaten food and inedible parts (e.g., peels, pits, bones) going to the following eight waste destinations*: composting, anaerobic digestion, landfill, combustion, sewer, dumping, spread onto land, or not harvested.

*Note: While some waste destinations recycle food scraps and are more preferred than others, they are all considered "waste" under the U.S. goal to halve food waste by 2030, or "loss and waste," under United Nations Sustainable Development Goal 12.3.

[1] Unless otherwise indicated, data and estimates referenced are based on ReFED modeling.

Annual Impacts Equivalent to:

54M
Cars driven for a year

7
Showers each day for everyone in the U.S.

120B
Lost meals—enough to feed 1/3 of the U.S. for a year

Implementing Solutions Could Achieve:*

18M
Tons of waste reduced annually

50K
Jobs created over 10 years

$61B
Net financial benefit annually

*ReFED modeling

Investments in Food Waste Solutions in 2024

$300M+
Federal funding

$640M
Private funding

State Food Waste Policies

12
States with organic waste bans or restrictions

18
Bills passed in 2024

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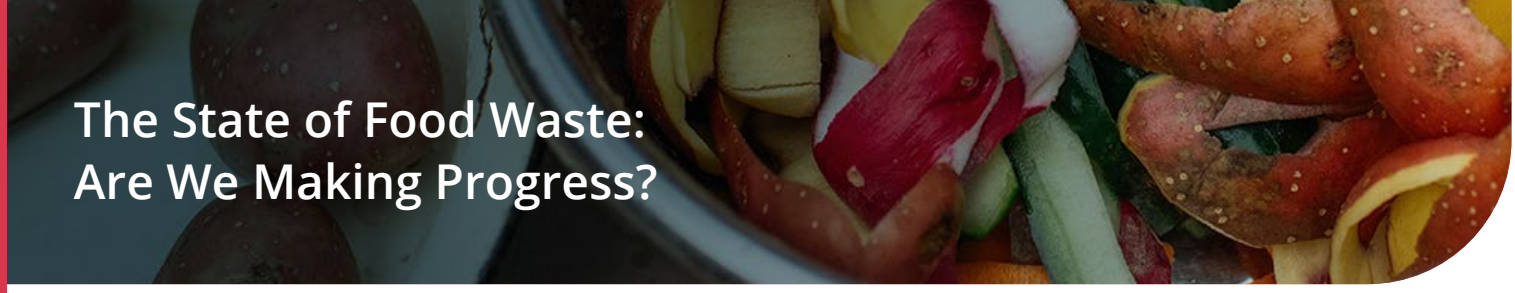


The State of Food Waste: Are We Making Progress?

Over the past decade, the United States has seen significant momentum in reducing the amount of food that goes to waste. The foundation for progress has been laid by a range of waste-related initiatives, investments, and policies across the country—awareness, commitments, and pilot projects have all increased. And yet, waste remains stubbornly high. After a dip during the COVID-19 pandemic, quantities of surplus food rebounded in 2023—the latest year for which data is available—despite record-high food prices. Numbers are now about level with where they were in 2016, the baseline year for the national goal to cut food waste in half by 2030. We will need a significant acceleration in action to make a real dent in the problem by then.

Across the food system, the residential sector continues to generate the largest amount of waste. This sector needs greater attention—something we have not yet seen at the scale required, but which may happen if the federal support announced in 2024 for a national consumer food waste prevention campaign goes forward.

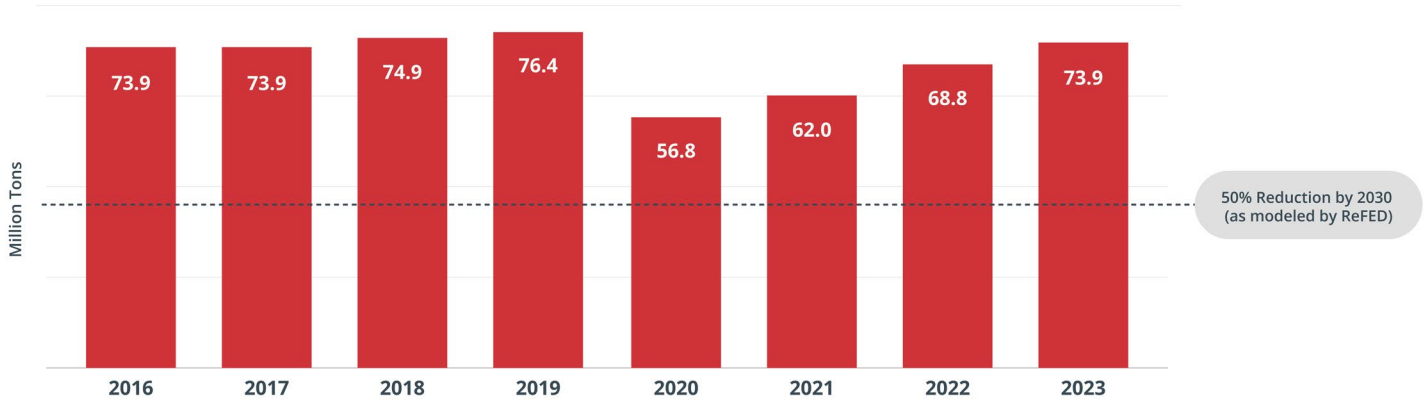
The types of food going to waste also reveal hotspots for potential progress. Produce represents the largest food category that is wasted—much of this is never being harvested, but a good amount is also spoiling in homes. Prepared foods are the second highest category, primarily driven by restaurant plate waste. Both of these areas could see movement in the near future, driven by the new interest in smaller portions and fresher foods from the growing segment of U.S. adults using GLP-1 drugs, such as Ozempic, for weight loss.

Looking at the trajectory of surplus food, we believe 2023 represents a return to pre-pandemic "normalcy" and expect 2024 data to show a leveling off. In some sectors—most notably retail—surplus food is now declining. This gives us some optimism, along with many successes to point to in 2023 and 2024, including:

- A 25% reduction in unsold food jointly reported by retailers on the West Coast.
- Publication of the federal government's first *National Strategy for Reducing Food Loss and Waste and Recycling Organics.*
- Participation by a growing number of industry leaders in the newly launched U.S. Food Waste Pact.
- Transformative levels of federal funding flowing into food waste solutions.
- State and local governments' continued progress, with California passing a first-ever law to standardize date labels, and 100 state bills being introduced nationwide.

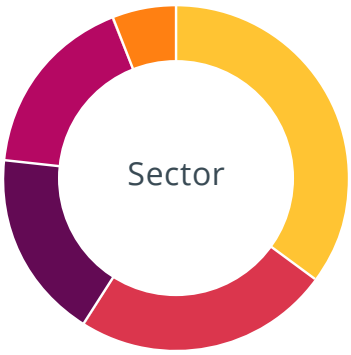
We are still far off from meeting the 2030 food waste reduction goal, and it's becoming increasingly difficult to see how we will reach it. But progress *is* being made, and our hope is that these bright spots demonstrate that change is possible—with the right combination of motivation, stakeholder alignment, and funding.

Surplus Food Generation in the U.S. Over Time

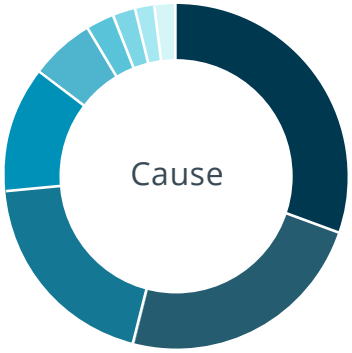


Where Does Surplus Food Come From?

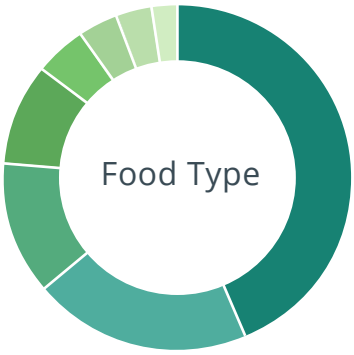
The charts below show where surplus food comes from, why it is wasted or lost, and the types of food that aren't getting eaten, using data from 2023. Understanding how much surplus is generated by each sector, what causes the most surplus, and which food types are most commonly wasted help identify the solutions that will most effectively target these hotspots.



- Residential - 35.2%
- Farm - 23.8%
- Manufacturing - 17.8%
- Foodservice - 17.2%
- Retail - 6%



- Trimmings & Byproducts - 30.4%
- Excess - 23.6%
- Not Harvested - 19.7%
- Spoiled - 12.1%
- Date Label Concerns - 5.8%
- Food Safety - 2.4%
- Buyer Rejections - 2.2%
- Mistakes & Malfunctions - 1.8%
- Other - 2%



- Produce - 43.7%
- Prepared Foods - 20.2%
- Dairy & Eggs - 12.7%
- Dry Goods - 9.5%
- Fresh Meat & Seafood - 4.6%
- Ready-To-Drink Beverages - 3.8%
- Breads & Bakery - 3.2%
- Frozen - 2.3%

ReFED's Residential Estimates Have Been Updated

ReFED's overall estimate for surplus food from the residential sector has been updated based on new household surplus food research. Until this year, ReFED estimated the amount of surplus food generated by the residential sector using consumer loss rates from the USDA's LAFA Data Series.[2] However, the most recent data available was from 2011-2012 and does not capture changes in consumer waste over time. ReFED is now basing our estimates of household surplus food on a triannual tracking survey conducted since 2021 by the Ohio State Food Waste Collaborative and the Multiscales RECIPES Sustainable Regional Systems Research Network.[3] Residential surplus estimates are now about 40% lower than previously published, and this has in turn lowered our estimate of total surplus food, as well as all correlated impacts. While constituting a significant change to the data, we believe this update and the corresponding changes to ReFED's estimates are an important step toward a more accurate and real-time understanding of the country's food waste landscape. As ReFED navigates a general lack of data on food waste, we update our methods when new sources are available and rank our confidence in each approach with a data quality score. Those scores, and more detail on our methods and data sources across all sectors, can be found on the ReFED Insights Engine's methodology webpages.

[2] U.S. Department of Agriculture *Loss-Adjusted Food Availability (LAFA) Data Series*
[3] The Ohio State University 2024: *National Household Food Waste Tracking Survey*

The Impacts of Food Waste
Financial Implications

$382B
Total value of surplus food across U.S. in 2023

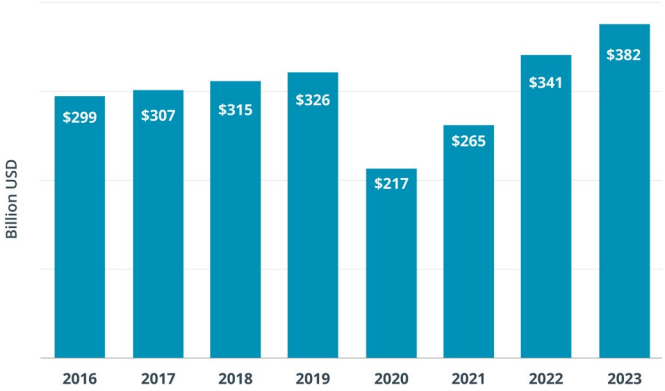
1.4%
of U.S. GDP in 2023

$1,140
Per capita value of surplus food in 2023

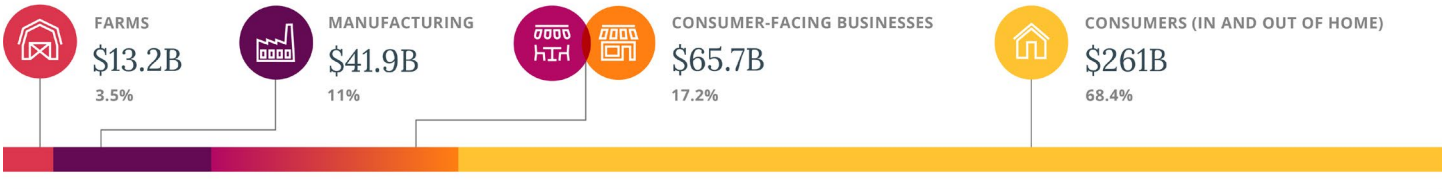
Surplus food is a major drain on the economy, representing lost value and significant costs for both food businesses and consumers. In 2023, the value of surplus food was equivalent to 1.4% of total U.S. GDP for the entire year. Some of this total value was food that might have been sold by farms, manufacturers, retailers, and foodservice operators but wasn't—if it had been sold, an additional 5% of annual food spending could have been realized as revenue. Between groceries and restaurant plate waste, consumers spent $261 billion on food they didn't ultimately eat, which represented nearly 14% of their annual food-at-home spending and 7% of food-away-from-home spending.

Ongoing inflation and stubbornly high food prices have led to a dramatic increase in the total value of food waste, outpacing the increase in surplus food volume. With the possibility of new immigration policies contributing to labor shortages and potential tariffs that could drive up prices for many food products, we anticipate that food prices—and the value of what goes to waste—will continue to increase for both businesses and consumers.

Value of Surplus Food Over Time



Value of Surplus Food Across Sectors in 2023



Additional Costs of Surplus Food

Beyond the revenue that food businesses are missing out on, and the money that consumers are spending on food that ends up getting thrown away, surplus food also represents significant costs in terms of expenditures on the resources and labor required to produce food that is not ultimately sold or eaten. What's more, the true and full cost of surplus food also includes all of the costs that businesses and governments incur to handle and manage food material once it is deemed "surplus," such as:

- **Costs of Poor Waste Management** | Improper handling and storage of food waste can lead to messes, odors, and pests—potentially incurring additional labor costs for clean-up and pest management and costly fines from health and environmental regulators.

- **Waste Contracts** | Whether waste is heading to a landfill, incinerator, or composting facility, service agreements with the hauler can vary in cost depending on the frequency and volume of collection provided.
  - Landfill tip fees, often included in the waste hauling contract and required to cover the costs of landfill operation and compliance with local regulations, can vary according to landfill size and location—but are generally rising. In a 2023 survey of 515 landfills, the ton-weighted average tip fee reached $57.63.[4]
  - Many generators of surplus food find they are able to negotiate contracts for food waste diversion with more flexibility, frequency, and better rates than with landfill haulers.

Food waste prevention and diversion activities come with their own costs, but they result in higher and better uses of the food material—and potentially net cost savings.

- **Employee Training** | Time and resources are required to teach staff to separate food properly for recovery, recycling, or disposal. Food businesses must develop training materials and procedures specific to a location, department, and their diversion programs—for both managers and associates who may speak different languages—and these hours add up.

- **Donation Logistics** | Staff time is required to package and inventory donations while coordinating with rescue transporters—with special handling to ensure food safety standards like temperature controls are maintained as it is transported and stored. In addition, while often covered by the donation agency rather than the food waste generator, backhauling logistics can cost around $2,000 per ton of food rescued. However, the practice makes use of existing transportation flows and more than recoups the costs through tax savings.

- **Depackaging** | Value recovery pathways, such as livestock feed and composting, require the feedstock to be free of contamination. Expensive machinery may be required to remove plastic, metal, glass, and other packaging from organic material—a large depackager (40 tons/hour) can cost around $500,000 per machine, although smaller units (3 tons/hour) are becoming available in the U.S. for under $200,000.

THE HIDDEN FUTURE COST OF SURPLUS FOOD

$47B

Annual social cost, globally, of GHG emissions from surplus food in 2023

Preventing unnecessary food waste can also reduce direct and indirect costs for future generations. In addition to the financial costs of growing, producing, distributing, and disposing of surplus food, there are real and tangible costs associated with the environmental and social damage that results—particularly climate change.

One way to estimate the true cost of surplus food is through the social cost of carbon (SCC), an economic metric that estimates the monetary cost of the damages associated with emitting more greenhouse gases into the atmosphere. These costs capture a myriad of direct and spillover effects from the various physical climate changes that are already being experienced around the world. For example, extreme weather can lead to the destruction of property or agricultural land, and heat waves can damage crops, send vulnerable individuals to the emergency room, and dramatically increase energy demand through air conditioning.

ReFED's analysis used SCC estimates from the U.S. EPA[5] and our own data on the extent and impacts of food waste to show that the global social cost of emissions from food waste for the single year of 2023 was $47 billion. Since GHG emissions from a single year persist in the atmosphere over time and continue to have impacts, the cost of annual emissions compounds and actually increases annually as well—**so 2023 emissions from surplus food will ultimately reach a cumulative cost of more than $571 billion over 10 years.**[6]

[4] Environmental Research & Education Foundation 2024: *Analysis of MSW Landfill Tipping Fees – 2023*
[5] EPA 2023: *Report on the Social Cost of Greenhouse Gases: Estimates Incorporating Recent Scientific Advances*
[6] Assuming a 2% discount rate and converting all greenhouse gas emissions to CO_2 equivalents on a 100-year time line (undervalues the near-term impact of methane emissions)

The Impacts of Food Waste
Climate and Natural Resources

230M Total GHG emissions from surplus food in 2023 ($MTCO_2e$)

2.7M Total methane emissions from surplus food in 2023 ($MTCH_4$)

Surplus food takes a significant toll on the environment and natural resources. These negative impacts are driven by all of the resources and energy required to grow, transport, cool, and cook food; the conversion of native ecosystems to agriculture; and the methane produced from food decaying in landfills and sewage treatment plants. What's more, these impacts make it increasingly difficult to produce the food required to feed a growing population.

By tackling food waste and making the best use of the food we produce—along with resource efficiency, building community resilience, and investing in regenerative and restorative food practices—we can reduce these harmful effects and protect precious resources. Importantly, *preventing* food from being wasted in the first place is the most effective approach to managing food waste to reduce planet-warming greenhouse gas (GHG) levels, with the added benefits of conserving water, land, biodiversity, and inputs like fertilizer.

Climate

The climate impact of surplus food is particularly shocking—in fact, the United Nations' Food and Agriculture Organization (FAO) estimates that if global surplus food were a country, it would rank third in the world for GHG emissions after China and the U.S.[7] Within the U.S., ReFED's analysis indicates that surplus food is responsible for the same amount of GHG emissions as driving 54 million cars, or 18% of all registered vehicles in the country. Production and supply chain emissions, which are emitted as food moves from farm to fork, outweigh emissions from disposal 92% to 8%.

Pulling the Methane "Emergency Brake"

Global climate leaders have zeroed in on methane reduction as a key "emergency brake" in the fight against climate change. Methane is a powerful and short-acting greenhouse gas that only persists in the atmosphere for 12 years. That means that reducing methane emissions now has a cooling effect that will be felt in just a decade or two—crucial for limiting near-term warming. ReFED's analysis shows that across the United States, **surplus food is responsible for nearly three million metric tons of methane each year, which is 10% of the country's total annual methane emissions and the same as the emissions from powering 45 million homes with electricity when considered on a 20-year timeframe.** Methane comes from the production of food—primarily beef and dairy—and from throwing food out, which accounts for the majority of landfill methane and significant release from sewers. Reducing food loss and waste, therefore, presents an opportunity to rapidly and dramatically cut methane emissions, avoiding its most harmful impacts to our communities and ecosystems and buying time to address other sources of emissions.

[7] FAO 2015: *Food Wastage Footprint & Climate Change*

16.2T Gallons of waste required to grow surplus food

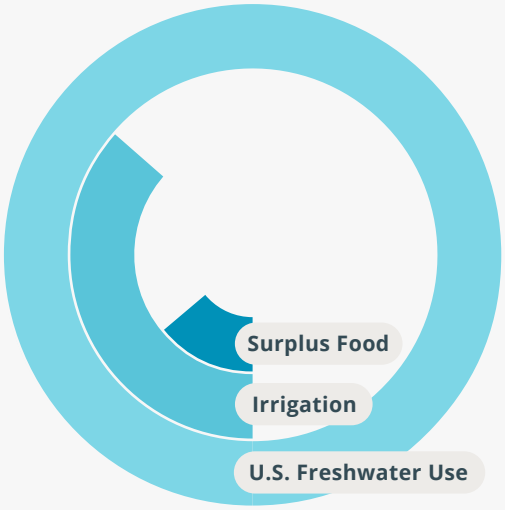
16% Equivalent amount of U.S. cropland used to grow surplus food[8]

Water Scarcity

Farmers, ranchers, and food producers across the U.S. are already struggling with water scarcity, particularly in places like California, which is responsible for over 10% of the country's agricultural production value and 18% of the country's dairy supply.[9] In 2023, water used to produce surplus food reached 16.2 trillion gallons—more than all the freshwater water used in California and Idaho combined. This amount of water would fill 24 million Olympic-sized swimming pools or allow every American to shower seven times a day all year long.

Water Use in the U.S.

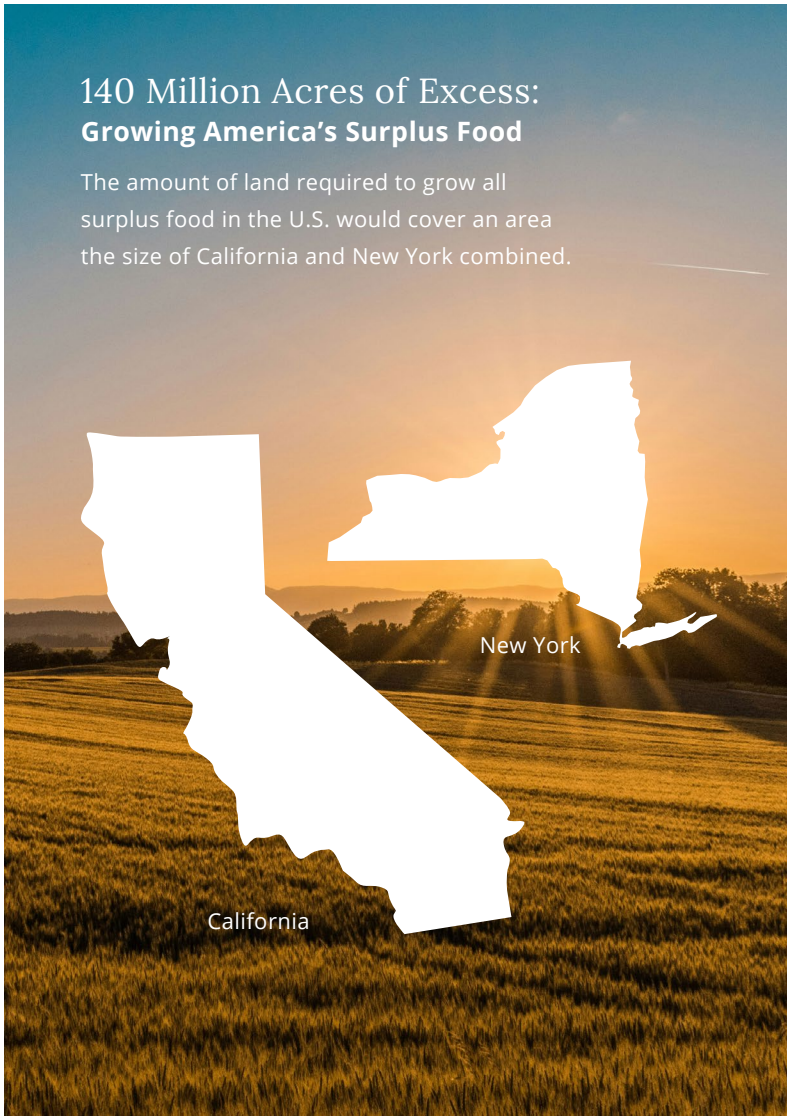
87% of total U.S. water use in 2015 was freshwater withdrawals. Of that freshwater use, 42% is used for irrigation, and the equivalent of 38% of irrigation demand is used to grow surplus food.



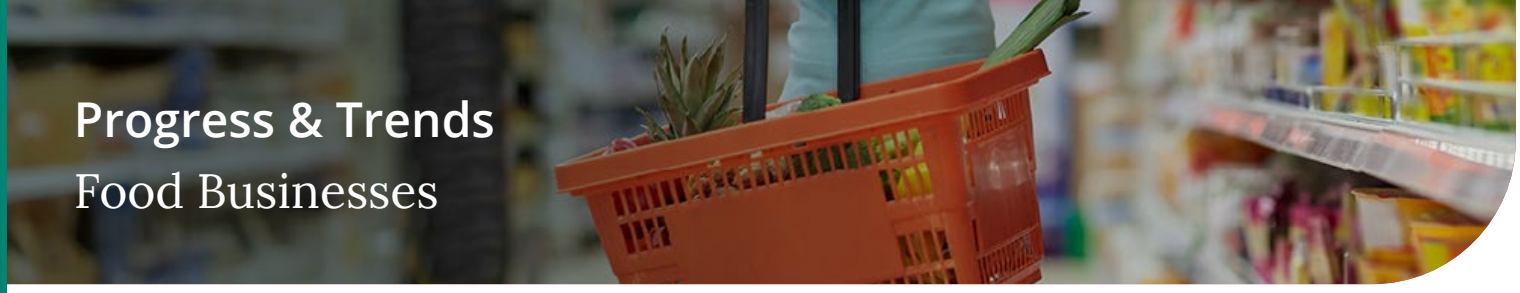
16% Equivalent amount of U.S. freshwater used to grow surplus food

Land Use and Biodiversity Loss

If all surplus food in the U.S. were grown in one place, this "mega-farm" would cover 140 million acres—an area the size of California and New York combined.[10] Land used for agriculture can significantly impact biodiversity, through habitat loss due to native ecosystem conversion and food web disruptions from fertilizer and pesticide exposure. Rainforests are not the only ecosystems being destroyed—in the U.S., grasslands are the carbon and biodiversity refuges under threat. In 2022 alone, approximately 1.9 million acres of native grasslands were converted to croplands across the U.S. and Canadian portions of the Great Plains[11]—a region that represents one of the world's largest intact grassland areas, serving as a critical carbon storage reservoir and home to hundreds of species of grasses, insects, birds, and mammals.



[8] EPA 2021: *From Farm to Kitchen: The Environmental Impacts of U.S. Food Waste*
[9] CDFA 2024: *California Agricultural Statistics Review 2022-2023*
[10] EPA 2021: *From Farm to Kitchen: The Environmental Impacts of U.S. Food Waste*
[11] WWF 2024: *2024 Plowprint Report*



Progress & Trends
Food Businesses

$108B

Lost value of surplus food from food producers and businesses in 2023

20%

Share of top 65 food businesses across foodservice, retail, and manufacturing with specific, time-bound food waste reduction targets

50%

Market share represented by **retail** signatories of the U.S. Food Waste Pact and Pacific Coast Food Waste Commitment

27%

Market share represented by **foodservice** signatories of the U.S. Food Waste Pact and Pacific Coast Food Waste Commitment

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Food waste is an inefficiency for food businesses, and inefficiencies are bottom-line costs. Most businesses recognize the need for operational changes to reduce waste, but implementation can be costly and complex. Even in the face of these challenges, many businesses eagerly adopt food waste reduction solutions, particularly those that help them manage vast amounts of operational data to better inform their decision-making.

Key Trends Driving Food Waste Reduction Among Food Businesses:

- **Increased Reporting Requirements**
  More businesses are reporting on food loss and waste due to regulatory requirements and investor pressure. Those in the lead are leaning into decision-ready data that goes beyond public reporting and informs their strategic plans for food waste reduction.

- **Strengthening Supplier and Other Partnerships**
  When it comes to addressing waste, leading businesses have often already tackled the "low-hanging fruit." They are now leveling up to address more complex issues, which require coordination and partnership across the supply chain, and collaboration with their industry peers and competitors.

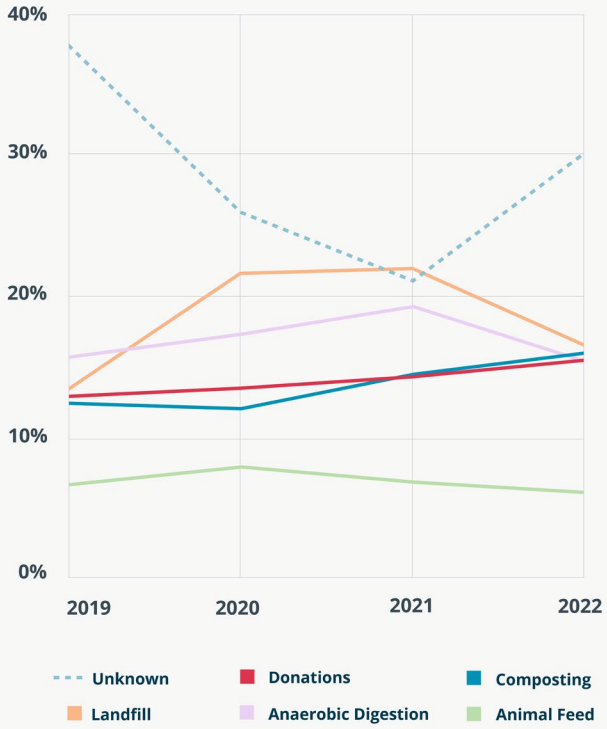
- **Empowering Frontline Employees**
  Employee education and engagement programs are driving real results. Pilot programs that put employees in charge of identifying the most significant issues and recommending solutions to implement are seeing waste reductions of 50-70% at those points of impact.

- **Investing in Recycling**
  Since *preventing* food waste can require cross-sector or multistakeholder collaboration over longer periods of time, many retailers have turned to composting and anaerobic digestion as a more immediate strategy to keeping organic material out of landfills. Some states provide favorable regulations and incentives for recycling programs; in other jurisdictions, food businesses must develop their own partnerships and something their own infrastructure.

Retailers Demonstrate Progress: Reducing Surplus, Increasing Donations

The Pacific Coast Food Waste Commitment (PCFWC) is a public-private partnership between food businesses and jurisdictions on the West Coast of North America, all working together to reduce food waste in the region by 50% by 2030 using the "Target, Measure, Act" framework. An analysis by ReFED found that **grocery retailers who had signed on to the PCFWC reduced the volume of unsold food in their operations by 25% between 2019 and 2022. Reporting retailers also increased the rate of unsold food going to compost by 28% and the rate of unsold food being donated by 20%.** This resulted in a 30% decrease in associated greenhouse gas emissions. Building on the success of the PCFWC, in 2023 ReFED and the World Wildlife Fund launched the U.S. Food Waste Pact, a nationwide business collaborative focused on sharing food waste reduction data and testing and scaling solutions with participating businesses and their supply chains.

PCFWC Destination Rates by Year



We've seen significant progress from retail and foodservice businesses over the past several years. A few examples of major strides include:

- In October 2024, the North American foodservice company Guckenheimer announced it had achieved a 64% reduction in food waste from their 2022 baseline, making it the first major U.S. foodservice provider to cut food waste in half.[12] Other companies reported serious progress too, including a 42% reduction at Kellanova, 41% at Fresh Del Monte, and 37% at Ahold Delhaize.[13]

- More businesses are setting targets, measuring, and reporting waste through pre-competitive collaboratives like the U.S. Food Waste Pact. In 2024, the U.S. Food Waste Pact grew by adding key signatories, including Amazon Fresh and Chick-fil-A, bringing the total signatory base to 17 businesses across retail, manufacturing, foodservice, and quick-service restaurants—as well as thousands more represented by coalition signatories like Health Care Without Harm and the Stanford Food Institute.

- Companies are implementing technology to *prevent* food waste. Guckenheimer cites waste tracking as a key step to achieving their goals. Danone North America saw a 50% increase in the sell-through rate of its excess product after partnering with Spoiler Alert, a software platform focused on liquidation.[14] In 2023, Albertsons Companies announced the rollout of Afresh Technologies to meat and seafood departments in over 2,200 stores[15] to drive better decision-making with intelligent and connected technology solutions, and in 2024 announced an expansion to 17 distribution centers across produce, meat, seafood, deli, and foodservice.[16]

[12] Guckenheimer 2024: "Guckenheimer Becomes First Major U.S. Food Services Provider to Cut Food Waste in Half"
[13] Champions 12.3 2024: *SDG Target 12.3 on Food Loss and Waste: 2024 Progress Report*
[14] Spoiler Alert 2023: "Danone North America and Spoiler Alert share strong results in their battle against waste"
[15] PR Newswire 2023: "Afresh Deploys AI-Powered Store Ordering and Inventory Platform to Albertsons Companies' Meat and Seafood Departments Chainwide"
[16] PR Newswire 2024: "Afresh Enhances Supply Chain Capabilities with the Launch of Afresh DC Forecasts, Partnering with Albertsons Companies as the First Customer"

Progress & Trends
Food Insecurity and Donations

47M
Americans facing food insecurity in 2023

1.75M
Tons of surplus food donated in 2023

12%
Share of donatable surplus food that is actually donated

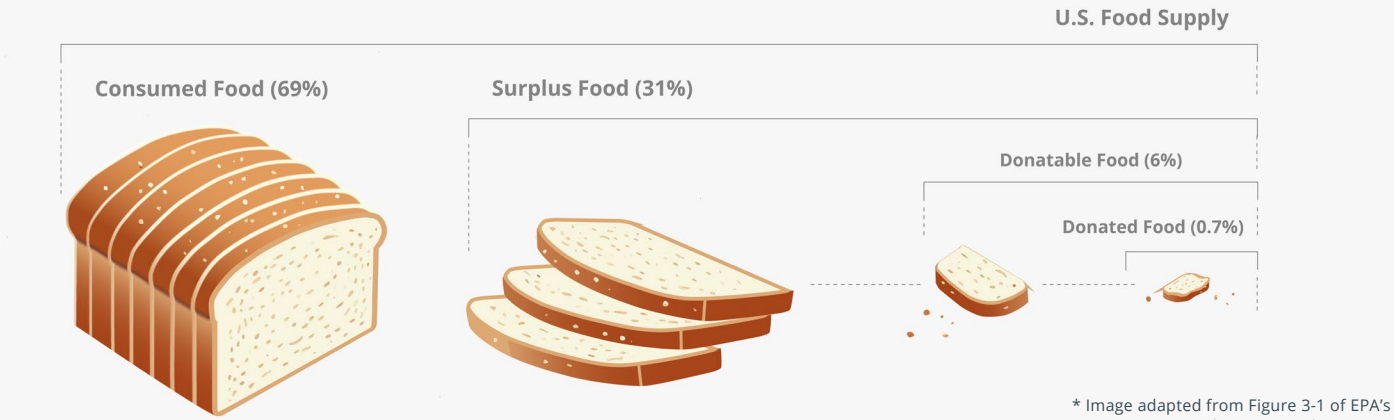
Donation is a key strategy for rescuing food that would have gone to landfill or otherwise be wasted, while also making the best use of perfectly edible and nutritious food by feeding those in need. But surprisingly, ReFED estimates only 12% of the 14.5 million tons that *could* be donated actually does get donated.

Meanwhile, across the country, food insecurity is worsening, with USDA's 2023 report on food insecurity showing a significant increase in the number of Americans living in food insecure households from approximately 41 million in 2016 to 47 million in 2023—or 1 in 7.[17] With vulnerable households no longer receiving the government support provided during the COVID-19 pandemic, as well as contending with higher food prices, it's more important than ever to support consumers in using all of their food and to ensure that food businesses are donating as much of their unavoidable surplus as possible.

Fortunately, donations do seem to be on the rise. Feeding America's data from over 200 member food banks indicates that in both 2023 and 2024, the volume of food donated to the network from retailers alone increased over 5% from the prior year. While some of this growth may be attributed to Feeding America's increased funding for retailer support, we see that businesses are also proactively improving their donation programs, recognizing that they offer a "win-win-win" of cost savings and tax incentives, reduced food insecurity, and minimized environmental impacts by diverting food from landfills.

As state policies related to food waste increase, the Zero Food Waste Coalition recommends that organics recycling laws—which limit the amount of food that can go to landfill—include a greater focus on donations, requiring food businesses to enhance both diversion and donation programs to remain compliant. For example, California law SB 1383 includes provisions for rescuing edible food to complement landfill diversion efforts, ensuring that food goes to its highest and best use of feeding people. As one of the only states to require donation as a policy, California's initiative seems promising—a 2023 progress report indicated that the state had already reached 94% of its 2025 food recovery goal.[18]

Donated Food as a Share of Total U.S. Food Supply*



* Image adapted from Figure 3-1 of EPA's 2023 *From Farm to Kitchen* report

[17] USDA ERS 2024: *Household Food Security in the United States in 2023*
[18] CalRecycle 2025: *California's Climate Progress on SB 1383*

Progress & Trends
Consumer Food Waste

208
Pounds per person of food not eaten (in and out of home)

$780
Annual spend per person on food not eaten (in and out of home)

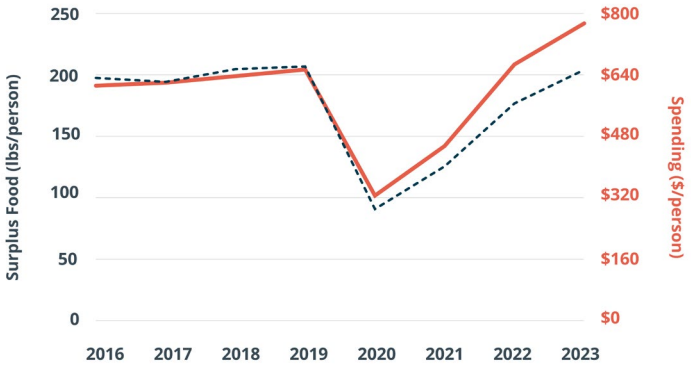
14%
Share of annual consumer grocery spending on food not eaten

Between uneaten groceries and restaurant plate waste, consumers waste nearly 35 million tons of food annually, costing them $261 billion. One might expect rising food prices to drive down waste, but that doesn't seem to be the case. After a brief decline during the pandemic, likely due to more routine cooking of meals at home and a desire to reduce trips to the store, food waste at home skyrocketed by 280% from early 2021 to early 2022[20], and in 2023 surpassed pre-pandemic levels.

Why aren't high prices incentivizing consumers to waste less food? Surprisingly, total food spending, on both food at home and food away from home, reached a record high in 2023, even after adjusting for inflation and population growth.[19] And while surplus can be expected to rise as spending rises, inflation-adjusted spending on wasted food has also increased dramatically since 2020, suggesting that households are becoming less efficient at utilizing what they buy. Rather than wasting less, survey data indicates that consumers employ other coping strategies, such as switching from expensive products to cheaper alternatives, like private-label items or non-organic produce.[21]

Raising consumers' awareness about just how much food they actually waste—worth nearly $800 per person—and how to manage it more effectively could significantly reduce household food waste. A 2023 MITRE and Gallup study found that only 33% of people realize how much they spend on food they don't eat.[22] Additionally, while nearly 90% of households reported wasting edible food in the week prior to the survey, people who threw out leftovers wasted nearly four times as much food as people who infrequently threw them away. ReFED estimates that nearly 1.5 million tons of food gets discarded

Food Not Eaten by Consumers



by consumers because of concerns about date labels. In fact, a new Harris Poll survey of U.S. adults in January 2025 reveals that Americans rely on food date labels even more than they did in 2016, with 43% "always or usually" discarding food near or past the date on the label and 44% mistakenly believing that the federal government regulates these labels.[23] Standardizing date labels and educating about their meaning, as well as how to plan meals and store ingredients and leftovers more effectively, could address many drivers of consumer waste.

While current and future federal funding is unclear at the time of this report's publication, the EPA did announce a $39 million grant in 2024, primarily funding a five-year national consumer campaign focused on food waste prevention and recycling. Schools have also joined this effort—600 schools in over 30 states have used World Wildlife Fund's "Food Waste Warrior" curriculum to teach children about reducing food waste. And the tide on individual awareness might be turning—a 2021 study by Innova Market Insights found that 62% of consumers are willing to pay more for a product that fights food waste.[24]

[19] Li, R., Shu, Y., Bender, K. E., & Roe, B. E. (2023). "Household food waste trending upwards in the United States: Insights from a National Tracking Survey" *Journal of the Agricultural and Applied Economics Association*, 2(2), 306-317 https://doi.org/10.1002/jaa2.59
[20] USDA ERS Food Expenditure Series (FES)
[21] Purdue University, Center for Food Demand Analysis & Sustainability: *Consumer Food Insights, Volume 3, Issue 5: May 2024*
[22] MITRE-Gallup 2023: *The State of Food Waste in America: 2023 Report*
[23] Consumer Perceptions of Food Date Labels: 2025 National Survey
[24] Innova Market Insights: "Consumers expect shared responsibility for the health of the planet"

Progress & Trends
Policy Landscape

18
State laws passed in 2024

12
States (plus D.C.) that ban or restrict food from landfills

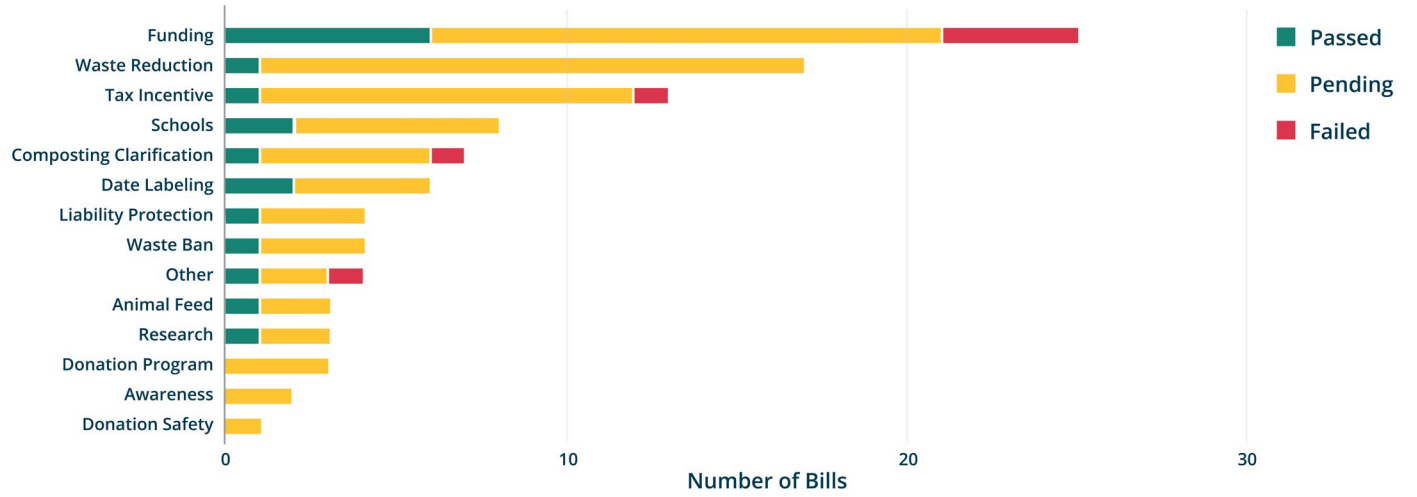
12
States with tax incentives for food donation

Policy is a critical lever in the fight against food waste, providing the impetus to move the food system to act. Food waste reduction has always been a nonpartisan issue with support from both sides of the aisle, given the range of systemwide benefits from cost savings to job creation, hunger relief, and efficient use of natural resources. Importantly, a federal commitment and collaboration to food waste reduction has existed through the last three administrations.

Key policy areas include organic waste management, funding for infrastructure and innovation, improvements to food date labels and tax laws, expanded food donation policies, and consumer education. On the federal level in the 118th U.S. Congress during 2023-2024, 16 federal bills related to food waste—including the No Time to Waste Act, the COMPOST Act, the Food Date Labeling Act, and the Reduce Food Loss and Waste Act—were introduced, primarily to shape the Farm Bill, an omnibus piece of legislation which governs much of our food and agricultural systems and should be renewed every five years. Since Congress failed to pass a new Farm Bill in 2024, policymakers will need to begin developing the legislative package anew, and we expect many of those bills to be reintroduced.

Much of the authority to regulate waste, however, lies at the state level. In 2024, a flurry of 100 state-level bills—a similar number to the previous few years—were introduced related to organic waste bans, funding for food waste initiatives, and tax incentives for food donation. New Jersey led the charge with 20 bills. Of those introduced across the country, 18 bills were passed, seven failed, and the rest were pending at the end of 2024.

State Food Waste Legislation Outcomes by Category (2024)



State Policy Effectiveness

A recent study led by University of California, Davis analyzed ReFED food waste generation data, solutions data, and state-level qualitative policy assessments to evaluate the effectiveness of current policies in meeting the 2030 goal to reduce food waste by 50%.[25] This research indicated that under the EPA's 2021 definition of food waste (which excludes recycling by composting, anaerobic digestion, etc), current state policies on average can only achieve a 5% reduction in food waste relative to their respective generation levels. The study analyzed how current state-level policies align with the 2030 goal and found an overemphasis on recycling strategies, rather than prioritizing prevention, rescue, and repurposing food for livestock feed—highlighting a significant misalignment between state and federal priorities. While recent progress made at the state level is promising—for example, Vermont reported a 13% reduction in the tons of food scraps sent to landfill between 2018 and 2023,[26] attributed to the state's organic waste ban—stronger policies that incentivize prevention and food donation are urgently needed to achieve the targeted 50% reduction within the next five years. And most importantly, more states need to adopt them.

Local Government Action

Counties, cities, and towns across the country are also taking action to reduce food waste. Given that approximately 80% of the U.S. population resides in urban areas, tackling food waste in cities is a crucial piece of the puzzle. NRDC's "Food Matters" program hosts a network of 54 participating cities, including Nashville, Cincinnati, Albuquerque, and Detroit. A subset of those cities reported diverting over 35,000 tons of food waste from landfills and incinerators in 2024.[27] As of October 2024, curbside composting has now been rolled out in all ive boroughs across New York City, with enforcement starting this spring. That same month, Austin, Texas, implemented new updates to their Universal Recycling Ordinance that requires all multifamily properties to provide convenient access to commercial composting services. And in California, where jurisdictions are responsible for compliance with state law SB 1383, 91% have implemented residential organics collection.

TWO IMPORTANT POLICY ADVANCES

California passes first-of-its-kind date label legislation

In the fall of 2024, California passed AB 660, the first law in the country to mandate a standardized date label system comprising two labels—one for safety ("USE By") and one for quality ("BEST If Used By")—to address ongoing consumer confusion. Additionally, when the law goes into effect in July 2026, grocery stores in the state can no longer carry products with "sell-by" date labels, which are a tool for retailer inventory management but are frequently misinterpreted by consumers as meaning a product is no longer safe to consume. The expectation is that other states will soon follow California's example, and date label legislation at the federal level could also end up in the next Farm Bill.

National Strategy on Food Loss and Waste Released

Announced at the 2024 ReFED Food Waste Solutions Summit in June, the first-ever *National Strategy for Reducing Food Loss and Waste and Recycling Organics* provides a list of existing and planned activities for the U.S. to meet the goal of a 50% reduction in food loss and waste across the food system by 2030. Representing a coordinated effort between the USDA, EPA, and FDA, the strategy aims to develop, implement, and support both federal- and state-level programs and policies to prevent food loss and waste and increase recycling rates for organic waste. A number of years in the making, the strategy provides a critical blueprint for government action on these issues.

[24] Kakadellis, S., Mao, S., Harwood, A. et al. "State-level policies alone are insufficient to meet the federal food waste reduction goal in the United States" Nat Food (2025). https://doi.org/10.1038/s43016-024-01092-w
[25] Vermont DEC 2024: *2023 Vermont Waste Composition Study*
[26] NRDC Food Matters *Annual Report, July 2023–June 2024*

Progress & Trends
Capital Deployment and Funding

4%

Share of $600 billion in global annual investment for climate mitigation and adaptation that goes to food systems broadly

$900M+

Investment in U.S. food loss and waste solutions by public, private, and philanthropic sources in 2024

25%

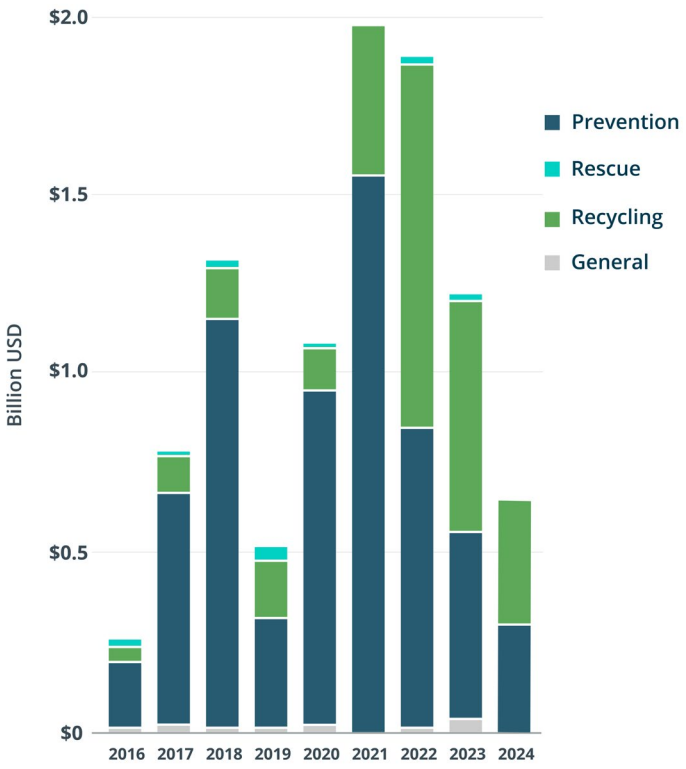
Increase in philanthropic funding for food waste solutions to $50 million in 2023 from 2019

Capital providers of all types play a critical role in funding the development and adoption of food waste solutions—many of which have a strong potential for investment returns, in addition to their environmental and social benefits. Funding food waste solutions from conception to adoption to scale requires matching of the correct type of capital with the appropriate opportunity, and in many cases, a blended finance model integrating multiple types of capital is required. Of particular importance is capital that comes from catalytic sources—including impact-first capital, angel investing, and philanthropic and government capital—which has the patience and risk-tolerance to unlock impact, thereby having a multiplier effect that can stimulate larger amounts of capital from more traditional sources, overcome system-level barriers, and de-risk new innovations.

However, climate finance entering the food loss and waste sector has fallen critically short of the need—less than 4% of the $600 billion in global climate finance has gone to food and agriculture generally, with an even smaller portion funding food waste initiatives.[28] This current mismatch in capital allocation toward the areas with the greatest impact potential represents a huge opportunity for climate funders to lead in driving real and meaningful change.

Of the $900M total funding directed to U.S. food loss and waste efforts, a majority comes from private capital. The long-term trend has been an increase in private funding for food waste solutions at an 11% compound annual growth rate (CAGR) from approximately $240M in 2014 to approximately $600M in 2024. However, private food waste funding has declined by 67% from 2021 until 2024.

Annual Private Investment by Solution Category



[28] World Economic Forum 2023: *Green Returns: Unleashing the Power of Finance for Sustainable Food Systems*

Key Trends in Food Waste Funding:

- **Economic conditions have slowed investments.** Higher interest rates over the last few years have decreased available capital, reduced business investment, and led to declines in early-stage funding.

- **Venture capital has peaked (for now).** Venture capital has been driving food waste funding, but expectations for that to continue are muted—while interest rates may fall in 2025, venture appetite may be moderated by a near-term decline in overall climate funding and uncertainty in the economic environment, such as how tariffs will be imposed.

- **Investor funding has gone to a range of solution types.** Investor funding over the last few years has focused on supply chain technologies, including inventory management, waste tracking (usually AI-enabled), and shelf-life extension, as well as end-of-life waste destinations like kitchen waste storage and infrastructure-based waste management (e.g., anaerobic digestion, insect farming). There also continues to be innovation in finding ways to valorize byproducts and improve cold chains. 2023 also saw the launch of Hawthorne Food Ventures, the first fund entirely dedicated to investing in food waste solutions.[29]

- **Federal government funding—mostly supporting infrastructure—has helped to offset private funding declines.** Funding from the federal government has largely come in the form of grants and project finance to build infrastructure (e.g., for organics composting and anaerobic digestion), which many food waste solutions require yet is not a great fit for some other capital types.

- **Inflation Reduction Act and the American Rescue Plan Act funded infrastructure.** 2024 saw a substantial amount of federal funding toward food waste solutions. This included $25 million to expand USDA's Community Food Projects and Food and Agriculture Service Learning grants programs, which will improve food and nutrition security while increasing knowledge of agriculture and supporting local economies. Funding through the EPA included $78 million to communities and Tribes from the Solid Waste Infrastructure for Recycling (SWIFR) grant program, and a $39 million award from the Recycling Education and Outreach (REO) grant program. These investments represent a step towards meeting "Congress' goal to create a stronger, more resilient, and cost-effective U.S. recycling system."[30]

- **Philanthropic funding continues to support field catalysts or "ecosystem builders."** Philanthropic funders are increasingly recognizing the important and necessary role of ecosystem coordination and convening. In addition, grant capital is supporting important solutions that don't necessarily provide good financial returns—including school programs, advisory and technical assistance for specific sectors and local governments, policy advocacy, and hunger relief and food insecurity initiatives.

- **Organic waste and methane reduction are driving interest in recycling infrastructure.** Infrastructure and private equity funds have been eyeing investments in waste-related infrastructure. The benefits of scale, increased undeployed capital at infrastructure funds, and the transition to renewables—plus a push from related policies—have driven capital into the sector through M&A and infrastructure funding.

[29] Ida Posner, Founder of Hawthorne Food Ventures, serves as a member of ReFED's Board of Directors. No incentive was provided for their inclusion in this report.
[30] EPA 2024: "Biden-Harris Administration Announces $117 Million in Grants Available to Advance Recycling Infrastructure and Prevent Wasted Food"

Progress & Trends
Solutions Adoption and Economics

Food waste isn't one single problem—it's multiple problems occurring at every stage of the supply chain. The good news? There are dozens of solutions available and ready to scale.

ReFED has modeled 45 solutions[31] and found that their full implementation across the food system would achieve annually:

20M
Tons diverted from landfill

79M
GHG emissions avoided ($MTCO_2e$)

5T
Gallons of water conserved

4.6B
Meals rescued

50K
Jobs created

$60.8B
Net benefit based on a cost of $16B—a 3.8x return

The marginal food waste abatement cost curve (page 19) arranges ReFED's modeled food waste solutions left to right, from most to least cost-effective per ton of food waste diverted—with cost effectiveness being considered at the society level, aggregating costs and benefits across all stakeholders. Bar height indicates net financial gain to society, and bar width represents each solution's diversion potential (in tons). Note that this analysis assumes each solution is adopted system-wide, so lower adoption of prevention solutions would require greater volumes of food to be addressed by recovery and recycling solutions.

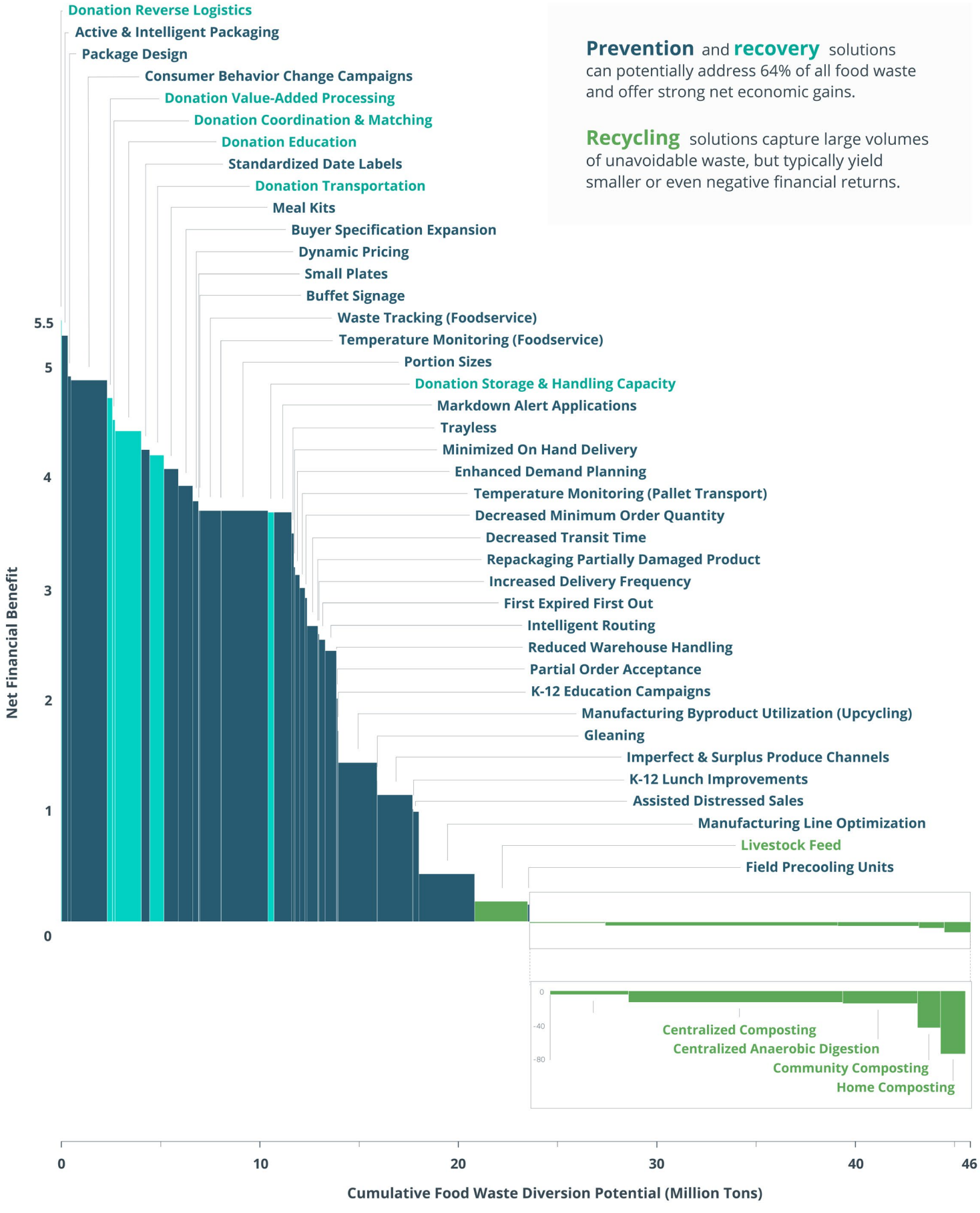
Prevention and recovery solutions, concentrated on the left side of the chart, offer higher cost-effectiveness at the systemwide level. Some tackle upstream inefficiencies in the supply chain, delivering strong returns on investment. Others require one entity to pay where another would benefit—often a good place for philanthropy or government funding to engage.

In contrast, recycling solutions can handle large volumes of unavoidable waste but offer lower or even negative financial returns, falling on the right side of the chart. Because of this trade-off, public policy and funding can and has filled a need in supporting centralized recycling infrastructure for composting and anaerobic digestion facilities. Interestingly, there has been some private equity and venture interest in digestion technology and other methods of processing biomaterials, in spite of the capital expenditures required and less certain growth trajectories.

This analysis illustrates that **striking a balanced systems approach that supports both prevention and rescue along with scalable recycling measures is key to achieving the greatest overall impact in reducing food waste.**

[31] In addition to the food waste solutions that ReFED has modeled since 2021, this year we added three new solutions: field cooling units, existing delivery networks, and repackaging intact and still edible items. More information can be found at insights-engine.refed.org.

Marginal Food Waste Abatement Cost Curve



Prevention and **recovery** solutions can potentially address 64% of all food waste and offer strong net economic gains.

Recycling solutions capture large volumes of unavoidable waste, but typically yield smaller or even negative financial returns.

Key Trends in Solution Development and Adoption

Many of the available solutions are continuing to prove out in the market with real, measurable, and tangible business results. ReFED's Solution Provider Directory is currently tracking nearly 1,800 for-profit, nonprofit, and fiscally-sponsored entities in the U.S. and abroad that are working on the frontlines of food loss and waste reduction. And the overall solutions landscape continues to evolve, spanning across industries at varying lifecycle stages. This evolution is driven by emerging technologies, increased globalization, and the demand for fresh and frozen products worldwide.

Technology Trends

- **Powered by AI**
  Artificial intelligence enables real-time efficiency improvements, customer engagement, and data-driven decision-making. Notably, cold chain operators are integrating smart technologies, such as IoT-enabled sensors and real-time monitoring systems, combined with machine learning. Enhanced demand planning products—which help businesses determine the amount of product needed—are leveraging AI to use more data in ordering decisions. Dynamic pricing and markdown alert applications, which help drive inventory turnover using discounts that provide good value for customers while maintaining revenue for the business, are being explored by retailers in particular.

- **Frictionless Integration**
  To overcome challenges from changes to existing operational processes, solution providers are refining their technologies to integrate into existing workflows with minimal disruption. Many new solutions offer real-time monitoring and predictive maintenance without requiring additional hardware.

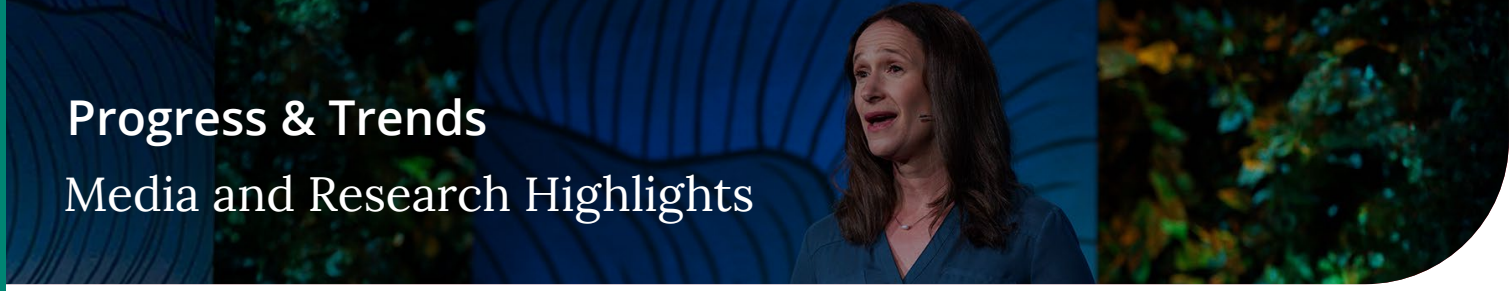
Consumer-Facing Trends

- **Consumer Behavior Shifts**
  Solutions like intelligent packaging, markdown alert applications, smart food storage systems, and inventory and food purchasing management apps are increasingly helping consumers make informed purchasing decisions that can help prevent overbuying and reduce food spoilage in their home kitchens. Yet significant room remains in shifting consumer household behavior and the cultural norms around food waste. For example, a ReFED survey of U.S. Food Waste Pact signatories indicated that retailers are not prioritizing customer education or awareness campaigns, other than some exploration of standardized date labels for private-label products.

- **Decentralized Recycling**
  Household appliances that grind, pulverize, and dehydrate food waste are gaining in popularity. While effective for some situations, these appliances can be costly and require a shift in consumer behavior, which could limit their scalability. In response, companies are developing alternative models—such as rental programs in partnership with waste haulers—to increase their usage.

Circularity Trends

- **High-Value Recycling**
  Solutions that effectively divert food waste from landfills and sewers can still fail to fully capture the financial, nutritional, and overall value of the waste. As a result, circular solutions are gaining momentum, converting feedstocks derived from food waste into high-value biomaterials while addressing real-world demands. In the fashion industry, for example, there is growing demand for sustainable textiles that are more environmentally friendly than traditional textile production. In response to this demand, companies are transforming food waste into bio-based leather alternatives, offering a sustainable substitute for traditional animal and synthetic leathers.



Progress & Trends

Media and Research Highlights

179K

Media articles about food waste published in 2024

9%

Increase in online searches for "Food Waste" between January 2023 and December 2024

5K+

Academic papers with "Food Waste" in the abstract published in 2024

We have not yet reached a point where support for food waste reduction—and a broader recognition of the true value of the food we eat—has embedded itself in our culture. Despite food waste being the single largest contributor to landfills, its disposal often does not provoke the same level of public scrutiny as littering or plastic pollution.

Still, we're hopeful that we've reached a "food waste moment," where people are starting to understand the importance of reducing waste and are beginning to act on it. That starts with an understanding of the problem—indeed, an understanding that there even *is* a problem—and the media plays a critical role in sharing this information. Because food waste happens throughout the food system, there are a range of stories that can be told about the issue, and news outlets have increasingly been focusing on the topic over the last few years. We've seen coverage by the *Wall Street Journal, New York Times*, CNN, Fox News, NPR, and many more—and ReFED's Dana Gunders spoke about food waste on the TED stage, highlighting mainstream recognition around the issue.

We've also seen an uptick in academic research focused on food waste—from just over 1,000 scholarly peer-reviewed articles in 2016 to more than 5,000 in 2024—which indicates growing interest in learning more about the topic and potential solutions.

U.S. Secretary of Agriculture Tom Vilsack announced the release of the first-ever *National Strategy for Reducing Food Loss and Waste and Recycling Organics* at the ReFED Food Waste Solutions Summit.

Both EPA and ReFED released landmark reports on the methane impact of food waste—the EPA's dove deep into methane generation from food waste landfills, while ReFED's quantified methane generation from surplus food across the food system.

2025 Outlook

Food waste impacts—and is impacted by—the entire food system and beyond. In 2025, broader trends will set the stage for food waste reduction, some factors driving less waste as an ancillary benefit and others perhaps causing more. There are also specific initiatives that will take root to drive progress. Overall, we're in a "food waste moment," where external factors are aligning to make it an opportune time to make real progress on food waste reduction.

Federal and State Policy Shifts

Changes by the new administration will undoubtedly impact the food system. An immigration crackdown could hit the food industry hard and worsen already challenging labor shortages. For farmers, this could mean leaving more produce unharvested. In restaurants and grocery stores, it could lead to less labor to handle food donations or repurpose food. These labor shortages could also drive higher wages, and in turn higher food prices. Furthermore, proposed tariffs are almost certain to raise food prices. Despite these risks, we remain optimistic about the potential for strong state policy adoption and the opportunity for the next federal Farm Bill to build more robust policy to help farmers and others sell more of what they produce.

Higher Food Prices

Overall, reducing food waste should become more attractive in this high-priced environment. While to date we have seen a limited impact of high food prices in reducing household waste, further increases could incentivize behaviors that stretch food budgets—such as eating leftovers or more carefully planning meals. Higher prices also help businesses justify investments such as waste-tracking and other software systems that cut food waste.

GLP-1 Medications

GLP-1 drugs, such as Ozempic, are another influence that will undoubtedly impact waste in both restaurants and homes—and ultimately, the results for waste could be mixed. With 6% of adults now taking these drugs and eating less as a result, the demand for restaurants to provide an option for smaller portions is growing. This could reduce plate waste in restaurants for those on GLP-1s and those with smaller appetites—a significant change, as plate waste currently represents about 70% of restaurant waste. Beyond restaurants, however, these drugs could drive waste in homes as they change food preferences, at least in the short term. Research from Ohio State found that among a survey of GLP-1 users, 25% of respondents agreed they had wasted more food since taking the drugs. Interestingly, the same study found that as GLP-1 users shifted to eating more vegetables on their diminished appetites, they were less likely to agree that they wasted more food. Changing food preferences is also forcing the food industry to reformulate products and throws a wrench in demand predictions for existing products, which could increase waste throughout the supply chain.

Artificial Intelligence Innovation

Along with the rest of society, the food system is seeing an explosion of innovation driven by artificial intelligence. AI-powered tech is already helping grocers forecast demand better and reduce waste, a concept that's now being applied in foodservice and restaurants. Beyond that, AI enables technology to create frictionless waste tracking with image recognition, better predict shelf-life, and more intelligently route products accordingly. This is just the beginning, and we anticipate that AI will support a range of new tools that will fundamentally reduce food waste throughout the supply chain.

Climate Commitments and Investment

This year, Brazil will host COP30—a particularly notable year for the international climate summit, as countries will submit new plans to cover the next five years. We expect food waste to become a more prominent topic at the 2025 conference, given the increasing global focus on methane reduction as a climate change solution. New data from satellites tracking how much methane comes from landfill shows that these emissions have been vastly underestimated, and food

[32] KFF Health Tracking Poll May 2024: *The Public's Use and Views of GLP-1 Drugs*

[33] Mansouri, J., & Roe, B. E. (2024). "Changes in Food Waste among a Sample of U.S. Consumers after Beginning Anti-Obesity Medication" *Nutrients*, 16(19), 3274. https://doi.org/10.3390/nu16193274

scraps are responsible for the bulk of this methane from landfills. Monitoring through this new technology may lead to increased scrutiny at the state, local, and corporate levels. However, with the U.S. government turning away from its climate commitments, federal funding for large infrastructure projects that could address landfill methane will likely slow.

Funding Volatility

In terms of funding, many of the dollars invested in recent years for solutions to food waste have been driven by venture capital activity, which is declining in line with other sectors, including climate tech. Expectations for the year ahead are a mixed bag, since lower interest rates may manifest in 2025 but will be moderated by a near-term decline in overall climate funding and the potential for tariffs. We believe food waste funding will likely be headed for a similar year compared to 2024. Within what does get invested, we expect to see continued focus on supply chain technology development, such as demand planning software and shelf-life extension, as well as facilities-based organics recycling.

While the outlook for 2025 has a mixture of forces at play, the high-priced food environment, evolution of AI solution applications, and food trends moving toward smaller portions all give us optimism that we will continue to make progress toward reducing food waste. We have the foundation, and we know where work needs to be done. We have viable solutions and initiatives supporting the adoption of these solutions, and many steps have already been taken. Progress is already being made in some sectors, and we expect that all the work to date will drive reductions with even more progress in the year to come.

We are still not on track to reach the 2030 national goal of a 50% reduction in food waste. For that to happen, everyone connected to the food system needs to step up and do their part. Food waste is a systemwide problem—which means it will take systemwide action to end it.

ReFED Resources to Help You Take Action

Retailers, Foodservice and Manufacturers

Join the U.S. Food Waste Pact to Target, Measure, and Act or explore our Business Services offerings.

Solution Providers

Explore our Solution Provider resources and join the Solution Provider Directory.

Capital Providers

Explore our funder collaborative, the Food Waste Funder Circle, and funder resources including the ReFED Capital Tracker. Join peer funders by contributing to ReFED's impact investing vehicle, the Catalytic Grant Fund.

Policymakers

Explore existing federal and state policies with ReFED's Policy Finder. Review the state policy toolkit from the Zero Food Waste Coalition.

Media

Reach out with a media request or access our media toolkit.

ReFED is a U.S.-based nonprofit that catalyzes the food system toward evidence-based action to stop wasting food. We work to increase adoption of food waste solutions across the supply chain by cultivating and convening the food community, delivering actionable evidence and insights, and seeding and accelerating promising initiatives. Our vision is a sustainable, resilient, and inclusive food system that makes the best use of the food we grow. To learn more about solutions to reduce food waste, please visit www.refed.org.

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