



National Strategy for Reducing Food Loss and Waste and Recycling Organics

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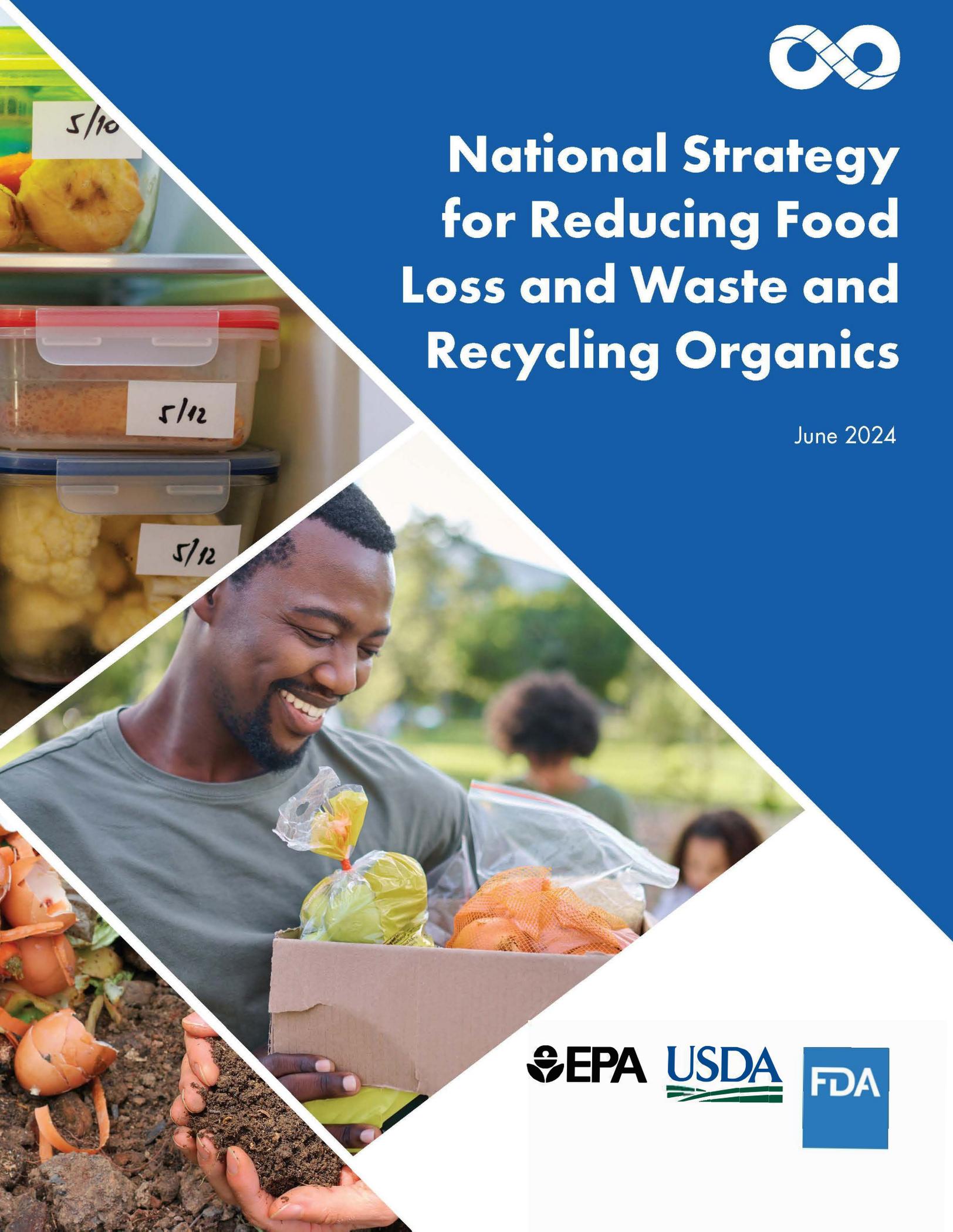


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Background

In 2015, the U.S. Environmental Protection Agency and the U.S. Department of Agriculture jointly announced an ambitious national goal to reduce food loss and waste by 50% by 2030. In 2021, EPA directly aligned the food waste part of the goal with the United Nations Sustainable Development Goal Target 12.3:^{1,2} “by 2030, halve per capita^a global food waste at the retail and consumer levels and reduce food losses along production and supply chains, including post-harvest losses.”³ Recycling food and other organic waste (e.g., composting, anaerobic digestion, and rendering) will also drive progress toward EPA’s nationwide goal of a 50% recycling rate by 2030 and support the USDA Climate Smart Agriculture and Forestry Strategy.⁴

Actions included in this strategy will put the U.S. on a path to achieving the complementary goals to reduce food loss and waste and increase the recycling rate in addition to supporting the *U.S. Methane Emissions Reduction Action Plan*,⁵ which identified reducing food waste in landfills as an Administration action to reduce methane emissions.⁶ Lastly, food waste is responsible for 58% of landfill methane emissions released to the atmosphere,⁷ so diverting food waste from landfills is an effective strategy to reduce greenhouse gas emissions.

The concentration of methane (a potent greenhouse gas) in the atmosphere has more than doubled over the past 200 years. Scientists estimate that this increase is responsible for 20 to 30% of climate warming since the Industrial Revolution.⁸ Per the Fifth National Climate Assessment, the increase in global greenhouse gas emissions is causing rapid warming and other large-scale changes, many unprecedented in thousands of years, including rising sea levels, changing rainfall patterns, shift in the timing of seasonal events, and others.⁹

Through this *National Strategy for Reducing Food Loss and Waste and Recycling Organics*, the Biden-Harris Administration identifies concrete steps—and complementary EPA, USDA and FDA actions—that will accelerate the prevention of food loss and waste where possible and practical, and the recycling of the remainder with other organic waste, across the entire U.S. supply chain.¹⁰ To build a more circular economy for all, EPA, USDA and FDA

Audience: Governmental and non-governmental organizations, communities and businesses focused on preventing food loss and waste and increasing organics recycling.

Scope: Food loss and waste occurs throughout the food supply chain from production through consumption. This Strategy focuses on preventing food loss and waste and recycling organic waste (including food, yard, and tree trimmings) and other organic materials along the entire supply chain.

The term “organic waste” in this Strategy includes food, yard and tree trimmings, and other organic (carbon-based) materials in the waste stream. “Organic” does not refer to food and fiber certified under the Organic Foods Production Act of 1990.

a. The UN Food Waste Index (2024), reports that the U.S. per capita food waste is 73 kg/year for household, 74 kg/year for food service, and 12 kg/year for retail. In contrast, the average food waste per capita in high income countries (per World Bank income grouping) is 81 kg/year for households, 21 kg/year for food service, and 13 kg/year for retail.

seek to highlight opportunities to use raw materials more efficiently, recover valuable resources from discarded materials, enable those resources to be used for their highest value, and help regenerate soils. EPA, USDA and FDA seek to accomplish this in ways that address climate change while being inclusive of all communities, consider environmental justice concerns and the potential to reduce food and nutrition insecurity, and drive innovation and economic growth. EPA, USDA and FDA collaborate on food loss and waste efforts, and all three work closely with a variety of public- and private- sector partners.¹¹ The three federal agencies have a formal interagency agreement focusing on the cooperation and coordination of efforts to reduce food loss and waste.^{12,13}

In the United States, the average family of four spends \$1,500 each year on food that ends up uneaten.¹⁴ More than one-third (nearly 100 million tons) of the U.S. municipal waste stream is organic waste, including food, yard and tree trimmings and other organic materials.¹⁵ Sixty-six million tons of this is food.¹⁶ Food is also the single most common material found in landfills, comprising 24% of municipal solid waste in landfills,¹⁷ and 61% of methane generated by landfilled food waste is not captured by landfill gas collection systems and is released to the atmosphere.¹⁸ The production and current management of this material as waste uses significant resources. It also contributes to a broad range of environmental impacts, including:

- Climate change.
- Air pollutants.
- Water scarcity.
- Biodiversity loss.
- Soil and water quality degradation.

Producing, packing, processing, distributing, retailing, preparing and disposing of the amount of food that is currently wasted annually in the United States contributes greenhouse gas emissions equivalent to those of 60 coal-fired power plants and requires enough water and energy to supply more than 50 million homes each year.^{19,20} Preventing food loss and waste and recycling organic waste, can substantially

Food loss and waste (FLW): Food produced for human consumption that leaves the human food supply chain for any reason (and is not ultimately consumed by humans).

Food loss: Food produced for human consumption that leaves the human food supply chain for any reason (and is not ultimately consumed by humans) between production up to, but not including, the retail sector.

Food waste: Food produced for human consumption that leaves the human food supply chain for any reason (and is not ultimately consumed by humans) at the retail, food service or household sectors.

Prevention of food loss and waste in this Strategy broadly refers to preventing food from becoming lost or wasted in the first place (i.e., source reduction) and keeping it in the human food supply chain by recovering and/or upcycling it.

Organics recycling in this Strategy refers to collecting and processing food loss and waste and other organic (carbon-based) materials, such as yard and tree trimmings, that would otherwise be landfilled or incinerated, and turning it into new products, such as soil amendments (e.g., by composting food scraps) or soaps and bone meal (e.g., by rendering). Some organics recycling solutions also generate biogas that can be captured and used to produce electricity or fuel.

Please see the Glossary for additional definitions.

reduce environmental impacts. Food loss and waste and other organic materials are resources rich in essential nutrients that can be recovered and returned to soils, building soil health and resilience in urban and rural environments and reducing reliance on mined and synthetic fertilizers, which are GHG-intensive to produce.²¹ This effort will also provide social and economic benefits that can help address the needs of underserved communities, such as:

- The potential to advance food and nutrition security for Americans and increase the recovery/rescue^b and donation rate of wholesome food, through the emergency food system and food recovery nonprofits.
- Expanding or creating jobs, financial opportunities, industries, and sectors in materials management or food waste reduction, including commercialization of new innovations that reduce food loss and waste.
- Increasing supply chain resilience—by building stronger linkages among stakeholders.
- Delivering financial savings to households and businesses.

EPA will use the Bipartisan Infrastructure Law’s materials management grants,²² and other resources available, to implement actions in this Strategy as appropriate. EPA and USDA are also advancing environmental justice through this Strategy, which addresses the many programs that are part of the Justice40 Initiative, which set the goal that 40% of certain federal investments flow to disadvantaged communities that are marginalized by underinvestment and overburdened by pollution.^{23,24} Programs that are part of the Justice40 Initiative will be identified throughout the Strategy.^c USDA will use American Rescue Plan Act (ARPA) and Inflation Reduction Act (IRA) funds, capacity, and competitive research, education, Extension funding, and other resources available to implement actions, as appropriate to their authority.

b. Throughout this Strategy, the terms “recovery” and “rescue” are used interchangeably. Please see the Glossary for definitions.

c. Justice40 Initiatives are marked with an asterisk (*) throughout the Strategy.

Goal of the National Strategy for Reducing Food Loss and Waste and Recycling Organics

Prevent the loss and waste of food; increase recycling of food and other organic materials to support a more circular economy for all; reduce GHG emissions; save households and businesses money; and build cleaner, healthier communities.

The actions detailed in this Strategy will help the United States meet its *National Food Loss and Waste Reduction Goal*^{25,26} to halve food loss and waste by 2030 and contribute to achieving the *National Recycling Goal*²⁷ to achieve a 50% recycling rate by 2030, as well as contribute to global achievement of the United Nations SDG Target 12.3.^{28,29} Preventing food loss and waste and recycling food and other organic waste will also reduce landfill methane emissions, in support of the *U.S. Methane Emissions Reduction Action Plan*.³⁰ Coordinated efforts to reduce food loss and waste will complement the Administration's additional efforts to reduce methane emissions from landfills and agriculture (e.g., supporting anaerobic digestion). These efforts are part of the Administration's whole-of government methane strategy—including actions to cut emissions from landfills and food waste, agriculture, the oil and gas sector, abandoned mines, and other major sources, while improving measurement and monitoring—to fulfill the Global Methane Pledge, which aims to reduce anthropogenic methane emissions by at least 30% by 2030 from 2020 levels.

Scope of materials included in this Strategy

This Strategy addresses organic waste, defined as food, yard and tree trimmings, and other organic (carbon-based) materials in the waste stream. States and local jurisdictions often vary in the materials included in their definitions of organic waste. Organic materials such as yard and tree trimmings are often recycled on their own, but they may also be recycled together with food and therefore are included in this Strategy. Composting nitrogen-rich materials, like food, requires carbon-rich materials such as woody yard and tree trimmings and dried leaves.

Environmental justice and equity

Identifying and addressing the challenges related to food loss, food waste and organic waste to help meet the needs of Tribal communities as well as communities with environmental justice concerns is an integral part of the Strategy. These communities bear the brunt of the adverse environmental, social, and economic consequences of waste management, among other systems. More equitable outcomes, including waste or recycling collection and/or materials management options, require addressing their needs. For Tribal communities, food sovereignty is often based on a recognition of food production methodologies such as foraging and the use of all animal byproducts. A core pillar of Indigenous food sovereignty is the development and maintenance of circular economies that provide for these and other cultural values. Furthermore, this Strategy is a deliverable in the Biden-Harris Administration's National Strategy on Hunger, Nutrition, and Health, and these efforts



align with Pillar 1, “Improve Food Access and Affordability,” which seeks to reduce barriers to food recovery by making it easier for food retailers and the service industry to donate wholesome foods.³¹

Strategies to recover food that would otherwise be lost or wasted could help deliver additional wholesome foods, especially fresh, frozen, dried, or canned vegetables and fruit, to emergency food assistance organizations, such as food banks and food pantries. This in turn could have health and economic benefits for households that use such resources when they are experiencing food insecurity. Such strategies would also contribute to feeding the growing global population with less environmental impact. The Strategy highlights opportunities, especially in communities with environmental justice concerns, to build community-scale organics recycling infrastructure; better feed those in need; reduce pollution; create jobs and business opportunities; and use compost made from recycled organic waste, including food, to support green infrastructure and build healthier soil across communities.

A central part of addressing environmental justice and equity is the meaningful engagement of communities in decisions that affect them. Robust engagement with communities most affected by the obstacles identified below is a foundational component of this Strategy.

Through community partnerships grounded in equity, this Strategy will ensure that communities most in need will be deeply engaged in its development and implementation—and will be beneficiaries of its success.

Challenges

Many challenges must be overcome to prevent half of food loss and waste (*National Food Loss and Waste Reduction Goal*) and to recycle half of all waste, including food and other organic waste (*National Recycling Goal*). This Strategy addresses seven key challenges:

- **Limited outreach and education.** A national, coordinated behavior change campaign that goes beyond awareness could enable businesses across the food supply chain, and also consumers, to make a noticeable difference on reducing food loss and waste. Outreach efforts have been limited by funding. Existing efforts have focused on awareness, which has limited the ability to spur as much action as is needed to achieve the national food loss and waste reduction goal. Additionally, targeted youth engagement, leadership, and education is crucial to meet our *National Food Loss and Waste Reduction Goal* because instilling good food waste reduction habits for youth can have a sizeable impact for years to come.
- **Limited research funding.** Research in both the technical sciences and the social sciences can provide the groundwork for the development of new and innovative technologies, solutions and practices; improve capacity building; lead to the widespread commercialization of valuable innovations; and improve our understanding of why people waste food and what solutions can drive changes. USDA funds some fundamental research on food loss and waste as part of its overall research portfolios but does not have dedicated funding for food loss and waste.
- **Need for collaboration.** The drivers of organic waste, including food loss and waste, vary by stage of the supply chain. In many cases, they can be best overcome by actors from multiple stages of the supply chain working together. Partnerships within the private sector, as well as between the private and public sectors and non-profits, including underserved communities, will be needed to identify effective solutions, scale up their implementation, and measure progress toward the national and international goals.
- **Obstacles facing underserved communities.** Lack of access to healthy and affordable food in communities leads to higher rates of food insecurity. Historically underserved communities may face greater challenges around food and nutrition security and may rely on emergency food assistance organizations more than other communities. For example, convenience stores servicing Tribal lands sometimes receive either shelf-stable product or product that is near or passed quality ripeness for sale because these communities are often set as one of the last nodes of the U.S. food supply chain. In addition, underserved communities may not have access to composting options that improve soil health and keep the economic and job benefits of organics recycling in those communities.

- **Insufficient infrastructure and planning.** Current organics recycling infrastructure is not sufficient to meet the *National Recycling Goal*, in part because the goal is insufficiently reflected in state and local government planning processes. Specifically, improvements to existing infrastructure should take advantage of opportunities to address other materials streams such as plastic packaging while expanding organics recycling. Funding, equipment, reliable hauling collection services, assistance with obtaining siting approval and permitting, and identification of suitable locations will be needed to increase recycling of certain types of food waste and other organic waste into animal food (e.g., where wholesome), compost, and other products at industrial and community scales. Moreover, infrastructure to distribute wholesome food to emergency food assistance organizations and to properly store it to extend its usable life (e.g., sufficient cold storage) is also limited.
- **Organics recycling market expansion.** Markets for the use of recycled products made from organics, such as compost, must be expanded to increase the economic incentive for organics recycling. Opportunities exist in a variety of applications to increase the use of compost to enhance soil health and water retention, reduce soil erosion and stormwater runoff, while building resilience to climate change impacts and serving as a site restoration and remediation tool. However, contamination in the waste stream for organic materials, especially with plastic packaging and persistent chemicals, must be addressed through interventions such as product innovation or optimized infrastructure. Furthermore, market expansion of compost is limited by lack of awareness and education, among compost producers and customers, about the various uses and benefits of compost application; by challenges the composting industry faces around distributing compost and marketing it to a wider audience; by the need to produce different types of compost for different sectors; and by compost quality concerns.
- **Obstacles to estimating food loss and waste and progress toward goals.** USDA, EPA and ReFED (a national nonprofit with a formal agreement with the Federal Interagency Food Loss and Waste Collaboration³²) have been collaborating to improve data and estimation methodologies, but there are many obstacles, such as limited, nationally representative data on food loss and waste in some areas (e.g., on the farm and during production stages). Data gaps and limitations make it difficult to understand the extent and consequences of food loss and waste, track progress toward the national and international goals, and measure success. The Administration has also been working to expand and enhance tools and strategies to precisely monitor, measure, verify and report methane emissions from food waste and other sources.

Objectives

Building on the latest evidence on food loss and waste, this National Strategy proposes four objectives:

1. Prevent food loss.
2. Prevent food waste.
3. Increase the recycling rate for all organic waste.
4. Support policies that incentivize and encourage the prevention of food loss and waste and organics recycling.

For each objective, the Strategy highlights strategic actions that EPA, USDA and FDA could take to address the key challenges and build on collaborative stakeholder efforts already underway or planned by EPA, USDA and FDA to help meet the national goals. In addition, the Strategy includes actions that federal agencies can take to prevent and reduce wasted food within their own operations. The Strategy is not meant to be comprehensive of all environmentally positive actions possible in this area. Many programs included here have competing priorities and may include food loss and waste as only part of their total funding. Specific actions ultimately adopted will be informed by evidence-based research to the extent available and stakeholder engagement, and implemented through technical and financial assistance, pilots and programs, and policies, where appropriate and subject to funding and resource availability.

Preventing the loss and waste of food (i.e., source reduction) and rescuing and upcycling food are powerful strategies to reduce the environmental impact of feeding a rapidly growing global population³³ while potentially improving the economic security of producers, providing resources for new types of businesses and jobs, and supporting food and nutrition security, such as supporting emergency food assistance organizations that serve food-insecure individuals. Improved food system efficiency will reduce its environmental footprint. Most GHG emissions associated with food waste occur before the food reaches the landfill (i.e., during production, processing and distribution).³⁴ This means that prevention offers the greatest opportunity of all food loss and waste strategies to decrease GHG emissions, protect critical ecosystems and address climate change.³⁵ In 2023, EPA released the Wasted Food Scale,³⁶ a graphic showing options for reducing the environmental impacts of wasted food, from most preferred to least preferred. The Wasted Food Scale prioritizes actions that prevent wasted food from being generated in the first place and includes pathways for preventing or managing wasted food. Agency actions highlighted in this Strategy are guided in part by the Scale.

The first two objectives below address prevention of food loss and waste. (Food loss occurs on farms or during food manufacturing/processing, storage and distribution, whereas food waste occurs in retail, food service or households.)

Objective 1: Prevent food loss

Opportunities to reduce food loss at the production and distribution stages of the food supply chain can lead to greater economic returns for producers, manufacturers and distributors. By some estimates, food loss and waste and surplus food was valued at roughly 2% of U.S. gross domestic product—or \$444 billion—in 2021.³⁷ Innovation, biological advances, collaboration and market development will drive progress toward preventing the loss of foods and enable significant social, environmental and economic benefits from farm to table. Some advances, such as biotechnological advances that slow the decomposition of produce, can prevent food loss and waste directly.³⁸ Other actions, such as policy adjustments and innovations, can address food loss and waste directly and can promote the equitable development of new technologies that help the United States meet its national and international food loss and waste goals.

Strategic actions

- A. Optimize the harvest or collection of raw commodities and foods.** Deepen collaboration among farmers, fishers, livestock producers, processors, distributors, retailers, schools, and emergency food assistance organizations (e.g., food banks and pantries) to develop new business models and data to support new policies that use a greater share of foods produced. Examples could include but are not limited to whole crop purchase and/or partial order acceptance by retailers, procurement models to source local produce in select circumstances (e.g., between farms and schools that accept produce donations), specification changes for market orders, better integration of production and processing facilities, improved on-farm storage, and technical assistance on loss reduction approaches through public-private partnerships. Incorporate loss-reducing business, agricultural and technological innovations, such as improvements in demand forecasting, cultivars, machinery and technologies including predictive analytics (i.e., artificial intelligence), and strengthen on-farm food rescue and the equitable distribution of surplus food.³⁹
 - USDA's Food and Nutrition Service aims to continue supporting The Emergency Food Assistance Program Farm to Food Bank Projects, subject to continued authorization and funding from Congress. These projects are designed to reduce food waste at the agricultural production, processing or distribution level through the donation of food and provide food to individuals in need; and build relationships between agricultural producers, processors, and distributors and emergency feeding organizations through the donation of food. Projects are administered by state agencies to cover the cost to harvest, package, process and transport commodities that may otherwise go to waste for use by emergency feeding organizations.

- The USDA Farm Service Agency's Farm Storage Facility Loan Program* provides low-interest financing so producers can build or upgrade facilities to store commodities (e.g., cold storage for produce and frozen foods) to increase the shelf life of products so they are more likely to make it to market.
- USDA's FSA also offers a microloan program focusing on financing the needs of small, beginning farmer, niche and non-traditional farm operations, such as truck farms, farms participating in the direct marketing and sales such as farmers markets and Community Supported Agriculture. These loans can assist in additional storage and reduce food loss.
- USDA's Local Agriculture Market Program consists of several programs by the Agricultural Marketing Service and Rural Development that funds projects that create more and better markets for producers, benefitting farmers and ranchers, which incentivizes harvesting of all food products and thereby reducing food loss and waste.
- USDA is investing in innovations to reduce food loss and waste or to make new products out of food scraps and other resources—including biochar, fruit cultivars with longer shelf lives, post-harvest technologies to extend shelf life, plant-derived coatings to protect fruits from frost damage before harvest, using insect meal for animal food, harvest machinery that reduces bruising, and new tools that prevent cross-contamination.⁴⁰ USDA's Agricultural Research Service, through its national Product Quality and New Uses program, will continue to research solutions to agricultural challenges from farm to table by improving quality, reducing spoilage and finding ways to convert wholesome agricultural processing byproducts and waste into valuable food and other products.
- USDA will continue to help move ARS research discoveries to market, in collaboration with industry partners to expedite scale-up, to solve agricultural problems and expand the economic impact of ARS research and development through ARS's Office of Technology Transfer, which works on partnerships, patenting and licensing.
- USDA's National Agricultural Statistics Service data on the production and utilization of fruits and vegetables can guide research on where food loss is occurring and measure progress made in addressing food loss on farms.
- USDA's Risk Management Agency will continue to improve communication to farmers, crop insurance agents, RMA staff, and gleaning organizations to encourage gleaning and to reduce on-farm food loss.
- USDA's National Institute for Food and Agriculture will continue to invest in innovative research, education, and Extension proposals that optimize the harvest or collection of raw commodities and foods through its Agriculture and Food Research Initiative.

B. Reduce food loss in food manufacturing/processing, storage and distribution.

Optimize handling, routing and storage; improve transportation, inventory and supply chain management with best practices and technologies, such as artificial intelligence, blockchain technology and remote sensing. When economically feasible, upcycle food ingredients, food products and processing byproducts into new foods for human consumption and/or create animal food with remaining food that would otherwise be lost. This food should be wholesome, safe and contain approved ingredients per existing state and federal regulations.

- USDA will continue to invest in emerging technologies through the Small Business Innovation Research* program, the Small Business Technology Transfer* program, and other programs to improve supply chain resilience, including food waste reduction and utilization.
- USDA will continue to invest in innovative manufacturing technologies that, amongst other priorities, include integration of data science/artificial intelligence, improving the monitoring of product quality, food packaging materials (including nanotechnology), and systems to extend shelf life and prevent food loss and waste.
- USDA will research food packaging materials from biobased and renewable sourced polymers using novel physical processes and chemical modifications. ARS scientists helped create and establish American Society for Testing and Materials standard test methods for compostability and biodegradation and are currently developing bioproducts and renewable polymers that are degradable in multiple environments. ARS scientists are developing safer biodegradable packaging and produced from waste (including food waste). ARS scientists will continue to research modified packaging technologies along the cold chain post-harvest to develop modified atmospheres in storage or in packaging, packaging perforations for controlled environments, and intelligent packaging that releases biobased components to extend shelf life by maintaining fruit/vegetable quality. The principles of Life-Cycle Analysis or similar framework will continue to be used to quantitatively assess the environmental and economic sustainability of developed renewable products or technologies and potential benefits. These products protect and enhance food products, eliminate or reduce pathogens, address antimicrobial resistance, extend shelf-life, and reduce food waste and reliance on fossil-fuel-based packaging.
- FDA will continue to administer a mandatory pre-market Food Contact Notification program that reviews the safety of materials used in food packaging as well as antimicrobials used in food processing. This mandatory authorization program ensures the safety of these products. It can also play a vital role in reducing FLW by providing industry a clear route to bring innovative packaging products to market. For example, such products may help reduce FLW by preserving the nutritional value and freshness of food transported over long distances or stored for extended periods of time, and antimicrobials that reduce FLW at production facilities by reducing potential for cross contamination prior to packaging and shipping.

- USDA will continue to partner with the airline industry and associated caterers, including International Air Transport Association, to make progress on reducing food waste starting with allowing uneaten meals to stay on board for the return flight (back-catering), which reduces the amount of non-imported food waste required to be incinerated or sterilized. USDA continues to reduce the amount of airline food waste by providing risk-based exemptions for food that was not imported, preventing its incineration or sterilization.
- USDA has partnered with the maritime industry, including the private yacht industry, to create a list of food items exempt from incineration/sterilization requirements, which reduces the amount of food waste in this area.
- USDA is partnering with IATA and Customs and Border Protection to recover wholesome food in the airline industry on international flights through the Transatlantic Recycling Trial. Trial outcomes and lessons learned will be shared broadly to spur industry-wide action.
- USDA will continue to support the practice of safely treating and feeding excess, wholesome food waste to swine by providing education and outreach around and enforcing federal regulations set forth in the Swine Health Protection Act and 9 Code of Federal Regulations part 166. Compliance with the regulations set forth in the SHPA safeguard both swine and human health as well as help to reduce the environmental impact of excess food waste.
- USDA will continue to promote partnerships across the food supply chain, including small businesses, trade associations, and other commodity groups. For example, NIFA partners with various commodity groups through the AFRI Commodity Board partnerships by co-funding projects that will improve crop production efficiency and advance solutions to critically important problems in U.S. agriculture to increase farmer profitability and sustainability, including food loss and waste efforts.
- USDA's Section 32 'Funds for Strengthening Markets, Income, and Supply' will continue to be used to purchase domestic surplus commodities such as fruits, vegetables, meats, poultry, and fish, some of which would otherwise be wasted. Section 32 purchases not only support farmers, ranchers, and fishermen, but provides wholesome, high-quality products to schools, food banks and households in communities across the country, and are a vital component of our nation's food safety net.
- Through a cooperative agreement with Cornell University, USDA's Agricultural Marketing Service is researching the infrastructure needs for the fresh fruit and vegetable supply chain.
- A partnership between the USDA Agricultural Marketing Service's Transportation & Marketing Program and the University of Wisconsin is analyzing how perishable products flow through supply chains via refrigerated trucks. The study fills a data gap by breaking down publicly available data to the county level, revealing how specific, high-value, cold-chain-dependent foods flow across the continental United States.

Objective 2: Prevent food waste

Food waste from consumers and consumer-facing businesses (retail and food service), which comprises roughly half of U.S. food loss and waste,⁴¹ carries larger environmental and economic costs than food losses upstream (i.e., on-farm or within food processing and distribution), since costs accumulate as food is wasted further down the supply chain.⁴² The first two actions below are built on the recommendations of the *National Academies of Sciences, Engineering and Medicine's A National Strategy to Reduce Food Waste at the Consumer Level*.⁴³

Measurement: Progress will be measured by federal government estimates, and evaluation methods will be developed as part of the actions below.

Strategic actions

- A. Develop, launch and run a national consumer education and behavior change campaign. Akin to successful efforts in other countries, a national consumer campaign is needed to raise awareness about the environmental and economic impacts of food waste and to share food waste prevention tactics—such as food storage or meal planning—with consumers, including those in underserved communities. The campaign should be informed by research and delivery of messaging through community-trusted communication routes. Community leaders, advocacy groups, business leaders and influencers can help drive education and messaging to all levels of society.
 - Building on its Blueprint for a National Campaign to Prevent Wasted Food and in coordination with USDA, EPA will fund the development and implementation of a national wasted food prevention campaign aimed at households. Communities will be able to customize the campaign to fit their needs and audiences. The campaign will be informed by learnings from community-level food waste prevention intervention projects. The campaign will also involve public-private partnerships, leveraging current stakeholders, such as the U.S. Food Loss and Waste 2030 Champions.
 - › In addition to the campaign, EPA has awarded Science to Achieve Results research grants to develop, apply, and test innovative and creative community-engaged approaches to reduce household food waste, especially in low-income households. The results of this research will be shared publicly.
 - USDA has co-funded the development of a food waste measurement data model for the household level in collaboration with university partners and the Foundation for Food & Agriculture Research. This model will allow for more accurate estimations of food waste given a variety of commonly collected metrics (e.g., survey, curbside audit, photo diary). Advances from this effort can aid in the implementation of the National Campaign to Prevent Wasted Food.

- EPA will incorporate USDA-funded audience segmentation research and fund additional audience segmentation research to help inform priority audiences for a national campaign.
- USDA is investing \$2.5 million of NIFA's AFRI funds to rigorously test and measure the effectiveness of different consumer education campaign messages in encouraging households to reduce food waste to strengthen the design of the National Campaign to Prevent Wasted Food. This behavioral science research will build on previous consumer focused food waste reduction campaigns. It will engage the Land-grant University System Cooperative Extension System to investigate new methods and models for implementing programs in communities. Furthermore, this will be a partnership with private and nonprofit sectors.
- Expertise from USDA and FDA, on subjects such as on food date labeling and consumer-reaching food safety, will help shape the National Campaign to Prevent Wasted Food.

B. Educate and engage children and youth about strategies to reduce food waste; encourage development and adoption of lifelong best practices in schools to reduce food waste. Providing children and youth with knowledge about food loss and waste and reduction strategies can encourage the development of food waste-reducing behavior at an early age. Educational activities can build on and complement several of USDA's strategic actions:

- USDA is investing \$10 million of ARPA funds in NIFA's Food and Agriculture Service Learning Program grants for food loss and waste reduction on school grounds. These grants are to engage in and scale up efforts that increase capacity for students to learn how to prevent food waste, change the school environment (e.g., through student-led cafeteria food waste audits), and use cafeterias and other parts of school grounds as classrooms. Also, with this funding, NIFA and the National 4-H Council will develop food loss and waste leadership trainings for youth who attend national and state level events; these youth can take lessons back to their communities and implement them locally.
- USDA FNS's Patrick Leahy Farm to School Grant Program, among other priorities, can support farm-to-school activities related to food loss and waste, such as improved acceptance of school meals through education, recipe development, and taste-testing, composting school garden clippings and/or cafeteria food scraps and using that compost for school gardens, or engaging children in feeding cafeteria food scraps to chickens they raise on school grounds.

- USDA FNS periodically conducts the School Nutrition and Meal Cost Study, which estimates the amount of plate waste in the National School Lunch and School Breakfast Program. The SNMCS has identified practices that school nutrition professionals can consider implementing in their school meals programs that may help reduce plate waste, such as offering more entrée choices, offering raw vegetables every day, addressing the time and length of mealtimes, and implementing offer versus serve (an option that allows students to decline some of the food offered in a reimbursable lunch or breakfast).⁴⁴
- EPA established the National Environmental Youth Advisory Council⁴⁵ in 2023 to provide independent advice and recommendations to the Administrator on how to increase EPA's efforts to address a range of environmental issues as they relate to youth, with an emphasis on those below 29 years of age. Council members will provide a critical perspective on how the impacts of climate change and other environmental harms affect youth communities. NEYAC's 2023-2025 charge topics⁴⁶ include providing advice and recommendations to the EPA Administrator on food loss and waste. As part of the agency's commitment to centering communities with environmental justice concerns, at least 50% of the overall membership of NEYAC come from, reside primarily in and/or do most of their work in disadvantaged communities as defined by the Climate and Economic Justice Screening Tool as part of Justice40.

C. Partner with the private sector to find upstream solutions to consumer food waste.

Some of the most effective solutions to preventing consumer food waste may lie upstream from households. Changes in the consumer environment will be explored, with partners in retail, food service, and food manufacturing industries and food advocates, to make it easier for all consumers and community types to waste less food. For example, successful efforts in other countries have included changes in packaging design, marketing promotions and portion sizes, and food date labeling. Consumer confusion about the different quality date labels (e.g., best if used by, sell by, use by) leads to the premature discard of wholesome food.

- FDA and USDA/Food Safety and Inspection Service will continue to support the food industry's efforts to standardize the use of the term "Best if Used By" on its packaged-food labeling when the date is simply related to optimal quality—not safety.⁴⁷
- EPA is partnering with the United Nations Environment Programme, the Pacific Coast Collaborative/ReFED and the Consumer Goods Forum to fund the development and testing of new interventions with retailers, food service and hospitality providers and manufacturers aimed at helping consumers waste less food. Results and learnings will be shared broadly to inspire industry-wide action.
- EPA will seek opportunities to test solutions in traditional brick-and-mortar shopping settings, as well as online shopping settings.

- USDA and EPA are committed to expanding the U.S. Food Loss and Waste 2030 Champions, a public-private partnership that includes businesses that have publicly committed to reducing food loss and waste in their own U.S. operations in half by 2030.
- USDA, EPA and FDA renewed the interagency agreement on June 1, 2024 with the Food Waste Reduction Alliance, representing three major sectors of the supply chain—food manufacturing, retail, and restaurant and food service. Through this partnership, the three agencies formalized industry education and outreach efforts with the Consumer Brands Association, FMI—The Food Industry Association, and the National Restaurant Association, the three founding partners of FWRA.

D. Facilitate and incentivize food donations to improve access to healthy and affordable food.

- EPA will refine and expand on food donation and recovery infrastructure data in the *Excess Food Opportunities Map*,⁴⁸ a national tool that provides information on potential sources of excess food as well as potential infrastructure to help businesses, organizations and governments make better use of food by ensuring it goes to feed people or recycling it.⁴⁹
- EPA will continue to support regional, state and local projects aimed at increasing food rescue. All projects aimed at increasing food rescue and donation should assess the quality, nutrition and appropriateness of the food being rescued, not just the quantity (e.g., consistent with Indigenous food sovereignty).
- Through several programs, USDA will continue to help expand the food donation infrastructure and support research, education and Extension projects that convey the financial benefits of donating and improve and innovate food donation channels. For example, FSA's Farm Storage Facility Loan Program* and Rural Development's Community Facilities and Rural Energy for America Program* loan and grant programs can help fund cold storage infrastructure that helps extend shelf life. USDA will continue to clarify guidance on food safety for food donations. USDA will continue to provide guidance on the donation of eligible meat and poultry products to nonprofit organizations.
- USDA will continue to provide outreach on the benefits of using tax credits to encourage the donation of food.
- USDA will expand outreach to businesses and others on the liability protections afforded by the Bill Emerson Good Samaritan Food Donation Act, subject to additional funding.
- FDA will continue to work to encourage uniform adoption of food donation practices updated in the Food Code⁵⁰, which provide consistency and uniformity for public health officials to ensure alignment with food safety requirements, by state, local, Tribal and territorial retail food protection programs.

E. Research, identify and address unique drivers and impacts of U.S. food loss and waste and the incentives and strategies to reduce it.

- USDA's Economic Research Service will partner with academics to build on their seminal research findings on the economic drivers in the farm and pre-retail sectors of fresh produce loss, to examine economic drivers of loss in other food groups.
- USDA's ERS will partner with external researchers to examine the returns on investment for food loss and/or waste reduction activities, subject to the availability of funding and data.
- EPA is partnering with UNEP, the World Resources Institute and the Waste and Resources Action Programme to identify systemic drivers of food waste unique to the United States and recommend strategies to address them.
- EPA will evaluate the life cycle environmental impacts and potential cost savings from food waste prevention strategies to inform food waste campaigns and incentives.

F. Invest in behavioral science to determine the most effective strategies to change household behaviors related to food waste.

- EPA and USDA will explore investing in behavioral science expertise and research to guide iterative design and implementation of a national campaign.
- USDA's NIFA launched a new \$1.5 million cross-cutting AFRI program area titled "Center for Research, Behavioral Economics, and Extension on Food, Loss and Waste." This center will use a systems approach in conducting research and Extension outreach to address inefficiencies in the food system, such as food waste. The center aims to create meaningful momentum on food loss and waste prevention and recovery among Land grant Universities, their partners, and external stakeholders. The center awardee, Purdue University, was announced in May 2024.

G. Test new approaches in the United States and abroad, identify technology-based solutions, and facilitate sharing of best practices to reduce food loss and waste among retailers, manufacturers and food service providers, including in their supply chains.

- EPA is partnering with UNEP, ReFED and the Pacific Coast Collaborative to fund projects that test interventions to prevent wasted food across the whole supply chain, with both large industrial-scale and smaller retailers, food service and hospitality providers, and manufacturers. Findings will be shared to increase awareness about food waste reduction opportunities among businesses and other leading organizations and amplify solutions.
- EPA and USDA will continue to provide funding opportunities through SBIR grants to small businesses seeking to develop new technological approaches to prevent and facilitate recycling of food waste.

- FDA will continue to work with industry to implement the New Era of Smarter Food Safety Blueprint-Tech-Enabled Traceability to allow stakeholders in the supply chain to adopt and leverage digitally enabled technologies and data sharing to more quickly and accurately pinpoint contaminated food product and remove it from the marketplace, reducing food loss and waste associated with such events.
- USDA and EPA will promote food waste reduction, food recovery and composting practices within headquarters and other buildings where practical while jointly exploring opportunities to promote these activities in other federal buildings across the United States.

H. Participate in international forums to share best practices, data and tools. Many countries are interested in reducing food waste and see it as an important action to reduce GHG emissions. The United States is a leader in food loss and waste measurement and reduction practices, data and tools can showcase these efforts internationally. Participation can also bring back successful best practices from other countries.

- EPA and USDA, with support from other agencies, will continue to collaborate with the Group of Seven, the Group of 20, the Commission for Environmental Cooperation, the Asia-Pacific Economic Cooperation, the Organisation for Economic Cooperation and Development, and other international organizations to exchange policies and best practices for reducing and measuring food waste.
- USDA will continue to host its roundtable series on food loss and waste success stories from the United States and around the world and expand the series to include additional knowledge sharing and education, such as on the donation liability protections of the Bill Emerson Good Samaritan Food Donation Act.
- USDA will host sessions (e.g., workshops for states, municipalities/localities and Tribal communities) to share the development of other food loss and waste information and highlight and disseminate best practices to catalyze action regionally. These may include presentations by the private sector and nonprofits.

Objective 3: Increase the recycling rate for all organic waste

Recycling organic waste offers the opportunity to recover nutrients and create healthy soils, in a way that also promotes environmental justice through local community engagement. Certain types of organic waste can be used to create wholesome animal food (including by insect farming), compost, digestate and/or energy, thus providing nutrients to livestock, returning nutrients to the soil, and/or displacing the use of fossil fuels—all while reducing GHGs. Properly managed organics recycling is essential to building a more circular economy for all, encompassing actions that regenerate nature and reducing landfill methane emissions.

Measurement: Progress will be measured by EPA's metric for food waste and other organics (by management pathway destination—e.g., composting, anaerobic digestion, landfill).⁵¹

Strategic actions

- A. Support the development of additional organics recycling infrastructure through grants and other assistance for all communities, especially those that are underserved.** The development of additional organics recycling infrastructure will be essential to meet the *National Recycling Goal* and to ensure that all communities can participate and share in the benefits of organic waste recycling. These actions will support centralized and de-centralized (e.g., on-farm or community-scale) organics recycling operations, as well as education and training for community members.
- USDA Rural Development's REAP guarantees loans of up to \$25 million and provides grants of up to \$1 million to agricultural producers and rural small businesses for renewable energy systems or to make energy efficiency improvements, including anaerobic digesters that incorporate food waste as feedstock.
 - USDA is investing \$30 million over three years through Composting and Food Waste Reduction cooperative agreements, which engage private producers and their local governments and partners to develop, implement and test strategies for planning and implementing municipal/community compost plans and/or food waste reduction plans and identify food waste solutions.
 - USDA's Natural Resources Conservation Service* will continue to provide financial and technical assistance for the construction of composting facilities, including those that incorporate food waste, for the purpose of transforming organic waste into a soil amendment that improves or maintains overall soil health.

- EPA will fund up to \$275 million in grants through the Solid Waste Infrastructure for Recycling Grant Program^{*52} (part of the Bipartisan Infrastructure Law*), which includes supporting organics recycling infrastructure (e.g., composting and anaerobic digestion) as eligible activities. This funding could include support for capacity building and training for underserved communities, including efforts to enable increased decentralized composting. EPA will provide technical assistance and peer networking opportunities to SWIFR grantees and will make future funding opportunities available under SWIFR.
- EPA will fund up to \$75 million in grants through the Recycling Education and Outreach Grant Program^{*53} (part of the Bipartisan Infrastructure Law*), which includes supporting education and outreach efforts for food and organics recycling as eligible activities. EPA will provide technical assistance and peer networking opportunities to REO grantees and will make future funding opportunities available under REO.
- EPA's Community Change Grant program^{*54} will provide approximately \$2B in funding for environmental and climate justice activities to benefit disadvantaged communities through projects that reduce pollution, increase community climate resilience, and build community capacity to address environmental and climate justice challenges. Food waste reduction and recycling activities are included in this grant program.
- EPA's Climate Pollution Reduction Grants program^{*55} will provide \$5B in grants to states, local governments, Tribes and territories to develop and implement ambitious plans for reducing greenhouse gas emissions and other harmful air pollution. Included in the scope of this program, among many sectors, is the "Waste, Water, and Sustainable Materials Management Sector." This sector could fund programs that expand composting and bio-digestion infrastructure to reduce GHG emissions and increase beneficial use of organic waste. Additionally, the sector could fund programs and incentives that reduce or divert food and/or yard waste through improved production practices, improved collection services, and increased reuse or recycling rates.
- EPA will continue to convene the recipients of its *Supporting Anaerobic Digestion in Communities* funding to share information and lessons learned from their demonstration projects, feasibility studies, and technical assistance and education projects focusing on anaerobic digestion of food waste.
- EPA's AgSTAR program will continue to provide technical assistance support and guidance for on-farm anaerobic digesters that co-digest food waste, and promote the beneficial use of digestate, a nutrient-rich byproduct of anaerobic digestion.

B. Expand the market for products made from recycled organic waste. Education and outreach on the value of recycled products made from organic waste—compost as well as other beneficial products (e.g., rendered materials)—can help increase the end market for procurement and use of these products by municipalities, state transportation departments, real estate developers, farmers, landscapers and other entities and increase composting of

food waste. Research to support market expansion can include quantifying the value and benefits of these recycled products made from organics. For example, it can include the benefits of compost and other beneficial products (e.g., digestate) when used to improve soil quality, increase soil carbon sequestration, increase water retention, provide plant nutrients, serve as green infrastructure to control erosion and stormwater runoff, build climate resilience, and aid in cleanup of disturbed and contaminated soils.

- USDA and EPA will continue to conduct research and develop new materials to communicate the benefits, costs and impacts of using compost, digestate and other organic soil amendments in a variety of applications, such as building climate resilience and a more circular economy. For example:
 - › USDA's NRCS, in consultation with various Land-grant Universities, will continue to support research and outreach material related to compost and other soil-related products.
 - › EPA will assess the environmental value of using compost in stormwater management, the restoration of disturbed sites and the remediation of contaminated sites, as well as for more traditional uses in agriculture, landscaping and horticulture. EPA will also evaluate the climate-related benefits of applying compost, including carbon sequestration in soils and improved resilience to changing climate, and create materials to communicate this to partners and the public.
 - › EPA will create outreach materials to promote the use of compost in non-agricultural applications.
 - › EPA will examine the barriers to expanding use of compost in non-agricultural sectors. EPA will compare the environmental impacts of producing and applying organic amendments to that of mined or synthetic fertilizers.
 - › USDA NIFA's AFRI Foundational and Applied Sciences Request for Applications and the Sustainable Agriculture Systems RFA accept research, education, and Extension proposals across these topic areas. For example, the Biorefining and Biomanufacturing Program Area accepts research projects that improve or expand use of waste and byproducts generated in agricultural and food systems. Additionally, the Agricultural Microbiomes in Plant Systems and Natural Resources Program Area prioritizes applications that functionally characterize microbiomes and microbiome metabolites (i.e., a substance formed in or necessary for metabolism).
 - › Researchers in USDA's ARS are currently evaluating novel biochar produced by diverse controlled processes (pyrolysis, wet torrefaction and torrefaction). Scientists are modifying produced biochar for alternative uses in soil amendments, recycled plastics, sustainable carbon black replacement in a rubber filler and remediation applications including chemical spills, heavy metal removal and per- and polyfluoroalkyl substances absorption.

- › Furthermore, EPA will examine the environmental value of producing and using biochar made from organic waste.

C. Enhance support to advance de-centralized (i.e., community-scale, on-farm and home composting) organics recycling, with emphasis on Tribal communities and communities with environmental justice concerns, allowing all communities to benefit—economically and environmentally—from certain types of organics recycling efforts. Federal resources could be used to provide tools and increase capacity for communities for certain types of organics recycling and end-product use where possible. These efforts should include community investment, job creation, and reduction of burden on centralized infrastructure.

- EPA and USDA will identify model community composting operations, consider beneficial connections with community gardens, identify supportive and prohibitive policies and regulations, and share outreach materials to support the advancement of community and home composting, highlighting its environmental, economic and social benefits.
- EPA and USDA will continue to strengthen opportunities for Tribes to develop composting programs on Tribal lands—for example, through training workshops, funding support and technical assistance.
- EPA will evaluate the environmental performance of in-home food waste management technologies.
- EPA will assess the impact of organic waste collection (e.g., transport) on overall environmental footprint of organics recycling.

D. Build, refine, and share tools and data to aid decision-making about infrastructure investments, waste management policies, and waste management pathway destinations (e.g., composting, anaerobic digestion, landfill).

- EPA and other federal partners will promote and encourage state and local governments to adopt the new Wasted Food Scale,⁵⁶ a tool that ranks wasted food management methods based on their environmental impacts and contribution to a circular economy. The tool's ranking is based on life cycle assessment and a circularity analysis as captured in the findings of EPA's 2023 report *From Field to Bin: The Environmental Impacts of U.S. Food Waste Management Pathways*.⁵⁷
- EPA will continue to research the environmental impacts of food waste management pathways, including those on the Wasted Food Scale and additional pathways.
 - › EPA will consider the environmental value of additional pathways such as rendering and insect farming.
 - › EPA will evaluate methane and other emissions related to anaerobic digestion.
 - › EPA will assess the methane emissions from food waste sent down the drain and through the sewer to water resource recovery facilities.

- EPA will update the Waste Reduction Model with the latest data for food waste and other organics.
- EPA will develop a calculator for external stakeholders, including state and local governments considering food waste programs, to estimate methane emissions savings from diverting food waste from landfills.
- EPA will research emissions from composting operations and develop a basis for emissions factors that could be used to streamline issuance of permits for new composting facilities by states.
- EPA will develop or refine tools, such as the CoEAT, that help decision-makers assess economic feasibility and benefits of adding food waste into existing organics recycling programs and infrastructure.
- EPA will continue to gather data on organic materials management, including but not limited to the generation, collection, recycling, and use of organic materials. EPA commits to developing new information collection tools as needed and to make any data collected publicly available. EPA is developing an online dashboard with material circularity indicators that includes wasted food to illustrate impact and progress.
- USDA will continue to host the Inter-Agency Biogas Working Group, which shares data and information (e.g., on current and best practices, USDA also shares data with EPA AgSTAR), current funding opportunities and policies related to anaerobic digestion, including those that incorporate food scraps. This sharing can help aid decision-making about anaerobic digester infrastructure investments.
- Several USDA programs mentioned above, such as the CFWR and the REAP, will share selected aggregated data and information publicly, and will share information and tools on food waste management pathway destinations (e.g., composting, anaerobic digesters) with awardees.
- Department of Energy will continue to provide assistance for the development of community-centered solutions and business plans for resource and energy recovery from organic waste streams, including \$10 million for awards for Community Scale Resource and Energy Recovery from Organic Wastes and over \$1.5 million in ongoing technical assistance provided by the National Renewable Energy Laboratory. This technical assistance assists U.S. municipalities and counties in the lower 48 states, Alaska, Hawaii, and U.S. territories—as well as Tribal governments—with addressing knowledge gaps, specific challenges, decision-making considerations, planning, and project implementation strategies related to waste to energy technologies.
- *The National Strategy to Advance an Integrated U.S. Greenhouse Gas Measurement, Monitoring, and Information System*⁵⁸ includes a task to establish measurement test beds that combined atmospheric observations of carbon dioxide and methane with activity data from landfill operations to improve municipal solid waste landfill emissions models, emissions factors, and activity data. Additionally, inter-agency activities (with

National Oceanic and Atmospheric Administration, National Aeronautics and Space Administration, National Institute of Standards and Technology, EPA) and partnership with the private sector will advance the development of cost-effective measurement and monitoring approaches with landfill emissions. These tasks will be aligned and supported by parallel efforts to monitor and quantify food loss and waste reduction strategies.

E. Address contamination in the organic waste recycling stream. One current limit on organics recycling is the contamination of this waste stream with plastics, persistent chemicals such as per- and polyfluoroalkyl substances (PFAS) and other materials.

- As requested, EPA and USDA will provide subject matter expertise and technical assistance to state, Tribal, territorial and local governments (as well as other entities) to address contamination in the organic waste recycling stream.
- EPA will provide stakeholders with synthesis of the latest science related to contamination by plastic and PFAS in organics recycling.
- EPA and USDA will support research on the uptake and bioaccumulation of PFAS in plants and animals, including PFAS bioaccumulation via biosolids application.⁵⁹
- In coordination with actions under its draft *National Strategy to Prevent Plastic Pollution*,⁶⁰ EPA will consider how to scale and refine existing solutions that address non-compostable plastic contamination in the organic waste recycling stream, including the use and management of certified compostable (in areas where composting infrastructure exists), single-use products and reusable alternatives for food packaging and serviceware.
- EPA will study the effect of de-packaging equipment—a commonly used strategy to reduce contamination in food waste streams before composting and anaerobic digestion, on levels and particle sizes of microplastic contamination in food waste streams.
- EPA will continue to share effective outreach materials that communities can customize and use to address and reduce contamination in their composting programs through its *Composting Food Scraps in Your Community: A Social Marketing Toolkit*.⁶¹
- FDA will update its Guidance for Industry for the Food Contact Notification program to reflect new market trends for food packaging and assist manufacturers in developing innovative new products such as biodegradable/compostable packaging. Additionally, FDA has worked with industry to phase out the sale of PFAS for use in paper food packaging in the U.S. market.⁶² These activities help reduce the potential for contamination of food wastes with plastics or PFAS from food packaging.

Objective 4: Support policies that incentivize and encourage the prevention of food loss and waste and organics recycling

Policies that incentivize and encourage the prevention of food loss and waste, redistribution of surplus, wholesome food, development of additional organics recycling infrastructure, and expansion of markets for recycled products made from organics and soil amendments made from food and other organic waste—at all levels of government—can help the United States meet its *National Food Loss and Waste Reduction Goal and National Recycling Goal*. These policies can be prioritized in line with the recommendations in EPA's Wasted Food Scale. For example, efforts can include promoting state and local goal setting and climate planning; and facilitating peer learning on effective and equitable surplus food redistribution systems, organic waste collection and processing infrastructure, cost-benefit analytical tools, sharing case studies and market-based incentives or policy approaches to divert organic waste from landfills and incinerators (such as “pay-as-you-throw” programs or landfill bans on organic materials). Many states and cities have enacted policies to prevent wasted food and to keep organic waste out of landfills. In 2021 alone, 25 states introduced food waste legislation.⁶³

Strategic actions

- A. Support international policymakers aiming to build more circular economies.** The United States is advancing a range of circular economy approaches internationally in several priority sectors, including agriculture and prevention of food loss and waste.
- EPA and USDA, with support from other agencies, will continue to collaborate with the G7, the G20, the Commission for Environmental Cooperation, the Asia-Pacific Economic Cooperation, the Organisation for Economic Cooperation and Development, and other international organizations to exchange best practices and policies for the reduction and measurement of food waste.
 - USDA, with support from other agencies, will continue to support the United States' participation in the Food Is Never Waste Coalition, which was launched in Rome in 2021 at the UN Food Systems Summit to reduce food loss and waste while emphasizing economic sustainability.
 - The USDA Secretary and EPA Administrator are members of the Champions 12.3 coalition, which consists of executives from governments, businesses, international organizations, research institutions, farmer groups and civil society dedicated to inspiring ambition, mobilizing action and accelerating progress toward achieving SDG Target 12.3 by 2030.

B. Support Federal, Tribal, territory, state, and local policymakers aiming to build more circular economies.

- EPA and USDA will provide subject matter expertise and technical assistance to federal agencies, Tribes, territories, states and local governments, as requested, on policy approaches and options for reducing food loss and waste and increasing food waste and/or other organics recycling.
- EPA will encourage state and local governments to adopt the Wasted Food Scale and prioritize the highest-ranked management pathways when possible.
- EPA is evaluating a number of new and emerging technologies and different regulatory approaches that could be incorporated into a revised/updated New Source Performance Standard/Emission Guidelines under Section 111 of the Clean Air Act for municipal solid waste landfills. Among these regulatory approaches is organics waste diversion.^{64,65}
- EPA's Environmentally Preferable Purchasing Program⁶⁶ will explore recommendations for federal procurement related to food waste prevention in line with the Food Service Guidelines for Federal Facilities, EPA Wasted Food Scale and the Federal Food Donation Act of 2008.
- EPA will explore recommendations for federal procurement related to finished compost products.
- EPA and USDA will identify barriers to on-farm and decentralized composting and share information with partners, such as state and local policymakers.
- EPA will continue to convene the National Compost and Anaerobic Digestion Peer Network, composed of state and local government staff working on organics recycling efforts, as well as the Food: Too Good to Waste Peer Network, composed of state and local government staff who share successful strategies for reducing household food waste. These networks aim to share information on current research, challenges and solutions and provide a platform for state and local governments to collaborate and learn from each other. EPA will continue to expand participation in both networks and look for opportunities to connect and collaborate with other similar peer networks, such as USDA's Office of Urban Agriculture and Innovative Production grantee networks.
- EPA will continue to share example state and local climate action plans on its website that contain actions to reduce food loss and waste, as well as recycle organic waste.⁶⁷
- USDA will continue to host events that highlight success stories and sharing of information for food loss and waste prevention. These events could include information on building a more circular economy.

- Recognizing that states and local governments have taken incredible leadership regarding food loss and waste policies and programs, EPA will highlight and amplify state and local examples of successful policies and initiatives through peer networks and work with the Environmental Council of the States and Association of State and Territorial Solid Waste Management Officials and will use these learnings to inform federal work. EPA will also post SWIFR and REO grantee success stories on its website.
- EPA's Environmental Justice Thriving Communities Technical Assistance Centers⁶⁸ will continue to provide training and other assistance to build capacity for navigating federal grant application systems, developing strong grant proposals, and effectively managing grant funding, while taking steps to remove barriers and improve accessibility for communities with environmental justice concerns.

Measuring Progress Toward the Objectives

EPA and USDA will work together and collaborate with external partners to improve measurement of food loss and waste and to track progress toward the *National Food Loss and Waste Reduction Goal*, the *National Recycling Goal*, and *SDG Target 12.3*.⁶⁹

EPA and USDA will rely on—and expand and improve where necessary and feasible given available resources—their existing datasets for food loss and food waste. More data will be needed in some areas, such as on-farm food losses, and more regular updates may be needed in other areas to track progress. All data sources will be peer-reviewed to ensure quality. Ultimately, this work will be partially guided toward data analytics that can be used for accurate predictive tools for food loss and waste along the supply chain. Models already exist for what and how these data could be provided so that tracking food loss and waste and seeking opportunities can become proactive rather than reactive.

EPA will also develop measures to track the environmental benefits achieved through progress toward the *National Food Loss and Waste Reduction Goal*, and will publicly report these measures in its *Report on the Environment*⁷⁰ and *US National GHG Inventory*.⁷¹ The first metric will quantify the methane emissions associated with landfilling food waste and will build on EPA's 2023 report *Quantifying Methane Emissions from Landfilled Food Waste*.⁷² The second metric will track annually the greenhouse gas emissions associated with the production, processing, distribution and retail of food that is ultimately landfilled.

As noted above, agencies will coordinate under the *National Strategy to Advance an Integrated U.S. Greenhouse Gas Measurement, Monitoring, and Information System*⁷³ to enhance quantification tools to measure landfill emissions. The agencies will also address composting and other strategies through ongoing efforts to measure, monitor, report on and verify greenhouse gas emissions reductions resulting from the adoption of conservation practices and strategies.

Glossary

Circular economy: An economy that uses a systems-focused approach and involves industrial processes and economic activities that (a) are restorative or regenerative by design; (b) enable resources used in such processes and activities to maintain their highest values for as long as possible; and (c) aim for the elimination of waste through the superior, cost-effective design of materials, products and systems (including business models).⁷⁴

Environmental justice: The just treatment and meaningful involvement of all people, regardless of income, race, color, national origin, Tribal affiliation or disability, in agency decision-making and other federal activities that affect human health and the environment so that people:

(i) are fully protected from disproportionate and adverse human health and environmental effects (including risks) and hazards, including those related to climate change, the cumulative impacts of environmental and other burdens, and the legacy of racism or other structural or systemic barriers; and

(ii) have equitable access to a healthy, sustainable, and resilient environment in which to live, play, work, learn, grow, worship, and engage in cultural and subsistence practices.⁷⁵

Equity: The consistent and systematic fair, just and impartial treatment of all individuals, including individuals who belong to underserved communities that have been denied such treatment, such as Black, Latino, Indigenous and Native American persons, Asian Americans and Pacific Islanders, and other persons of color; members of religious minorities; lesbian, gay, bisexual, transgender, and queer (LGBTQ+) persons; persons with disabilities; persons who live in rural areas; and persons otherwise adversely affected by persistent poverty or inequality.⁷⁶

Food security: Having access, at all times, to adequate food for an active, healthy lifestyle.⁷⁷

Food donation: Giving wholesome food to nonprofits or individuals in need at no cost or at a good Samaritan reduced price.

Food loss: Food produced for human consumption that leaves the human food supply chain for any reason (and is not ultimately consumed by humans) between production up to, but not including, the retail sector.

Food loss and waste: Food produced for human consumption that leaves the human food supply chain for any reason (and is not ultimately consumed by humans). Crops grown to produce biofuel, feed or seed, or other nonfood products are not included. Food loss and waste may also be referred to as "wasted food."

Food recovery/rescue: The collection of wholesome food that would have otherwise left the human food supply chain and redistributing it to feed people.

Food waste: Food produced for human consumption that leaves the human food supply chain for any reason (and is not ultimately consumed by humans) at the retail, food service or household sectors.

Green infrastructure: The range of measures that use plant or soil systems, permeable pavement or other permeable surfaces or substrates, stormwater harvest and reuse, or landscaping to store, infiltrate, or evapotranspire stormwater and reduce flows to sewer systems or to surface waters.⁷⁸

Indigenous food sovereignty: The ability for Tribal Nations and communities to feed their own people on their own terms.⁷⁹

Insect farming/agriculture: Raising and breeding insects as livestock (referred to as minilivestock or microstock) for the commodities they produce (e.g., silk and honey) or for the insects themselves (e.g., for use as human and animal food; dyes; and other products). Some insect species can safely and efficiently convert organic and inorganic waste streams into value-added products.

Nutrition Security: All Americans have consistent and equitable access to healthy, safe, affordable foods essential to optimal health and well-being.⁸⁰

Organics recycling: Collecting and processing food loss and waste and other organic (carbon-based) materials, such as yard and tree trimmings that would otherwise be landfilled or incinerated, and turning it into new products, such as soil amendments (e.g., by composting food scraps) or soaps and bone meal (e.g., by rendering). Some organics recycling solutions also generate biogas that can be captured and used to generate electricity and/or fuel.

Organic waste: Includes food, yard and tree trimmings, and other organic (carbon-based) materials in the waste stream. Materials included in the definition of organic waste vary by state and local jurisdiction (e.g., some state and local jurisdictions include lumber and manure). The term “organic” in this Strategy does not refer to food and fiber certified under the Organic Foods Production Act of 1990.

Prevention: In this Strategy, “prevention” of food loss and waste broadly refers to preventing food from becoming waste in the first place (i.e., source reduction) and keeping it in the human food supply chain by rescuing and/or upcycling it.

Rendering: A cooking and separating process in which conditions such as time and temperature, with or without pressure, are sufficient to remove water, kill pathogenic microorganisms, and separate fats and oils from other components.⁸¹ It reuses human food byproducts, such as animal byproducts, not intended for human consumption that would otherwise be discarded and repurposes them for various applications, such as fuel and animal food.⁸²

Surplus food: Food that is donated to food banks, pantries, and other organizations, or upcycled into new food products, and therefore kept in the human food supply chain. Surplus food is not considered food loss or food waste. May also be referred to as “excess food.”

Underserved community: A population sharing a particular characteristic, or a geographic community, that has been systematically denied a full opportunity to participate in aspects of economic, social and civic life.⁸³

Upcycled food: A food product created from surplus food, food byproducts, and ingredients that otherwise would have left the human food supply chain.⁸⁴

Wasted food: This term can be used interchangeably with “food loss and waste” to mean food produced for human consumption that leaves the human food supply chain (and is not ultimately consumed by humans).

Endnotes

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2. United Nations. (2023). Target 12.3: Food loss & waste. <https://www.un.org/sustainabledevelopment/sustainable-consumption-production/>.
3. U.S. Environmental Protection Agency. (2021). United States 2030 Food Loss and Waste Reduction Goal. <https://www.epa.gov/sustainable-management-food/united-states-2030-food-loss-and-waste-reduction-goal>. In September 2021, EPA updated the baseline of the national 2030 goal to align it with SDG Target 12.3, which aims to reduce the amount of food from food retail, food service, and households that has been removed from the human supply chain. This is defined as food waste that is being sent to the following six management pathways: landfill; controlled combustion; sewer; litter, discards, and refuse; co/anaerobic digestion; compost/aerobic digestion; and land application.
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Appendix A: Summary of Public Comments Received on the Draft National Strategy for Reducing Food Loss and Waste and Recycling Organics and Agency Responses

Comment Statistics

More than 10,327 comment letters from a wide range of external partners were received on the draft Strategy. Nearly 10,000 of the letters used identical or nearly identical text, while 337 submittals were unique. Commenters, both of the form letter and unique submittals, included industry and trade organizations, national and community-based non-profit organizations, government agencies, and private individuals.

Overall, nearly all commenters supported the National Strategy for Reducing Food Loss and Waste and Recycling Organics. Supporting commenters expressed that their organizations are aligned with the Strategy's objectives to reduce food loss and waste by 50 percent by 2030. They agreed with goals to foster a more circular economy and implement a national consumer education and behavior change campaign. Most supporting commenters recommended ways to improve the Strategy.

The most common feedback related to preventing the loss and waste of food, was supporting policies that incentivize and encourage food loss and waste prevention and organics recycling, and implementing the Strategy's education-based initiatives. A few commenters opposed the Strategy, stating that the federal government should not be involved in managing food or that the Strategy could create food shortages.

This appendix includes the following sections:

- Overall Characteristics of the Comments Received
- Overall Themes Observed
- How the Agencies Addressed Comments

Overall Characteristics of the Comments Received

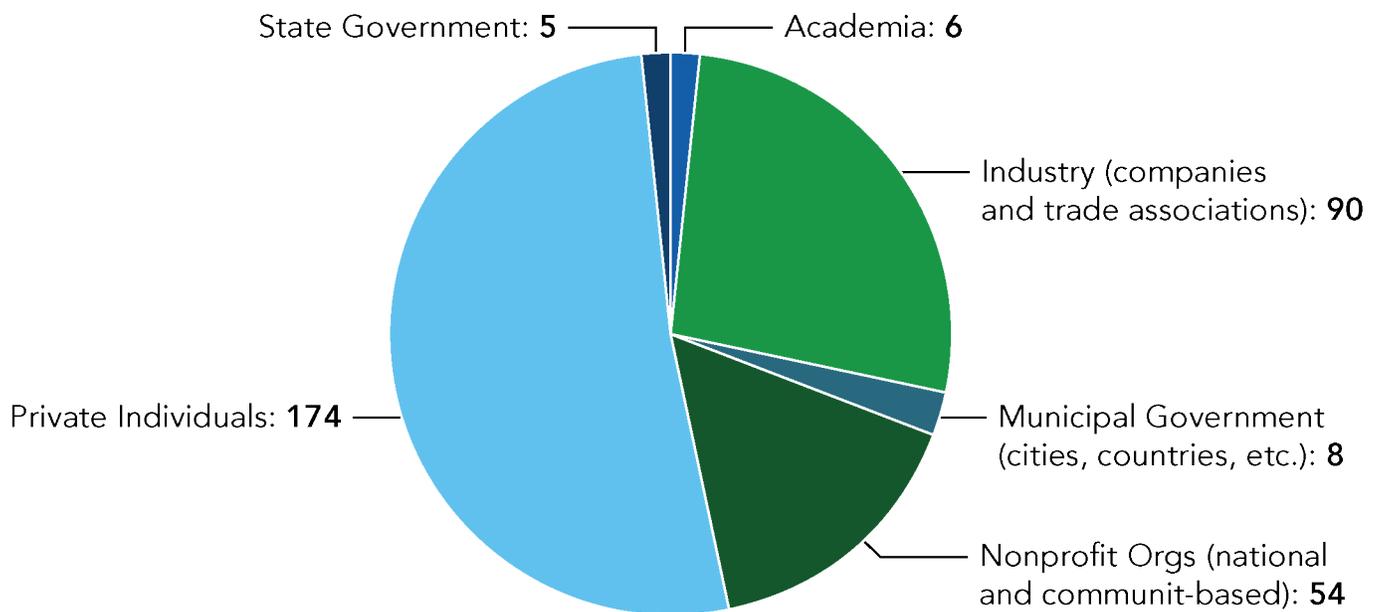
Agencies received 10,327 public comment submittals via Regulations.gov and the FDMS. After FDMS accounted for form letters (9,958), 367 comments were posted to the docket according to Regulations.gov. Contractor support further identified form letters, cover letters, duplicates, and attachments, leading to 337 unique comments. The largest number of comments were received on the topic of date labeling with over 9,800 comments received encouraging agencies to federally regulate/standardize date labels.

Note that form letters use identical or nearly identical text and are typically submitted in large quantities. Unique comments are individual one-of-a-kind comment letters submitted by the various commenter types identified below.

10,327	Total letters submitted
9,958	Form letters identified by FDMS
32	Cover letters, duplicates, and attachments
337	Unique comments

Commenters included industries and trade organizations, national and community-based non-profit organizations, states and municipalities, and private individuals. However, there were no commenters representing Congress, federal agencies, tribes, or foreign entities.

Count of Comments by Commenter Type



Overall Themes Observed

- Anaerobic digestion and mixed waste (e.g., use of AD or other methods as appropriate food management pathway)
- Enhanced infrastructure (e.g., cold chain, technology, compost collection, public-private partnerships)
- Community-centered solutions and business plans for resource and energy recovery from organic waste streams
- Increased coordination with stakeholders, including expansion of public-private partnerships across the supply chain
- Concerns of contamination in the compost stream (PFAS, microplastics, etc.)
- A need to standardize date labels and provide additional guidance
- Expanded education on food loss and waste, including education on the Bill Emerson Good Samaritan Food Donation Act
- Increased need for research, data, and measurement on FLW and its impacts, including measuring progress toward the National FLW Reduction Goal
- Packaging (compostable, non-compostable, and concerns about PFAS in packaging)
- Concerns that too much food is produced
- Updates to EPA Clean Air Act section 111 regulations for MSW landfills
- Promoting a whole-of-government approach, increasing coordination within and beyond FIFLAW.

How the Agencies Addressed Comments

The public comment period was open for 60 days and closed February 3, 2024. USDA, EPA and FDA representatives reviewed comments with contractor support to identify necessary changes to the final Strategy document. Comments were incorporated that added clarity to the draft Strategy language.

Overall, commenters called for greater coordination and collaboration amongst the three lead agencies (EPA, FDA and USDA) and a stronger commitment to reducing food loss and waste internally in the agencies (e.g., through food service and procurement guidelines).

Of note, the following changes were made in the National Strategy in response to comments. Nuances regarding the benefits of applying finished compost and anaerobic digestate for situations beyond agricultural were included. Definitions for rendering and insect agriculture were added to the glossary, along with mentions of both within the Strategy. Clearer, more succinct definitions of food loss, food waste, food upcycling, and food rescue were also added.

USDA

USDA received many thoughtful and constructive comments that were considered across the department, many of which contributed to additions or changes to the National Strategy, which strengthened it. Comments that did not lead to a changes or additions, will continue to be considered in internal discussions and if further funding becomes available.

Comments encouraged the standardization of date labeling. Both the USDA Food Safety and Inspection Service and FDA recommend that food industry members voluntarily apply the “best if used by” food date label which notes the date after which quality may decline but the product may still be consumed. The “best if used by” label aims to lessen consumer confusion and reduces wasted food. The “best if used by” label was the most frequently perceived as communicating quality, among the food date labels assessed by researchers at Johns Hopkins Center for a Livable Future (CLF), which supports using this label for standardization.^d The number, diversity, and complexity of products in the marketplace along with significant variability in the environmental, storage, and distribution conditions of food creates challenges for standardization. Additional funding could support additional data to help inform work in this space. As date labeling becomes standardized, the Hopkins research notes the need for a strong communications campaign regarding the meaning of the labels. Funding to support a national consumer education campaign could also help clarify food date labels and quality to help reduce the premature discard of wholesome food.

USDA received many comments highlighting the increased need for coordination among stakeholders across the supply chain, including the expansion of public private partnerships. In response to these comments, USDA has expanded upon sections in the National Strategy to further highlight where programs and funding have facilitated or can lead to collaboration across the supply chain or with engaged external partners.

Comments were also received on the need to raise awareness of the Bill Emerson Good Samaritan Food Donation Act. USDA is committed within the National Strategy to build upon existing efforts to provide further education, outreach and information on the liability protections afforded under the act (including the new amendments added in January 2023) tailored to a wider variety of stakeholders. USDA will continue internal discussions to explore further ways to elevate the Bill Emerson Good Samaritan Food Donation Act among our offices and agencies.

Commenters also requested measurement of progress toward the national goal to reduce food loss and waste 50% by 2030. USDA’s Economic Research Service welcomes coordination with experts and external partners for contributions of data and knowledge sharing in support of ongoing food loss and waste measurement research. Such collaborations will be paramount in the success and expediency of ERS’s FLW efforts moving forward. USDA’s ERS reiterates their intention to partner with external researchers, academics, and industry to better understand the economic drivers of food

d. Johns Hopkins Bloomberg School of Public Health. (2019). Survey: Misunderstanding Food Date Labels Linked With Higher Food Discards – Confusion about when to worry about food safety is widespread. <https://publichealth.jhu.edu/2019/survey-misunderstanding-food-date-labels-linked-with-higher-food-discards>.

loss in the farm and pre-retail sectors and to examine return on investment for food loss and waste reduction activities, pending availability of funding. Better understanding the economic drivers of food loss will help facilitate its measurement.

EPA

Many commenters provided helpful recommendations or suggestions for future EPA work but did not result in a change to the final Strategy language. EPA will consider all recommendations based on available capacity and funding.

Since the Strategy was initially released in December 2023, EPA has published new reports with updated statistics and data about the environmental impacts of wasted food. As a result, the Strategy has been updated to reflect this new information. EPA has also committed to expanding some of the capabilities of its current tools, such as the Waste Reduction Model and the Excess Food Opportunities Map.

Commenters also wished to see the Wasted Food Scale referenced more explicitly throughout the Strategy, and so that was made clearer as well.

Finally, many commenters wished to see more specificity in the Strategy in two areas: funding amounts and measurement of progress against the national goal to reduce food loss and waste by 50% by 2030. EPA responded to inquiries about funding by highlighting EPA grant programs that have previously, or may in the future, fund projects that adapt to or mitigate the environmental effects of wasted food. For measurement, EPA will continue to do research in this area and coordinate with federal partners (e.g., USDA)—as well as highlight and amplify the work of key external partners who have been leaders in this space.

FDA

Many commenters provided helpful recommendations or suggestions for future FDA work but there were no substantive changes to the final Strategy language. FDA will continue to consider all recommendations based on available capacity and funding.

Specifically, FDA received comments on continuing to work with stakeholders on implementation and compliance of the tech-enabled food traceability rule, outreach on encouraging food donations as long as food safety practices are followed, and on supporting voluntary industry efforts to use “Best if Used By” quality-based date labeling. FDA remains committed to continued work on these initiatives.

FDA is continuing to work with stakeholders to ensure compliance with the [Food Traceability Rule](#). In November 2023, FDA released a [fact sheet](#) to help retailers understand and implement recent changes to the [Food Code](#) effectively and will take into considerations the suggestions for updates/changes. FDA agrees with the support for use of the “Best if Used By” date label and continues to support the voluntary industry efforts to use standardized quality-based date labeling. As stated



in the [letter to the food industry regarding food waste](#), FDA will remain engaged in consumer education to raise awareness of food waste, reduce consumer confusion regarding voluntary quality-based date labeling, and provide consumers advice on food storage best practices to reduce waste.

Commenters also wished to see rendering referenced more explicitly throughout the Strategy, thus rendering was defined and included as an example.

FDA's CVM has made available educational resources and guidance for human food businesses that send human food for use as animal food. These include a draft [Guidance for Industry #239, "Human Food By-Products For Use As Animal Food"](#), a section for food businesses with both human and animal food on the [How do I Start an Animal Food Business? FDA](#) website, and a fact sheet for human food businesses that wish to safely distribute human food for animal food use that is located on our [Animal Food & Feeds | FDA](#) website: [CVM Fact Sheet – Safely Distributing Unused Human Food for Animal Food Use](#).

