FOOD LAW and POLICY CLINIC
HARVARD LAW SCHOOL

NRDC

ReFED

WWF

Opportunities to Reduce Food Waste in the 2023 Farm Bill

APRIL 2022

Prevention

Recovery

Recycling

Coordination

AUTHORS

The authors of this report are **Emily M. Broad Leib, Joseph S. Beckmann, Ariel Ardura, Sophie DeBode, Tori Oto, Jack Becker, Nicholas Hanel,** and **Ata Nalbantoglu** of the Harvard Law School Food Law and Policy Clinic (FLPC), along with **Yvette Cabrera, Andrea Collins, Darby Hoover, Madeline Keating,** and **Nina Sevilla** of NRDC (Natural Resources Defense Council), **Samantha Goerger** and **Dana Gunders** of ReFED, and **Stephanie Cappa, Alex Nichols-Vinueza,** and **Pete Pearson** of World Wildlife Fund (WWF).

ACKNOWLEDGEMENTS

This report would not have been possible without the advice and support of the many individuals and organizations with whom we discussed the ideas provided herein or who provided input and feedback on our drafts, including Melissa Melshenker Ackerman (Produce Alliance), Lesly Baesens (Denver Department of Public Health & Environment), Joe Bolick (Iowa Waste Reduction Center), Linda Breggin (Environmental Law Institute), Bread for the World, Carrie Calvert (Feeding America), Cory Mansell (Center for EcoTechnology (CET)), Darraugh Collins (Food Rescue U.S. - Detroit), Shirley DelRio, Paul Goeringer (University of Maryland College of Agriculture & Natural Resources), Nora Goldstein (BioCycle), Eva Goulbourne (Littlefoot Ventures), Andy Harig (FMI–The Food Industry Association), LaToyia Huggins (Produce Alliance), Bryan Johnson (City of Madison, Wisconsin - Streets Division), Sona Jones (WW International), Wes King (National Sustainable Agriculture Coalition (NSAC)), David Matthews-Morgan, Andrew Morse (Iowa Waste Reduction Center), Stacie Reece (City of Madison, Wisconsin), Barbara Sayles (Society of St. Andrew), Niyeti Shah (WW International), Rachel Shumaker (City of Dickinson, ND), Tom Smiarowski (University of Massachusetts Extension, Center for Agriculture, Food, and the Environment), Latha Swamy (City of New Haven, CT, Food System Policy Division), Danielle Todd (Make Food Not Waste), Jennifer Trent (Iowa Waste Reduction Center), Lorren Walker (Elias Walker), Renee Wallace (FoodPLUS Detroit), among others.

Report design by Najeema Holas-Huggins.

About the Harvard Law School Food Law and Policy Clinic

FLPC serves partner organizations and communities in the United States and around the world by providing guidance on cutting-edge food system issues, while engaging law students in the practice of food law and policy. FLPC is committed to advancing a cross-sector, multi-disciplinary and inclusive approach to its work, building partnerships with academic institutions, government agencies, non-profit organizations, private sector actors, and civil society with expertise in public health, the environment, and the economy. FLPC's work focuses on increasing access to healthy foods, supporting sustainable and equitable food production, reducing waste of healthy, wholesome food, and promoting community-led food system change. For more information, visit www.chlpi.org/FLPC.

About NRDC (Natural Resources Defense Council)

NRDC defends the rights of all people to live free from environmental harm in a clean, healthy, and thriving natural world. We combine the power of more than three million members and online activists with the expertise of some 750 scientists, lawyers, and policy advocates across the globe to ensure the rights of all people to the air, the water, and the wild. For more information, visit www.nrdc.org.

About ReFED

ReFED is a national nonprofit working to end food loss and waste across the food system by advancing data-driven solutions to the problem. We leverage data and insights to highlight supply chain inefficiencies and economic opportunities; mobilize and connect supporters to take targeted action; and catalyze capital to spur innovation and scale high-impact initiatives. Our goal is a sustainable, resilient, and inclusive food system that optimizes environmental resources, minimizes climate impacts, and makes the best use of the food we grow. To learn more about solutions to reduce food waste, please visit www.refed.org.

About World Wildlife Fund

WWF is one of the world's leading conservation organizations, working for 60 years in nearly 100 countries to help people and nature thrive. With the support of 1.3 million members in the United States and more than 5 million members worldwide, WWF is dedicated to delivering science-based solutions to preserve the diversity and abundance of life on Earth, halt the degradation of the environment, and combat the climate crisis. Visit www.worldwildlife.org to learn more.

Suggested Citation:

Emily M. Broad Leib, Joseph S. Beckmann et al., Harv. L. Sch. Food L. & Pol'y Clinic (FLPC), Nat. Res. Def. Council (NRDC), ReFED, & World Wildlife Fund (WWF), Opportunities to Reduce Food Waste in the 2023 Farm Bill (2022), https://chlpi.org/wp-content/uploads/2022/04/2023-Farm-Bill-Food-Waste.pdf.

Table of Contents

EXECUTIVE SUMMARY

The United States produces and imports an abundance of food each year, but approximately 35% of it goes unsold or uneaten.[1] Annually, 80 million tons of surplus food are not consumed. Of this, 54.2 million tons go to landfill or incineration, or are left on the fields to rot.[2] Farmers, manufacturers, households, and other businesses in the United States spend $408 billion each year to grow, process, transport, and dispose of food that is never eaten.[3] This waste carries with it enormous economic, environmental, and social costs, but also represents great opportunity. ReFED, a national nonprofit working with food businesses, funders, policymakers, and more, to reduce food waste, analyzed 40+ food waste solutions, and found that the implementation of these solutions has the potential to generate $73 billion in annual net financial benefit, recover the equivalent of 4 billion meals for food insecure individuals, save 4 trillion gallons of water, and avoid 75 million tons of greenhouse gas emissions annually.[4]

The federal government has an important role to play in the continued effort to reduce food waste. In 2015, the United States Department of Agriculture (USDA) and the United States Environmental Protection Agency (EPA) jointly announced the nation's first-ever food waste reduction goal, aiming to cut food waste in the United States by 50% by the year 2030.[5] While the food waste reduction goal is a step in the right direction, in order to make this goal a reality, it is imperative for the federal government to make food waste reduction a legislative priority.

Congress has started to take these necessary steps. In 2018, for the first time ever, Congress included measures in the Farm Bill to reduce food waste, for example, by clarifying liability protections for food donors, financing food recovery from farms, encouraging food waste recycling through community compost funding, and better coordinating food waste reduction efforts across the federal government.[6] Many of these programs were suggested in the *Opportunities to Reduce Food Waste in the 2018 Farm Bill* report, on which this report is based.[7] While the inclusion of these programs was an important first step, there is significant room for improvement in the 2023 Farm Bill. The farm bill authorizes roughly $500 billion over five years in expenditures across the entire food system, and the upcoming farm bill is poised to use a portion of this funding to build upon the successful pilot programs launched in 2018 and ensure more comprehensive investment in food waste reduction.

Opportunities to Reduce Food Waste in the 2023 Farm Bill details how Congress can take action to reduce food waste and offers specific recommendations of provisions to include in the 2023 Farm Bill. Given the bipartisan support for measures to reduce food waste,[8] the next farm bill provides an exciting opportunity to invest in food waste reduction efforts for greater social, economic, and environmental benefits. This report breaks food waste recommendations into four categories, based on whether they are intended to prevent food waste, increase food recovery, recycle food scraps through composting or anaerobic digestion, or coordinate food waste reduction efforts.

Below are a summary of the four categories and the top recommendations for each that are described in greater detail later in this report as well as mentions of relevant pending federal legislation (that are also included in further detail in Appendix C):

FOOD WASTE PREVENTION

Prevention efforts focus on interventions at the root causes of food waste—they locate and address inefficiencies in the food system and food related practices before excess food is produced, transported to places where it cannot be utilized, or discarded rather than eaten. More than 85% of greenhouse gas emissions from landfilled food waste result from activities prior to disposal, including the production, transport, processing, and distribution of food.[9] The greenhouse gas emissions embodied in the food wasted by consumers and consumer-facing businesses account for more than 260 million metric tons of carbon dioxide equivalent (CO_2e) per year,[10] which is equivalent to the annual emissions of 66 coal-fired power plants.[11] Food waste prevention efforts keep millions of tons of food out of the landfill and have the most potential for environmental,

economic, and social benefits. Altogether, the food waste prevention policies discussed in this section have the potential to annually divert nearly 7 million tons from landfills, while generating more than $27.4 billion each year in net financial benefit.[12]

Standardize and Clarify Date Labels

There is no federal regulation for date labels used on food. Instead, each state decides whether and how to regulate date labels, leading to a patchwork of inconsistent regulations and myriad date labeling terms such as "sell by," "best by," "expires on," and "use by." Manufacturers have broad discretion over what dates to affix to their food products, often using dates that typically reflect food quality and taste rather than food safety. Yet businesses, individuals, and even state regulators frequently misunderstand date labels and interpret them to be indicators of safety, leading to the unnecessary waste of wholesome food. Some states even restrict or forbid the sale or donation of past-date foods that are still safe to donate and eat. These inconsistent and misguided state laws lead to wholesome foods unnecessarily being discarded rather than donated. In order to reduce consumer confusion and the resulting food waste, the 2023 Farm Bill should standardize date labels through the Miscellaneous Title or a new Food Waste Reduction Title.

Launch a National Food Waste Education and Awareness Campaign

American consumers alone are responsible for 37.2% of all U.S. food waste.[13] Research shows that while consumers understand the importance of food waste reduction in the United States, they do not recognize their own role in these efforts. So far there have been successful small-scale campaigns to educate consumers, but to really move the needle, a coordinated, well-funded national campaign is needed. The 2023 Farm Bill can address and correct wasteful practices by providing $7 million annually through 2030 for a national food waste education and awareness campaign—with $3 million for research into effective consumer food waste reduction strategies and $4 million for consumer-facing behavior change campaigns—within the Miscellaneous or a Food Waste Reduction Title.

Relevant Pending Legislation

Food Date Labeling Act of 2021 (H.R. 6167, S.3324 117th Cong. 1st Sess., 2021); School Food Recovery Act of 2021 (H.R. 5459, 117th Cong. 1st Sess., 2021)

SURPLUS FOOD RECOVERY

Food recovery solutions aim to recover surplus food and redistribute it to individuals experiencing food insecurity. Recovering surplus food within the supply chain and reducing barriers to food donation could result in the recovery of roughly 2.3 million additional tons of food each year and a net financial benefit of $8.8 billion.[14] Nearly half of this new food recovery potential comes from farms, more than a third from restaurants, and the rest from grocers and retailers.[15]

Strengthen and Clarify the Bill Emerson Good Samaritan Food Donation Act

Many businesses are reluctant to donate food because of perceived liability concerns associated with donation, such as a food recipient getting sick.[16] To eliminate these barriers to surplus food donation, the 2023 Farm Bill should strengthen and clarify the Bill Emerson Good Samaritan Food Donation Act, which protects food donors from liability.[17] It should do so by delegating authority over the Act to the USDA and mandating that the USDA publish regulations interpreting the Act. The 2023 Farm Bill should also modify the Act to protect donors who donate directly to individuals and organizations that charge a small fee for donated food.

Increase Funding Support for Food Recovery Infrastructure and for Post-Harvest Food Recovery

The USDA should expand investments in food recovery infrastructure and innovative food recovery models to overcome barriers to increased food recovery and donation. To support the development of food recovery operations, Congress should increase funding for food infrastructure efforts, either through new 2023 Farm Bill investments or by making several funding initiatives from the COVID-19 response permanent. Additionally,

it should continue supporting innovative food recovery models by increasing funding for the Community Food Projects Competitive Grants Program within the Nutrition Title and earmarking a portion of the grants for food recovery projects. Congress should also increase funding for the Local Agriculture Market Program in the Horticulture Title, increase its applicability to food waste reduction beyond just "on-farm food waste," and earmark a portion of its funding for food waste prevention and recycling and food recovery.

Relevant Pending Legislation
Further Incentivizing Nutritious Donations of Food (or FIND) Act of 2022 (H.R. 7313, 117th Cong. 2nd Sess., 2022); Food Donation Improvement Act of 2021 (H.R. 6521, S.3281, 117th Cong. 1st Sess., 2021); Fresh Produce Procurement Reform Act of 2021 (H.R. 5309, 117th Cong. 1st Sess., 2021).

FOOD WASTE RECYCLING

Food waste is the largest component of landfills nationwide—contributing over 36 million tons to landfills each year[18] and accounting for 24.1% of landfilled municipal solid waste.[19] Food waste alone produces 4% of all U.S. greenhouse gas emissions per year.[20] Further, instead of being wasted, these organic inputs could contribute to better soil matter and reduce soil loss, contributing to a more circular economy. Despite improvements in food waste prevention and recovery initiatives, some food is inevitably discarded. Recycling remaining food waste has the annual potential to divert 20.9 million tons of food scraps from landfills and produce a net financial benefit of $239.7 million.[21] The 2023 Farm Bill should support methods of food waste management that are sustainable, economically beneficial, and limit the use of landfill space and reliance on incinerators.

Provide Grants to Support Proven State and Local Policies that Reduce Food Waste Disposed in Landfills or Incinerators

Landfills continue to be overburdened by food waste.[22] States and cities are running out of space to store organic waste as they continue to rely on landfills to manage this waste.[23] Further, as food items decompose in landfills, they release harmful greenhouse gases at alarming rates, which can cause potential harm to human health, agriculture, and other natural ecosystems and resources.[24]

State and local policies such as organic waste bans, waste diversion requirements, landfill taxes, and Pay-As-You-Throw policies have been shown to move the needle on reducing food waste and are essential to divert food waste from landfills and incinerators. When food waste generators that produce a certain threshold of food waste (e.g., grocery stores and hospitals) are prevented from transporting organic waste to landfills or have a strong financial reason not to waste food, they will make changes such as offering smaller portions, donating surplus food, recycling food scraps, and repurposing their leftovers. The 2023 Farm Bill should provide $650 million in yearly funding for ten years for state, local, and tribal governments, independently or as part of a public-private partnership to plan or implement proven policies that reduce food waste in landfills and incinerators.[25] As part of this program, Congress should require the USDA (in collaboration with EPA) to maintain a database of the state and local food waste reduction policies that have proven success, and data on their impacts. Congress can establish this program in the 2023 Farm Bill within the Miscellaneous Title or a dedicated Food Waste Reduction Title.

Provide Grants and Loans for the Development of Organic Waste Processing Infrastructure

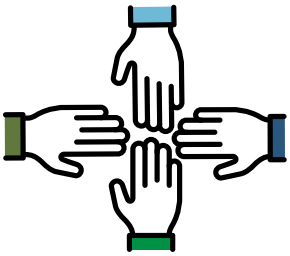
In addition to implementing waste bans, waste diversion requirements, zero waste goals, and waste prevention plans, state and local communities must also develop their organic waste processing capabilities to manage the organic waste diverted from landfills and to realize the benefits of these strategies. Both compost and anaerobic digestion infrastructure have the potential to convert food waste into productive soil amendments.

These organic waste processing capabilities are also costly. In the 2018 Farm Bill, Congress authorized the creation of the Community Compost and Food Waste Reduction Project (CCFWR) to provide pilot funding for local governments in at least ten states to study and pilot local compost and food waste reduction plans.[26] CCFWR

funding enables localities to enhance their waste prevention capacities and has already fostered a positive impact within communities.[27] Congress should build on the existing CCFWR program and adopt new strategies to develop composting and anaerobic digestion infrastructure. In order to scale the program's benefits, Congress should increase the total and per project funding available for the CCFWR program in the next farm bill. In addition, as CCFWR projects are generally small community projects, Congress should provide larger funding for the development of new compost and anaerobic digestion facilities, by providing $200 million per year for ten years in new composting infrastructure.

Relevant Pending Legislation

Cultivating Organic Matter through the Promotion Of Sustainable Techniques (or COMPOST) Act of 2021 (H.R. 4443, S.2388, 117th Cong. 1st Sess. 2021); Zero Food Waste Act of 2021 (H.R. 4444, S.2389, 117th Cong. 1st Sess. 2021).



FOOD WASTE REDUCTION COORDINATION

Data and research on food waste are critical to providing insight on areas that future policymaking should prioritize. A lack of comprehensive research and federal agency coordination in this space prevents effective management of national resources to address food waste. In the 2018 Farm Bill, Congress established a USDA Food Loss and Waste Reduction Liaison, a welcome step towards reducing food waste and increasing food recovery at the federal level. The 2023 Farm Bill should build upon this by further developing and funding food waste reduction coordination.

Increase Funding for the Food Loss and Waste Reduction Liaison and Create a Broader Research Mandate

The Food Loss and Waste Reduction Liaison (the Liaison) fills an important role for federal food waste reduction. The Liaison coordinates food waste reduction efforts across agencies, researches and publishes research on sources of food waste, supports organizations engaged in food loss prevention and recovery, and recommends innovative ways to promote food recovery and reduce food waste.[28] However, the Liaison only receives enough funding to staff the individual Liaison position with no funding for additional support staff, which inhibits the Liaison's ability to fulfill their statutory mandate.[29] Congress should increase the funding and develop the Liaison position into a Food Loss and Waste Office, so that there are more staff and capacity to carry out the duties set out in the farm bill. Congress should also identify modernizing and expanding national food waste data and farm food waste loss measurement as explicit goals for the Liaison, using the additional funding provided.

Provide Funding for the Federal Interagency Food Loss and Waste Collaboration

In 2018, the United States Food and Drug Administration (FDA), the USDA, and the EPA launched an interagency task force known as the Federal Interagency Food Loss and Waste Collaboration (the Collaboration) that is committed to working towards the national goal of reducing food loss and waste by 50% by 2030.[30] The Collaboration plays a vital role in the federal government's involvement in food loss and waste reduction efforts. Congress should authorize $2 million in annual funding for the Collaboration in the 2023 Farm Bill to better position it to meet the United States' 2030 food waste reduction goal.[31] Congress should require a broader set of federal agencies to engage in the Collaboration such as the Department of Defense, the Department of Transportation, the Department of Homeland Security, the Department of Education, and the General Services Administration, among others. Congress should also require the Collaboration to deliver regular reports to Congress on its progress towards achieving the national food waste reduction goal. These provisions can be included in the Miscellaneous Title or in a new Food Waste Reduction Title.

Relevant Pending Legislation

National Food Waste Reduction Act of 2021 (H.R. 3652, 117th Cong. 1st Sess. 2021).

INTRODUCTION

The amount of food wasted in the United States poses an enormous problem. Even though an abundance of food is produced and imported in the United States each year, about 35% of it goes unsold or uneaten.[32] This means that annually, 80 million tons of surplus food are not consumed. Of this, 54.2 million tons go to landfill or incineration, or are left on the fields to rot.[33] Food loss and waste carries enormous economic, social, and environmental costs. Farmers, manufacturers, households, and other businesses in the United States spend $408 billion each year to grow, process, transport, and dispose of food that is never eaten.[34] Producing food that ends up uneaten consumes 21% of all freshwater, 19% of all fertilizer, and 19% of all cropland used for agriculture in the United States.[35] Food waste generates about 270 million metric tons of carbon dioxide equivalent (CO_2e) greenhouse gas emissions each year, the same as 58 million passenger vehicles.[36]

Despite the surplus of food produced, 10.5% of American households faced food insecurity in 2019 and 2020, both before and after the COVID-19 pandemic began.[37] While the food insecurity rate did not rise in 2020 because of the massive federal investment in financial and direct assistance, the pandemic exposed the need for food system reform to ensure that our food supply can adapt and continue to serve the needs of Americans even when faced with unprecedented disruptions. The amount of food that goes to waste each year makes little sense when paired with the data on the number of food insecure households. In fact, according to the United States Environmental Protection Agency (EPA), significantly more food is wasted than would be required to feed every food-insecure individual in the United States.[38]

Reducing food waste is an important area for resource conservation and climate change mitigation that remains underdeveloped in federal policy. However, in recent years, the federal government has initiated efforts that acknowledge its important role in the effort to reduce food waste. In 2015, the U.S. Department of Agriculture (USDA) and the EPA jointly announced the nation's first-ever food waste reduction goal, aiming to halve U.S. food waste by 2030.[39] In 2018, the USDA, the EPA, and the United States Food and Drug Administration (FDA) signed an Memorandum of Understanding to work together towards this goal.[40] In 2019, these three agencies launched the *Federal Interagency Food Loss and Waste Collaboration* (formerly the *Winning on Reducing Food Waste Federal Interagency Collaboration)* which set priority actions to reduce food loss and waste, including enhancing interagency coordination, increasing consumer education and outreach efforts, and improving coordination and guidance on food loss and waste measurement.[41]

State and local actors also are recognizing and acting on the need for reform. At the local level, many cities, including New York, Austin, San Francisco, and Washington, D.C., promote food waste reduction through creative initiatives to reduce and better manage food waste.[42] For example, San Francisco introduced the first ever mandatory composting requirements for businesses and residents in 2009.[43] Since then, at least seven large cities or counties followed San Francisco's lead and implemented organic waste bans or mandatory organic waste recycling laws.[44] States have also implemented a variety of policies to reduce food waste. These include tax incentives for food donation,[45] organic waste bans,[46] and liability protections for food donors and food recovery organizations that exceed the federal floor.[47]

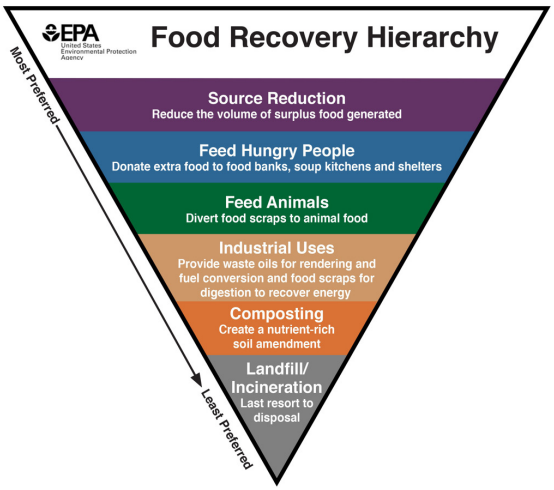
Reducing food waste has unique bipartisan appeal because it can simultaneously increase profits and efficiencies across the food system, increase access to wholesome food, and protect the planet from the harmful environmental consequences associated with wasted food. According to an analysis by ReFED, a national nonprofit working with food businesses, funders, policy makers, and more, to reduce food waste, implementing 40 priority food waste solutions has the potential to generate $73 billion in annual net financial benefit, recover the equivalent of 4 billion meals for food-insecure individuals every year, and create 51,000 jobs over ten years.[48] Adding to these economic and social benefits, food waste solutions also have the potential to save 4 trillion gallons of water and avoid 75 million tons of greenhouse gas emissions annually, among other environmental benefits.[49]

In order to meet our national food waste reduction goal, the federal government must make food waste reduction a priority in all of its policy areas.

In the 2018 Farm Bill, Congress responded for the first time ever to the pressing need for action on food waste reduction, with an unprecedented inclusion of various food waste related programs and funding.

Food Waste Provisions Included in the 2018 Farm Bill:

- Pilot Project to Support State and Local Composting and Food Waste Reduction Plans
- Grant Resources for Food Recovery Infrastructure Investments
- Food Loss and Food Waste Liaison and Study on Food Waste
- Food Donation Standards for Liability Protections
- Milk Donation Program
- Local Agriculture Marketing Program
- Spoilage Prevention
- Carbon Utilization and Biogas Education Program



Of particular relevance is the farm bill. Passed every five years, the farm bill is the largest piece of food and agriculture-related legislation in the United States and provides a predictable and visible opportunity to address food waste on a national scale. With food waste becoming a major focus in both states and the federal government, this legislation offers an opportunity to address multiple sectors of the food and agricultural system and effect system-wide change to reduce food waste. In 2018, Congress, for the first time ever, included measures related to food waste in the farm bill.[50] These provisions are enumerated in the first Text Box above and are described in more detail as relevant throughout this report. Many of these provisions were suggested in the *Opportunities to Reduce Food Waste in the 2018 Farm Bill* report, on which the current report is based.

These provisions offer an important starting point for investing the resources needed to meet our national food waste reduction goals. This report offers opportunities for Congress to build upon its noteworthy achievements in the 2018 Farm Bill by expanding the pilot programs and grants initiated in the 2018 Farm Bill and developing noteworthy and necessary new programs. Building from the preliminary funding in the 2018 Farm Bill, the 2023 Farm Bill is poised to help the federal government take more effective and wide-ranging action to reduce food waste. Food waste reduction programs could be included in a dedicated Food Waste Reduction Title or by modifying existing titles and programs to incorporate food waste reduction as a priority. Several provisions presented in this report could alternatively be implemented through standalone federal legislation.

The recommendations presented in this report are organized to reflect the priorities outlined in the EPA Food Recovery Hierarchy (pictured above).[51] As in the Food Recovery Hierarchy, this report highlights food waste prevention as the most important goal and begin by making proposals to prevent waste. Waste prevention efforts aim for intervention at the root causes of food waste—they locate and address inefficiencies in the food system and food related practices before excess food is produced, transported to places where it cannot be utilized, or discarded rather than eaten. Waste prevention efforts keep millions of tons of food out of the landfill, and altogether, the waste prevention policies discussed have the potential for the most considerable environmental benefit. Next, the report outlines opportunities to facilitate redirection of wholesome surplus food to food-insecure individuals by connecting farmers, retailers, or food service establishments with food banks, food rescue organizations, community organizations that provide food, emergency feeding operations, and other intermediaries (collectively referred to as "food recovery organizations"). Then, the report outlines recommendations for supporting recycling food scraps through composting or anaerobic digestion, rather than disposing of waste in landfills or incinerators. The report concludes with recommendations to coordinate and streamline food waste reduction efforts and elevate food waste reduction to be a federal priority. Taken together, the recommendations presented in this report can

strengthen the economy, preserve the environment, help withstand disasters—like pandemics—and improve the lives of millions of Americans, all by reducing the unnecessary waste of healthy, wholesome food that can be eaten, and by recycling remaining food scraps.

U.S. Food Loss & Waste Policy Action Plan:

On April 6, 2021, the Harvard Law School Food Law & Policy Clinic (FLPC), NRDC (Natural Resources Defense Council), ReFED, and World Wildlife Fund (WWF)—along with many additional supporters, including the American Hotel and Lodging Association, Compass Group, Food Recovery Network, Google, Hellmann's Best Foods, Hilton, Hyatt, Marriott International, the Kroger Company, Unilever, several local government agencies, and other businesses and non-profit organizations[52]—published the U.S. Food Loss & Waste Policy Action Plan for Congress & the Administration (Action Plan).[53] The Action Plan calls upon Congress and the Biden administration to take ambitious action to achieve the goal of cutting U.S. food loss and waste in half by 2030. It recommends five key policy recommendations ranging from investing in infrastructure and programs that measure and prevent food waste to standardizing date labeling at the federal level. The recommendations in this report that are also included in the Action Plan, and thus endorsed by a broad set of partners, are notated with ★ symbol. They are also listed together in Appendix A.

FOOD WASTE PREVENTION

Standardize and Clarify Date Labels ★

Annual potential to divert 582,000 tons of food waste, reduce 2.73 million metric tons of CO_2e, and save 162 billion gallons of water, with a net financial benefit of $2.41 billion[54]

ISSUE OVERVIEW

A major driver of food waste is confusion over date labels.[55] Consumers face an array of unstandardized labels on their food products, and many people throw away food once the date passes because they mistakenly think the date is an indicator of safety. However, for most foods the date is a manufacturer's best guess as to how long the product will be at its peak quality. When consumers misinterpret indicators of quality and freshness for indicators of a food's safety, this increases the amount of food that is unnecessarily discarded.

There is currently no federal scheme regulating date labels on food products other than infant formula.[56] Congress has given general authority to the FDA and the USDA to protect consumers from deceptive or misleading food labeling.[57] Both the USDA[58] and the FDA[59] published recommendations regarding the language to be used for date labels, but neither agency has used its authority to implement a comprehensive, mandatory regulatory scheme.

In the absence of federal regulation, states have enormous discretion to create regulatory schemes for date labels, resulting in high variability. Most states regulate some food items, while few states have created a comprehensive date labeling scheme, and some do not regulate date labels at

all.[60] Some states even restrict or forbid the sale or donation of past-date foods, even though most date labels are not safety indicators, creating unnecessary barriers to the donation of safe food.[61]

Manufacturers generally are free to select whether to use a date label, which explanatory phrase they will use (e.g., "best by," "use by," "best before," or "sell by"), and how the timeframe for the date will be measured. Manufacturers use a variety of methods to determine the timeframe for label dates, almost all of which are intended to reflect when the food will be at its peak quality and are not intended as safety indicators.[62] Yet businesses, individuals, and even state regulators frequently misinterpret the dates to be indicators of safety, leading to the unnecessary waste of wholesome, past-date food.[63] ReFED estimates this confusion accounts for 20% of consumer waste of safe, edible food—approximately $29 billion worth of wasted consumer spending per year.[64]

Federal standardization of date labels has the potential to dramatically reduce food waste in the United States. According to ReFED's Insights Engine, standardizing date labels is one of the most cost-effective ways to reduce food waste, with the potential to divert 582,000 tons of food waste per year from landfills, and the opportunity to provide $2.41 billion per year in net economic value.[65]

RECOMMENDED DATE LABELING SCHEME

Congress should standardize and clarify date labels by establishing a dual date labeling scheme that applies to all food products nationally and limits date labeling language to two options: either a label to indicate food quality or a label to indicate food safety. This would align with the preexisting industry Voluntary Product Code Dating Initiative established in 2017 by The Food Industry Association (FMI) (formerly the Food Marketing Institute) and the Consumer Brand Association (CBA) (formerly the Grocery Manufacturers Association), which recommends manufacturers use the term "BEST If Used By" where foods are labeled as a quality indicator, and the term "USE By" on foods labeled to indicate that they may pose a safety risk if consumed after this date.[66] Date labels used to signify food quality, which comprises most date labels on food products, should be required to use the language "BEST If Used By." For foods that increase in safety risk past the date, manufacturers should use a safety date, indicated with the language "USE By."

This would build on the momentum already underway. According to CBA, their members self-reported that 87% of products were using these streamlined labels as of 2018, less than two-years after CBA began the initiative.[67] Further, federal agencies recommend quality labels use the "Best If Used By" language, as evidenced by the USDA Food Safety Inspection Service (FSIS) 2016 recommendation that food manufacturers and retailers use this label to communicate quality[68] and the FDA's 2019 open letter supporting voluntary efforts to use "Best If Used By" to indicate quality.[69] Further, this dual date labeling scheme is ideal for communicating effectively with consumers. A 2016 national consumer survey conducted by FLPC, the National Consumers League, and Johns Hopkins University found that "best if used by" was the language best understood by consumers to indicate quality, while "use by" was one of two phrases that best communicated food safety.[70]

Requiring standard date labels would align the United States with its peer countries. Internationally, the *Codex Alimentarius* 2018 update, General Standard for the Labelling of Prepackaged Foods, sets out a dual date labeling scheme as the model practice.[71] The *Codex Alimentarius* is a set of international food standards developed by the Food and Agriculture Organization of the United Nations (FAO) and the World Health Organization (WHO). Aligned with the *Codex* standards, the European Union requires companies to use a safety-based, "use by" date label for foods that are considered "highly perishable," and unsafe to consume after the date. All other foods use a quality-based, "best before" date label, after which food may still be perfectly safe to consume and donate.[72]

In addition to standardizing date labels, federal action is also needed to preempt state restrictions on the sale or donation of food that is past its quality date. Currently, 20 states restrict the sale or donation of past-date foods, even when the dates on those foods have no bearing on safety, leading to unnecessary waste.[73] However, since only past-date foods bearing the "USE by" date label would pose a safety risk, the sale and donation of foods past the "BEST if Used By" date should be permitted.

To support the implementation of this change, Congress should instruct the FDA and the USDA to collaborate to inform consumers about the update, explicitly defining what these two labels mean in an education campaign.[74] Ensuring that consumers are aware of the new date labels and their meanings will help prevent unnecessary discarding of safe,

wholesome food. This could be included in the national food waste education campaign discussed in Section I(B) of this report.

IMPLEMENTATION OPPORTUNITY

The next farm bill should take the easy and cost-effective step to reduce food waste by standardizing and clarifying date labels with a uniform, nationwide policy that applies to all food products. This standardization should take the form of the two labels: "BEST if Used By" to indicate quality, and "USE By" to indicate safety. The initiative should also include a consumer education campaign.

The farm bill has previously addressed food labeling concerns,[75] and is an appropriate vehicle for standardizing date labels. This scheme should be implemented through a new Food Waste Reduction Title or in the Miscellaneous Title. Language implementing the above recommendations could be taken from the bicameral, bipartisan Food Date Labeling Act of 2021.[76]

Launch a National Food Waste Education and Awareness Campaign ★

Annual potential to divert 1.38 million tons of food waste, reduce 7.41 million metric tons of CO_2e, and save 281 billion gallons of water, with a net financial benefit of $6.08 billion[77]

ISSUE OVERVIEW

American consumers waste an estimated 30 million tons of food each year—accounting for about 37.2% of the food that goes to waste.[78] While many consumers understand the importance of food waste reduction, they generally do not recognize their own role in reducing food waste.[79] American consumers "perceive themselves as wasting little, with nearly three-quarters reporting that they discard less food than the average American."[80] Most consumers report that they discard less than 10% of their food and believe that much of their food waste is unavoidable.[81] However, the average household wastes 31.9% of the food it buys.[82] This mismatch regarding consumers' individual contribution to food waste and their perception of the quantity of their own waste demonstrates a problematic lack of awareness.

NATIONAL FOOD WASTE EDUCATION CAMPAIGN

Congress can promote national food waste education and awareness through a public awareness campaign. ReFED estimates that a national consumer education campaign is one of the most cost-effective solutions to reduce food waste, with the potential to divert 1.38 million tons of food annually and create $6.08 billion net economic value.[83] Because consumers unknowingly produce a massive amount of food waste, a national food waste awareness campaign should be geared towards increasing consciousness of the issue and changing consumer behavior. This campaign should incorporate elements of behavioral science to illustrate how much food goes to waste in households across the country, highlight methods for preserving and storing foods, provide consumers tips to identify whether food is still safe and edible, and teach consumers how to compost food scraps.[84]

Evidence indicates that a national education campaign has tremendous potential to impact consumer behavior. National education campaigns effectively changed United States consumer behaviors in other areas and consumer food waste practices in other countries. Domestically, the United States Centers for Disease Control and Prevention's (CDC) nine-week, national anti-smoking education campaign, "Tips from Former Smokers," motivated almost 2 million Americans to attempt to quit smoking.[85] In the United Kingdom, the Waste and Resources Action Programme's (WRAP) "Love Food Hate Waste" nationwide campaign reduced consumer food waste by 21% in five years.[86] The program cost £26 million (~$34.43 million USD) over five years to implement but was responsible for £6.5 billion (~$8.6 billion USD) in savings to households in avoided food costs, as well as £86 million (~$114 million USD) in savings to U.K. government authorities in avoided waste disposal costs.[87] Altogether, the initiative reaped a total benefit-cost ratio of 250:1. Between 2015 and 2018, the U.K. avoided 1.6 million tons of greenhouse gases and diverted 480,000 tons of food waste directly attributable to the nationwide campaign.[88]

A national food waste education campaign in the United States could similarly cultivate a cultural movement against food waste. In 2016, the Ad Council and NRDC launched "Save the Food," a public awareness campaign that encourages Americans to reduce food waste.[89] "Save the Food" has been featured on television, radio, billboards, and waste trucks in several large cities across the country, including Chicago and New York City.[90] As of 2019, more than $111 million of media space was donated, and survey results demonstrated that those aware of "Save the Food" ads were more likely to say that they had reduced the amount of food they had thrown away in the prior 6 months, compared to those not aware of the ads.[91]

While the "Save the Food" campaign is a first step, consumer education on food waste is needed on a larger national scale. With many American consumers still unaware of the impacts of food waste as well as their contribution to the issue, a nationwide targeted campaign could unify the messaging regarding consumer food waste and ensure that it reaches all Americans.

A national food waste education campaign will only be effective if it is properly targeted at consumers with well-tested messaging. It is essential that research be conducted to consider consumer insights and develop campaign approaches that resonate with target markets and incorporate elements of behavioral science to optimize campaign effectiveness.[92] Research should go towards investigating which population segments to target, understanding how to best target them, and determining which strategies are most effective in changing consumer habits, rather than just increasing awareness of the issue.[93] The research can also help identify the best messengers, which likely will differ across segments and markets (i.e., using celebrities or television shows that resonate with children to target the youth audience, social media to target young adults, and more traditional advertising streams to target adults), even though the messages themselves will be consistent. Pilot projects with strong assessment tools, including waste audits in communities where the campaigns are piloted, should be used before implementation of a full campaign to maximize effectiveness.

In the UK, WRAP used a consumer insight-driven research program to determine that 18- to 35-year-old people waste more food than any other age group, making them the ideal target, and the best way to interact with this group was through digital media messaging.[94] This type of targeting has also been used effectively at a smaller scale in the United States. In the City and County of Denver, the Department of Public Health and Environment has been integrating Community Based Social Marketing (CBSM) strategies targeted specifically at reducing food waste from leftovers.[95] The United States should learn from the targeting strategies used in these campaigns to optimize the consumer education and awareness campaign.

The Sustainable Management of Food program at the EPA created an implementation guide and toolkit for its food waste education program: *Food: Too Good to Waste.*[96] The guide is intended for community organizations and local governments interested in reducing food waste from households.[97] The guide offers advice on how to select a population to target and execute the education campaign. While the EPA has produced these helpful resources, they have not launched a full-scale consumer education campaign that is necessary to effectively reduce food waste nationally. The federal government, led by the USDA working with the EPA, could leverage these existing assets and research related to consumer outreach and behavior change when starting a national food waste education and awareness campaign.

IMPLEMENTATION OPPORTUNITY

The next farm bill should instruct the USDA in collaboration with EPA to launch a national food waste education and awareness campaign. A widespread consumer education campaign should be supported with funds appropriated through a Food Waste Reduction Title or through the Miscellaneous Title. Congress should appropriate $7 million annually through 2030, with $3 million for research into effective consumer food waste reduction strategies and $4 million into consumer behavior change campaigns.

Provide Funding to K-12 Schools to Incorporate Food Waste Prevention Practices in Their Programs

Annual potential to divert 7,060 tons of food waste, reduce 33,600 metric tons of CO_2e, and save 1.69 billion gallons of water, with a net financial benefit of $13.2 million[98]

ISSUE OVERVIEW

Every year tons of wholesome food are wasted in schools, costing the federal government as much as $1.7 billion annually.[99] This waste undermines efforts to address food insecurity, mitigate environmental degradation, and achieve food sustainability.

Schools provide close to 100 million meals to children each day as part of the National School Lunch Program (NSLP).[100] In the spring of 2019, WWF, with support from The Kroger Co. Foundation and the EPA Region 4 (Southeast), analyzed food waste in 46 schools in nine cities across eight states.[101] The report found that the schools wasted 39.2 pounds of food per student annually.[102] Based on these numbers, WWF extrapolates that schools participating in federal meal programs could waste 360,000 to 530,000 tons of food each year.[103]

The environmental impact of food waste in schools is significant. Given that over 100,000 schools participate in the NSLP, the food waste translates to 1.9 million metric tons of CO_2e of greenhouse gases and over 20.9 billion gallons of embedded water (the water that went into producing the food that went to waste).[104] Given the scale of waste resulting from school meal programs, schools should be a focal point for food waste education and reduction efforts.

SUPPORTING FOOD WASTE REDUCTION STRATEGIES IN SCHOOLS

Food waste in schools occurs for several reasons, including incorrect portion sizes and situational issues such as unpleasant eating environments and insufficient time periods for students to consume their meals.[105] There are several ways to address these issues; however, schools often struggle with implementation due to costs, a lack of guidance on how to adopt the changes, or insufficient program funding from the government.

Congress can support schools in conducting food waste audits, student surveys, and other methods to gather data on the types and quantity of food thrown away in school cafeterias. Food waste auditing helps administrators understand the scope of their food waste problem and identify specific areas for improvement.[106] In a 2019 study analyzing food waste at 46 schools in eight states, WWF found that students at each school were producing approximately 40 pounds of food waste per year, which is 9% higher than average Americans waste in homes (normalized by meals).[107] Once informed by their waste baseline, the schools conducted six weeks of food waste audits and recorded a total average waste reduction of 3%, with elementary schools seeing a greater reduction at 14.5%. Of the waste types measured including fruit and vegetable, milk, and other organic wastes, milk waste saw the greatest decrease with an average of 12.4%.[108]

Yet, many schools currently lack the funding to take on an auditing project. Even a $10-20 million grant program would help many schools reduce their food waste and change their cafeteria practices to ensure more food is eaten and not wasted. The program can build on the School Food Waste Reduction Grant Program proposed in the bipartisan School Food Recovery Act of 2021 (SFRA).[109] The SFRA seeks to establish a similar competitive grant program for local educational agencies to achieve food waste reduction goals. Grant programming directed at reducing school food waste will not only provide schools with needed funds to administer specific programs, including audits, but it will also encourage schools to devote more time and attention to food waste, and reward schools for engaging in these beneficial activities.

Once schools conduct audits and better understand the quantity of food waste they produce, they can introduce strategies proven to be effective in reducing food waste including longer lunch periods,[110] share tables,[111] and collaborating with students to improve meals.[112]

In addition to support for schools undertaking food waste audits, any funding or incentive for schools to conduct food waste audits, measure their waste, and take actions to reduce it or to redirect or donate surplus food could help move schools towards accounting for and changing their practices to be more sustainable. This is particularly true in schools utilizing additional grant funding for food service or educational programs.

To ensure that state and local health inspectors are aware of food waste policies in schools—specifically food donation and share tables, which may raise initial food safety concerns—Congress should mandate that the USDA educate officials about how these strategies work and that they are permissible.

MANDATING AN OFFER VERSUS SERVE MODEL ACROSS THE SCHOOL SYSTEM

When students are forced to take food they do not plan to eat, food is inevitably wasted. To remedy this problem, the USDA encourages schools to adopt the "Offer Versus Serve" (OVS) model[113] which allows students the opportunity to choose desired components of their NSLP and School Breakfast Program (SBP) meals to reduce food waste.[114] For schools to participate in NSLP and SBP, they must abide by federal and state rules on nutrition and food procurement.[115] Meals that are eligible for NSLP reimbursement must consist of five components: fruit, vegetable, whole grain, meat/alternative, and milk.[116] The OVS policy allows students to decline up to two of these five components if they take either a fruit or vegetable.[117] By contrast, students in schools without an OVS policy would be required to accept all five components, regardless of whether they intend to eat all the foods they are given.

Confusion surrounding the OVS policy leads to waste when schools mistakenly believe that students must elect to take a certain component of the meal, for example milk, for the meal to be reimbursable under federal regulations.[118] However, while milk must be *offered*, students are *not required* to take that option.[119] This confusion contributes to up to 45 million gallons of milk waste in school cafeterias nationwide.[120]

Currently OVS is mandatory for high schools and optional for elementary and middle schools, which may explain the higher rates of food waste in the lower grade levels.[121] Implementing this model across all schools would reduce the immense amount of waste produced in schools. The USDA should provide simple and clear instructions to schools implementing this program to avoid confusion and misunderstanding of the current rules that may lead to food waste. These instructions should be accompanied by an awareness program to increase understanding of the policies targeting both students and school staff (such a program may be as simple as posters explaining the requirements to hang in the lunchroom).

IMPLEMENTATION OPPORTUNITY

In the next farm bill, Congress should lower the financial burden on school food waste reduction efforts by providing dedicated grants to conduct food waste audits and implement waste reduction programming. The grants should be available to schools on a competitive basis and should be part of the Nutrition Title.

In addition to authorizing a new grant program, Congress should modify existing school grant program selection processes to preference applicants that have food waste reduction programs. The USDA currently administers several grant programs for schools, including the NSLP Equipment Assistance Grants[122] and the Farm to School Program (F2S).[123] Congress should require the USDA to give priority to applications from schools that include a food waste reduction or food donation plan as part of their application. These changes should be made through the Nutrition Title.

Lastly, Congress should mandate OVS across all schools, for both NSLP and SBP, but preserve some flexibility for schools to decline to use OVS for the youngest grade levels if doing so is difficult to implement or if it is deemed inappropriate for the school population. It should further require the USDA to publish additional guidance and implement training for teachers and staff to adequately prepare for the transition. These changes should be made through the Nutrition Title.

Promote Food Education and Food Waste Education in K-12 Programming

Annual potential to divert 14,800 tons of food waste, reduce 70,200 metric tons of CO_2e, and save 3.45 billion gallons of water, with a net financial benefit of $25.5 million[124]

ISSUE OVERVIEW

There is a gap in school programming for food waste education. While there are programs

providing grant funding to schools for food and agriculture related education, including the Food and Agriculture Services Learning Program (FASLP), a program created in the 2014 Farm Bill that provides funding for agriculture and nutrition education in K-12 schools,[125] there is no required focus on food waste. Additionally, the existing grant programs for food education generally do not have sufficient funding to reach all interested schools and thus are unable to maximize their positive impact.

Educating students on food waste can immediately reduce food waste.[126] Educating students will also realize long-term benefits because knowledge gained in early education significantly impacts the practices of individuals as they become participants in the marketplace.[127] Schools can play an integral part in educating future generations of consumers and establishing sustainable food consumption habits.

Congress should support efforts for schools to educate students on food waste reduction strategies. One program for which food waste reduction education should be required is FASLP, which should include a focus on food waste reduction strategies in nutrition education, such as portion size awareness, how to utilize surplus food, composting, and correctly storing perishables.[128] Modifying the language around the FASLP in the next farm bill to include food waste reduction techniques will motivate schools to expand their offerings, better account for food waste reduction, and educate the next generation of consumers on better food waste reduction practices.

Beyond food waste-specific education, Congress should increase support generally for education on food production and food systems to prevent waste. One way to educate kids on food in schools is through USDA's Farm to School Program (F2S).[129] F2S combines food education with improved access to local food by connecting schools with local farmers.[130] By helping students develop a greater appreciation for the origins of their food, this program helps students, and in turn schools, waste less.[131] Data from the 2013-2014 school year program revealed that F2S resulted in a 17% reduction in plate waste.[132] The USDA currently offers planning, implementation, and training grants ranging from $20,000 to $100,000 for F2S programs.[133] For the 2015-2016 school year, $120 million was requested and approximately $25 million was awarded.[134] This data demonstrates large demand for F2S programming, indicating that schools are interested in these initiatives but lack sufficient funding for them. By increasing funding for F2S, which has already been shown to reduce food waste in schools, more schools will be able to participate in the program and thus reduce their food waste.

IMPLEMENTATION OPPORTUNITY

The next farm bill should reauthorize and modify the FASLP program's authorizing language in the Nutrition Title to direct the USDA to award extra points on grant applications to schools that include food waste reduction education as a focus in their program.

The next farm bill should reauthorize and increase funding for the F2S program. This program has been shown to effectively reduce waste in schools. Increasing funding will allow additional schools to participate.[135] This program was originally a part of the Healthy, Hunger Free Kids Act of 2010,[136] but could be included in the farm bill going forward under the Nutrition Title.

Utilize Existing Federal Household-level Food Education Programs to Increase Food Waste Awareness

ISSUE OVERVIEW

On average, American households spend $1,866 per year on food that ends up going to waste.[137] According to the USDA Economic Research Service (ERS), 10.5% of American households faced food insecurity in 2020.[138] Many of these families participate in food assistance programs (e.g., Supplemental Nutrition Assistance Program (SNAP), Special Supplemental Nutrition Program for Women, Infants, and Children (WIC)), and have limited budgets to spend on food. As discussed above, individuals are often unaware of how much food they waste and how to reduce their own food waste at home.[139] There are multiple existing USDA programs targeting those 13.8 million households with food and nutrition education, yet currently none of these programs are required to address food waste.

With almost one-third of household food being

wasted, education regarding strategies to reduce food waste would inevitably save all consumers money. Congress should promote national food waste awareness by taking advantage of existing food education programming to provide educational materials to Americans about food waste prevention. The authorizing language for the Expanded Food and Nutrition Education Program (EFNEP) and for SNAP Education (SNAP-Ed) and SNAP-Ed guidance documents should include education related to increasing the efficiency of food usage or reducing food waste.[140] These are existing programs and are therefore easy to leverage, but additional efforts should be made by the federal government to educate all consumers on better food usage and reducing food waste.

EXPANDED FOOD AND NUTRITION EDUCATION PROGRAM OPPORTUNITIES

EFNEP is a federally funded farm bill[141] grant program that aims to enable low-income Americans to "engage in nutritionally sound food purchasing and preparation practices," by providing funding to land grant universities to deliver nutrition and physical education programs in each state.[142] EFNEP is funded annually through appropriations.[143] It typically receives around $69 million per year.[144] While the program already provides educational materials with strategies for shopping for healthy food on a budget, the authorizing language should also mention food waste reduction as a strategy to support household food budgets. One of the four stated core areas is increasing the ability of participants to buy, prepare, and store nutritional food.[145] This section of the program could mention food waste reduction. It will be important to make sure the education is culturally appropriate and applicable to the situations of the recipients, especially if many of them are depending on providers like food banks, where recipients do not typically get a choice in the foods they receive. Education about food waste reduction could help to extend the budgets of Americans, while helping to address the nation's food waste problem.

SNAP-ED OPPORTUNITIES

With over 42 million people receiving SNAP benefits each year, SNAP-Ed represents an enormous opportunity to educate individuals about food waste and food waste prevention.[146] SNAP-Ed is a federally funded grant program that seeks to improve the likelihood that SNAP recipients will make healthy food choices within a limited budget and engage in physically active lifestyles consistent with the current Dietary Guidelines for Americans and the USDA food guidance.[147] SNAP-Ed was first established in 1981 as "Nutrition Education" through the Food Stamp Program and now receives funding through annual appropriations bills—typically receiving just over $400 million split between the states.[148] Like EFNEP, SNAP-Ed focuses on "promoting healthy eating and active lifestyles," while stipulating that program providers "must consider the financial constraints of the SNAP-Ed target population in their efforts."[149]

SNAP-Ed offers an opportunity to educate Americans on how to best prevent food waste while in no way diverting resources or attention away from the primary objectives of the program—improving nutrition outcomes. Some states, including Maine and Connecticut, already include food waste education within their SNAP-Ed programming.[150] These states provide guidance on how to reduce food waste and how to understand date labels.[151] However, many states do not address food waste in their programming, which represents a tremendous missed opportunity. Rather than leaving it to states to decide to include guidance on reducing food waste, this instruction should come from Congress through the farm bill. The 2014 Farm Bill amended SNAP-Ed to include education on physical activity, which suggests that additional goals can be included in the 2023 Farm Bill.[152]

SNAP-Ed funding should be used to increase awareness of food waste and share techniques to reduce food waste—such as how to properly store leftovers, how to use some ingredients that people receiving food donations may be unfamiliar with, and how to interpret date labels. Additionally, it should be used to develop tools (for example, a meal planning tool) to help participants prevent food waste. Such a tool could be developed out of existing information and tips on meal planning available through multiple states' SNAP-Ed programs.[153] Again, any educational tools should also take into consideration cultural appropriateness, quality of food provided, and food access problems that might also lead to food waste.

By adjusting the goals and priorities for SNAP-Ed and EFNEP, Congress can tackle both food insecurity and food waste, ensuring that more Americans are provided with the necessary tools to get the most out of their food dollars by properly storing perishable items, reusing, and repurposing leftovers, and ultimately reducing food waste.[154]

IMPLEMENTATION OPPORTUNITY

The next farm bill should renew support for EFNEP in the Research, Extension, and Related Matters Title of the 2018 Farm Bill and modify the authorizing language to include food waste prevention education. Including an explicit focus on food waste reduction as a program goal in the authorizing language will ensure EFNEP providers include food waste reduction in their programs.

Similarly, Congress should add language about food waste education in the program goals of SNAP-Ed in the Nutrition Title. The 2023 Farm Bill should include an amendment including food waste education so SNAP-Ed strategies will assess nutrition, physical activity, *and* food waste reduction.

Provide Grant Funding for New Technologies to Reduce Food Spoilage and Food Waste

ISSUE OVERVIEW

Advances in food technology could prevent an enormous amount of food waste, however, insufficient funding has been dedicated to research and development in this space. New technology has the potential to reduce food waste on-farm and post-harvest, during transportation and processing, and on the shelf. There has been some development of such technology, however, many of these products are in the early stages, are too costly to apply at scale, and lack funding, which has held up the opportunity for new solutions, especially as the market for such solutions is uncertain. Federal investment has the potential to fill in the gaps that venture capital and other funding streams are missing, and should prioritize new companies and those without venture backing.

There is significant room for new technology to reduce on-farm food loss as well as help connect surplus food to avenues for its use. According to ReFED, 21% or 17 million tons of food loss occurs on farm.[155] Technology to help prevent this loss or to help redirect edible food may include harvesting technology such as improved picking machinery for high loss crops, tracking technology to monitor produce and optimize harvest schedules, and blockchain for demand forecasting and decision making across the supply chain. This technology could create more economic value for growers while reducing food loss.

In addition to technology to reduce on-farm food loss, packaging technologies and food treatments that slow spoilage and prolong the shelf life of produce, meat, poultry, fish, and other perishable products could have a tremendous impact on reducing food waste. It is important to note that new packaging prioritized for funding should not increase the use of fossil-fuel-based materials, non-recyclable/non-compostable materials, or single-use plastics. Some examples of innovative packaging technologies that address this issue include: It's Fresh!, which removes ethylene from produce to extend shelf life;[156] BluWrap, which works to reduce and monitor oxygen levels in meat, poultry, and fish packaging;[157] and Apeel, which applies an amphiphilic coating to lock moisture in produce while keeping air out.[158] However, these products remain largely in pilot phases, and food manufacturers may be unwilling to bear the cost of utilizing such packaging if the savings only benefit consumers who will save money by having food with longer shelf lives, rather than producers, who will likely face reduced sales if less food spoils, thus requiring replacement in the form of more sales.[159] According to ReFED, the use of innovative products to slow spoilage has the annual potential to divert 425,000 tons of food waste from the landfill, while creating $1.74 billion in net financial benefit.[160]

Investment is also needed in innovative upcycled food products or other byproduct utilization. Upcycled food is a growing sector of the economy that looks to find new, environmentally beneficial uses for previously discarded food products.[161] Upcycling creates new food products out of surplus food, unmarketable food, and even inedible food byproducts. New upcycling processes and products can be supported by funding for research and development. Funding can also support marketing to consumers to describe the benefits of foods that would otherwise have gone to waste. According to ReFED, upcycling food has the annual potential to divert 1.87 million tons of food waste from the landfill, while creating $2.69 billion in net financial benefit.[162] The USDA should promote research and development of technology to reduce on-farm food loss, slow food spoilage, and create upcycled food products.[163]

One farm bill grant program, the Specialty Crop Research Initiative (SCRI), can provide funding for the research and development of spoilage prevention technology and technology to reduce on-farm food loss. SCRI grants address needs related to "specialty crops"—which includes fruits, vegetables and tree nuts.[164] These grants are available to land grant universities (universities focused on teaching "agriculture and the mechanic arts"),[165] private universities, non-profit organizations, for-profit institutions (including small businesses), and state agricultural experiment stations.[166] There is an estimated total of $80 million available for funding each year for SCRI.[167] SCRI projects must address at least one of five focus areas, including efforts to improve production efficiency, handling and processing, productivity, and profitability over the long term.[168] The 2018 Farm Bill stated that SCRI should include "efforts to achieve a better understanding of systems to improve and extend the storage life of specialty crops."[169] By including this language, the 2018 Farm Bill took an important first step toward supporting innovative food spoilage prevention technology.

Even though SCRI *can* fund research on food spoilage technology as of 2018, and on technology to reduce on-farm food loss since the start of the program, none of the twenty grants given in 2021 addressed either issue.[170] In line with the United States national food waste reduction goal, and in order to increase support for innovations to reduce food loss, Congress should direct the USDA to further preference such projects during the selection process.

Beyond SCRI, other support for new packaging technologies is needed. SCRI does not cover research on products other than specialty crops, yet similar research is needed to extend the shelf-life and reduce waste of dairy, meat, poultry, and fish. Since animal products are generally more expensive for consumers and more resource-intensive to produce,[171] preventing their waste should be a high priority. Congress should create a program like SCRI that focuses on providing support for new technologies to extend the shelf life of dairy, meat, poultry, and fish.

SCRI also does not explicitly cover the research and development of upcycled food products, though it could arguably be included in its funding. Congress should specify that SCRI could also support research and development into upcycled products or should create a separate funding mechanism focused on research and development for upcycled food products. This can help drive more development of products using this beneficial practice.

IMPLEMENTATION OPPORTUNITY

In the Research, Extension, and Related Matters Title, Congress should increase funding for SCRI and should direct the USDA to further preference projects that target food waste by either extending the life of specialty crops or reducing on farm food loss during the SCRI selection process. Congress should also specify that funding from SCRI could be used for research and development of new upcycled products using surplus specialty crops.

Additionally, Congress should create a program like SCRI that supports new technologies to extend the shelf life of dairy, meat, poultry, and fish, and the development and manufacturing of upcycled food products using these food products. This program could be in the Research, Extension, and Related Matters Title, or the Miscellaneous Title, or in a new Food Waste Reduction Title.

Implement a Certification Program for Businesses that Demonstrate Food Waste Reduction

ISSUE OVERVIEW

Certification programs have effectively changed corporate and consumer behavior in other sectors and could prove similarly successful in reducing food waste. For example, in 1992, the EPA launched the Energy Star Certification program to formally recognize energy-efficient products.[172] The EPA worked with technical experts from computer and appliance companies to establish criteria that would qualify consumer electronics for Energy Star Certification.[173] Now, approximately 75,000 product models have earned the Energy Star Certification, and consumers purchase over 300 million Energy Star-Certified items each year.[174] As a result, the EPA estimates that Energy Star Certification has achieved 4 billion metric tons of greenhouse gas

reductions since the start of the program.[175]

The private sector already supports the creation of a food waste reduction certification system. In 2012, the U.S. Zero Waste Business Council (USZWBC) created a zero-waste certification program for businesses called TRUE.[176] In 2016, USZWBC merged with Green Business Certification Inc. (GBCI) to expand the certification program to drive sustainability across all sectors.[177] TRUE certification is available to any physical facility and their operations if they meet the seven minimum program requirements, which include achieving an average of 90% or greater overall diversion from landfills, incineration, and the environment for solid, non-hazardous wastes.[178]

A certification program similar to TRUE that focuses on food waste would help consumers identify businesses with good food waste reduction practices and could inform their purchasing choices, thereby using consumer preferences in the marketplace to reduce overall food waste. This program should include consumer education that raises awareness about the meaning of the certification and the importance of reducing food waste. Congress could task USDA, EPA, or the two to work together to oversee this program. This could build on the USDA and EPA's U.S. Food Loss and Waste 2030 Champions that identifies businesses and organizations that have made a public commitment to reduce food loss and waste in their own operations in the United States by 50% by the year 2030,[179] or the EPA's Food Recovery Challenge launched in 2011, which had offered technical assistance and acknowledgement to over 800 participants.[180] The agency should work with technical experts to establish criteria that would qualify certain businesses for the food waste reduction certification and should create consumer education materials to maximize the program's impacts.

IMPLEMENTATION OPPORTUNITY

The next farm bill should create a food waste reduction certification program, under the Miscellaneous Title or a new Food Waste Reduction Title, to encourage businesses to prevent or otherwise reduce food waste as consumer-facing businesses contribute 28% of the United States' total food waste.[181] The certification program can be administered by the Food Loss and Waste Reduction Liaison within the USDA, or by EPA, or by the two agencies jointly, building on their joint United States Food Loss and Waste 2030 Champions program.

Provide Financial Incentives to Businesses for the Adoption of Technologies that Reduce Food Waste by at Least 10%

ISSUE OVERVIEW

Roughly 42% of food waste results from inefficiencies in the food supply and food management chain by the manufacturing, retail, and food services sectors.[182] After food leaves the farm, businesses at all levels of food production, distribution, and retail experience inefficiencies—including spoilage, equipment issues, and handling errors—that result in waste.[183] For example, businesses at the product distribution level that transport food, especially food that is temperature sensitive, may contribute to food waste due to long transportation times or changes in temperature that increase the speed of spoilage.[184] At the retail level, 20% of unsold food is due to handling errors, 14% is due to spoilage, and 12% is due to equipment issues.[185]

Businesses along the supply chain can cut food waste by enhancing food product distribution systems. Existing technology can help businesses reduce these inefficiencies and reduce food waste by improving handling, forecasting, inventory management, and temperature monitoring. For example, trucks with advanced cooling technology can help reduce food waste during transportation.[186] Intelligent routing technology can help businesses identify when products have a change in shelf life and route the product to the nearest location.[187] Unfortunately, this technology can be expensive upfront, which creates an uptake barrier to businesses obtaining and implementing these kinds of food waste reduction solutions.

Providing incentives for businesses to adopt these technologies can not only scale deployment, but it can also create a more robust market for innovative, novel technologies. Congress should provide a financial incentive for businesses to employ

technologies that demonstrate an ability to prevent food waste by at least 10%.

The financial incentive should be structured in the form of a tax credit, much like the Federal Solar Investment Tax Credit (the ITC).[188] The ITC provides a 26% tax credit on installation costs for business that install, develop, and/or finance solar energy systems.[189] A similar tax credit model could be applied to food waste reduction technologies. Congress should direct agencies to establish a list of the technologies that have evidence to show that they reduce food waste by 10% and maintain a list of the technologies that are eligible for such a tax credit.

IMPLEMENTATION OPPORTUNITY

Congress should create a federal tax incentive for the commercial adoption of post-harvest food waste reduction technologies under a Trade and Tax Title or under the Miscellaneous Title or a new Food Waste Reduction Title. In order to qualify for this credit, Congress should direct agencies to maintain a list of eligible technologies that demonstrate a 10% reduction in food waste. Agencies should develop the approval program for the tax credit.

SURPLUS FOOD RECOVERY

Strengthen and Clarify The Bill Emerson Good Samaritan Food Donation Act ★

Annual potential to divert 57,000 tons of food waste, recover 95 million meals, and produce a net financial benefit of $159 million[190]

ISSUE OVERVIEW

While over 10.5% of Americans struggle to satisfy their food needs, up to 35% of food produced in the United States goes to waste.[191] Much of this food is safe, edible, and fit for consumption, but barriers stand in the way of donation. One of these barriers is that businesses are reluctant to donate food because of misperceptions regarding liability concerns associated with donation, such as a food recipient getting sick.[192] Congress responded to these concerns in 1996 by passing The Bill Emerson Good Samaritan Food Donation Act (Emerson Act).[193] The Emerson Act encourages food donation by providing comprehensive civil and criminal liability protection to food donors, gleaners, and non-profit organizations that distribute donations to those experiencing food insecurity.[194]

While the Emerson Act provides significant protections, a 2016 survey conducted by the Food Waste Reduction Alliance found that 50% of food manufacturers and 25% of retailers and wholesalers still cite liability concerns as a main obstacle to food donation.[195] And, according to ReFED, educating potential food donors on liability laws has the potential to divert 57,000 tons of safe, surplus food from landfills annually.[196] This means that liability concerns remain a significant barrier with room for improvement through the Emerson Act.

There are several shortcomings of the Emerson

Act that Congress should address to facilitate food donation. Specifically, Congress should help ensure there is federal agency capacity to interpret and provide guidance on the provisions of the Act and update several areas of the Act to provide additional flexibility for food donations.

PROVIDE THE USDA WITH AUTHORITY TO INTERPRET AND ISSUE GUIDANCE ON THE EMERSON ACT

Many provisions and terms in the Emerson Act are ambiguous and no federal agency has provided an authoritative interpretation of the Act's provisions. For example, donors must donate in "good faith" but have no guidance as to what activities meet that bar, and they cannot act with "gross negligence" but do not have any guardrails to know what food donations would be considered gross negligence. Also, donors may be concerned about facing liability if they donate a food that is past the date or mislabeled in some way.[197] Further, the lack of case law interpreting the Emerson Act makes it difficult for donors to know how the provisions would be interpreted by a court.[198] This may deter potential food donors who want to be sure they will receive liability protection before they donate. Guidance can clarify the meaning and interpretation of the Emerson Act's provisions.

In the 2018 Farm Bill, Congress took a step toward increasing the USDA's responsibility for the Emerson Act by mandating that the USDA create a Food Loss and Waste Liaison position to coordinate food waste efforts. The responsibilities of the Liaison include to "raise awareness of the liability protections afforded under the Bill Emerson Good Samaritan Food Donation Act."[199] While recent efforts have been made by the USDA to clarify donation liability laws as requested by Congress in the 2018 Farm Bill,[200] the lack of Congressional delegation limits the agency's authority. Congress should delegate authority to the USDA to interpret the Emerson Act and should require the USDA to write regulations interpreting and clarifying the terms of the Emerson Act.

THE EMERSON ACT SHOULD COVER DIRECT DONATIONS

The Emerson Act currently covers food donated to non-profit organizations, but it does not cover food donated directly to individuals.[201] This means that food producers and licensed food service establishments that give food directly to people experiencing food insecurity are not covered under the Emerson Act's protections. Extending protections to direct donations will increase efficiency, reduce costs, and enable timely use of perishable food. Individuals experiencing food insecurity would also be able to pick up food from accessible locations, such as local restaurants and grocery stores. In order to ensure direct donations will be made safely, the provisions should be limited to establishments that already comply with food safety requirements—such as food service establishments, institutions, and retail stores—or to farmers, as fresh produce poses fewer safety risks. Currently, several states provide enhanced liability protection for donors who donate directly to the end recipient, however, to maximize impact, the protection needs to be expanded by the federal government.[202]

The 2018 Farm Bill amended the Emerson Act to define a new term, "qualified direct donor" and instructed the USDA to issue guidance on the protections available to those direct donors.[203] However, since the farm bill did not update the Emerson Act itself, it did not actually offer protection to qualified direct donors. Offering protections for direct donors would be in line with the growing support to offer protection to donations directly to food-insecure individuals rather than only those made through intermediary non-profits.[204]

THE EMERSON ACT SHOULD COVER NON-PROFIT ORGANIZATIONS CHARGING A SMALL FEE

The Emerson Act only provides liability protections to donors and non-profit food recovery organizations when the individual receiving the food "is not required to give anything of monetary value."[205] This means that the Emerson Act does not extend liability protection when the ultimate recipient pays, even at a reduced rate, for food. As a result, innovative food recovery and repurposing models are excluded from coverage. These models, such as social supermarkets that sell surplus food at a low cost,[206] can fill a need for individuals experiencing food insecurity in addition to food assistance programs or pantries.

Several social supermarkets in the United States have shown potential for success.[207] Innovative retail models are particularly effective in geographical

areas with limited access to affordable and nutritious food. The USDA estimates that up to 17.4% of the population lives in such locations.[208] In Massachusetts, The Daily Table is a social supermarket with three locations that works with local food producers to recover healthy food that they later offer at reduced prices.[209] The Daily Table provides 1 million nutritional servings every month, with an average savings of 30% compared to other grocery stores.[210] It also employs over 65 individuals, many of whom are local community members.[211] In 2016, ReFED estimated that innovative retail models and secondary resellers have the potential to divert 167,000 tons of safe, surplus food from landfills per year and to provide $37 million per year in economic value.[212]

Currently, the Emerson Act's "no-charge" provision deters donations to innovative non-profit organizations and discourages traditional food recovery organizations from testing out new models due to fear of losing liability coverage. While providing food free of charge to individuals in emergency situations can be necessary, making space for other food recovery models such as social supermarkets enables food recovery organizations to reach a broader range of individuals experiencing food insecurity and food access challenges. Requiring that the recipient organization be a non-profit, as the Emerson Act does, ensures that any profits will be used for the organization to further serve its charitable purpose.[213] Some states already provide liability protection to non-profit organizations that sell food at a low cost and to the donors that donate to them.[214] Congress should institute this across all states by amending the Emerson Act to provide liability protection even if food is sold to the end recipient at a low price that reflect the cost of handling, transporting, or storing the food.

IMPLEMENTATION OPPORTUNITY

Liability protection is a low-cost policy change that can unlock more food donation. Congress should improve the Emerson Act's protections and clarity through the 2023 Farm Bill in the ways outlined above. Congress can make these changes in a new Food Waste Reduction Title or through the Miscellaneous Title. The bipartisan, bicameral Food Donation Improvement Act of 2021 offers model language that could be used to implement these changes.[215]

Increase Funding Support for Food Recovery Infrastructure and for Post-Harvest Food Recovery

Improving donation transportation and storage infrastructure has the annual potential to divert 908,000 tons of food waste, reduce 1.316 million metric tons of CO_2e, and save 127.6 billion gallons of water, with a net financial benefit of $3.287 billion[216]

ISSUE OVERVIEW

The costs and logistical challenges of preparing, processing, and transporting food for donation make it financially difficult for many food producers and vendors to donate surplus food.[217] Many food donors are not willing or able to spend additional money in order to donate food that they would otherwise send to disposal. Thus, food recovery organizations generally need to bear these costs in order to make donation cost-effective for donors. However, since the funds of food recovery organizations are limited, requiring these organizations to bear the costs of food recovery may prevent them from accepting all food donations or expanding operations to new donors or areas.

In addition to transportation costs, when food recovery organizations do receive donated food, capacity limitations at food recovery organizations can be a bottleneck leading to waste.[218] Canning, freezing, or processing food allows organizations to handle large volumes of perishable produce. However, processing requires access to sufficient facilities, appropriate equipment, and trained staff; these efforts thus are limited by an organization's resources.

The federal government can support food recovery infrastructure through grants to food recovery organizations. Further, the government can utilize the Local Agricultural Market Program (LAMP) to support farmers in developing supply relationships to provide surplus food to food recovery organizations that can help surplus food get to food-insecure individuals. Investing in food recovery infrastructure can create new and more sustainable methods for food recovery while supporting both producers and food recovery organizations.

INVESTING IN FOOD RECOVERY INFRASTRUCTURE

Investing in food recovery infrastructure, like transportation and storage, can support economic development while strengthening emergency food assistance. Scaling up food recovery operations contributes to local economies by generating new jobs in logistics and transportation, while also increasing access to food and reducing the amount of food going to waste.[219] ReFED estimates that an annual investment of $442 million, with $69.3 million from government sources, in transportation for food recovery would have a potential net benefit of $2.46 billion.[220]

In June 2021, as a one time COVID-19 response initiative, the USDA announced funding of up to $100 million in food recovery infrastructure grants for food assistance organizations, particularly those that reach underserved areas.[221] The grants can be used for efforts such as developing storage and refrigeration capacity, which help these organizations to rescue more food by increasing their capacity.[222]

Given the vast potential benefit of investments in food recovery infrastructure, Congress should ensure that these grants are integrated into regular USDA's operations instead of being a one-time initiative. Alternatively, Congress should expand its investment beyond this COVID-19 response program.

While existing grants are focused on infrastructure, another avenue with the potential to make a significant impact is technological solutions supporting food recovery. Congress should authorize funding for grants to food recovery organizations and other nonprofit and community based organizations developing donation matching infrastructure, such as a website or application, that would provide real time updates to connect organizations with surplus food with those able to distribute it. Such technology exists,[223] but current coverage is spotty and limited to only certain parts of the country. These grants could help support new solutions or the expansion of existing technology to additional areas.

One model to support this ongoing need is for Congress to create a new block grant program for the USDA to award annual grants to states to carry out projects that develop and support food recovery infrastructure and innovative food distribution models. States would be able to distribute their block grant funds to applicable food recovery organizations and local governments that apply for funding to fill a gap in needed food recovery infrastructure. This grant format would enable state governments to take a holistic approach to food recovery within their state and use grant funding to support geographic regions that would most benefit from new or improved food recovery and distribution infrastructure. This program should be modeled off the Specialty Crop Block Grant Program, which offers annual grants to state agriculture departments to implement projects that increase specialty crop competitiveness.[224]

ENHANCE GRANT PROGRAMS INCLUDING COMMUNITY FOOD PROJECT (CFP) AND LOCAL AGRICULTURAL MARKET PROGRAM (LAMP) TO SUPPORT POST-HARVEST RECOVERY

The USDA already has a variety of grant programs that could help support infrastructure for food recovery, such as CFP grants and funding under LAMP. Amending and enhancing these grants can support long-term food recovery efforts and innovative food recovery models.

CFP grants support community-based projects that can become self-sufficient after a one-time infusion of federal funds and provide communities with access to healthy, local foods.[225] The program is particularly well-suited to promote innovation, reflected by its goal to "support the development of entrepreneurial projects"[226] and its prioritization of organizations with innovative models for reducing food insecurity.[227]

CFP already includes gleaners among its eligible recipients and should continue to promote its relevance for both gleaners and other food recovery organizations.[228] The 2018 Farm Bill provided $5 million annually in mandatory funding for CFP,[229] less than the $9 million provided annually in the 2014 Farm Bill.[230] This makes an already competitive CFP grant even more difficult to receive, with only 18% of applications receiving funding.[231] Congress should increase funding for CFP and earmark some portion of this funding for community projects that focus on food recovery.

LAMP is an umbrella program created by the 2018 Farm Bill that includes the Value-Added Producer Grant (VAPG), the Farmers Market and Local Food Promotion Program (FMLFPP), and the Regional Food System Partnership (RFSP).[232] The 2018

Farm Bill allocated $50 million annually to support grants of up to $500,000 under these programs.[233] This allocation includes funding for "new business opportunities and marketing strategies to reduce on-farm food waste," which is responsible for 21% of the United States' total food waste.[234] However, despite the fact that the LAMP statutory authority allows the USDA to fund projects that reduce on-farm food waste and support regional and local food recovery infrastructure, in 2021, only 1 out of 88 Farmers Market Promotion Program projects[235] and 3 out of 84 Local Food Promotion Program projects worked with food banks.[236]

Congress could make the program more accessible and more impactful by increasing funding, removing the matching funds requirement, and earmarking some portion of funding for food recovery projects. In May 2021, the USDA expanded LAMP funding due to the COVID-19 pandemic, offering $92.2 million in grants under LAMP.[237] Making this increased funding permanent or further increasing funding in the 2023 Farm Bill could allow more organizations to receive grants under LAMP, which would help fund more innovation. In addition, Congress could remove matching funds mandates that require grant recipients to contribute either 25% (FMLFPP and RSFP) or 100% (VAPG) of the grant's value.[238] This would eliminate barriers for potential grantees, such as startup organizations that may not have sufficient funds to match grants at the start of their operations. Setting aside dedicated funding within LAMP for food recovery could boost the program's impact in the space as well. Congress should also extend VAPG funding to non-profits; at present, this funding cannot be used by food recovery organizations as most of these organizations are structured as non-profits, partially to take advantage of benefits available for food donation to non-profit organizations.

IMPLEMENTATION OPPORTUNITY

Congress should increase funding for food recovery infrastructure, either through new 2023 Farm Bill investments or by making COVID-specific investments permanent. Congress should establish a new block grant program that funds food recovery and distribution infrastructure at the state level. This program could be established in the Nutrition Title of the farm bill. Congress should also support post-harvest food recovery by increasing funding for the CFP grant program through the Nutrition Title of the farm bill and earmarking a portion for food recovery projects. Within the Horticulture Title of the farm bill, Congress should increase funding for LAMP, remove or reduce the matching requirements, extend VAPG funding to non-profits, and earmark a portion for food waste reduction and food recovery.

Offer Grant Resources and Procurement Programs to Increase Food Recovery from Farms

Interventions aimed at optimizing on-farm harvests could produce a combined net financial benefit of over $8 billion[239]

ISSUE OVERVIEW

As the USDA has noted, food waste from farms is a significant problem.[240] This is especially true for produce, which is more perishable than grain crops or other commodity crops.[241] In 2019, farms wasted 16.7 million tons of produce.[242] Not only is this a staggering amount of safe food that could otherwise have been donated to people experiencing food insecurity, but produce is a highly nutritious product and may not otherwise be readily available to those facing food insecurity. USDA programs that connect food-insecure Americans with surplus food from farms fill an important gap.

ADJUST AND INCREASE FUNDING OF THE TEFAP FARM TO FOOD BANK PROGRAM

In order to start addressing the financial hurdles to harvesting surplus crops for donation, the 2018 Farm Bill created a new program within The Emergency Food Assistance Program (TEFAP), called the TEFAP Farm to Food Bank Project Grants. This grant program aims to reduce food waste, provide food to individuals, and develop relationships between food providers and food recovery organizations.[243] The TEFAP Farm to Food Bank Project has a budget of $4 million annually to fund projects that involve "harvesting, processing, packaging, or transportation" of food products donated by farmers, processors, or distributors to emergency feeding organizations.[244] The grant covers costs including those associated with

harvesting food, transportation from farms to food recovery organizations, and stipends or salaries for volunteers/staff members working on a TEFAP Farm to Food Bank Project, but the grant cannot be used for purchasing the food itself.[245] The USDA provides states with funding under the TEFAP Farm to Food Bank Project, and states have discretion in choosing how to allocate the funds.[246] Twenty-nine states are participating in the project in FY2022, including 7 states that have not previously participated.[247]

Several food recovery organizations ("Emergency Feeding Organizations," or EFOs, under the statute[248]) that were funded through the TEFAP Farm to Food Bank Project report great success.[249] One EFO reported that the funding helped them recover over 100,000 pounds of produce that would otherwise have gone to waste in 2020.[250] This funding can be crucial to the functioning of EFOs, as supply chain issues, labor shortages, and the rising cost of pallets have created challenges in food recovery.

While the grant program has been highly successful, there are some opportunities for improvement. First, the farm bill should remove or reduce the requirement of a 50% match by states or EFOs.[251] EFOs struggle to meet this matching requirement, creating unnecessary barriers to access. Second, increasing the funding of the TEFAP Farm to Food Bank Project could encourage increased and more consistent state participation. The USDA releases potential allocation amounts for each state if every state participated.[252] However, the low allocating funding amounts—less than $30,000 for more than 10 states[253]—may contribute to the low participation rate among states (ranging from 19 states in 2020 to 29 states in 2022), as the limited award may disincentivize states from spending resources to update their state plan. However, states that do participate are provided additional funds from the non-participating states, which may encourage their continuous participation.[254] The 2023 Farm Bill should dedicate additional funding to the grant program to incentivize increased state participation and ensure that states receive adequate funding.

ESTABLISH FUNDING TO HARVEST AND DONATE SURPLUS FOOD FROM FARMS

As another avenue to support food recovery from farms, Congress should establish permanent funding for the purchase and donation of surplus food from farms.

During the COVID-19 pandemic, the Farmers to Families Food Box Program provided over 173 million boxes of food to food-insecure Americans.[255] After the program ended, the USDA utilized some of its ongoing funding for initiatives like TEFAP fresh produce boxes for food banks and the Dairy Donation Program as well as funding for local food distribution infrastructure—mentioned in greater detail in the next section—and for cooperative purchasing agreements with states.[256]

The Farmers to Families Food Box Program helped mitigate distributor job loss, created contracting opportunities for small- and mid-sized farms (in early rounds of the program), and helped deliver food to food-insecure individuals in many parts of the country. However, the program could have better supported BIPOC-owned, women-owned, and local farms, ensured equitable distribution of food assistance to food-insecure populations around the country, and focused some attention on guaranteeing the program did not have the adverse effect of contributing to food waste.[257]

Congress should designate funding for a revamped program to purchase and distribute surplus food that utilizes the Farmers to Families Food Box Program as a model, but which addresses some of its primary issues and critiques. Any such program funded by Congress should focus on ensuring that the food procured and donated under the program is truly food that would otherwise have gone to waste—for example, produce that is off-grade and not fit for consumer markets, or produce that is clearly identified as surplus—thereby ensuring the program helps to reduce the amount of food going to waste and does not cannibalize market opportunities for food. Congress should ensure such a program has several key features, such as: ensuring that end recipients have the dignity of choice to choose produce that is culturally-appropriate, healthy, and desirable to them (rather than being given a standard, one-size-fits all assortment); ensuring that food is high quality and not at risk of spoilage; reporting the program's recovery of food that would otherwise be wasted; ensuring compensation for transportation costs incurred by local nonprofits associated with last mile delivery; requiring program participants (including growers, distributors, and food recovery organizations) to measure and report their own food waste levels of food procured under the program; and measuring the program's procurement from woman-owned farms, BIPOC-owned farms, and other socially disadvantaged farmers and ranchers.

The proposed Fresh Produce Procurement Reform Act of 2021 provides a model that incorporates some of these suggestions.[258] This Act would create a USDA program to contract with farmers and other food providers, procuring fresh produce for food recovery organizations to provide to food-insecure individuals. This Act would prioritize socially disadvantaged farmers and encourage sourcing from small- and mid-sized growers, furthering equity goals and addressing related critiques of the Farmers to Families Food Box Program.[259]

IMPLEMENTATION OPPORTUNITY

Additionally, Congress should expand the TEFAP Farm to Food Bank Project in the Nutrition Title of the 2023 Farm Bill and reduce or remove the state match requirement. Congress should designate funding for a tailored surplus food purchase and donation program, modeled from the Farmers to Families Food Box Program but with upgrades to address equity and ensure the program is reducing rather than furthering food waste.

Encourage USDA Grant and Loan Recipients to Donate Surplus Food by Incentivizing Food Donation

ISSUE OVERVIEW

As discussed in the previous section, the USDA supports regional and local food system development through grant programs like LAMP and CFP.[260] These grants have generated new income sources for small, beginning, veteran, and socially disadvantaged farmers and created new market opportunities for value-added and niche products.[261] The grant recipients often are non-profit and farm-serving organizations that have helped strengthen and stabilize participating farmers markets by creating marketing space; offering training programs; developing peer-to-peer learning networks; strengthening regional and local food system infrastructure and increasing vendor sales and on-farm revenue; and developing food hubs and shared use kitchens to increase regional capacity for processing, distribution, and storage.[262] Given the nature of the work funded by these grants, which aims to support food system development and opportunities for food producers, the USDA should also leverage these grant programs to incentivize food donation and food waste reduction.

GRANT SELECTION PREFERENCES

Congress should demonstrate its commitment to food waste reduction by encouraging all programs or organizations applying for USDA grant funding to donate surplus food and prevent food from being wasted in the first place. The USDA has already required program participants to donate food in certain contexts, like the USDA Farmers Market program,[263] which shows the feasibility of the USDA taking such action. Specifically, the USDA Farmers Market program "requires farmers and vendors to donate surplus food and food products at the end of each market day to a local non-profit organization identified by the USDA."[264] Expanding this premise to other USDA grant programs could have a significant impact on food waste reduction.

This could be done by modifying grant selection processes to preference applicants with surplus food donation contracts with a food recovery organization. This measure would encourage applicants to take the first step in donating edible food that would otherwise be wasted. As a model, California has regulations to require food donation contracts as part of their effort to reduce short-lived climate pollutants.[265] Starting in 2022, food generators like supermarkets and distributors are obligated to recover as much food as possible that would otherwise be wasted.[266] To prove they have a plan to do this, food generators must have a contract or written agreement with a food recovery organization or service.[267] This requirement ensures that when food providers have surplus food, donating the food will not impose an additional burden of finding a food recovery organization to accept that food.

Congress should enact these priorities and requirements for any grant programs where grant money is used for food procurement or for developing markets for food. LAMP programs, which received an infusion of $92.2 million in May 2021, are a prime example.[268] $76.9 million of this funding will go to FMLFPP, supporting "direct-to-consumer markets like farmers markets" and "indirect-to-consumer markets like food hubs and value-added product incubators."[269] Since the USDA is providing

funds to support facilities or markets where food will be developed or sold (and often where food may be wasted), it is a great opportunity to incentivize grantees to donate food. While the goals of these grant programs should be the priority, Congress can instruct the USDA to incorporate a food donation contract incentive or requirement into all relevant grant programs.

IMPLEMENTATION OPPORTUNITY

In the next farm bill, Congress should direct the USDA to prioritize grant applicants that have a food donation contract in place with a food recovery organization. This should be implemented across a range of farm bill grant programs, with a focus on grant programs in which grantees procure or develop markets for food (throughout various titles such as through LAMP in the Horticulture Title and CFP in the Nutrition Title).

Expand Federal Tax Incentives for Food Donation ★

ISSUE OVERVIEW

Food donation can be an expensive and time-consuming process. Donors sometimes allocate substantial time and money to harvest, package, transport, and deliver food products to donees.[270] Farmers and food businesses may often find it less expensive or onerous to till under or send surplus food to landfills instead of donating it.

Tax incentives can offset some donation costs and make donation more financially feasible. Under federal law, two tax incentives are available for food donation: the general deduction and the enhanced deduction. The general deduction allows taxpayers to claim a deduction in the amount of the basis value of the donation (the cost to acquire the product) and is available for all in-kind donations.[271] The enhanced deduction is specific to food products and enables a donor of food to deduct the lesser of (a) twice the basis value or (b) the basis value of the food plus 50% of the expected profit margin of the product (fair market value minus basis value).[272] Through the enhanced deduction for food donations, a donor may be able to deduct up to twice as much as the general deduction.[273]

Tax benefits are a cost-effective strategy to promote food donation, as donors only receive the incentive if they indeed make a donation. Further, they have been successful in reducing food waste by lowering the cost barrier to donation. For instance, in 2005, Congress expanded the coverage of the enhanced deduction to include all business entities with the aim of encouraging more food donation.[274] This led to an increase of 137% in donations over the next year.[275] Recognizing the program's success, Congress made the change permanent by expanding enhanced deduction coverage to all businesses in the Protecting Americans from Tax Hikes Act of 2015 (PATH Act).[276] This is a welcome development and allows more companies to utilize the enhanced deduction.

CREATE AN ALTERNATE TAX CREDIT FOR FOOD DONATION

Congress should further develop effective tax incentives to maximize food recovery and donation. With the PATH Act, enhanced donations are now technically available to all businesses; however, tax deductions are generally not equally beneficial to all companies. A tax deduction lowers a donor's taxable income (which determines the amount of taxes owed).[277] For smaller companies, such as small- and mid-sized farmers and independent food businesses that operate on a low-profit margin, a deduction is not an effective incentive because taxable income may already be quite low. Farmers also may not claim an enhanced tax deduction because it requires too much record-keeping (to determine the value of the deduction as laid out above). By contrast, a tax credit directly applies to and reduces the amount of taxes owed,[278] and is often more beneficial to lower-margin businesses. Congress should create an alternative tax credit and give farmers the choice between this tax credit and the enhanced tax deduction. Offering a tax credit could make food donation more financially feasible for farmers and make it easier to donate surplus foods. Several states have already created a tax credit applicable to farmers, in recognition of the fact that this additional benefit is needed to support donation from farms.[279]

TAX BENEFITS SHOULD ACCOUNT FOR UNDERLYING COSTS IN DONATIONS

An effective food donation tax incentive also should

account for the underlying costs donors incur while donating food, such as transportation, food storage, and labor needed to prepare and transport donated food. Improving donation transportation and storage infrastructure has the annual potential to divert 908,000 tons of food waste, reduce 1.307 million metric tons of CO_2e, and save 127.6 billion gallons of water, producing a net financial benefit of $2.873 billion[280] These costs can add up quickly, deterring donation efforts in favor of cheaper options like sending food to the landfill.

To solve this problem, Congress should amend the enhanced tax deduction for food donation to include an additional tax deduction to offset the costs of transportation, labor, or storage of food for donation. For example, the incentive could offer a benefit to logistics and transportation companies that ship donated products, storage providers who store surplus inventory until donation, or retailers/producers that either directly deliver or pay for the shipment of their donation. California has implemented such a strategy at the state level, offering a 50% tax credit for transporting donated food.[281] Implementing a similar incentive at the federal level would help offset donation costs. Focusing on transportation and storage would address a significant cost barrier for donors and help get more food to those who need it most.

CONGRESS SHOULD AMEND RESTRICTIONS ON THE ENHANCED DEDUCTION TO PROMOTE INNOVATION

Congress should amend the restrictions imposed by the federal enhanced tax deduction to promote innovation and streamline the donation process. Like the Emerson Act described above,[282] the enhanced tax deduction is only available to donors who make donations to non-profit organizations that do not charge the end-users for the food.[283] Because of this "no-charge" requirement, donors cannot claim the enhanced deduction for donations made to a food recovery organization that charges even a low price to the end recipient. This disincentivizes donating to innovative food recovery and donations groups. Congress should allow the enhanced tax deduction to be claimed when donations are made to a non-profit organization that either distributes the food for free or at a low cost to cover the expenses associated with handling the food.

IMPLEMENTATION OPPORTUNITY

In the 2023 Farm Bill, Congress should create an alternative food donation tax credit that farmers can opt to claim instead of the enhanced tax deduction. It should also amend the current enhanced deduction to offset the underlying costs donors incur while donating food, such as transportation and storage. In addition, Congress should incentivize innovative food recovery models by removing the requirement that non-profit organizations provide donated food for free. Language implementing the above recommendations could be taken from the bipartisan Further Incentivizing Nutritious Donations of Food Act or FIND Food Act of 2022 (H.R. 7317, 117th Cong. (2d Sess., 2022)).

The 2008 Farm Bill had a title dedicated to tax issues: the Trade and Tax Provisions in the Farm Bill.[284] The next farm bill can revive the tax title from 2008 or create a new Food Waste Reduction Title and include these provisions there. Alternatively, the tax incentives can be placed in another existing title such as the Horticulture Title or the Miscellaneous Title.

Instruct the USDA Risk Management Agency and Approved Crop Insurance Providers to Better Support Gleaning

Gleaning has the annual potential to divert 78,500 tons of food waste and save 2.14 billion gallons of water, with a net financial benefit of $152 million[285]

ISSUE OVERVIEW

The USDA Risk Management Agency (RMA) permits and encourages farmers to donate damaged crops for gleaning purposes while still allowing farmers to receive insurance compensation for their lost crops.[286] Despite policies that allow for gleaning, few farmers take advantage of these policies

due to a deficit in knowledge around gleaning opportunities—whether the RMA allows gleaning of crops after an insurance claim has been made, when/how gleaning is permitted, and what legal risks exist for farmers. The RMA has created one document—a one-page gleaning crop fact sheet published in 2017—to educate farmers and crop insurance agencies on gleaning policies,[287] but this document has proven insufficient as miscommunication and confusion still exists around gleaning.[288]

One major source of confusion surrounds whether farmers can allow gleaning of crops covered under federal crop insurance. The government's two primary programs for crop insurance, the Federal Crop Insurance Program (FCIP) and the Noninsured Crop Disaster Assistance Program (NAP), permit farmers to allow gleaning on their farms.[289] However, the requirements under these programs can be ambiguous, leaving farmers unsure whether they will receive the insurance payments they rely on if they allow gleaning on their farms.[290] This confusion increases the likelihood that farmers will let their produce go to waste rather than allowing gleaning to take place.

FCIP and NAP guidelines both limit many aspects of the gleaning process. First, FCIP and NAP only allow gleaning when it is done by a 501(c)(3) non-profit and the insured producer has not received any compensation in exchange for the crops.[291] If the farmer receives any compensation in exchange for the crops, the harvesting will not be considered gleaning, and the producer will be unable to collect crop insurance on the produce.[292] However, farmers are still able to receive their insurance payments if they receive compensation for non-crop expenses, such as labor for harvesting or the transportation of gleaned crops.[293] Additionally, FCIP and NAP limit how gleaning can be done.[294] Before allowing gleaning, a producer must first have the fields inspected by a qualified Commodity Credit Corporation loss adjuster who will approve the insurance claim, and the producer must keep a record of the quantity of the crop gleaned.[295] When the adjuster visits the fields, they provide the farmer with a certificate for destruction that must be completed by the farmer. Some farmers believe that this certificate requires the leftover crops to be destroyed in front of the insurance provider; however, that is only the case for tobacco plants, a crop that would not be gleaned.[296] For other crops, the farmer can allow for gleaning of the crops after receiving the certificate rather than destroying the remaining crops, as long as no compensation is collected for the crops.[297]
Another area of confusion is whether farmers may collect crop insurance if they also file for the enhanced tax deduction for donated food. Farmers are concerned tax deductions may fall under the aforementioned prohibition on compensation for the gleaned crops—but this is a misunderstanding. The RMA guidance states that "situations not to be considered compensation for the crop include state tax credits and other state and federal tax advantages for donating gleaned commodities."[298] However, many farmers still mistakenly believe that they cannot benefit from the enhanced deduction for food donations if they have filed a crop insurance claim for the crops.

Another barrier to gleaning is fear regarding potential liability if a volunteer gleaner were to be injured on a farmer's land. However, this concern is misplaced as farmers are protected by federal law under the Emerson Act.[299] Section D of the Emerson Act provides that a person who allows the gleaning of donations will not be subject to civil or criminal liability that arises due to the injury or death of the gleaner.[300] Despite this existing liability protection, many farmers remain unwilling to allow gleaners onto their land because they believe there is still a liability risk.[301]

OPPORTUNITY FOR CLARIFYING RMA GUIDANCE

There is a general lack of awareness regarding gleaning as an option for farmers, particularly regarding crops for which a farmer has filed a crop insurance claim. RMA guidance is very limited, and crop insurance agents are not encouraged to promote gleaning to farmers and may also themselves misunderstand the gleaning policies. Thus, the burden of educating farmers on gleaning falls upon gleaning organizations which lack the capacity and funding to promote awareness.[302]

Congress should require the USDA to develop and disseminate semi-annual information sheets or reminder notices to farmers, crop insurance agents, RMA agents, and gleaning organizations. This will ensure that all parties involved can promote gleaning and effectively address any concerns or apprehensions farmers may have. This guidance should, (1) promote gleaning and increase awareness of gleaning as an option for farmers who may be entirely unaware of gleaning practices; (2) clarify how crop insurance allows for gleaning (to

this, it should explain that crop insurance can still be collected if farmers allow for gleaning),[303] clarify that farmers can still claim tax incentives for donated food in addition to crop insurance, and clarify that farmers can receive payment for non-crop expenses associated with gleaning (i.e., transportation, labor);[304] (3) provide contact information for local gleaning organizations for each farmer to the extent possible; and (4) ensure that farmers are aware that they are protected from liability claims regarding both the safety of the food gleaned and for any injuries sustained by volunteers on their land under the Emerson Act. [305] The USDA could utilize the USDA Cooperative Extension service, which already has established connections to producers across the United States, to disseminate gleaning guidance to farmers.

IMPLEMENTATION OPPORTUNITY

Congress should use the 2023 Farm Bill to instruct the RMA to institute an expanded education and awareness program by developing more guidance materials and utilizing semi-annual reminders. This instruction can be included within the Crop Insurance Title, which addresses FCIP, or the Commodities Title, which addresses NAP.[306] This change would encourage more farmers to allow for gleaning of their lands, thus reducing the number of crops that go to waste and allowing for the healthiest foods—fruits and vegetables—to be made available to people experiencing food insecurity.

FOOD WASTE RECYCLING

Provide Grants to Support Proven State and Local Policies that Reduce Food Waste Disposed in Landfills or Incinerators ★

ISSUE OVERVIEW

The ongoing reliance on landfills to manage organic waste is problematic for several reasons. Landfills continue to be overburdened by organic waste (which makes up around 24.1% of municipal solid waste in landfills by weight),[307] and states and cities are running out of space to store their waste.[308] Moreover, as food items decompose in landfills, they release harmful greenhouse gases at alarming rates. Municipal waste landfills are the third-largest source of human-created methane emissions, accounting for 15.1% of methane created by humans in the United States in 2019[309] and 8-10% of all global anthropogenic greenhouse gas emissions from 2010 to 2016.[310] Eighty times more portent than CO_2 in the short term, and 25 times more potent than CO_2 overall[311] methane traps heat in the atmosphere and disrupts geologic processes such as air and water temperatures, weather, and the carbon cycle.[312] These disruptions expose human health, agriculture, and other natural ecosystems and resources to potential harms.[313]

ORGANIC WASTE BANS

Organic waste bans, mandatory recycling laws, waste diversion requirements, food donation requirements, landfill taxes, and similar policies to reduce food in landfills are proven policies to reduce food waste and are growing in popularity. These policies take various actions to limit the amount of food that goes to landfills or incinerators or to make it more costly to send food to landfills or

incinerators. For example, organic waste bans are policies that prevent entities that produce a certain threshold of food waste (e.g., grocery stores and hospitals) from transporting that waste to landfills or incinerators, subject to certain exceptions. Where these bans are implemented, waste generators can no longer rely on waste disposal and must utilize other strategies to reduce their footprint. Waste generators might reduce food waste by offering smaller portions, donating surplus food, recycling food scraps, or repurposing their leftovers. In addition to organic waste bans, other effective policy options include mandated food scrap recycling,[314] Pay-As-You-Throw policies that charge a higher fee for sending organic waste to landfills,[315] and an increased landfill tax charged per unit of trash in addition to landfill tipping fees.[316]

These types of policies have been shown to successfully reduce food waste. In Massachusetts, after one year with an organic waste ban, businesses diverted food waste from landfills at a rate five-times higher than before the organic was ban was adopted.[317] Massachusetts saw more than a 25,000-ton increase in food donation.[318] Vermont also saw a 60% increase in food donation following implementation of the state's organic waste ban.[319]

Organic waste bans are gaining popularity as a food waste reduction model, as evidenced by a recent uptake of several states and localities. Connecticut,[320] Massachusetts,[321] New York,[322] Rhode Island,[323] New Jersey,[324] Maryland,[325] and Vermont,[326] have all adopted state organic waste bans, and California enacted a waste recycling law that requires commercial waste generators to compost or anaerobically digest their organic waste.[327] California also enacted a law requiring businesses in the state to donate at least 20% of edible food that is currently wasted.[328] Austin (TX), Boulder (CO), Hennepin County (MN), Portland (OR), New York City (NY), San Francisco (CA), and Seattle (WA), enacted local organic waste bans,[329] and Washington, D.C., recently enacted a mandatory waste recycling law.[330]

Another opportunity to improve food waste diversion is to improve food waste measurement strategies. There is no national requirement for businesses or waste facilities to measure food waste, and state- or city-level studies are conducted only periodically or inconsistently. A lack of transparency around food waste makes it difficult for state and local governments to monitor organic waste generation and limits the government's ability to implement tailored and innovative waste reduction strategies.

Because waste is managed on the state and local level, state and local actors are more familiar with regional and local food waste issues than are federal leaders; they are the actors best situated to identify and implement most organic waste reduction initiatives. However, studying, planning, implementing, and enforcing such initiatives is costly. The federal government can support these promising policies by providing funding to states and localities to adopt proven policies to reduce food waste. The funding could be used to plan, implement, or enforce these policies. Funding could also be used to support the creation of a state or local government staff position specifically committed to food waste reduction coordination, which would then oversee the jurisdiction's new food waste reduction policies. By providing funding for states or localities to plan or implement these policies, Congress can incentivize the uptake of such projects and help actualize the environmental and societal benefits associated with food waste reduction projects.

One model to support these state and local policies is articulated in the proposed Zero Food Waste Act of 2021.[331] This Act would create a grant program for state, tribal, and local governments to reduce the amount of food waste by 50% by 2030.[332] Under this Act, grants may be awarded to an eligible entity that is a nonprofit organization to study the generation of food waste in the state or area in which the entity is located, identify policies and programs that significantly reduce the amount of food waste, and develop a plan under which the organization will carry out at least one food waste reduction activity.[333] Alternatively, a grant may be awarded to collect and publish data on the amount of food waste generated in a state or area in which the origination is located or for an organization that carries out or otherwise supports a food waste reduction activity.[334]

IMPLEMENTATION OPPORTUNITY

The next farm bill should provide grants to state and local governments, and to public-private partnerships, to encourage them to implement proven or promising food waste reduction

policies, such as organic waste bans, mandatory recycling laws, landfill taxes, Pay-As-You-Throw laws, and other policy measures to make it comparatively costlier or more difficult to send food to landfills or incinerators.

To accelerate the adoption of these strategies, the farm bill should provide $650 million per year for ten years for state, local, and tribal governments, independently or as part of a public-private partnership to plan or implement an organic waste ban or other proven food waste reduction policy.[335] As part of this program, Congress should require the USDA (in collaboration with the EPA) to maintain a database of the state and local food waste reduction policies that have proven successful and data on their impacts.

This program should be established within the Miscellaneous Title or a dedicated Food Waste Reduction Title.

Provide Grants and Loans for the Development of Organic Waste Processing Infrastructure ★

Investing in centralized anaerobic and composting infrastructure has the annual potential to divert 17.64 million tons of food waste and reduce 5.852 million metric tons of CO_2e, with a net financial benefit of $220.4 million[336]

ISSUE OVERVIEW

In addition to implementing waste bans, zero waste goals, and waste prevention plans, states and local communities must also develop their organic waste processing capabilities to manage the organic waste diverted from landfills and to realize the benefits of these strategies.

Both compost and anaerobic digestion infrastructure have the potential to convert food waste into productive soil amendments. Adding compost to soil improves soil structure, increases water and nutrient retention capacity, and contributes nutrients and carbon to often-depleted soil.[337] In fact, initial findings from University of California-Berkeley's Silver Lab show that food-waste derived compost poses better climate change mitigation potential than manure or plant waste compost.[338] Recent studies examining industrial composting processes continue to improve the greenhouse gas capture potential of such facilities.[339] Anaerobic digestion infrastructure simultaneously captures biogas, a type of energy that can fuel vehicles and generate electricity. The EPA, in February 2022, recognized the importance of scaling anaerobic digestion capacity across the country and delegated $2 million to 11 organizations for anaerobic digestion projects.[340]

Alternative to compost and anaerobic digestion, animal feed facilities take animal and/or vegetable food scraps, heat treat them, and re-sell them as animal feed for swine and cattle.[341] Not only is food-scrap-derived animal feed cheaper than traditional feed,[342] but it is more sustainable as well. One organization, Do Good Food, has recognized the potential to sell animals raised on food scraps animal feed to consumers, capitalizing on its status as a more environmentally friendly product than traditionally raised animals.[343]

Composting, anaerobic digestion, and animal feed processing infrastructure is costly. An anaerobic digestion facility that processes around 50,000 tons of waste per year costs over $20 million to construct.[344] Meanwhile, it costs $5-9 million to build and $17-28 per ton to operate a large composting facility.[345] One full-service composting facility can process between 5,000 and 100,000 tons of organic waste every year.[346] For reference, the City of Madison, Wisconsin (a city of nearly 270,000) estimates they produce at minimum 10,000 tons of potentially compostable food scraps annually.[347]

Sometimes, local governments (e.g., Madison, WI) limit the amount of local organic waste they collect for compost because they do not have the infrastructure necessary to process it.[348] Building composting facilities and infrastructure is critical to ensure organic waste does not end up in landfills.

COMMUNITY COMPOST AND FOOD WASTE REDUCTION PROJECT

In the 2018 Farm Bill, Congress authorized the creation of the Community Compost and Food Waste Reduction Project (CCFWR) within the

USDA Office of Urban Agriculture and Innovative Production (UAIP) to provide pilot funding for local governments in at least ten states to study and pilot local compost and food waste reduction plans.[349] A total of $25 million was authorized to be appropriated to CCFWR, UAIP, and urban agricultural grants.[350] While the specific amount allocated to CCFWR projects per year may vary within that total, in FY2020, $900,000 was available for CCFWR projects, and each applicant could request a maximum of $90,000 for a two-year grant.[351] In FY2021, total CCFWR funding was $2 million, but the maximum request amount remained at $90,000 per project.[352]

CCFWR funding enables localities to enhance their waste reduction capacities and has already fostered a positive impact within communities.[353] Entities eligible to apply for the grant include city or township governments, county governments, state-designated or federally recognized Indian Tribes, and special district governments.[354] The CCFWR pilot projects may focus on several different areas, including: waste management and permaculture business development, local food waste, and diversion (including transportation) of food waste from landfills.[355] Examples of 2021 projects include creating a network of food scrap drop-off stations, developing and promoting community gardens, building small-scale composting sites, testing innovative models around household compost pick-up, building composting infrastructure or funding the full-operative of composting infrastructure, and educating the public.[356]

The first two years of CCFWR have proven its grant model a success,[357] however, there is room to improve the CCFWR grant model and scale its benefits.[358] First, grant recipients reported that the $90,000 funding cap is too low to fund large projects in highly populated cities because the grant does not provide enough money to scale a project across the whole city.[359] As a result, CCFWR projects in large cities only benefit a limited number of people. CCFWR grants are also too small to fund the development of new facilities or composting systems or to develop long-term projects.[360] This means that localities that do not already have anaerobic digestion and composting infrastructure gain limited benefit from CCFWR grants.

Second, the CCFWR grant only goes to local governments, which limits the opportunity for government officials at the regional or state level to use the funds for organic waste reduction projects. This removes the possibility of scaling across a region, which would increase the efficiency of some projects. Congress should expand the program to authorize private partnerships (i.e. with non-governmental organizations) to incentivize CCFWR projects across regions and within communities with resource-constrained local governments. Addressing these problems within the CCFWR program would help localities to scale and improve upon the benefits that drive them to apply for the grant funding in the first place.

Third, CCFWR recipients need to match at least 25% of the federal grant through direct funding and/or in-kind contributions.[361] Although a few cities reported that the matching requirement was not a burden given the in-kind contribution allowance, at least one city had to divert direct funding to the project.[362] Eliminating the matching requirement would allow the grantees to receive the full grant in direct funding.

Finally, previous CCFWR projects primarily focus on composting. Future iterations of the CCFWR program should also prioritize food waste prevention and food recovery. Emphasizing food waste prevention and recovery keeps food higher in the Food Recovery Hierarchy. Congress should instruct the USDA to provide better guidance to communities seeking funding for food waste reduction methods outside of composting.

OTHER FARM BILL PROGRAMS

Other federal programs help build anaerobic digestion and composting capacity in rural areas including the Solid Waste Management Grant (SWMG) program[363] and the Water and Waste Disposal Loan and Grant program.[364]

In the 2018 Farm Bill, Congress reauthorized the SWMG program under the Rural Development Title.[365] Congress authorized up to $10 million in annual appropriations to provide technical assistance for solid waste management practices.[366] However, the Rural Utilities Service has consistently allocated only about $4 million per year to SWMGs since 2018.[367] The Rural Utilities Service intends for these grants to fund technical assistance and training on improving planning and management at solid waste sites.[368] Although these grants need not incorporate organic waste reduction strategies,

some projects include organic waste reduction plans.[369] The 2017 SWMG program awarded extra points to applications that involved composting projects that reduced organic waste in landfills.[370]

In addition to SWMGs, states and localities can also utilize the Water and Waste Disposal Loan and Grant program, which primarily funds wastewater systems, including those that derive energy from food waste.[371] The program received a $1.45 billion funding package for FY2021,[372] and offers applicants low fixed-rate loans with payback periods of up to 40 years.[373]

The CCFWR, SWMGs, and the Water and Waste Disposal Loans and Grant program all provide tailored funding opportunities to improve local food waste reduction plans. However, there is still a lack of sufficient funding for the growing needs of food waste diversion infrastructure. Building anaerobic digestion and composting capabilities is a costly process, but once constructed, these facilities keep food waste from landfills and generate profound long-term advantages for society.

According to ReFED, $14 billion in annual investment is needed to revamp how the federal food system prevents food from going to waste, recovers surplus food, and recycles food scraps. ReFED projects that around $1.2 billion of this needed investment should come from government grants and project financing in food waste recycling.[374] The federal government is far away from meeting this need in food waste recycling funding.

Several pending federal bills offer models for increased investment. The COMPOST Act of 2021[375] would authorize a USDA grant and loan program to fund composting infrastructure projects in states and local governments.[376] This Act would authorize $200 million per year for ten years for composting infrastructure projects, with each project able to obtain a grant or loan for up to $5 million.[377]

The Zero Food Waste Act of 2021, mentioned above, provides grant funding for "food waste reduction projects," which could include composting infrastructure and anaerobic digestion projects within the $650 million funding allocation.[378] Those anaerobic digestion projects would be restricted to ones in which the grantee guarantees that the anaerobic digestion food waste by-product is used as soil amendment that does not create an environmental hazard, that the project will limit the amount of animal waste used as anaerobic digestion input, and that the project will use source-separated organics.[379]

IMPLEMENTATION OPPORTUNITY

The next farm bill should build on existing grant programs and adopt new strategies to develop composting and anaerobic digestion infrastructure. Congress should amend the CCFWR program to increase the total and per project funding available, reduce or eliminate the matching requirement, and expand the list of eligible entities who may apply for grant funding to also include state governments, as well as non-governmental organizations and community groups that work with partners in rural locations or across regions. For local projects, Congress should increase the per project cap from $90,000 to $300,000 to ensure all cities regardless of size can scale their food waste reduction projects. For regional or state projects, Congress should implement a project cap of $500,000.

In addition, Congress should increase funding for the SWMGs and the Water and Waste Disposal Loans and Grant program and should continue to prioritize projects in which the implementing agencies prioritize food waste reduction. Congress should consider extending the SWMG program to two years for more robust projects.

Congress also should create funding streams along the lines envisioned in the COMPOST Act of 2021 and Zero Food Waste Act of 2021 to support new compost and anaerobic digestion infrastructure. Beyond funding the construction of this infrastructure, Congress should also consider expanding the COMPOST Act of 2021 and Zero Food Waste Act of 2021 to include funding to develop and maintain large-scale transportation infrastructure necessary to haul compost from these communities to the compost and anaerobic digestion sites.

The next farm bill should enact these measures under the Miscellaneous Title or a new Food Waste Reduction Title.

Require Federal Food Procurement Contractors to Measure, Recover, Recycle, and Prevent Food Waste in Federal Contracts ★

ISSUE OVERVIEW

The federal government can serve as a role model for positive environmental practices. Every year, the federal government purchases billions of dollars' worth of food for school food programs, military service members, veteran hospitals, incarcerated persons, and other federal feeding programs.[380] Yet, the federal government does not necessarily have plans in place to address food waste generated by federal procurement policies and contracts.

The federal government should use its contract power to require government entities and their contractors to measure and report food waste. The Federal Food Donation Act of 2008 (Food Donation Act of 2008) was passed to take a first step towards reducing food waste among agencies. The Food Donation Act of 2008 requires federal procurement contracts of over $25,000 to include specific language that *encourages* federal agencies and contractors to donate safe, excess food to food recovery organizations.[381] However, outside of merely including the required language in contracts, federal agencies and contractors are neither required to donate excess wholesome food, nor are they required to measure and report food waste, or to ensure food that cannot be recovered is recycled instead of thrown in the trash to be landfilled or incinerated. The Council on Environmental Quality (CEQ) already tracks and publishes several energy efficiency and sustainability data points reported to the CEQ Office of the Federal Chief Sustainability Officer by each federal agency's sustainability lead.[382] The CEQ could use this existing dashboard to track and publish food waste and recovery data generated by federal agencies.

Further, the Food Donation Act of 2008 does not require any reporting on how much food is wasted or donated, so there is little information about how much food is wasted by federal agencies and their contractors, or whether any agencies or their contractors are making efforts to donate surplus food. Congress should require agencies to receive and compile reports from their contractors regarding food excess and waste that results from the food procurement agreement.

IMPLEMENTATION OPPORTUNITY

Congress should modify the Federal Food Donation Act of 2008 to require all federal agencies that enter food procurement contracts to include contract language requiring their contractors to donate any surplus food and to compost any inedible food scraps. They should also require their contractors to measure and report food donation and food waste that results from the contract. Additionally, Congress should designate responsibility to track and publicly report federal food donation and waste to either CEQ, another government agency (i.e., the USDA or the EPA), or to the Federal Interagency Food Loss and Waste Collaboration. Congress should implement these changes as part of the Miscellaneous Title or a dedicated Food Waste Reduction Title.

Support Compost End Markets Through Crop Insurance Benefits and Increased Federal Procurement of Compost Products

ISSUE OVERVIEW

Growing the compost market benefits entities all along the food chain. In particular, creating end markets for compost products will support increased composting, and by giving compost facilities a market to sell compost, the facilities may be able to reduce their tipping fees and draw more food waste generators to compost rather than landfill their waste. In turn, this will make composting a more viable and less expensive option than throwing organic waste materials in a landfill. Farmers can also benefit from compost end markets as they can use the soil amendment products derived from composting or anaerobic digestion (compost products) to improve the quality of their

soil.[383] The environmental benefits of compost stem not only from diverting food waste from landfills, but also from treating fields with compost, which reduces or eliminates the need to use chemical fertilizers, leads to higher agricultural yields, increases soil water retention, and increases carbon sequestration.[384]

States and localities are investing in compost and anaerobic digestion infrastructure to process food waste.[385] These cities are also scaling their compost and food waste collection efforts, which will inevitably increase the total amount of compost products created by compost and anaerobic digestion processing facilities. Creating more end markets for composting will also encourage the development of more compost facilities. In order to bolster these state and local efforts to realize the social and environmental benefits of composting, the federal government should support the development of compost end markets.

Likely recognizing the benefits of supporting compost end markets, President Biden's Executive Order 14057, published in December 2021, calls on all federal agencies to support markets for recycled products.[386] The USDA is also increasingly recognizing the importance of developing and incentivizing climate-smart farming practices. In February 2022, the USDA announced the new Partnerships for Climate-Smart Commodities, which will provide funding for specified entities to develop pilot projects likely to generate greenhouse gas benefits and increase soil carbon sequestration.[387] The program announcement specifically lists adding soil amendments (which includes compost) as a qualifying practice.[388] The federal government can use both its purchasing power and other means to develop the private compost market. Most notably, the federal government should incentivize farmers to use compost products in their fields. This will encourage farmers to reap the environmental benefits associated with composting and will increase the financial viability of the burgeoning composting industry.

THE MODEL: PANDEMIC COVER CROP PROGRAM

During COVID-19, the federal government initiated an incentive program that paid farmers a $5 per acre premium under crop insurance for the planting of cover crops.[389] This program, known as the Pandemic Cover Crop Program (PCCP), ran for the 2021 planting year and helped producers realize more profits from their land.[390] The PCCP allows farmers to realize the considerable environmental benefits associated with cover crops. These benefits include: decreasing the breakdown of soil,[391] which increases soil organic matter and helps plant growth;[392] storing nutrients from manure and other on-farm inputs until the following years' crop can utilize them; reducing nitrogen losses to the environment; and reducing the use of purchased nitrogen fertilizer that is produced using fossil fuels and lower costs of production.[393]

Compost use has similar plant health and environmental benefits. It can be used on annual crops, perennials, orchards, vineyards, and grasslands to improve soil properties, provide nutrients in a stable organic form, and increase plant growth and health.[394] Further, compost increases water retention capability and improves drought resilience.[395] Compost can also be used to increase carbon sequestration (i.e., long-term storage of carbon in soils and vegetation).[396] In fact, studies and literature reviews by the Marin Carbon Project and its partners found that a one-time application of a quarter inch of compost can double the soil's carbon sequestration potential (approximately one ton of carbon per hectare).[397] Finally, given rising fertilizer costs,[398] compost may be a cost-effective alternative to fertilizer.

The federal government should use PCCP as a model for an incentive program that encourages farmers to apply compost products to their fields.

FEDERAL ACQUISITION REGULATION

Congress should require federal agencies to purchase compost made from recycled organic waste materials for any of their landscaping services. Following a number of executive orders aimed at supporting sustainable products and services, including President Clinton's Executive Order 12873 in 1993[399] and President Bush's Executive Order 13423 in 2007,[400] the Office of Management and Budget modified the Federal Acquisition Regulation (FAR) to be more environmentally friendly. The FAR requires federal agencies to ensure that 95% of all products and services purchased are energy and water efficient, bio-based, environmentally preferable, non-ozone depleting, or made with recovered materials.[401] However, the FAR does not specifically mention

or suggest purchasing compost made from recycled organic waste materials. Instead, it has selection criteria including selecting products that lower environmental impacts and reduce waste management costs, among other things.[402] Given the aforementioned environmental benefits and waste management cost reductions associated with composting, Congress or the Administration should direct the FAR Council to revise the FAR to require federal purchasers to procure compost made from recycled organic waste materials when procuring landscaping services.

Congress has used the federal government's purchasing power to set standards around environmental issues in other areas. For example, the Department of Defense is legally required to give preference to electric and hybrid vehicles when purchasing or leasing vehicles.[403] The Energy Policy Act requires new federal fleets to meet certain alternative fuel vehicle and electric vehicle requirements.[404] Using federal government purchasing power to stimulate demand and to encourage private market uptake of sustainable technology is a demonstrated, successful model of setting environmental policy. Congress should implement this model, using the federal government's purchasing power to develop private markets to stimulate composting product markets.

IMPLEMENTATION OPPORTUNITY

To increase viability for compost products, Congress should create a crop insurance premium incentive program that pays farmers a per acre bonus for applying compost products to their fields before planting. Congress also should increase federal procurement of compost products containing recycled organic waste materials, by requiring federal agencies to prioritize purchasing of compost made from recycled organic waste materials when purchasing landscaping services. Congress should establish this program in the Farm Bill's Crop Insurance Title.

Encourage Diversion of Food Waste into Animal Feed Where Appropriate ★

ISSUE OVERVIEW

Food scrap feeding refers to feeding livestock animals food scraps or food residuals, which can include edible by-products of food production. Food scraps are most often sourced from restaurants, retail, and institutions such as schools.[405]

Food scrap feeding is regulated under federal law and requires animal-derived food scraps to be heat-treated (but not necessarily vegetable-derived food scraps) in addition to a number of storage and transport requirements.[406] Food scrap feeding is also regulated at the state level, often with stricter requirements such as outright bans of feeding of animal-derived and/or vegetable waste to certain animals, or requirements that one or both types of waste be heat-treated.[407] When done in accordance with the federal laws, food scrap feeding is safe for animals, and it realizes all the same environmental benefits associated with diverting food waste from landfills. Numerous studies demonstrate that properly heat-treated food scraps are safe for animals that consume feed derived from those scraps, and for consumers who eat those animals.[408] Food scrap-derived animal feed is a more environmentally friendly option than conventional feed when comparing a range of environmental factors, including climate change potential, emissions of carcinogens and toxins, and particulate matter emissions.[409]

Private companies are increasingly recognizing their ability to divert food to animal food scraps. For example, the company Do Good Foods partners with grocery stores to recover food first for donation to food banks, and any left-over food is processed into animal feed for chickens.[410] Another company in this space, FeedBack Earth, collects postconsumer food scraps from entities such as restaurants and cafeterias and converts them into animal feed for livestock.[411]

To build on the increased interest in diversion of food scraps to animal feed, Congress should require the USDA to write guidance encouraging states

to update their laws around animal scrap feeding to the federal laws outlined below. Furthermore, Congress should create a tax incentive for private businesses to divert food waste to animal feed to make that pathway more economically viable than sending the scraps to the landfill. It is essential that Congress makes this tax incentive smaller than the enhanced tax deduction for businesses to donate surplus food for human consumption, to best align with the highest use on the Food Recovery Hierarchy.

SWINE HEALTH PROTECTION ACT AND OTHER RELEVANT LAWS

The Swine Health Protection Act (SHPA), the federal legislation governing food scrap feeding to swine, sets a food scrap feeding regulation floor that can stand on its own or can be exceeded by more stringent state-level regulations.[412] SHPA and its implementing regulations, overseen by the USDA Animal and Plant Health Inspection Service, demand food scrap treatment facilities to comply with a number of storage, transport, licensing, recordkeeping, and treatment requirements.[413]

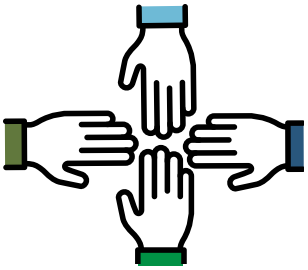
SHPA essentially gives states the option of whether to allow food scrap feeding and gives states the option to seek primary enforcement responsibility under the Act[414] or to work with the Secretary of Agriculture to oversee regulations such as permitting within the state.[415] However, despite the demonstrated environmental benefits and food safety assurances, two states forbid any food scrap feeding and fifteen states forbid animal-derived food scrap feeding.[416] It is also important to note that a few state laws exist that govern the feeding of food scraps to other animals such as poultry and cattle.[417] Congress can take a more active role in encouraging and incentivizing innovative food waste recycling strategies including the diversion of food scraps to animal feed.

In addition to SHPA, the FDA's "Current Good Manufacturing Practice, Hazard Analysis, and Risk-Based Preventive Controls for Food for Animals" regulation, authorized under the Food Safety Modernization Act,[418] regulates facilities that use animal byproducts as animal feed and includes a requirement to develop a plan that identifies potential hazards and implements controls around those hazards.[419] The FDA also works with the Association of American Feed Control Officials (AAFCO) to standardize animal feed ingredients and labeling requirements.[420]

The FDA also prohibits the use of mammalian protein (i.e., animal tissue) in feeds for ruminant animals under its Bovine Spongiform Encephalopathy (BSE)/Ruminant Feed Ban Rule.[421] This ban covers all "ruminants," meaning animals that have a stomach with four chambers through which feed passes during digestion, such as cattle, sheep, goats, deer, elk, and antelopes, among others (swine and fowl are not ruminants).[422] The regulations apply to any "protein derived from mammalian tissue."[423] The ban specifically lays out the types of products that can and cannot be fed to particular types of ruminants.[424]

IMPLEMENTATION OPPORTUNITY

To maximize the potential for food scraps diversion to animal feed, Congress should require the USDA to write guidance encouraging states to update their laws around food scrap feeding to animals. This guidance should provide clear recommendations on ways to streamline state-level laws and explain why states should remove any unnecessary restrictions that do not exist within the federal-level animal feed laws. Congress should also create a tax incentive for private businesses to divert food waste to animal feed that is lesser than the enhanced tax deduction for businesses to donate surplus food to food-insecure individuals in order to ensure food goes to its most beneficial use. Congress should implement these changes as part of the Miscellaneous Title or a dedicated Food Waste Reduction Title.



FOOD WASTE REDUCTION COORDINATION

Increase Funding for the USDA Food Loss and Waste Reduction Liaison and Create a Broader Research Mandate

ISSUE OVERVIEW

In the 2018 Farm Bill, Congress formally established a Food Loss and Waste Reduction Liaison (the Liaison) within the USDA.[425] The creation of the Liaison is a welcome step towards addressing food loss and waste at the federal level. Establishing a central coordinating position brings harmony to food loss prevention efforts, provides technical assistance across different agencies, and designates an office tasked with leading essential research.

The Liaison coordinates food loss and waste measurement and reduction efforts across all levels of government and with private businesses and nongovernmental organizations.[426] The Liaison's duties include: coordinating food waste reduction efforts between the USDA, the EPA, and the FDA; reinforcing and promoting federal programs to measure and reduce food waste; supporting and providing information to organizations engaged in food loss prevention and recovery; raising awareness on the liability protections available to food donors; and recommending innovative ways to recover food and reduce food waste.[427]

The Liaison's broad research mandate under the 2018 Farm Bill authorizes the Liaison to conduct comprehensive national research that identifies and quantifies sources of food waste.[428] The 2018 Farm Bill calls for the Liaison to evaluate and determine different aspects of food waste, such as how waste is measured, what factors contribute to waste, and what the current cost and volume of food loss is.[429] To carry out these duties, the Liaison is authorized to enter into agreements with universities and non-governmental organizations (NGOs).[430] Following a study on food waste,[431] the Liaison is required to produce a report detailing the findings and analyzing the impact of food waste reduction efforts conducted by the USDA.[432]

LIMITED RESOURCES

Even though the Liaison was authorized to perform a number of duties in the food loss and waste space, the position lacks adequate funding to carry out those duties. The position was authorized in the 2018 Farm Bill, and received $400,000 in funding the following year.[433] The Liaison most recently received $500,000 in appropriations for FY2021,[434] however, this funding is insufficient to support more than one full-time position and to engage in the range of tasks Congress envisioned for the Liaison.

Given the scale of the challenge of United States food waste and the range of opportunities, a Food Loss and Waste Office with multiple staff members would be better equipped to address the challenges. This would mean increased funding for additional staff and for internal and external research and pilot projects. This increased funding will enable the Liaison or Office to coordinate initiatives more effectively within government offices and between all levels of government and private institutions.

Increased funding could also be used to create a network for the Liaison to coordinate with regional hubs, as the types of food waste and the barriers to food recovery vary across regions. Congress could model this new regional research component on the National Food Waste Reduction Act of 2021.[435] This Act would create a Food Waste Research Program within the Liaison office that establishes a partnership with 5 regional partner institutions.[436] In

partnership with the Liaison, these regional partner institutions will plan, conduct, and arrange for public research, data, education, and recommendations pertaining to food waste reduction and food recovery issues, locally, regionally, and nationwide.[437]

INSUFFICIENT RESEARCH

In addition to its critical role in acting as a point of contact across agencies and between government and private actors, the Liaison could play an important part in increasing federally funded food loss and waste research. Data and research on food waste are critical because they can inform how federal grants should be awarded and provide insight on areas that future policymaking should prioritize. Currently, research focused on supply chain food loss and waste is lacking. Two areas where more research is needed are on farm food loss and waste (estimated 17 million tons of waste per year) and household food loss and waste (estimated 30 million tons of waste per year).[438]

The USDA Economic Research Service (ERS) has sporadically researched supply chain food loss but does not update this research consistently. In 1997, the ERS conducted a preliminary food loss study and estimated loss at every stage of the supply chain based on available data and expert input from the 1970s.[439] Likely due to the fact 2018 Farm Bill does not specify food waste as an ERS research priority and the ERS' prioritization of other research topics, the ERS has not conducted comprehensive follow-up studies or published new reports.[440]

Federally-funded research fails to address several key issues. For example, existing research does not adequately quantify on-farm food waste. Farmers and other food producers often do not measure unsaleable produce since they are not required to publicly report on these losses. Moreover, since it is expensive to visit farms and track the data regularly, studies on food waste either do not engage on-farm food waste or refer to older data. By researching methods to measure farm losses, the federal government could provide the data necessary to identify tailored solutions to on-farm food waste. Further, no government entity consistently researches and reports on supply-chain food loss.

The upcoming farm bill should provide explicit funding for comprehensive food waste research. This funding could be directed toward the Food Loss and Waste Liaison or Food Loss and Waste Office, potentially in conjunction with ERS. The funding should support comprehensive research on the amount of food wasted with a focus on on-farm food waste and supply chain inefficiencies accounting for the most loss and waste.

IMPLEMENTATION OPPORTUNITY

Congress should increase the funding and authorize a Food Loss and Waste Office. Congress also should dedicate funding for comprehensive national and farm-level food waste research. Congress should implement these changes under the Miscellaneous Title or within a dedicated Food Waste Reduction Title.

Provide Funding for the Federal Interagency Food Loss and Waste Collaboration ★

ISSUE OVERVIEW

Acknowledging the role that the federal government should play in reducing food loss and waste, in 2018 the FDA, the USDA, and the EPA launched an interagency task force now known as the Federal Interagency Food Loss and Waste Collaboration (the Collaboration).[441] The Collaboration committed to working towards the goal of reducing food loss and waste by 50% by 2030.[442] In support of this goal, in 2019, the Collaboration published a national food waste reduction strategy.[443] The strategy identifies six priority areas: enhancing interagency coordination; increasing consumer education; improving guidance on food loss and waste measurement; improving guidance on food safety, date labels, and food donations; collaborating with private industry; and encouraging intra-government food waste reduction.[444]

The Collaboration periodically reports through its website on various projects the Collaboration conducts to reduce food waste.[445] For example, in line with the first objective to increase interagency coordination, the Collaboration created the Interagency Working Group.[446] In pursuit of the second objective to increase consumer education,

the agencies increased their social media presence, developed informational websites, hosted webinars, and developed other educational materials related to food waste.[447] In pursuit of the fifth objective to collaborate with private industry, the task force solicited assistance from industry leaders and other stakeholders to combat food waste across the supply chain.[448]

While it has taken successful steps and is a positive development, the Collaboration should be given funding and a mandate to expand its membership and continue to scale its work. Congress should also require the Collaboration to create a national plan to meet the national goal to halve food waste by 2030. As part of this plan, the Collaboration should establish food waste reduction timelines, metrics, and benchmarks to track the government's progress in reaching the national goal. This can also help food businesses chart progress and develop their own plans to support achievement of the national goal.

In addition to enshrining the Collaboration in law, Congress should require a broader set of federal agencies to engage in the Collaboration, as many other agencies play a role in the food system through food safety enforcement, food procurement, and food distribution, and could improve their impact on food waste reduction and food recovery. This could include agencies such as the Department of Defense, the Department of Transportation, the Department of Homeland Security, the Department of Education, and the General Services Administration, among others.

Congress can further require the Collaboration to create an external advisory committee to provide needed input on programming and policy issues. By establishing an advisory committee, the Collaboration will be in a better position to understand existing and future challenges facing food waste, to acquire the latest data regarding food loss and waste, and to stay on top of innovative solutions from leading experts. Participating stakeholders should represent a diverse array of perspectives, from the private sector to farmers to non-profit organizations, including businesses and food recovery organizations of varying sizes.

IMPLEMENTATION OPPORTUNITY

Congress should authorize the existence of the Collaboration by creating an explicit mandate for the Collaboration in the 2023 Farm Bill. In addition, Congress should authorize $2 million in annual funding for the Collaboration to better position it to meet the United States' 2030 food waste reduction goal.[449] To ensure this investment is well-spent, Congress should require the Collaboration to deliver regular reports to Congress on its progress towards achieving the national food waste reduction goal. These provisions can be included in the Miscellaneous Title or in a new Food Waste Reduction Title.

Establish New Positions for Regional Supply Chain Coordinators at the USDA ★

Real-time donation coordination has the annual potential to divert 144,000 tons of food waste, recover 239 million meals, reduce 552,000 metric tons of CO_2e, and save 30.8 billion gallons of water, producing a net financial benefit of $595 million[450]

ISSUE OVERVIEW

The food supply chain in America is extremely vulnerable to shocks. As the COVID-19 pandemic demonstrated, small disruptions in manufacturing can quickly lead to empty shelves and high food prices.[451] These disruptions disproportionately harm low-income individuals who have little room for flexibility in their food budgets.[452] COVID-19 highlighted the already-present need for changes that make the food supply chain more resilient.

Numerous factors during transit, such as breaks in refrigeration, vibrations from the road, and shipping delays, affect the freshness of food.[453] When these supply chain factors change a food product's shelf life, manufacturers and other entities transporting

food between two locations might find that the most affordable and reasonable option for their food product is to donate it. However, a lack of real-time food supply data makes it difficult for manufacturers and drivers to connect their would-be food donations with food recovery organizations.

This logistical gap in the food donation supply chain calls for regional point persons who can connect entities that sporadically have food to donate with food recovery organizations within the given region. In addition to facilitating food donation within regions, regional supply chain coordinators could facilitate more systemic research and planning around addressing recurring regional supply chain problems. The coordinators could connect with stakeholders including producers, distributors, manufacturers, local and state officials, and other agency leaders to address supply chain barriers to food waste reduction. Further, the coordinators could work with food recovery organizations to identify willing recipients for rescued food and connect them with donors. When implementing their mandate, the coordinators could collaborate with the Rural Development state and regional offices. Having regional coordinators could help with planning during normal times to ensure more resilience and coordination during local, regional, or national disasters.

IMPLEMENTATION OPPORTUNITY

The next farm bill should establish regional supply chain coordinators within the USDA that partner with food producers, distributors, and food recovery organizations and act as regional points of contact to facilitate real-time food recovery as well as understand and develop the capacity needed for ongoing food recovery. Authority and funding for these regional supply chain coordinators should be established within the Miscellaneous Title, or a new Food Waste Reduction Title.

Appendix A
U.S. Food Loss & Waste Policy Action Plan Recommendations and Additional Report Recommendations

The U.S. Food Loss & Waste Policy Action Plan for Congress & the Administration, discussed on page 3 of this report, was published in 2021 by the Harvard Law School Food Law & Policy Clinic (FLPC), NRDC (Natural Resources Defense Council), ReFED, World Wildlife Fund (WWF), along with many additional supporters. The Action Plan calls upon Congress and the Biden administration to take ambitious action to achieve the goal of cutting United States food loss and waste in half by 2030. It recommends five key policy recommendations ranging from investing in infrastructure and programs that measure and prevent food waste to requiring a national date labeling standard. This report pulls in several key recommendations from the Action Plan that fall within the legislative purview of the farm bill, and includes additional recommendations that are specific the farm bill. The recommendations in this report that are also included in the Action Plan are listed below, followed by the additional recommendations outlined in the report.

Policy Recommendations Included in the U.S. Food Loss & Waste Policy Action Plan

1. Standardize and clarify date labels
2. Launch a national food waste education and awareness campaign
3. Strengthen and clarify the Bill Emerson Good Samaritan Food Donation Act
4. Expand federal tax incentives for food donations
5. Provide grants to support proven state and local policies that reduce food waste disposed in landfills or incinerators
6. Provide grants and loans for the development of organic waste processing infrastructure
7. Require federal food procurement contractors to measure, recover, recycle, and prevent organic waste in federal contracts
8. Encourage diversion of food waste into animal feed where appropriate
9. Provide funding for the Federal Interagency Food Loss and Waste Collaboration
10. Establish new positions for regional supply chain coordinators at the USDA

Additional Report Recommendations

1. Provide funding to K-12 schools to incorporate food waste prevention practices in their programs
2. Promote food education and food waste education in K-12 programming
3. Utilize existing federal household-level food education programs to increase food waste awareness
4. Provide grant funding for new technologies to reduce food spoilage and food waste
5. Implement a certification program for businesses that demonstrate food waste reduction
6. Provide financial incentives to businesses for the adoption of technologies that reduce food waste by at least 10%
7. Increase funding support for food recovery infrastructure and for post-harvest food recovery
8. Offer grant resources and procurement programs to increase food recovery from farms
9. Encourage USDA grant and loan recipients to donate surplus food by incentivizing food donation
10. Instruct the USDA Risk Management Agency and approved crop insurance providers to better support gleaning
11. Support compost end markets through crop insurance benefits and increased federal procurement of compost products
12. Increase funding for the USDA Food Loss and Waste Reduction Liaison and create a broader research mandate

Appendix B
Table of Recommendations and Implementation Opportunities by Title

Commodity Programs Title	Instruct the USDA RMA to initiate an expanded education and awareness program by developing more guidance materials and utilizing semi-annual reminders for NAP
Nutrition Title	Provide dedicated grants for schools to conduct food waste audits and implement waste reduction programming Mandate Offer-Versus-Serve (OVS) policies to be implemented across all schools for both NSLP and SBP Modify existing school grant program selection processes to preference applicants that have a food waste reduction or food donation program Reauthorize and modify the FASLP program's authorizing language to direct USDA to award extra points on grant applications to schools that include food waste reduction education as a focus in their program Reauthorize and increase funding for the Farm to School grant program Add language about food waste education in the program goals of the SNAP Education (SNAP-Ed) program Establish a new block grant to states that funds food recovery and distribution infrastructure Support post-harvest food recovery by increasing funding for the Community Food Projects (CFP) grant program and earmarking a portion of funding for food recovery projects Reauthorize and expand the TEFAP Farm to Food Bank project and reduce or remove the state match requirement Designate funding for a tailored surplus food purchase and donation program modeled from the Farmers to Families Food Box Program with upgrades to address equity and ensure the program is reducing rather than furthering food waste Direct the USDA to prioritize, across a range of grant programs, applicants that have a food donation contract in place with a food recovery organization
Research, Extension and Related Matters Title	Renew support for the Expanded Food and Nutrition Education Program (EFNEP) and modify the authorizing language to include food waste prevention education Increase funding for the Specialty Crop Research Initiative (SCRI) and direct USDA to preference projects that target food waste reduction Create a new program (similar to SCRI) that supports new technologies to extend the shelf life of dairy, meat, poultry, and fish and the development and manufacturing of upcycled food products
Horticulture Title	Increase funding for the Local Agricultural Marketing Program (LAMP) and remove or reduce the matching requirement Extend Value-Added Producer Grant (VAPG) funding to non-profits, and earmark a portion of funding for food waste reduction and food recovery Direct the USDA to prioritize grant applicants that have a food donation contract with a food recovery organization across a range of farm bill grant programs such as LAMP

Crop Insurance Title	Instruct the USDA RMA to initiate an education and awareness program on the benefits and protections for gleaning, by developing more guidance materials and utilizing semi-annual reminders for FCIP Create a crop insurance premium incentive program that offers farmers a per acre bonus for applying compost products to their fields before planting Increase federal procurement of compost products containing recycled organic waste materials by requiring federal agencies to prioritize purchasing of compost made from recycled organic waste materials when purchasing landscaping services
Miscellaneous Title/Food Waste Reduction Title	Launch a national food waste education and awareness campaign Implement a food waste reduction certification program to encourage businesses to prevent or otherwise reduce food waste Strengthen and clarify the Bill Emerson Good Samaritan Food Donation Act and require USDA to publish regulations better explaining its provisions Provide grants to state and local governments to encourage the implementation of proven or promising food waste reduction policies such as organic waste bans, mandatory recycling laws, landfill taxes, PAYT laws, and other policy measures Reauthorize and amend the Community Compost and Food Waste Reduction (CCFWR) program to increase the total and per-project funding available, reduce or eliminate the matching requirement, and expand the list of eligible entities who may apply for grant funding to also include state governments and non-governmental organizations and community groups that work with partners in rural locations across regions Increase funding for the Solid Waste Management Grant (SWMG) and the Water and Waste Disposal Loans and Grant program and continue to prioritize projects in which the implementing agencies prioritize food waste reduction Authorize funding to support new compost and anaerobic digestion infrastructure, and support large-scale transportation needs for compost and anaerobic digestion Modify the Federal Food Donation Act of 2008 to require all federal agencies that enter food procurement contracts to require their contractors to donate any surplus food and to compost any inedible food scraps, and require such contractors to measure and report food donation and food waste that result from the contract, and require agencies to report this data to a central federal government authority Require the USDA to write guidance encouraging states to update their laws around food scrap feeding to animals Increase funding for the Food Loss and Waste Liaison and authorize creation of a Food Loss and Waste Office Provide funding for comprehensive national and farm-level food waste research Provide a mandate for the Federal Food Loss and Waste Collaboration and authorize $2 million in annual funding for the Collaboration to better position it to meet the United States' 2030 food waste reduction goal Establish regional supply chain coordinators within the USDA that partner with food producers, distributors, and food recovery organizations and act as regional points of contact to facilitate real-time food recovery as well as understand and develop the capacity needed for ongoing food recovery
Tax and Trade Provisions Title (If reestablished from the 2008 Farm Bill)	Create a federal tax incentive for the commercial adoption of post-harvest food waste reduction technologies that reduce food waste by at least 10% Create an alternative food donation tax credit that farmers can opt to claim instead of the enhanced tax deduction for food donation Amend the enhanced tax deduction for food donation to offset the costs of transportation and storage Amend the enhanced tax deduction for food donation to incentivize innovative food recovery models by removing the requirement that non-profit organizations provide donated food for free Create a tax incentive for private businesses to divert food waste to animal feed that is lesser than the enhanced tax deduction for businesses to donate surplus food to food insecure individuals

Appendix C
Table of Pending Federal Legislation

Report Section	Report Recommendation	Bill Name	Bill Number	Date Introduced	Cosponsors	Summary
Food Waste Prevention	Standardize and Clarify Date Labels	Food Date Labeling Act of 2021	H.R. 6167, S.3324 117th Congress	12/7/2021	**House:** Rep. Pingree, Rep. Newhouse, Rep. Blumenauer, Rep. Lieu, Rep. Kuster, Rep. McGovern **Senate:** Sen. Blumenthal	To establish requirements for quality and discard dates that are, at the option of food labelers, included in food packaging, and for other purposes.
	Provide Funding to K-12 Schools to Incorporate Food Waste Prevention Practices in Their Programs	School Food Recovery Act of 2021	H.R. 5459, 117th Congress	9/30/2021	Rep. Pingree, Rep. Newhouse, Rep. Bonamici, Rep. Hayes, Rep. McGovern, Rep. Case, Rep. Schrier, Rep. Bishop, Rep. Carbajal, Rep. Ruiz	To amend the Richard B. Russell National School Lunch Act to require the Secretary of Agriculture to carry out a grant program to make grants to eligible local educational agencies to carry out food waste reduction programs, and for other purposes.
Surplus Food Recovery	Expand Federal Tax Incentives	Further Incentivizing Nutritious Donations of Food Act or FIND Food Act of 2022	H.R. 7317, 117th Congress	3/31/2022	Rep. Brown, Rep. Pingree, Rep. Keller, Rep. Balderson	To amend the Internal Revenue Code of 1986 to incentivize food donation through tax credits and deductions, and for other purposes.
	Strengthen and Clarify the Bill Emerson Good Samaritan Food Donation Act	Food Donation Improvement Act of 2021	H.R. 6251, S.3281, 117th Congress	12/13/2021, 11/30/2021	**House:** Rep. McGovern, Rep. Newhouse, Rep. Pingree, Rep. Walorski, Rep. Keller, Rep. Reschenthaler, Rep. Wild, Rep. Brown, Rep. Hayes **Senate:** Sen. Blumenthal, Sen. Toomey, Sen. Braun	To amend the Bill Emerson Good Samaritan Food Donation Act to clarify and expand food donation, and for other purposes.
	Offer Grant Resources and Procurement Programs to Increase Food Recovery from Farms	Fresh Produce Procurement Reform Act of 2021	H.R. 5309, 117th Congress	9/21/2021	Rep. DeLauro, Rep. McGovern, Rep. Bishop, Rep. Valadao, Rep. Adams, Rep. Evans	To direct the Secretary of Agriculture to enter into contracts to provide individuals dealing with food and nutrition insecurity family-friendly fresh produce, and for other purposes.

Food Waste Recycling	Provide Grants and Loans for the Development of Organic Waste Processing Infrastructure	Cultivating Organic Matter through the Promotion of Sustainable Techniques or COMPOST Act of 2021	H.R. 4443, S.2388, 117th Congress	7/16/2021, 7/20/2021	**House**: Rep. Brownley, Rep. Pingree, Rep. Kuster, Del. Norton, Rep. Cicilline, Rep. Bonamici, Rep. Cleaver, Rep. Levin, Rep. Blumenauer, Rep. Hayes, Rep. Raskin, Rep. Spanberger, Rep. Krishnamoorthi, Rep. Newman, Rep. Neguse, Rep. Houlahan, Rep. Courtney, Rep. Jayapal, Rep. Payne **Senate:** Sen. Booker, Sen. Smith	To require the designation of composting as a conservation practice and activity, and to provide grants and loan guarantees for composting facilities and programs, and for other purposes.
	Provide Grants to Support Proven State and Local Policies that Reduce Food Waste Disposed in Landfills or Incinerators	Zero Food Waste Act of 2021	H.R. 4444, S.2389, 117th Congress	7/16/2021, 7/20/2021	**House**: Rep. Brownley, Rep. Pingree, Rep. Kuster, Del. Norton, Rep. Cleaver, Rep. Levin, Rep. Pocan, Rep. Blumenauer, Rep. Hayes, Rep. Raskin, Rep. Payne **Senate**: Sen. Booker, Sen. Smith	To provide grants to reduce the amount of food waste, and for other purposes.
Food Waste Reduction Coordination	Increase Funding for the USDA Food Loss and Waste Reduction Liaison and Create a Broader Research Mandate	National Food Waste Reduction Act of 2021	H.R. 3652, 117th Congress	6/1/2021	Rep. Axne, Rep. Pingree	To direct the Secretary of Agriculture to establish a food waste research and technical assistance program and grant program, and for other purposes.

ENDNOTES

1 *The Challenge*, ReFED, https://ReFED.com/food-waste/the-challenge [https://perma.cc/XF6C-K2AK].
2 *ReFED Insights Engine: Food Waste Monitor,* ReFED, https://insights-engine.ReFED.org/food-waste-monitor?break_by=sector&indicator=tons-surplus&view=detail&year=2019 [https://perma.cc/3XJ2-X9E4].
3 *Id.*
4 *New Data from ReFED Reveals Amount of Food Waste Has Leveled Off after Increasing 11.9% Since 2010,* ReFED (Feb. 2, 2021), https://ReFED.com/articles/new-data-from-ReFED-reveals-amount-of-food-waste-has-leveled-off-after-increasing-11-9-since-2010/ [https://perma.cc/42Y9-NAMJ].
5 *EPA and USDA Join Private Sector, Charitable Organizations to Set Nation's First Food Waste Reduction Goals,* U.S. Env't Prot. Agency (EPA) (Sept. 16, 2015), https://www.usda.gov/wps/portal/usda/usdamediafb?contentid=2015/09/0257.xml&printable=true [https://perma.cc/9S67-GMBL].
6 Agriculture Improvement Act of 2018, Pub. L. No: 115-334.
7 Emily Broad Leib et al., Harv. L. Sch. Food L. & Pol'y Clinic (FLPC), Opportunities to Reduce Food Waste in the 2018 Farm Bill (2017), https://chlpi.org/wp-content/uploads/2013/12/Opportunities-to-Reduce-Food-Waste-in-the-2018-Farm-Bill_May-2017.pdf [https://perma.cc/9LE3-7GT8].
8 Adam Redling, *Bipartisan Caucus Seeks to Address Food Waste,* Waste Today Mag. (May 7, 2018), https://www.wastetodaymagazine.com/article/congress-food-waste-caucus-pingree-young/ [https://perma.cc/WS5S-ZDJ3].
9 EPA Off. Of Res. Conservation & Recovery, Documentation for Greenhouse Gas Emission and Energy Factors Used in the Waste Reduction Model (WARM): Organic Materials Chapters, ICF (2020), https://www.epa.gov/sites/default/files/2020-12/documents/warm_organic_materials_v15_10-29-2020.pdf [https://perma.cc/RZD4-2ZH9].
10 Catherine I. Birney et al., *An assessment of individual foodprints attributed to diets and food waste in the United States*, Env't Rsch. Letters 12 (Oct. 17, 2017), https://iopscience.iop.org/article/10.1088/1748-9326/aa8494 [https://perma.cc/CH9C-4KSP].
11 *Greenhouse Gas Equivalencies Calculator*, EPA (Mar. 2021), https://www.epa.gov/energy/greenhouse-gas-equivalencies-calculator [https://perma.cc/PKB5-YLXJ].
12 These numbers were modeled in the ReFED Roadmap and represent the annual impact of reshaping consumer environments to prevent food waste. ReFED, Roadmap to 2030: Reducing U.S. Food Waste by 50% and the ReFED Insights Engine At-A-Glance (2021), https://ReFED.com/uploads/ReFED_roadmap2030-FINAL.pdf [https://perma.cc/MX53-4AY3] [hereinafter ReFED Roadmap to 2030 At-A-Glance].
13 *ReFED Insights Engine,* ReFED, https://insights.ReFED.org/ (last visited Mar. 3, 2022) [https://perma.cc/Q2Z8-JCS7].
14 These numbers were modeled in the ReFED Roadmap and represent the annual impact of strengthening food recovery. ReFED, Roadmap to 2030: Reducing U.S. Food Waste by 50% and the ReFED Insights Engine At-A-Glance, *supra* note 12.
15 Id.; ReFED Insights Engine, *supra* note 13.
16 BSR, Analysis of U.S. Food Waste Among Food Manufacturers, Retailers, and Restaurants, Food Waste Reduction All. 17, 24, 32 (2014), https://foodwastealliance.org/wp-content/uploads/2020/05/FWRA_BSR_Tier3_FINAL.pdf [https://perma.cc/9EDB-Z2T9].
17 Bill Emerson Good Samaritan Food Donation Act, 42 U.S.C. § 1791 [hereinafter Emerson Act].
18 EPA Off. Of Revenue, Conservation & Rec., 2018 Wasted Food Report: Estimates of generation and management of wasted food in the United States in 2018, EPA 19 (2020), https://www.epa.gov/sites/default/files/2020-11/documents/2018_wasted_food_report.pdf [https://perma.cc/SQ4J-NXVZ].
19 EPA, Advancing Sustainable Materials Management: 2018 Fact Sheet-Assessing Trends in Materials Generation and Management in the United States (2020), https://www.epa.gov/sites/default/files/2021-01/documents/2018_ff_fact_sheet_dec_2020_fnl_508.pdf [https://perma.cc/6STD-WPML] [hereinafter Advancing Sustainable Materials Management].
20 ReFED, Roadmap to 2030: Reducing U.S. Food Waste by 50% and the ReFED Insights Engine At-A-Glance, *supra* note 12.
21 These numbers were modeled in the ReFED Roadmap and represent the annual impact of recycling any remaining food waste. *Id.*
22 Advancing Sustainable Materials Management, *supra* note 19.
23 *See* James Thompson & Rob Watson, *Time is Running Out: The U.S. Landfill Capacity Crisis*, WasteAdvantage Mag. (May 13, 2018), https://wasteadvantagemag.com/time-is-running-out-the-u-s-landfill-capacity-crisis/ [https://perma.cc/CX2D-KMTU].
24 *Greenhouse Gases*, EPA (last visited Oct. 10, 2021), https://www.epa.gov/report-environment/greenhouse-gases [https://perma.cc/QT4K-EGE7].
25 FLPC, NRDC (Nat. Res. Def. Council), ReFED, World Wildlife Fund (WWF), US Food Loss and Waste Policy Action Plan for Congress & the Administration 7 (2021), https://cdn.sanity.io/files/34qvzoil/production/b235a5e697650c15ea6c9d4b76cf5f49553a5f74.pdf [https://perma.cc/QVK2-37VD] [hereinafter US Food Loss and Waste Action Plan].
26 Agriculture Improvement Act of 2018, 7 U.S.C. § 6923 (d) (2018) [hereinafter Agriculture Improvement Act].
27 *USDA Announces First-Ever Recipients of Urban Agriculture Grants and Cooperative Agreements*, U.S. Dep't of Agric. (USDA) (Aug. 25, 2020), https://www.usda.gov/media/press-releases/2020/08/25/usda-announces-first-ever-recipients-urban-agriculture-grants-and [https://perma.cc/4MUZ-A6JA] [hereinafter *USDA Announces First-Ever Recipients*].
28 *See* Agriculture Improvement Act, *supra* note 26 at § 6924.
29 The Liaison received $500k in appropriations for FY2021. *See* Consolidated Appropriations Act, 2020, H.R. 133 § 776 (2020).
30 EPA, U.S. Food & Drug Admin. (FDA), USDA, *Formal Agreement Among The United States Environmental Protection Agency and The United States Food and Drug Administration and The United States Department of Agriculture Relative to Cooperation and Coordination on Food Loss and Waste* (Oct. 18, 2018), https://www.usda.gov/sites/default/files/documents/usda-fda-epa-formal-agreement.pdf [https://perma.cc/X3HV-XXH6] [hereinafter *Formal Agreement Among EPA, FDA, and USDA*]; *Winning on Reducing Food Waste and Federal Interagency Strategy,* EPA, https://www.epa.gov/sustainable-management-food/winning-reducing-food-waste-federal-interagency-strategy [https://perma.cc/J9LT-AU72] [hereinafter *Winning on Reducing Food Waste*].
31 US Food Loss and Waste Action Plan, *supra* note 25.
32 *The Challenge*, *supra* note 1.
33 *ReFED Insights Engine: Food Waste Monitor*, *supra* note 2.
34 *Id.*
35 *On the Road to Reduction*, ReFED (Apr. 17, 2017), https://ReFED.com/articles/on-the-road-to-reduction/ [https://perma.cc/PGC4-

DQF3].

36 Darby Hoover & Yvette Cabrera, Food Waste Policy Gap Analysis and Inventory: MidAtlantic, Southeast, and Great Lakes Regions, NRDC, FLPC, & Ctr. for EcoTechnology (CET) (Aug. 3, 2021), https://www.nrdc.org/resources/food-waste-policy-gap-analysis-and-inventory-midatlantic-southeast-and-great-lakes-regions [https://perma.cc/XN79-FFNL].

37 Alisha Coleman-Jensen et al., Household Food Security in the United States in 2019, USDA Econ. Rsch. Serv. (ERS) 4 (2020), https://www.ers.usda.gov/webdocs/publications/99282/err-275.pdf?v=6197.5 [https://perma.cc/DZ2H-ZBM5]; Alisha Coleman-Jensen et al., Household Food Security in the United States in 2020, USDA ERS 4 (2021), https://www.ers.usda.gov/webdocs/publications/102076/err-298.pdf?v=4259.6 [https://perma.cc/SJ95-ZQYV].

38 Kirsten Jaglo et al., From Farm to Kitchen: The Environmental Impacts of U.S. Food Waste, EPA Off. of Rsch. & Dev. 15 (2021), https://www.epa.gov/system/files/documents/2021-11/from-farm-to-kitchen-the-environmental-impacts-of-u.s.-food-waste_508-tagged.pdf [https://perma.cc/QM9V-GW6F].

39 *United States 2030 Food Loss and Waste Reduction Goa*l, EPA, https://www.epa.gov/sustainable-management-food/united-states-2030-food-loss-and-waste-reduction-goal (last visited Mar. 10, 2022) [https://perma.cc/DC3S-S2UV]; *USDA and EPA Join with Private Sector, Charitable Organizations to Set Nation's First Food Waste Reduction Goals*, USDA (Sept. 16, 2015), https://www.usda.gov/wps/portal/usda/usdamediafb?contentid=2015/09/0257.xml&printable=true [https://perma.cc/C3SM-6UMN].

40 *Formal Agreement Among EPA, FDA, and USDA*, *supra* note 30.

41 *Federal Interagency Food Loss and Waste Collaboration,* EPA, https://www.epa.gov/sustainable-management-food/federal-interagency-food-loss-and-waste-collaboration [https://perma.cc/G7U7-ULQ9]; *Winning on Reducing Food Waste*, *supra* note 30.

42 *What are Cities Doing About Food Waste?*, RTS (Feb. 5, 2020), https://www.rts.com/blog/what-are-cities-doing-about-food-waste/ [https://perma.cc/LMU8-7EX2].

43 *Managing and Transforming Waste Streams—A Tool for Communities—Zero Waste Case Study: San Francisco*, EPA, *https://www.epa.gov/transforming-waste-tool/zero-waste-case-study-san-francisco* (last visited Nov. 5, 2020) [https://perma.cc/RH2R-FM2Z].

44 *See* Emily Broad Leib & Katie Sandson et al., FLPC & CET, Bans and Beyond: Designing and Implementing Organic Waste Bans and Mandatory Organics Recycling Laws (2019), https://www.chlpi.org/wp-content/uploads/2013/12/Organic-Waste-Bans_FINAL-compressed.pdf [https://perma.cc/DPT9-VGRX] [hereinafter Bans and Beyond]; D.C. Code § 8-1031.01–8-1031.03.

45 Jennifer Schultz, *Fighting Food Waste,* 25 Nat'l Conference of State Legs. 46 (Dec. 2017), https://www.ncsl.org/research/agriculture-and-rural-development/fighting-food-waste.aspx [https://perma.cc/46R2-DUGR].

46 Kelly Maile, *Organic waste legislative update,* Waste Today Mag. (Mar. 23, 2020), https://www.wastetodaymagazine.com/article/organic-waste-legislative-update-food/ [https://perma.cc/H7GM-5EP8]; Connecticut, Massachusetts, New York, Rhode Island, New Jersey, and Vermont adopted state organic waste bans, and California enacted a waste recycling law that requires commercial waste generators to compost or anaerobically digest their organic waste. *See*, Conn. Gen. Stat. Ann. § 22a-226e (2017); 310 Mass. Code Regs. 19.017 (2017); N.Y.C. Admin Code § 16-306.1 (2016); R.I. Gen. Laws § 23-18.9-17 (2017); N.J. Stat. Ann. § 13:1E-99.123 (West 2020); Vt. Stat. Ann. tit. 10, § 6605k (2017); Cal. Pub. Res. Code § 42649.81 (2017).

47 *Organic Waste Legislative Update*, *supra* note 46.

48 *New Data from ReFED Reveals Amount of Food Waste Has Leveled Off After Increasing 11.9% Since 2010*, ReFED (Feb. 2, 2021), https://refed.com/articles/new-data-from-refed-reveals-amount-of-food-waste-has-leveled-off-after-increasing-11-9-since-2010/ [https://perma.cc/7SSE-QPAB].

49 *Id.*

50 Agriculture Improvement Act, *supra* note 26.

51 *Sustainable Management of Food: Food Recovery Hierarchy,* EPA, https://www.epa.gov/sustainable-management-food/food-recovery-hierarchy (last visited Nov 5, 2021) [https://perma.cc/KP7M-BT4B].

52 US Food Loss and Waste Action Plan, *supra* note 25.

53 *Id.*

54 *ReFED Insights Engine Solutions Database: Standardized Date Labels*, ReFED, https://insights-engine.refed.org/solution-database/standardized-date-labels (last visited Feb. 19, 2022) [https://perma.cc/2CQ4-5DG4].

55 Emily Broad Leib & Dana Gunders et al., FLPC & NRDC, The Dating Game: How Confusing Food Labels Lead to Food Waste in America 17 (2013), http://www.chlpi.org/wp-content/uploads/2013/12/dating-game-report.pdf [https://perma.cc/V9RZ-889M] [hereinafter FLPC & NRDC, The Dating Game]; E. Rsch. Grp, Current State of Food Product Open Dates in the U.S., FDA 1–13 (2003), https://www.foodrisk.org/resources/display/32 [https://perma.cc/A3AA-6QUB].

56 The date labeling of infant formula is regulated under 21 CFR 107.20(c). *See* FDA Ctr. for Food Safety & Applied Nutrition, Contains Nonbinding Recommendations Labeling of Infant Formula: Guidance for Industry, U.S. Dep't of Health & Human Servs. (Sep. 2016), https://www.fda.gov/files/food/published/Guidance-for-Industry--Labeling-of-Infant-Formula-PDF.pdf [https://perma.cc/W9X7-C2EW].

57 21 U.S.C. §§ 331(b), 343, 463(a), 607(c), 1043.

58 *Press Release: USDA Revises Guidance on Date Labeling to Reduce Food Waste*, USDA Food Safety & Inspection Serv. (FSIS), (Dec. 14, 2016), https://www.fsis.usda.gov/wps/portal/fsis/ newsroom/news-releases-statements-transcripts/news-release-archives-by-year/archive/2016/nr-121416-01 (last visited Mar. 11, 2022); FSIS, *Food Product Dating*, USDA, https://www.fsis.usda.gov/food-safety/safe-food-handling-and-preparation/food-safety-basics/food-product-dating (last visited Mar. 11, 2022).

59 Frank Yiannas, *Letter to the Food Industry*, FDA (May 23, 2019), https://www.fda.gov/media/125114/download [https://perma.cc/KRN8-MP8P].

60 Emily Broad Leib et al., FLPC & NRDC, Don't Waste, Donate: Enhancing Food Donations through Federal Policy 19 (2017), http://www.chlpi.org/wp-content/uploads/2013/12/Dont-Waste-Donate_-March-2017.pdf [https://perma.cc/E9AT-VXP7].

61 *See, e.g.*, *ReFED U.S. Food Waste Policy Finder: Massachusetts Food Waste Policy*, ReFED (Jan. 8, 2022), https://www.refed.com/tools/food-waste-policy-finder/massachusetts/ [https://perma.cc/P62F-YMRY]; FLPC & NRDC, The Dating Game, *supra* note 55.

62 *Id.*; Harvey L. Hensel, *Look What Consumerism Has Done Now*, 29 Food Drug Cosmetic L. J. 220, 226 (1974).

63 Emily Broad Leib et. al., FLPC, Date Labels: The Case for Federal Legislation 6 (2019), https://www.chlpi.org/wp-content/uploads/2013/12/date-labels-issue-brief_June-2019.pdf [https://perma.cc/4M8X-5WP5].

64 ReFED Date Labeling Standardization Tool, ReFED 1 (2016), https://refed.org/downloads/ReFED-Standardization-Package.pdf [https://perma.cc/7AM6-MUBF].

65 *ReFED Insights Engine Solutions Database: Standardized Date Labels*, *supra* note 54.

66 *Product Code Dating*, FMI—The Food Indus. Assoc., https://www.fmi.org/industry-topics/labeling/product-code-dating (last visited

Nov. 15, 2021) [https://perma.cc/X858-JKC6]; *Grocery Industry Launches New Initiative to Reduce Consumer Confusion on Date Labels*, Consumer Brands Assoc. (Feb. 2017), https://consumerbrandsassociation.org/posts/grocery-industry-launches-new-initiative-to-reduce-consumer-confusion-on-product-date-labels/ [https://perma.cc/26Q2-A52Z].

67 Consumer Brands Assoc., Best if Clearly Labeled 1 (2018), https://consumerbrandsassociation.org/wp-content/uploads/2019/11/ConsumerBrands_ClearlyLabeled.pdf [https://perma.cc/CQV6-4X2Z].

68 USDA, Food Product Dating, Docket No. FSIS-GD-2016-0014, (2016).

69 *Letter to the Food Industry*, *supra* note 59.

70 Emily Broad Leib et al., FLPC, Nat'l Consumers League, & Johns Hopkins U., Consumer Perceptions of Date Labels: National Survey (2016), http://www.chlpi.org/wp-content/uploads/2013/12/Consumer-Perceptions-on-Date-Labels_May-2016.pdf [https://perma.cc/W7Y5-MCY5].

71 Food & Agric. Org. of the U.N. (FAO) & World Health Org. (WHO), Codex Alimentarius International Food Standards: General Standard for the Labelling of Prepackaged Foods, CXS 1-1985 (Rev. 2018), http://www.fao.org/fao-who-codexalimentarius/sh-proxy/en/?lnk=1&url=https%253A%252F%252Fworkspace.fao.org%252Fsites%252Fcodex%252FStandards%252FCXS%2B1-1985%252FCXS_001e.pdf [https://perma.cc/X3RP-5P5T]; *see also* Joseph Beckmann et al, FLPC, The Global Food Donation Policy Atlas Issue Brief Promoting Food Donation: Date Labeling Law and Policy (2021), https://www.foodbanking.org/wp-content/uploads/2021/11/atlas-date-labeling-issue-brief.pdf [https://perma.cc/585F-XWVX].

72 Eur. Comm'n et al., Food redistribution in the EU: Mapping and analysis of existing regulatory and policy measures impacting food redistribution from EU Member States (2020), https://op.europa.eu/en/publication-detail/-/publication/8f5d3481-b753-11ea-bb7a-01aa75ed71a1 (last visited Jan. 16, 2022).

73 FLPC & NRDC, The Dating Game, *supra* note 55.

74 The Food Date Labeling Act of 2021, introduced in the 116th Congress, offers a model for the needed changes. Food Date Labeling Act, S. 3324, 117th Cong., (1st Sess. 2021); Food Date Labeling Act, H.R. 6167, S. 3324, 117th Cong., (1st Sess. 2021) [hereinafter Food Date Labeling Act of 2021].

75 The 2002 Farm Bill made Country of Origin Labeling (COOL) mandatory for products including fresh fruits and vegetables, beef, pork, lamb, seafood, and peanuts (P.L. 107–171, § 10816). COOL regulations for fish and shellfish became effective in 2005, while, for other commodities, the rule did not go into effect until 2009. Exact regulations continue to change—the most recent amendment occurred in January 2017—and remain controversial, but have been included in subsequent farm bills. In 2002 and 2014, COOL was included in the Miscellaneous Title; in 2008, it was located within the Livestock Title. *See Country of Origin Labeling (COOL)*, USDA Mktg. Serv., https://www.ams.usda.gov/rules-regulations/cool (last visited Mar. 11, 2022) [https://perma.cc/8Z8P-DCB9]; Joel L. Greene, Country-of-Origin Labeling for Foods and the WTO Trade Dispute on Meat Labeling, Cong. Res. Serv. (2015), https://fas.org/sgp/crs/misc/RS22955.pdf [https://perma.cc/VJ89-UPFM].

76 Food Date Labeling Act of 2021, *supra* note 74.

77 *ReFed Insights Engine Solutions Database: Consumer Education Campaigns*, ReFED, https://insights-engine.refed.org/solution-database/consumer-education-campaigns (last visited Mar. 11, 2022) [https://perma.cc/F8HW-AU6K].

78 *ReFED Insights Engine: Food Waste Monitor*, *supra* note 2.

79 Nat'l Acad. of Sciences, Eng'g, & Med. (NASEM), A National Strategy to Reduce Food Waste at the Consumer Level 37 (Barbara O. Schneeman and Maria Oria eds., 2020) [hereinafter NASEM, National Strategy to Reduce Food Waste].

80 Roni A. Neff, Marie L. Spiker & Patricia L. Truant, *Wasted Food: U.S. Consumers' Reported Awareness, Attitudes, and Behaviors*, 10.6 PLOS One (June 10, 2015), http://dx.doi.org/10.1371/journal.pone.0127881 [https://perma.cc/V2PM-Y4JW] [hereinafter Neff et al., *Wasted Food*].

81 NASEM, National Strategy to Reduce Food Waste, *supra* note 79 at 48.

82 Yang Yu & Edward C. Jaenicke, *Estimating Food Waste as Household Production Inefficiency*, 102 Am. J. of Agric. Econ. (Jan. 23, 2020), https://onlinelibrary.wiley.com/doi/abs/10.1002/ajae.12036 [https://perma.cc/3HJA-5SGX].

83 *Id.*

84 *ReFed Insights Engine Solutions Database: Consumer Education Campaigns*, *supra* note 77.

85 *Impact of First Federally Funded Anti-Smoking Ad Campaign Remains Strong After Three Years*, Ctr. For Disease Control & Prevention (CDC) (Mar. 4, 2016), http://www.cdc.gov/media/releases/2016/p0324-anti-smoking.html [https://perma.cc/RLB3-9CEX].

86 Craig Hanson & Peter Mitchell, The Business Case for Reducing Food Loss and Waste, Champions 12.3 7-8 (Mar. 2017), https://champions123.org/sites/default/files/2020-08/business-case-for-reducing-food-loss-and-waste.pdf [https://perma.cc/PA5B-BKDT].

87 *Id*.

88 Waste Res. Action Prog. (WRAP), Courtauld Commitment 2025 Milestone Progress Report 4 (2020), https://wrap.org.uk/sites/default/files/2020-08/Courtauld-Commitment-2025-Milestone-Progress-Report.pdf (last visited Mar. 11, 2022).

89 *Let's Save the Food*, Waste Free Kitchen Handbook & NRDC (2016), http://www.savethefood.com [https://perma.cc/JC3Y-FCZN]; *See also* Dana Gunders, *Save the Food*, NRDC (Apr. 21, 2016), https://www.nrdc.org/experts/dana-gunders/save-food [https://perma.cc/J55F-GQ64].

90 Dana Gunders, NRDC, Wasted: How America Is Losing Up to 40 Percent of Its Food from Farm to Fork to Landfill 6 (2nd ed. 2017), https://www.nrdc.org/sites/default/files/wasted-2017-report.pdf [https://perma.cc/3B29-KBZR] [hereinafter Gunders, Wasted].

91 Yerina Mugica & Terra Rose et al., NRDC, Tackling Food Waste in Cities: A Policy and Program Toolkit 32 (2019), https://www.nrdc.org/sites/default/files/food-waste-cities-policy-toolkit-report.pdf [https://perma.cc/WLN4-QXE6] [hereinafter NRDC, Tackling Food Waste in Cities].

92 *Case: Love Food, Hate Waste*, U.N. Env't Prog. (UNEP) 1 (2016), https://www.oneearthweb.org/uploads/2/1/3/3/21333498/love_food_hate_waste_case.pdf [https://perma.cc/5U6R-ZZ4J].

93 NASEM, National Strategy to Reduce Food Waste, *supra* note 79 at 140.

94 *Citizen Behaviour Change*, WRAP, https://wrap.org.uk/taking-action/citizen-behaviour-change/love-food-hate-waste (last visited Oct. 10, 2021).

95 *Food Waste: Less is More,* Denver: The Mile High City, https://www.denvergov.org/Government/Agencies-Departments-Offices/Agencies-Departments-Offices-Directory/Public-Health-Environment/Community-Behavioral-Health/Food-System-Policies/Food-Waste-Less-is-More (last visited Feb 6, 2022) [https://perma.cc/ZZV8-DFEW].

[96] *Food: Too Good to Waste Implementation Guide and Toolkit*, EPA, https://www.epa.gov/sustainable-management-food/food-too-good-waste-implementation-guide-and-toolkit (last visited Feb. 6, 2022) [https://perma.cc/H57Q-6C24].

[97] *Id.*

[98] *ReFED Insights Engine: Solutions Database: K-12 Lunch Improvements*, ReFED, https://insights-engine.refed.org/solution-database/k-12-lunch-improvements (last visited Feb. 19, 2022) [https://perma.cc/Q4LS-TPTN].

[99] WWF, Food Waste Warriors: A deep dive into food waste in US schools 22 (2019), https://c402277.ssl.cf1.rackcdn.com/publications/1271/files/original/FoodWasteWarriorR_CS_121819.pdf?1576689275 [https://perma.cc/V2G4-WRLP] [hereinafter WWF, Food Waste Warriors].

[100] *See National School Lunch Program (NSLP) Fact Sheet*, USDA Food & Nutrition Serv. (Mar. 20, 2019), https://www.fns.usda.gov/nslp/nslp-fact-sheet [https://perma.cc/JRK7-P9BL] [hereinafter *NSLP Fact Sheet*]; *see also* WWF, Food Waste Warriors, *supra* note 99 at 4.

[101] *See generally*, *id*.

[102] *Id.* at 9.

[103] *Id.* at 10.

[104] The WWF report extrapolates the number from 46 sample schools. *Id.*

[105] Matteo Boschini et al., *Why the waste? A large-scale study on the causes of food waste at school canteens*, 246 J. of Cleaner Air Prod. 2 (2020).

[106] *Schools: Reducing Food Waste at K012 Schools*, *USDA*, https://www.usda.gov/foodlossandwaste/schools (last visited Apr. 20, 2022) [https://perma.cc/27HD-M743] [hereinafter *Reducing Food Waste at K-12 Schools*]; *See* USDA, EPA, U. of Ark, Guide to Conducting Student Food Waste Audits: A Resource For Schools (2017), https://www.epa.gov/sites/default/files/2017-12/documents/guide_to_conducting_student_food_waste_audit_-_nov_20_2017.pdf [https://perma.cc/LJ2J-R426].

[107] WWF, Food Waste Warriors, *supra* note 99 at 9.

[108] *Id*.

[109] School Food Recovery Act, H.R. 5459, 117th Cong. (2021).

[110] A survey conducted by the Harvard School of Public Health and NPR found that 14% of parents report that their children receive less than 15 minutes to eat their lunch. The USDA encourages schools to increase lunchtime to 30 minutes to improve "dietary intake and reduce food waste." *See* The Mktg. Inst., Reducing Food Waste in Schools: The Business Case, WWF 1 (2019), https://files.worldwildlife.org/wwfcmsprod/files/Publication/file/8k9ldd2tdx_FoodWasteWarrior_BusCase_121119.pdf?_ga=2.127647173.957544864.1634142315-1035761673.1610483385 [https://perma.cc/R86K-2U5Q]; Harv. Sch. of Pub. Health, Nat'l Pub. Radio (NPR), Robert Wood Johnson Found. Survey, Education and Health in Schools: A Survey of Parents Summary 10 (2013), https://media.npr.org/documents/2013/dec/rwjf_npr_harvard_edpoll.pdf [https://perma.cc/A94Z-WBXR]; *Reducing Food Waste at K-12 Schools*, *supra* note 106.

[111] Schools can promote the use of "share tables" where students can return food and drink items that are still whole and/or unopened for other students to take and eat. For example, if a student takes an apple, but before biting into it decides they do not want it, rather than throw the apple away they can place it on a share table for another student to take. These share tables address both the issues of food waste and food insecurity as K-12 schools that receive funding from NSLP have high poverty rates and many students may not have access to sufficient food outside of these meals. Providing students with additional food through share tables may help get these children closer to meeting their nutrition needs. *See Reducing Food Waste at K-12 Schools*, *supra* note 106.

[112] Schools can work with students to improve school meals. Students complain that school meals are unpalatable, and while there are limitations on what changes can be made to the offered school meals, receiving input from students may help providers better cater to students' preferences. This can help provide schools with lunches that will get eaten rather than go to waste. One way to do this is through School Lunch Advisory Councils (SLACs). A few schools, including Park High School in Livingston, MT, and public schools in Brockton, MA, already implemented SLACs and may serve as models. Initiatives by the SLAC at Park High School led to a 35% decrease in overall lunch waste. *See* Stacy Blondin et al., *'It's just so much waste.' A Qualitative Investigation of Food Waste in a Universal Free School Breakfast Program*, 18(9) Pub. Health Nutrition 1565 (2014); Alicia White, *Students Get Involved in School Lunch though School Lunch Advisory Councils,* USDA (Feb. 21, 2017), https://www.usda.gov/media/blog/2016/09/22/students-get-involved-school-lunch-through-school-lunch-advisory-councils [https://perma.cc/M3EX-QFDD]; *Youth Advisory Committees,* Brockton Pub. Sch., https://www.bpsma.org/schools/school-lunch-program/youth-advisory-committees (last visited Oct. 12, 2021) [https://perma.cc/9DM7-GA7B].

[113] 7 C.F.R. § 210.10(e) (2017).

[114] *See* 7 C.F.R. § 210.1 et seq.; *see also NSLP Fact Sheet*, *supra* note 100; *see also School Breakfast Program*, USDA Food & Nutrition Serv., http://www.fns.usda.gov/sbp/school-breakfast-program-sbp (last visited Mar. 31, 2022) [https://perma.cc/QR2C-YC5B].

[115] *See* 7 C.F.R. §§ 210.10, 220.8.

[116] *Id.* at § 210.10(c).

[117] *Id.* at § 210.10(e).

[118] *See* Telephone interview with Kathleen Dietrich, Founder and Executive Director, Food Bus (Apr. 5, 2016); *see also USDA Sets the Record Straight on Proposed Meal Flexibilities,* USDA Food & Nutrition Serv., https://www.fns.usda.gov/news-item/notice-stakeholders-usda-sets-record-straight-proposed-school-meals-flexibilities (last visited Apr. 10, 2021) [https://perma.cc/C7JJ-5F6Z]. School meal reimbursement requirements are detailed in 7 C.F.R. § 210.10.

[119] Child Nutrition Programs: Flexibilities for Milk, Whole Grains, and Sodium Requirements, 83 Fed. Reg. 63775 (Feb. 11, 2019) (to be codified at C.F.R. pt. 201, 215, 220 226).

[120] *Be a Food Waste Warrior*, WWF, https://www.worldwildlife.org/teaching-resources/toolkits/be-a-food-waste-warrior (last visited Nov. 1, 2021) [https://perma.cc/4NM2-55P3].

[121] WWF, Food Waste Warriors, *supra* note 99 at 22.

[122] *NSLP Equipment Assistance Grants*, USDA Food & Nutrition Serv. (May 25, 2018), https://www.fns.usda.gov/nslp-equipment-assistance-grants [https://perma.cc/7KEA-UAQG].

[123] *Community Food Systems: The Farm to School Grant Program*, USDA (Oct. 22, 2021), https://www.fns.usda.gov/cfs/farm-school-grant-program [https://perma.cc/PK5K-Q4QM].

[124] *ReFED Insights Engine: Solutions Database: K-12 Lunch Improvements*, *supra* note 98.

125 Agricultural Act of 2014, 7 U.S.C. § 7633.
126 WWF, Reducing Food Waste in Schools, *supra* note 110 at 3.
127 Barry Percy-Smith & Danny Burns, *Exploring the role of children and young people as agents of change in sustainable community development*, 13 The Int'l J. of Just. & Sustainability 323 (2021).
128 *See* Adam Vaughan, *Failure to Teach Cooking at School 'Contributing to £12bn a Year Food Waste*,' Guardian (July 13, 2016), https://www.theguardian.com/environment/2016/jul/13/failure-teach-cooking-at-school-contributing-food-waste [https://perma.cc/AX2N-KWWL].
129 WWF, Reducing Food Waste in Schools, *supra* note 110.
130 *Id.* at 3.
131 *Id.*
132 *New USDA Data Show Growing Farm to School Efforts Help to Reduce Plate Waste, Increase Student Participation in Healthier School Meals Programs*, USDA Food & Nutrition Serv. (Oct. 20, 2015), https://www.fns.usda.gov/pressrelease/2015/029215 [https://perma.cc/7YNJ-JF5C] [hereinafter *New USDA Data Showing Growing Farm to School Efforts*].
133 USDA Food & Nutrition Serv., Cultivating Opportunity: An Overview of USDA's Fiscal Year 2015 and 2016 Farm to School Grantees' Growing Achievements 7 (2018), https://fns-prod.azureedge.net/sites/default/files/f2s/USDA_GranteeReport_O.pdf [https://perma.cc/PWL5-TBDM].
134 *Id*.
135 *New USDA Data Showing Growing Farm to School Efforts*, *supra* note 132.
136 Healthy, Hunger Free Kids Act of 2010, P.L. No. 111-296 (2010).
137 Lana Bandoim, *The Shocking Amount of Food U.S. Households Waste Every Year*, Forbes (Jan. 26, 2020), https://www.forbes.com/sites/lanabandoim/2020/01/26/the-shocking-amount-of-food-us-households-waste-every-year/?sh=3ef7089a7dc8 (last visited Mar. 12, 2022); *see also* Chuck Gill, *The Average American Household Wastes $1,866 of Food Per Year*, Futurity (Jan. 23, 2020), https://www.futurity.org/food-waste-united-states-sustainability-consumers/ [https://perma.cc/3TTW-MF4P].
138 *Food Security of U.S. Households 2020*, USDA Econ. Rsch. Serv. (Sept. 8, 2021), https://www.ers.usda.gov/topics/food-nutrition-assistance/food-security-in-the-us/key-statistics-graphics.aspx [https://perma.cc/XU9C-VS6P].
139 NASEM, National Strategy to Reduce Food Waste, *supra* note 79 at 37.
140 *See generally*, USDA Food & Nutrition Serv., FY 2022 Supplemental Nutrition Assistance Program Education (SNAP-Ed) Plan Guidance: Nutrition Education and Obesity Prevention Program (2021), https://snaped.fns.usda.gov/sites/default/files/documents/FY%202022%20SNAP-Ed%20Plan%20Guidance.pdf [https://perma.cc/UP5L-DHDZ] [hereinafter SNAP-Ed Plan Guidance].
141 Agriculture Improvement Act, *supra* note 26 at § 3175(c).
142 *Id.*
143 *See* USDA Nat'l Inst. of Food & Agric. (NIFA), Expanded Food and Nutrition Education Program (EFNEP) FY 2021 Request for Applications (2020), https://nifa.usda.gov/sites/default/files/resources/FY2021-Expanded-Food-and-Nutrition-Education-Program-EFNEP-RFA-508-Modified.pdf [https://perma.cc/UL77-L8XP].
144 *Id.*
145 *About EFNEP*, USDA NIFA, https://nifa.usda.gov/program/about-efnep (last visited Apr. 24, 2021) [perma.cc/3AKM-ZWHF].
146 *SNAP-Eligible Households*, Feeding Am., https://hungerandhealth.feedingamerica.org/explore-our-work/programs-target-populations/snap-eligible-households/ (last visited Oct. 10, 2021) [https://perma.cc/98LT-2WKL].
147 SNAP-Ed Plan Guidance, *supra* note 140 at 5.
148 *See SNAP-Ed Final Allocations*, USDA SNAP-Ed Connection, https://snaped.fns.usda.gov/program-administration/funding-allocations (last visited May 12, 2021) [https://perma.cc/US74-FWXT].
149 SNAP-Ed Plan Guidance, *supra* note 140 at 9.
150 *The Dating Game–Your Guide to Preventing Food Waste: Part 1,* Snap4CT BLOG (Apr. 27, 2020), https://www.snap4ct.org/snap4ct-blog/your-guide-to-preventing-food-waste-part-1 [https://perma.cc/3RVP-D5DZ] [hereinafter *The Dating Game–Your Guide to Preventing Food Waste*]; *Managing Seasonal Abundance to Avoid Food Waste, and Feed Your Family Well*, Me. SNAP-Ed BLOG (Jun. 24, 2020), https://www.mainesnap-ed.org/blog/managing-seasonal-abundance-to-avoid-food-waste-and-feed-your-family-well/ [https://perma.cc/KU66-Q8B6] [hereinafter *Managing Seasonal Abundance*].
151 *The Dating Game–Your Guide to Preventing Food Waste*, *supra* note 150; *Managing Seasonal Abundance*, *supra* note 150.
152 Agricultural Act of 2014, *supra* note 125 at § 9001.
153 *Meal Planning, Shopping, and Budgeting,* USDA Food & Nutrition Serv., https://snaped.fns.usda.gov/nutrition-education/nutrition-education-materials/meal-planning-shopping-and-budgeting (last visited Oct. 10, 2021) [https://perma.cc/9E49-B8LW].
154 Surveyed consumers report that saving money is one of the most important motivations for reducing food waste in their households. As a result, framing food waste reduction in terms of better budgeting may be effective. Neff et al., *Wasted Food*, *supra* note 80.
155 *The Challenge*, *supra* note 1.
156 *It's Fresh! As nature extended*, It's Fresh!, https://itsfresh.com (last visited Nov. 18, 2021) [https://perma.cc/BXC3-CEJH].
157 *What We Do*, Bluwrap, https://www.bluwrap.me (last visited Nov. 18, 2021) [https://perma.cc/9K3J-MNH7].
158 *Apeel: This Is FOOD GONE GOOD*, Apeel, https://www.apeel.com (last visited Nov. 18, 2021) [https://perma.cc/46SM-JCMG].
159 ReFED, A Roadmap to Reduce U.S. Food Waste by 20 Percent 37 (2016), https://refed.org/downloads/ReFED_Report_2016.pdf [https://perma.cc/7643-HCA7].
160 *ReFED Insights Engine Solutions Database: Active & Intelligent Packaging*, ReFED, https://insights-engine.refed.org/solution-database/active-intelligent-packaging (last visited Jan. 23, 2021) [https://perma.cc/RW6V-LW4C].
161 *About Upcycled Food*, Upcycled Food Assoc., https://www.upcycledfood.org/upcycled-food (last visited March 14, 2022) [https://perma.cc/JKL3-W7RN].
162 *ReFED Insights Engine Solutions Database: Manufacturing Byproduct Utilization (upcycling)*, ReFED, https://insights-engine.refed.org/solution-database/manufacturing-byproduct-utilization-upcycling (last visited March 11, 2022) [https://perma.cc/N2EW-625V].
163 In selecting grant recipients, the USDA should give priority to small companies that have not received significant venture capital funding. These companies likely require more federal funding to create the desired technology than those with significant outside, private funding.
164 USDA NIFA, Specialty Crop Research Initiative: FY 2017 Request for Pre-Application (RFPA) 5 (2017), https://nifa.usda.gov/sites/

default/files/rfa/FY%202017%20SCRI%20RFPA.pdf [https://perma.cc/JB4S-MVNC] [hereinafter Specialty Crop Research Initiative Application]; The Editors of Encyclopedia Britannica, *Land-Grant Universities: American education*, Britannica, https://www.britannica.com/topic/land-grant-university (last visited Dec. 15, 2021) [https://perma.cc/FQL4-AUNN] [hereinafter *Land-Grant Universities*].

165 Specialty Crop Research Initiative Application, *supra* note 164; *Land-Grant Universities*, *supra* note 164.

166 *Specialty Crops Research Initiative (SCRI)*, USDA NIFA, https://nifa.usda.gov/funding-opportunity/specialty-crop-research-initiative-scri (last visited Nov. 18, 2021) [https://perma.cc/6Z3T-CWP9].

167 *Id.*

168 *Id.*

169 7 U.S.C. § 7632(B)(iii).

170 *Current Research Information System (CRIS)*, USDA NIFA, https://cris.nifa.usda.gov/search.html (last visited Mar. 12, 2022) [https://perma.cc/GR69-LDKB].

171 Janet Ranganathan, *Animal-based Foods are More Resource-Intensive than Plant-Based Foods*, World Res. Inst. (Apr. 2016), http://www.wri.org/resources/charts-graphs/animal-based-foods-are-more-resource-intensive-plant-based-foods [https://perma.cc/LX9D-8XZ5].

172 *See* 7 U.S.C. § 6294a; *see also ENERGY STAR Products: 20 Years of Helping America Save Energy Save Money and Protect the Environment*, Energy Star, EPA, & U.S. Dep't of Energy 5–6 (2012), https://www.energystar.gov/about/pub_catalog/energy-star-products-20-years-of-helping-america-save-energy-save-money-and-protect-the-environment [https://perma.cc/L6N6-P7H8].

173 *See ENERGY STAR Products*, *supra* note 172.

174 *ENERGY STAR Impacts*, Energy Star, EPA, & U.S. Dep't of Energy, https://www.energystar.gov/about/origins_mission/impacts (last visited Nov. 18, 2021) [https://perma.cc/Q636-ZHJK].

175 *Id.*

176 *TRUE program for zero waste certification*, True, https://true.gbci.org/true-program-zero-waste-certification (last visited Nov. 18, 2021) [https://perma.cc/HEF2-6DDD].

177 Marisa Long, *GBCI to Administer Zero Waste Certification and Credential*, U.S. Green Bldg. Council (Oct. 5, 2016), https://www.usgbc.org/articles/gbci-administer-zero-waste-certification-and-credential [https://perma.cc/4BRD-L8VQ].

178 *TRUE program for zero waste certification*, *supra* note 176.

179 Sustainable Mgmt. of Food, *United States Food Loss and Waste 2030 Champions*, EPA, https://www.epa.gov/sustainable-management-food/united-states-food-loss-and-waste-2030-champions#about (last visited Jan. 17, 2022) [https://perma.cc/G92G-CRDC].

180 Sustainable Mgmt. of Food, *Learn About the Food Recovery Challenge*, EPA, https://www.epa.gov/sustainable-management-food/learn-about-food-recovery-challenge (last visited Feb 27, 2022) [https://perma.cc/2JRB-XYCF].

181 ReFED Roadmap to 2030 At-A-Glance, *supra* note 12.

182 *ReFED Insights Engine: Food Waste Monitor*, *supra* note 2.

183 *Id*.

184 *Key Action Area: Enhance Product Distribution,* ReFED, https://refed.org/action-areas/enhance-product-distribution (last visited Nov. 21, 2021) [https://perma.cc/8W27-TEMW].

185 *Key Action Area: Refine Product Management*, ReFED, https://refed.org/action-areas/refine-product-management (last visited Nov. 21, 2021) [https://perma.cc/4LKJ-KAS2].

186 Elliot Maras, *Temperature Control: The Ongoing Quest In The Food Supply Chain*, Food Logistics (Aug. 14, 2015), https://www.foodlogistics.com/transportation/cold-chain/article/12096528/temperature-control-the-ongoing-quest-in-the-food-supply-chain [https://perma.cc/D9W5-JWXC].

187 *ReFED Insights Engine Solutions Database: Intelligent Routing*, ReFED, https://insights-engine.refed.org/solution-database/intelligent-routing (last visited Nov. 21, 2021) [https://perma.cc/4GHM-KRN3].

188 Investment Tax Credit, 26 U.S.C. § 48 (2018).

189 *What Solar Tax Credits Are Available in 2021*?, EnPhase (May 21, 2021), https://www4.enphase.com/en-us/stories/what-solar-tax-credits-are-available-2021 [https://perma.cc/NF2Q-UZJC]; *Solar Investment Tax Credit (ITC)*, Solar Energies Indus. Assoc., https://www.seia.org/initiatives/solar-investment-tax-credit-itc (last visited Nov. 21, 2021) [https://perma.cc/G89J-Z5KN].

190 A Roadmap to Reduce U.S. Food Waste by 20 Percent, *supra* note 159 at 48.

191 *Food Waste FAQs*, USDA, https://www.usda.gov/foodwaste/faqs (last visited Dec. 3, 2021) [https://perma.cc/NY84-LKJE]; *Key Statistics & Graphics*, USDA Econ. Rsch. Serv., https://www.ers.usda.gov/topics/food-nutrition-assistance/food-security-in-the-us/key-statistics-graphics/ (last visited Dec. 3, 2021) [https://perma.cc/SL47-SY8A]; Gunders, Wasted, *supra* note 90.

192 Analysis of U.S. Food Waste Among Food Manufacturers, Retailers, and Restaurants, *supra* note 16.

193 *See* Jessica A. Cohen, *Ten Years of Leftovers with Many Hungry Still Left Over: A Decade of Donations Under the Bill Emerson Good Samaritan Food Donation Act*, 5 Seattle J. for Soc. Justice 455, 468–74 (2006).

194 Emerson Act, *supra* note 17 at § 1791(c).

195 Analysis of U.S. Food Waste Among Food Manufacturers, Retailers, and Restaurants, *supra* note 16 at 17, 24.

196 A Roadmap to Reduce U.S. Food Waste by 20 Percent, *supra* note 159 at 48.

197 Emerson Act, *supra* note 17 at § 1791.

198 FLPC, Legal Fact Sheet: The Bill Emerson Good Samaritan Food Donation Act (2013), https://www.chlpi.org/wp-content/uploads/2013/12/Emerson-Act-Legal-Fact-Sheet.pdf [https://perma.cc/U896-CJ8H].

199 Agriculture Improvement Act, *supra* note 26 at § 12504 (2018); 7 U.S.C. § 6924(b)(1).

200 *Frequently Asked Questions about the Bill Emerson Good Samaritan Food Donation Act*, USDA, https://www.usda.gov/sites/default/files/documents/usda-good-samaritan-faqs.pdf (last visited Mar. 31, 2022) [https://perma.cc/K93U-MHSC].

201 *See* Emerson Act, *supra* note 17 at § 1791(c).

202 *See, e.g.*, Ariz. Rev. Stat. Ann. § 36-916; N.H. Rev. Stat. Ann. § 508:15; Vt. Stat. Ann. tit. 12, § 5762 (2017).

203 Agriculture Improvement Act, *supra* note 26 at § 7507.

204 *See, e.g.*, Feeding Hungry Students in Schools Act of 2021, H.R. 4802, 117th Cong. (2021).

205 Emerson Act, *supra* note 17 at § 1791(b)(3). § 1791(b)(3).

206 Social supermarkets are nonprofit grocery stores that sell donated and recovered food at a very low price. *See* Jay Rayner, *The Rise*

of Social Supermarkets, Guardian (May 19, 2019), https://www.theguardian.com/society/2019/may/19/social-supermarkets-food-poverty-jay-rayner/ (last visited Mar. 24, 2022); *see also* Serri Graslie, *Social Supermarkets A 'Win-Win-Win' For Europe's Poor*, NPR (Dec. 12, 2013), https://www.npr.org/sections/thesalt/2013/12/11/250185245/social-supermarkets-a-win-win-win-for-europes-poor [https://perma.cc/6L7D-D4RB]. Social supermarkets have had much success as an alternative to rescue food and support those in need of food access. *Id.*; *see* also FLPC, Federal Policies to Support the Food System and Consumers During COVID-19 6 (2020), https://chlpi.org/wp-content/uploads/2013/12/FLPC-Policies-v4.pdf [https://perma.cc/EHT6-DSD3].

207 *Id.*

208 *Documentation*, USDA Econ. Rsch. Serv. (May 24, 2021), https://www.ers.usda.gov/data-products/food-access-research-atlas/documentation/ [https://perma.cc/7URQ-D43U].

209 *About Us*, Daily Table, https://dailytable.org/about (last visited Dec. 3, 2021) [https://perma.cc/B9PV-RNCR].

210 *Daily Table*, Daily Table, https://dailytable.org/ (last visited Dec. 3, 2021) [https://perma.cc/PAX2-LB9J].

211 *Id.*

212 This estimate includes all secondary resellers, not just non-profits. A Roadmap to Reduce U.S. Food Waste by 20 Percent, *supra* note 159 at 36.

213 Emerson Act, *supra* note 17 at § 1791(c).

214 *See, e.g.*, Mass. Gen. Laws 94 § 328 (2021); Or. Rev. Stat. § 30.890 (2021).

215 *See* Food Donation Improvement Act of 2021, S. 3281, 117th Cong. (2021); Food Donation Improvement Act of 2021, H.R. 6251, 117th Cong. (2021).

216 *ReFED Insights Engine Solutions Database: Donation Transportation*, ReFED, https://insights-engine.refed.org/solution-database/donation-transportation (last visited Dec. 3, 2021) [https://perma.cc/GU6K-5N8V]; *ReFED Insights Engine Solutions Database: Donation Storage Handling & Capacity*, ReFED, https://insights-engine.refed.org/solution-database/donation-storage-handling-capacity (last visited Feb. 23, 2022) [https://perma.cc/6D8H-PCSN].

217 *See Community Solutions Act of 2001: Hearing on H.R. 7 Before the Subcomm. on Human Res. & the Subcomm. on Select Revenue Measures of the H. Comm. on Ways & Means*, 107th Cong. 98, 100–01 (2001) (statement of Bill Reighard, President, Food Donation Connection) (discussing the steps that must be taken in order to prepare food for donation).

218 *See* Jane Brennan et al., *Food Banks Apply 2020 Lessons to Plan for Their Future*, McKinsey & Co. (May 11, 2021), https://www.mckinsey.com/featured-insights/food-security/food-banks-apply-2020-lessons-to-plan-for-their-future [https://perma.cc/TM9Z-AGAK].

219 ReFED found that over 2,000 new jobs would be created by investments in donation transportation while diverting 643,000 tons of food waste annually. *ReFED Insights Engine Solutions Database: Donation Transportation*, *supra* note 216.

220 *Id.*

221 *USDA to Invest $1 Billion to Purchase Healthy Food for Food Insecure Americans and Build Food Bank Capacity*, USDA (June 4, 2021), https://www.usda.gov/media/press-releases/2021/06/04/usda-invest-1-billion-purchase-healthy-food-food-insecure-americans [https://perma.cc/39NX-NVQK] [hereinafter *USDA to Invest $1 Billion to Purchase Healthy Food*].

222 *See id.*

223 For a listing of some donation matching technology, visit *Search the Directory,* Food Rescue Locator, https://foodrescuelocator.com/ (last visited March 14, 2022) [https://perma.cc/S8J5-XKD9].

224 *Specialty Crop Block Grant Program*, USDA Agric. Mktg. Serv., https://www.ams.usda.gov/services/grants/scbgp (last visited Mar. 11, 2022) [https://perma.cc/R3WU-4YF7].

225 Agriculture Improvement Act, *supra* note 26 at § 2034.

226 *Id.* at § 2034(d)(2); USDA NIFA, Request for Application: Community Food Projects Competitive Grant 22 (2021), https://nifa.usda.gov/sites/default/files/rfa/FY21-CFP-MOD-RFA-508.pdf (last visited Dec. 3, 2021) [https://perma.cc/GBQ2-SHM].

227 USDA NIFA, Request for Application: Community Food Projects Competitive Grant 23 (2021), https://nifa.usda.gov/sites/default/files/rfa/FY21-CFP-MOD-RFA-508.pdf (last visited Dec. 3, 2021) [https://perma.cc/GBQ2-SHM].

228 7 U.S.C §§ 2034(a)(2), (c).

229 Agriculture Improvement Act, *supra* note 26 at § 2034.

230 *Id.*

231 *Community Food Projects (CFP) Competitive Grants Program*, USDA NIFA (Dec. 17, 2020), https://nifa.usda.gov/funding-opportunity/community-food-projects-cfp-competitive-grants-program [https://perma.cc/BN9V-T4EF].

232 Agriculture Improvement Act, *supra* note 26 at § 1627c.

233 *Id.* at §§ 1627c(i)(1), 1627c(d)(4).

234 *Id.* at § 1627c(d)(2)(H); ReFED Roadmap to 2030 At-A-Glance, *supra* note 12.

235 The project recipient was Providence Farm Collective Corp. USDA, Farmers Market Promotion Program Fiscal Year 2021 Description of Funded Projects 33 (2021), https://www.ams.usda.gov/sites/default/files/media/FY2021FMPPDescriptionofFundedProjects.pdf [https://perma.cc/DK8W-CB6D].

236 USDA, Transportation and Marketing Local Food Promotion Program Fiscal Year 2021 Description of Funded Projects 4–5, 16 (2021), https://www.ams.usda.gov/sites/default/files/media/FY2021LFPPDescriptionofFundedProjects.pdf [https://perma.cc/92YE-9AZY].

237 *USDA Invests $92.2 Million in Grants for Local, Regional Food Producers Affected by the Pandemic*, USDA (May 5, 2021), https://www.usda.gov/media/press-releases/2021/05/05/usda-invests-922-million-grants-local-regional-food-producers [https://perma.cc/TFU6-LWGT].

238 Agriculture Improvement Act, *supra* note 26 at §§ 1627c(d)(3)(6)(E), 1627c(e)(4), 1627c(d)(3)(5)(E).

239 *See ReFED Insight Engine Solutions Database: Explore Solutions to Food Waste*, ReFED, https://insights-engine.refed.org/solution-database?dataView=total&indicator=us-dollars-profit (last visited Feb 23, 2022) [https://perma.cc/6LKE-EK8R].

240 Claudia Hitaj, *Food Loss at the Farm Level*, USDA Econ. Rsch. Serv. (July 29, 2021), https://www.usda.gov/media/blog/2019/04/16/food-loss-farm-level [https://perma.cc/WU8B-HZZP].

241 *Id.*

242 *ReFED Insights Engine: Food Waste Monitor*, *supra* note 2.

243 Agriculture Improvement Act, *supra* note 26 at § 7507(d)(3).

244 *Id.* at § 7507(d).

245 USDA, FNS-GD-2021-0106, FD-151: TEFAP Questions and Answers about Farm to Food Bank Projects (2021).

246 USDA, FNS-GD-2021-0092, The Emergency Food Assistance Program (TEFAP) - State Plan Requests and Allocations for Fiscal Year 2022 Farm to Food Bank Projects (2021).

247 USDA, FNS-GD-2021-0092, The Emergency Food Assistance Program (TEFAP) - State Plan Requests and Allocations for Fiscal Year 2022 Farm to Food Bank Projects (2021). The program has four rounds of funding planned. The first round of grants was issued in May 2020 and granted $3.752 million to 19 states. USDA, The Emergency Food Assistance Program Fiscal Year 2020 Farm to Food Bank Project Summaries (2020), https://fns-prod.azureedge.net/sites/default/files/resource-files/FY20%20Farm%20to%20Food%20Bank%20Project%20Summaries_for%20website%20.pdf (last visited Dec. 16, 2021) [https://perma.cc/E3UH-E84Z]. The second round of grants were issued in December 2020 and granted $3.764 million to 24 states. For this round of grants, seven new states submitted applications, while two states that participated in the first round did not apply. USDA, The Emergency Food Assistance Program Fiscal Year 2021 Farm to Food Bank Project Summaries, https://indd.adobe.com/view/0f7fc1aa-dedf-4f5f-b88a-e6c78ce19f05 [https://perma.cc/JZ7T-A7JP]. The third round of grants used funding from FY2021 and FY2022 and will be issued in two parts during 2022, allocating $7.544 million to 29 states and territories. This round had 22 applicants who had applied in one of the previous rounds and seven applicants that had never applied. USDA, The Emergency Food Assistance Program Fiscal Year 2022 Farm to Food Bank Project Summaries, https://indd.adobe.com/view/03475b50-ee1f-48e7-9bea-1433240e4d96 [https://perma.cc/33ZD-GDXQ]; USDA, FNS-GD-2021-0092, The Emergency Food Assistance Program (TEFAP) - State Plan Requests and Allocations for Fiscal Year 2022 Farm to Food Bank Projects (2021). The fourth round of grants is planned for FY2023, with anticipated funding of $3.772 million. USDA, FNS-GD-2021-0092, The Emergency Food Assistance Program (TEFAP) - State Plan Requests and Allocations for Fiscal Year 2022 Farm to Food Bank Projects (2021).

248 Agriculture Improvement Act, *supra* note 26 § 7507.

249 Stakeholder interviews conducted between October 2021 and December 2021. Notes on file with authors.

250 Stakeholder interviews conducted between October 2021 and December 2021. Notes on file with authors.

251 Agriculture Improvement Act, *supra* note 26 at § 7507(d)(2)(B).

252 *TEFAP Farm to Food Bank Projects Potential Allocation Worksheet*, USDA (July 30, 2021), https://fns-prod.azureedge.net/sites/default/files/resource-files/Attachment%20B%20-%20FY%202021%20TEFAP%20Farm%20to%20Food%20Bank%20Projects%20Potential%20Allocations_8.25.21.pdf [https://perma.cc/BE3R-U5LT].

253 *See id*.

254 Agriculture Improvement Act, *supra* note 26 at § 7507 (d)(2)(C)(ii).

255 *USDA Farmers to Families Food Box*, USDA Agric. Mktg. Serv., https://www.ams.usda.gov/selling-food-to-usda/farmers-to-families-food-box (last visited Dec. 3, 2021) [https://perma.cc/7DVU-TXT5].

256 *Farmers to Families Food Box - Stakeholders Letter*, USDA Agric. Mktg. Serv., https://www.ams.usda.gov/selling-food-to-usda/farmers-to-families-food-box-letter (last visited Dec. 3, 2021) [https://perma.cc/P7XC-2Q4N]; *see Pre-Solicitation Announcement TEFAP Fresh Produce*, USDA Agric. Mktg. Serv. (Apr. 9, 2021) [https://perma.cc/AA79-FLZL]; *Dairy Donation Program*, USDA Agric. Mktg. Serv., https://www.ams.usda.gov/services/ddp (last visited Dec. 3, 2021) [https://perma.cc/EGA8-K6B9]; *see also* Emily Broad Leib, Joseph Beckmann, Ariel Ardura et al, FLPC & Nat'l Sustainable Agric. Coal. (NSAC), An Evaluation of the Farmers to Families Food Box Program (2021), https://www.chlpi.org/wp-content/uploads/2013/12/F2F-Food-Box-Report-Online-Final1.pdf [https://perma.cc/UGN6-AAHX] [hereinafter FLPC, An Evaluation of the Farmers to Families Food Box Program]; *USDA to Invest $1 Billion to Purchase Healthy Food*, *supra* note 221; *USDA Invests $92.2 Million in Grants for Local, Regional Food Producers Affected by the Pandemic*, *supra* note 237.

257 FLPC, An Evaluation of the Farmers to Families Food Box Program, *supra* note 256.

258 Fresh Produce Procurement Reform Act of 2021, H.R. 5309, 117th Cong. (2021).

259 *Id.*

260 *See* discussion of LAMP and CFP, *supra* Section II.B.

261 *USDA Announces $90.2 Million in Grants Awarded to Strengthen Local and Regional Markets for U.S. Agricultural Products*, USDA (Nov. 23, 2021), https://www.usda.gov/media/press-releases/2021/11/23/usda-announces-902-million-grants-awarded-strengthen-local-and#:~:text=WASHINGTON%2C%20Nov.,local%20and%20regional%20food%20businesses [https://perma.cc/9F96-A8LC] [hereinafter *USDA Announces $90.2 Million in Grants*]; *See generally* USDA Agric. Mktg. Serv., *Grants & Opportunities*, USDA Agric. Mktg. Serv., https://www.ams.usda.gov/services/grants (last visited Jan. 18, 2022) [https://perma.cc/R9GW-9NSD].

262 *USDA Announces $90.2 Million in Grants*, *supra* note 261; *See generally Grants & Opportunities*, *supra* note 261.

263 USDA, OMB. No. 0581-0229, USDA Farmers Market 2019 Rules, Procedures, and Operating Guidelines 8 (2019).

264 7 C.F.R. § 170.12(c) (2021).

265 S.B. 1383, 2015–2016 Reg. Sess. (Cal. 2016).

266 Cal. Code Regs. tit. 14, § 18991.3 (2021).

267 *Id.* Similarly, France requires large supermarkets to contract with food recovery organizations as part of the country's national food waste regulation. Marie Mourad & Steven Finn, *France's Ban on Food Waste Three Years Later*, Food Tank (June 2019), https://foodtank.com/news/2019/06/opinion-frances-ban-on-food-waste-three-years-later/ [https://perma.cc/2VHK-LD8F].

268 *See USDA Invests $92.2 Million in Grants for Local, Regional Food Producers Affected by the Pandemic*, *supra* note 237.

269 *Id.*

270 Emily Broad Leib et al., FLPC, The Global Food Donation Policy Atlas: United States Legal Guide Food Donation Law and Policy 11 (2020), https://www.foodbanking.org/wp-content/uploads/2020/06/USA-Legal-Guide.pdf [https://perma.cc/VSJ6-8Y8G].

271 26 U.S.C. § 170(e)(1).

272 *See id.* at § 170(e)(3)(B); 26 C.F.R. § 1.170A-4A(b)(4) (2021).

273 *See* 26 U.S.C. § 170(e)(3)(B).

274 FLPC, *America Can Finally Give More: Congress Passes Permanent Extension of Enhanced Tax Deductions for Food Donations*, Ctr. for Health L. & Pol'y Innovation (CHLPI) (Dec. 22, 2015), https://www.chlpi.org/america-can-finally-give-more-congress-passes-permanent-extension-of-enhanced-tax-deductions-for-food-donations/ [https://perma.cc/28UF-TFNJ].

275 *Id*.

276 *See* H.R. 2029, 114th Cong. § 113(a) (2016) (codified at 26 U.S.C. § 170(e)(3)(C)).

277 *See Tax Credits vs. Tax Deductions*, Internal Revenue Serv. (IRS), https://www.irs.com/articles/tax-credits-vs-tax-deductions (last visited Dec. 3, 2021) [https://perma.cc/7M6W-W9UF].

278 *Id.*

279 *See, e.g.*, Cal. Rev. & Tax. Code § 17053.12; *see also* Emily Broad Leib et al, FLPC, Keeping Food Out of the Landfill: Policy Ideas for States and Localities (2016), https://chlpi.org/wp-content/uploads/2013/12/Food-Waste-Toolkit_Oct-2016_smaller.pdf [https://perma.cc/2CZV-FSF9].
280 *See* discussion on increasing funding support for food recovery infrastructure, *supra* Section II.B.
281 Cal. Rev. & Tax. Code § 17053.12 (2021).
282 *See* discussion of Emerson Act, *supra* Section II.A.
283 The federal enhanced tax deduction does not apply if the donation is made "in exchange for money, other property, or services." 26 U.S.C. § 170(e)(3)(A)(ii).
284 Food, Conservation, and Energy Act of 2008, H.R.2419, 110th Cong. (2008).
285 *ReFED Insights Engine Solutions Database: Gleaning*, ReFED, https://insights-engine.refed.org/solution-database/gleaning (last visited Feb. 23, 2022) [https://perma.cc/MCW2-MLKG].
286 The RMA defines gleaning as "the collection of wholesome food for distribution for those in need." The terms "gleaning" and "food recovery" are often used interchangeably. *Risk Management Agency Fact Sheet: Gleaning Crops*, USDA Risk Mgmt. Agency, *https://www.rma.usda.gov/en/Fact-Sheets/National-Fact-Sheets/Gleaning-Crops* (Oct. 2017), [https://perma.cc/PR6Y-TKYD].
287 *Id*.
288 The Nat'l Gleaning Project, Vt. L. Sch. Ctr. for Agric. & Food Sys. (CAFS), USDA Nat'l Agric. Lib., Reducing Food Insecurity and Food Waste: Improving the National Framework to Support Gleaning Operations 8 (2017), https://nationalgleaningproject.org/wp-content/uploads/2018/12/NGP-reducing-food-insecurity-and-waste.pdf [https://perma.cc/S8TJ-ZYW2] [hereinafter CAFS, Reducing Food Insecurity and Food Waste].
289 *Risk Management Agency Fact Sheet: Gleaning Crops*, *supra* note 286.
290 Paul Goeringer, *Gleaning Unharvested Crops and Crop Insurance or NAP Coverage*, College of Agric. & Nat'l Res. (June 29, 2020), https://www.agrisk.umd.edu/post/gleaning-unharvested-crops-and-crop-insurance-or-nap-coverage [https://perma.cc/V4Z7-4RN8].
291 USDA Risk Mgmt. Agency & Fed. Crop Ins. Corp. (FCIC), Loss Adjustment Manual Standards Handbook: 2021 and Succeeding Crop Years 153 (2020), https://www.rma.usda.gov/-/media/RMA/Handbooks/Loss-Adjustment-Standards---25000/Loss-Adjustment-Manual/2021-25010-1H-Loss-Adjustment-Standards-Handbook.ashx [https://perma.cc/E8MA-ZJYW]; Goeringer, *supra* note 290.
292 *Risk Management Agency Fact Sheet: Gleaning Crops*, *supra* note 286.
293 *Id.*
294 *Id.*
295 USDA Commodity Credit Cooperation, Noninsured Crop Disaster Assistance: 2020 and Subsequent Years Basic Provisions 15 (2020), https://www.fsa.usda.gov/Assets/USDA-FSA-Public/usdafiles/State-Offices/Indiana/pdfs/ccc-471_nap_basic_provisions_03-04-2020.pdf [https://perma.cc/3FVA-XG6R].
296 Telephone interview with USDA Risk Management Agency, Nov. 8, 2021. Notes on file with authors.
297 *Id*.
298 CAFS, Reducing Food Insecurity and Food Waste, *supra* note 288 at 8.
299 42 U.S.C. § 1791.
300 *Id.*
301 In about half of the states, in addition to being protected by the Good Samaritan Act, farmers are also protected by state legislation that limits a farmer's liability for damages in a civil action brought against the farmer for an injury to a person or property by a charitable organization or an agent of a charitable organization the farmer permits onto the farmer's property. *See Legal & Policy Resources*, CAFS Nat'l Gleaning Project, https://nationalgleaningproject.org/legal-policy-resources/ (last visited Oct. 14, 2021) [https://perma.cc/7CY2-3594].
302 CAFS, Reducing Food Insecurity and Food Waste, *supra* note 288 at 15.
303 *Risk Management Agency Fact Sheet: Gleaning Crops*, *supra* note 286.
304 *Id.*
305 42 U.S.C. § 1791.
306 Agriculture Improvement Act, *supra* note 26 at § 1601.
307 Advancing Sustainable Materials Management, *supra* note 19.
308 *See Time is Running Out*, *supra* note 23.
309 *Landfill Methane Outreach Program (LMOP): Basic Information about Landfill Gas*, EPA, https://www.epa.gov/lmop/basic-information-about-landfill-gas (last visited March 5, 2022) [https://perma.cc/229L-5E8B].
310 *See* Cheikh Mbow et al., *Special Report on Climate Change and Land Chapter 5: Food Security*, IPCC (2018), https://www.ipcc.ch/srccl/chapter/chapter-5/ [https://perma.cc/T4BR-QAH2].
311 *Global Methane Initiative: Importance of Methane*, EPA, https://www.epa.gov/gmi/importance-methane#:~:text=Methane%20is%20more%20than%2025,due%20to%20human%2Drelated%20activities (last visited Mar. 31, 2022) [https://perma.cc/3KSJ-VUX4]; *Reduce Methane Pollution and Leaks*, NRDC, https://www.nrdc.org/issues/reduce-methane-pollution-and-leaks (last visited Mar. 31, 2022) [https://perma.cc/LRZ5-LUGX]; *see also* Chad Frischmann, *Opinion: The climate impact of the food in the back of your fridge*, Wash. Post WorldPost (July 31, 2018), https://www.washingtonpost.com/news/theworldpost/wp/2018/07/31/food-waste/ [https://perma.cc/D8K8-P4TP].
312 *Report on the Environment: Greenhouse Gases*, EPA, https://www.epa.gov/report-environment/greenhouse-gases (last visited Oct. 10, 2021) [https://perma.cc/7TFW-TTJL].
313 *Id*.
314 US Food Loss and Waste Action Plan, *supra* note 25; NRDC, Tackling Food Waste in Cities, *supra* note 91.
315 US Food Loss and Waste Action Plan, *supra* note 25; NRDC, Tackling Food Waste in Cities, *supra* note 91.
316 US Food Loss and Waste Action Plan, *supra* note 25; A Roadmap to Reduce U.S. Food Waste by 20 Percent, *supra* note 159 at 56.
317 *After One Year, Mass. Commercial Food Waste Disposal Ban Gets Results*, CET (Oct. 6, 2015), https://www.centerforecotechnology.org/after-one-year-mass-commercial-food-waste-disposal-ban-gets-results/ [https://perma.cc/3C4M-TRKF] [hereinafter CET, *After Year One*]; *see also A Success Story: The Massachusetts Commercial Organics Waste Ban*, Env't Council of the States (Mar. 24, 2016), https://vimeo.com/160289284 [https://perma.cc/Y2MM-D78U] [hereinafter *Massachusetts Commercial Organics Waste Ban*]; *See* 310 Mass. Code Regs. 19.017, *supra* note 46.

[318] CET, *After Year One*, *supra* note 317; *see also Massachusetts Commercial Organics Waste Ban*, *supra* note 317.
[319] *Results are in: Trash is Down, Recycling is UP!*, Vt. Dep't of Env't Conservation 2 (July 27, 2016), https://nerc.org/news-and-updates/nerc-bulletin/september-2016#vtrecyclingincreasing [https://perma.cc/U6PG-HH5V]. The Vermont organic waste ban is located at vt. stat. ann. tit. 10, § 6605k, *supra* note 46.
[320] Conn. Gen. Stat. Ann. § 22a-226e, *supra* note 46.
[321] 310 Mass. Code Regs. 19.017, *supra* note 46.
[322] N.Y.C. Admin Code § 16-306.1, *supra* note 46.
[323] R.I. Gen. Laws § 23-18.9-17, *supra* note 46.
[324] N.J. Stat. Ann. § 13:1E-99.123, *supra* note 46.
[325] Md. Code Ann., Envir. § 9-1724.1 (LexisNexis 2021).
[326] vt. stat. ann. tit. 10, § 6605k, *supra* note 46.
[327] Cal. Pub. Res. Code § 42649.81, *supra* note 46.
[328] Cal. Pub. Res. Code § 42652.5(a)(2) (2016).
[329] Bans and Beyond, *supra* note 44.
[330] D.C. Code § 8-1031.01–8-1031.03, *supra* note 44.
[331] Zero Food Waste Act of 2021, H.R. 4444, 117th Cong. (2021); Zero Food Waste Act of 2021, S. 2389, 117th Cong. (2021) [hereinafter *Zero Food Waste Act of 2021*]; *COMPOST, Zero Food Waste Legislation Introduced in Congress*, BioCycle (July 20, 2021), https://www.biocycle.net/compost-zero-food-waste-legislation-introduced-in-congress/ [https://perma.cc/L3EA-VGXG].
[332] *Zero Food Waste Act of 2021*, supra note 331 at § 2(a)(2) (2021).
[333] *Id.* at § 2(3)(a)(i-ii).
[334] *Id.* at § 2(3)(B-C).
[335] US Food Loss and Waste Action Plan, *supra* note 25.
[336] *ReFED Insights Engine Solutions Database: Centralized Anaerobic Digestion*, ReFED, https://insights-engine.refed.org/solution-database/centralized-anaerobic-digestion (last visited Feb. 23, 2022) [https://perma.cc/6YTA-W66U]; *ReFED Insights Engine Solutions Database: Centralized Composting*, ReFED, https://insights-engine.refed.org/solution-database/centralized-composting (last visited Feb. 23, 2022) [https://perma.cc/3G42-BPMF].
[337] *Composting At Home*, EPA, https://www.epa.gov/recycle/composting-home (last visited Feb 10., 2022) [https://perma.cc/M7KR-KC44].
[338] *See* Hannah Marsh, Food Waste Compost Application to Grasslands The Climate Change Mitigation Potential of Food Waste Compost Application to Grassland Soils (2019), https://nature.berkeley.edu/classes/es196/projects/2019final/MarshH_2019.pdf [https://perma.cc/MPJ8-QF83].
[339] *See* Sintana E. Vergara & Whendee L. Silver, *Greenhouse gas emissions from windrow composting of organic wastes: patterns and emissions factors*, 14 Env't research Letter (2019).
[340] *EPA Announces Selection of 11 Organizations to Receive $2 Million to Help Tackle the Climate Crisis Through Food Diversion*, EPA (Feb. 24, 2022), https://www.epa.gov/newsreleases/epa-announces-selection-11-organizations-receive-2-million-help-tackle-climate-crisis [https://perma.cc/F5RA-F52J].
[341] A Roadmap to Reduce U.S. Food Waste by 20 Percent, *supra* note 159 at 66.
[342] *Id*.
[343] *See generally*, *Do Good Foods: Good for Place & Planet*, Do Good Foods, https://dogoodfoods.com/ (last visited Nov. 28, 2021) [https://perma.cc/36VQ-A9X6].
[344] A Roadmap to Reduce U.S. Food Waste by 20 Percent, *supra* note 159 at 62.
[345] A large composting facility can process up to 40,000 tons per year. *Id.* at 61.
[346] *Food Waste Composting Infrastructure in the U.S.*, BioCycle (Jan. 4, 2019), https://www.biocycle.net/food-waste-composting-infrastructure-u-s/ [https://perma.cc/7Y98-CQV9].
[347] Stakeholder interviews conducted between October 2021 and December 2021. Notes on file with authors.
[348] For example, the City of Madison noted that they had to discontinue household compost pick-up because they did not have a compost processing facility, but they will continue household pick-up once they can afford to build such a facility. Stakeholder interviews conducted between October 2021 and December 2021. Notes on file with authors.
[349] Agriculture Improvement Act, *supra* note 26 at § 6923(d).
[350] *Id.* at § 6923(e).
[351] *Community Compost and Food Waste Reduction Project FAQ*, USDA farmers.gov (Jun. 19, 2020), https://www.farmers.gov/your-business/urban/opportunities/ccfwr-faq [https://perma.cc/9AFS-UGV7].
[352] *Id.*
[353] *USDA Announces First-Ever Recipients*, *supra* note 27.
[354] *Community Compost and Food Waste Reduction Project FAQ*, *supra* note 351.
[355] Agriculture Improvement Act, *supra* note 26 at § 6923(d)(2).
[356] *Urban Agriculture Cooperative Agreements*, USDA farmers.gov, https://www.farmers.gov/your-business/urban/opportunities/coop-agreements (last visited Oct. 16, 2021) [https://perma.cc/3UKZ-PLQS] (listing all funded 2021 CCFWR projects).
[357] *See generally*, Stakeholder interviews conducted between October 2021 and December 2021. Notes on file with authors.
[358] These problems were identified through interviews conducted by FLPC with 2020 and 2021 CCFWR grant recipients.
[359] Stakeholder interviews conducted between October 2021 and December 2021. Notes on file with authors.
[360] *See* Stakeholder interviews conducted between October 2021 and December 2021. Notes on file with authors.
[361] Agriculture Improvement Act, *supra* note 26 at § 6923(d)(2)(D).
[362] *See* Stakeholder interviews conducted between October 2021 and December 2021. Notes on file with authors.
[363] Agriculture Improvement Act, *supra* note 26 at § 1932(b).
[364] *Water & Waste Disposal Loan & Grant Program*, USDA Rural. Dev., https://www.rd.usda.gov/programs-services/water-waste-disposal-loan-grant-program (last visited Apr. 21, 2021), [https://perma.cc/JD95-XKRL].
[365] Agriculture Improvement Act, *supra* note 26 at § 1932(b).
[366] *Id.*
[367] USDA Rural Utilities Serv. (RUS), 2021 Congressional Justifications-Rural Utilities Service, USDA 33–16 (2021) https://www.usda.gov/

sites/default/files/documents/rural-development-rural-utilities-service-fy2021-congressional-justifications.pdf [https://perma.cc/Q2EV-DU8K].

368 *Solid Waste Management Grants*, USDA Rural Dev., https://www.rd.usda.gov/programs-services/water-environmental-programs/solid-waste-management-grants (last visited Nov. 24, 2021) [https://perma.cc/BB2Z-PM6C].

369 *Solid Waste Management FY 2021 Grantees*, USDA Rural Dev., (2021) https://www.rd.usda.gov/sites/default/files/swm_fy2021_project_narratives.pdf [https://perma.cc/3P5K-YQ5W].

370 USDA Rural Dev. & Rural Util. Serv., Application Guide for Technical Assistance and Training and Solid Waste Management Grant Programs Fiscal Year 2017 (2017), https://www.rd.usda.gov/files/RD-WEP-AppGuideTAT_SWM_FY2017.pdf [https://perma.cc/X2DJ-JV37].

371 USDA Rural Dev., Funding for Food Waste Reduction Projects from USDA Rural Development 3 (2016), https://www.usda.gov/sites/default/files/documents/RD_Food_Loss_and_Waste_Guide.pdf [https://perma.cc/U4L5-642E].

372 *Appropriations Committee Releases Fiscal Year 2021 Agriculture-Rural Development-FDA Funding Bill*, House Comm. On Appropriations (Jul. 5, 2020), https://appropriations.house.gov/news/press-releases/appropriations-committee-releases-fiscal-year-2021-agriculture-rural-development [https://perma.cc/H9T2-HRY3].

373 *Water & Waste Disposal Loan & Grant Program*, *supra* note 364.

374 ReFED Roadmap to 2030 At-A-Glance, *supra* note 12 at 5, 10.

375 Cultivating Organic Matter through the Promotion Of Sustainable Techniques Act "COMPOST Act" of 2021, S. 2388, 117th Cong. (2021); Cultivating Organic Matter through the Promotion Of Sustainable Techniques Act "COMPOST Act" of 2021, H.R. 4443, 117th Cong. (2021) [hereinafter *COMPOST Act of 2021*].

376 *Id.* at § 310J.

377 *Id.*

378 *Zero Food Waste Act of 2021*, *supra* note 331 at § 2(a)(3)(C).

379 *Id.* at § 2(b)(4).

380 Chloe Waterman et al., Food Procurement and Infrastructure, Data for Progress 2 (2021), https://www.filesforprogress.org/memos/food-procurement-and-infrastructure.pdf [https://perma.cc/3WRU-GCGJ].

381 42 U.S.C. § 1792.

382 *See Federal Sustainability Progress, Plans, and Performance*, Council on Env't Quality, https://www.sustainability.gov/performance.html (last visited Mar. 5, 2022) [https://perma.cc/8JPY-7BZV].

383 Emily Marriott & Ed Zaborski, *Making and Using Compost for Organic Farming*, eOrganic (Jan. 15, 2020), https://eorganic.org/node/2880 [https://perma.cc/25E3-TTGV].

384 *Sustainable Management of Food: Reducing the Impact of Wasted Food by Feeding the Soil and Composting*, EPA (Dec. 15, 2021), https://www.epa.gov/sustainable-management-food/reducing-impact-wasted-food-feeding-soil-and-composting [https://perma.cc/67EJ-YJB4].

385 For example, many CCFWR grantees report that they plan to scale their compost collection to include household compost pick-ups once they build infrastructure to process all the food waste. Stakeholder interviews conducted between October 2021 and December 2021. Notes on file with authors.

386 Exec. Order No. 14,057, 86 Fed. Reg. 70935, 70937 (Dec. 13, 2021).

387 *Partnerships for Climate-Smart Commodities*, USDA, https://www.usda.gov/climate-solutions/climate-smart-commodities (last visited Mar. 5, 2022) [https://perma.cc/RQM3-QNA4].

388 *Id.*

389 *Pandemic Cover Crop Program*, USDA Farmers.gov, https://www.farmers.gov/cover-crops (last visited Dec. 16, 2021) [https://perma.cc/5VHQ-G8U8].

390 *See id.*

391 *Cover Crops – Keeping Soil in Place While Providing Other Benefits*, USDA Nat'l Res. Conserv. Serv. (NRCS) N.Y., https://www.nrcs.usda.gov/wps/portal/nrcs/detail/ny/technical/?cid=nrcs144p2_027252#:~:text=A%20cover%20crop%20slows%20the,holding%20capacity%20for%20plant%20growth (last visited Mar. 13, 2022) [https://perma.cc/WT4T-N2FR].

392 *Id.*

393 *Id.; Reducing the Impact of Wasted Food by Feeding the Soil and Composting*, *supra* note 384.

394 *Compost and Mulch Use in Agriculture: Organic Materials Management*, CalRecycle (Feb. 3, 2021), https://www.calrecycle.ca.gov/organics/farming#:~:text=Modern%20agriculture%20uses%20compost%20and,and%20health%2C%20and%20conserves%20water [https://perma.cc/93WB-W3R9].

395 *See Can Increased SOM Reduce Crop Insurance Payouts?*, BioCycle (Mar. 30, 2021), https://www.biocycle.net/can-increased-som-reduce-crop-insurance-payouts/ [https://perma.cc/473Y-KNGN].

396 *Compost and Mulch Use in Agriculture: Organic Materials Management*, *supra* note 394.

397 *See Science*, Marin Carbon Project, https://www.marincarbonproject.org/marin-carbon-project-science (last visited Mar. 4, 2022) [https://perma.cc/FSS7-N4AT]; *see* Rebecca Ryals et. al., *Long-term climate change mitigation potential with organic matter management on grasslands*, 25 Ecological Apps. 531 (Mar. 2015); *see* Rebecca Ryals & Whendee L. Silver, *Effects of organic matter amendments on net primary productivity and greenhouse gas emissions in annual grasslands*, 23 Ecological Apps. 46 (Jan. 2013).

398 *See* Joe L. Outlaw et al., Texas A&M U. Agric. & Food pol'y Ctr., Economic Impact of Higher Fertilizer Prices on AFPC's Representative Crop Farms (2022), https://afpc.tamu.edu/research/publications/files/711/BP-22-01-Fertilizer.pdf [https://perma.cc/V9WM-3VSM].

399 58 Fed. Reg. 203 (Oct. 20, 1993).

400 Exec. Order No. 13,423, 48 C.F.R. § 970.5223-6 (Oct. 1, 2010).

401 Federal Acquisition Regulation § 23.103.

402 U.S. Dep't of Energy Sustainable Acquisition Workgroup, *Priority Products*, Fed. Facilities Env't Stewardship & Compliance Assistance Ctr., https://www.fedcenter.gov/members/workgroups/sustainableacquisition/priorityproducts/ (last visited Jan. 18, 2022) [https://perma.cc/EM3W-LZ38]. Under the EPA's Comprehensive Procurement Guideline (CPG) Program—this is part of its Sustainable Materials Management initiative that promotes a system approach to reducing materials use, associated greenhouse gas emissions that contribute to climate change, and the other environmental impacts over the materials' entire lifecycle—the EPA designates products that are or can be made with recovered materials, and recommends practices for buying these products. *See Sustainable Materials Management: Comprehensive Procurement Guideline (CPG) Program*, EPA https://www.epa.gov/smm/

comprehensive-procurement-guideline-cpg-program (last visited Mar. 15, 2022) [https://perma.cc/5MQA-7PF9]. One such product under this program includes Compost Made From Recovered Organic Materials, which include but are not limited to yard waste, food waste, manure, and biosolids. *Id.*; *see also Sustainable Materials Management: Comprehensive Procurement Guidelines for Landscaping Products - Compost Made From Recovered Organic Materials*, EPA, https://www.epa.gov/smm/comprehensive-procurement-guidelines-landscaping-products#compost [https://perma.cc/D4P3-AMG5]. Under this program, procuring agencies of Compost Made From Recovered Organic Materials are required to purchase it with the highest recovered material content level practicable. *Sustainable Materials Management: Comprehensive Procurement Guidelines for Landscaping Products - Compost Made From Recovered Organic Materials, EPA*, https://www.epa.gov/smm/comprehensive-procurement-guidelines-landscaping-products#compost [https://perma.cc/D4P3-AMG5].

403 *See* 10 U.S.C. § 2922g(a).

404 42 U.S.C. § 13212; *see also Vehicle Acquisition and Fuel Use Requirements for Federal Fleets*, U.S. Dep't of Energy (Oct. 17, 2021), https://afdc.energy.gov/laws/357 [https://perma.cc/C4TP-GQ4X].

405 M. L. Westendorf & R. O. Myer, *Feeding Food Wastes to Swine*, U. of Florida Inst. of Food & Agric. Scis. (May 2004), https://edis.ifas.ufl.edu/publication/an143 [https://perma.cc/QV8T-T8DT].

406 *See* 9 C.F.R. § 166.1–166.15 (2020) (Swine Health Protection Act regulations).

407 *See* Emily Broad Leib et al., FLPC, Food Recovery Project, & U. Ark. Sch. of L., Leftovers for Livestock: A Legal Guide for Using Food Scraps as Animal Feed 8 (Aug. 2016), https://www.chlpi.org/wp-content/uploads/2013/12/Leftovers-for-Livestock_A-Legal-Guide_August-2016.pdf [https://perma.cc/G6HP-4NU4].

408 *See id.* at 3 (finding requirements under Swine Health Protection Act ensure scraps are disease-free when fed to animals). Numerous scientific studies demonstrate that the required heat-treatment of animal food waste renders microbials innocuous. *See, e.g.*, A.J. Garcia et al., *Biodegradable municipal solid waste: Characterization and potential use as animal feedstuffs*, 25 Waste Mgmt. 780, 782, 785–786 (2005); Steven Edwards, *Survival and inactivation of classical swine fever virus*, 73 Veterinary Microbiology 175, 177 (2000).

409 *See* Ramy Salemdeeb et al., *Environmental and health impacts of using food waste as animal feed: a comparative analysis of food waste management options*, 140 J. of Cleaner Prod. 871, 875 (2017).

410 *Do Good Foods*, *supra* note 343.

411 *Feedback Earth: Transforming discarded food into high-quality animal feed.*, FeedBack Earth, https://www.feedback.earth/ (last visited Mar. 11, 2022) [https://perma.cc/U6GB-FRGZ]; *see* Lisa Redmond, *Feedback Earth seeks to expand tonnage of food waste turned into animal feed*, Grafton News (May 23, 2021), https://www.thegraftonnews.com/story/news/local/2021/05/23/feedback-earth-animal-feed-human-food-waste-creeper-hill-road/5232449001/ [https://perma.cc/Z6W7-T7E9].

412 7 U.S.C. §§ 3801–3813.

413 9 C.F.R. § 166.1–166.15 (2020).

414 7 U.S.C. §§ 3803, 3807, 3809.

415 7 U.S.C. §§ 3803, 3808.

416 *See U.S. Food Waste Policy Finder: About the Policy Finder*, ReFED (Mar. 3, 2022), https://policyfinder.refed.org/about#:~:text=ReFED%20is%20a%20national%20nonprofit,driven%20solutions%20to%20the%20problem [https://perma.cc/PZT2-HCHE] (filtering state policy and recycling policy).

417 California, Georgia, Illinois, Iowa, Kansas, Massachusetts, Michigan, Minnesota, Nebraska, Nevada, New Jersey, New York, Pennsylvania, Puerto Rico, and South Dakota regulate the feeding of food scraps to other animals. *See* Leftovers for Livestock, *supra* note 407 at 10.

418 21 U.S.C. § 2201 et seq.

419 Leftovers for Livestock, *supra* note 407 at 5–6; 80 Fed. Reg. § 56169.

420 Leftovers for Livestock, *supra* note 407 at 7–8.

421 21 C.F.R. § 589.2000 (2016).

422 21 C.F.R. § 589.2000 (2016).

423 21 C.F.R. § 589.2000 (2016).

424 21 C.F.R. § 589.2000 (2016).

425 Agriculture Improvement Act, *supra* note 26 at § 6924.

426 *Id.* at § 6924(a).

427 *Id.* at § 6924(b).

428 *Id.* at § 6924(d).

429 *Id.*

430 *Id.* at § 6924(c).

431 *Id.* at § 6924(d).

432 *Id.* at § 6924(e).

433 USDA, FY 2021 Budget Summary 93 (2021), https://www.usda.gov/sites/default/files/documents/usda-fy2021-budget-summary.pdf [https://perma.cc/DYD8-NAXN] (Appendix Table APP-1).

434 Consolidated Appropriations Act, *supra* note 29.

435 National Food Waste Reduction Act of 2021, H.R. 3652, 117th Cong. (2021).

436 *Id.* at § 2(a).

437 *Id.* at § 2(b)(1).

438 *What is Food Waste?*, ReFED, https://refed.com/food-waste/the-challenge/#what_is_food_waste (last visited Apr. 27, 2021) [https://perma.cc/WS29-QER4].

439 Linda S. Kantor et al., *Estimating and Addressing America's Food Losses*, 20 Food Rev. 2, 3 (1997); *see* Gunders, Wasted, *supra* note 90.

440 *See Loss-Adjusted Food Availability Documentation*, USDA Econ. Rsch. Serv., https://www.ers.usda.gov/data-products/food-availability-per-capita-data-system/loss-adjusted-food-availability-documentation/ (last visited Apr. 27, 2021) [https://perma.cc/86R4-8JFA]; *see also* Jean C. Buzby et al., USDA Econ. Rsch. Serv., The Estimated Amount, Value, and Calories of Postharvest Food Losses at the Retail and Consumer Levels in the United States, 10 (2014), https://www.ers.usda.gov/webdocs/publications/43833/43680_eib121.pdf [https://perma.cc/YF7E-CYRS].

441 *Formal Agreement Among EPA, FDA, and USDA*, *supra* note 30.
442 *Winning on Reducing Food Waste*, *supra* note 30.
443 *Id*.
444 *Id*.
445 *Federal Interagency Food Loss and Waste Collaboration*, *supra* note 41.
446 *Id.*
447 *Id.*
448 *See, e.g.*, EPA ET AL., *Memorandum of Understanding Among The United States Environmental Protection Agency and The United States Food and Drug Administration and the United States Department of Agriculture and The Founding Partners of the Food Waste Reduction Alliance Relative to a Federal Government and Nongovernmental Organization Formal Collaboration on Industry Education and Engagement with Respect to the Importance of Food Waste Reduction* (Oct. 25, 2019), https://www.epa.gov/sites/production/files/2019-10/documents/signed_food_waste_mou.pdf [https://perma.cc/VA4S-PZGP].
449 US FOOD LOSS AND WASTE ACTION PLAN, *supra* note 25.
450 *ReFED Insights Engine Solutions Database: Donation Coordination & Matching*, REFED, https://insights-engine.refed.org/solution-database/donation-coordination-matching (last visited Feb. 23, 2022) [https://perma.cc/6BDP-RMGH].
451 *See generally*, JOSEPH BALAGTAS & JOSEPH COOPER, USDA OFF. OF THE CHIEF ECONOMIST, THE IMPACT OF CORONAVIRUS COVID-19 ON U.S. MEAT AND LIVESTOCK MARKETS (2021), https://www.usda.gov/sites/default/files/documents/covid-impact-livestock-markets.pdf [https://perma.cc/28UU-YGXD].
452 *See* Alfred Lubrano, *Inflation, supply-chain disruptions are hurting Philly food banks and low-income people*, PHILA. INQUIRER (Nov. 24, 2021), https://www.inquirer.com/news/pennsylvania/pandemic-food-banks-pantries-philabundance-share-supply-disruptions-20211124.html [https://perma.cc/V8MM-94HA].
453 *ReFED Insights Engine Solutions Database: Intelligent Routing*, *supra* note 187.

FOOD LAW
and POLICY CLINIC
HARVARD LAW SCHOOL

ReFED