

This document has been prepared as part of the implementation project of Legal Pathways to Deep Decarbonization (Michael B. Gerrard and John C. Dernbach, eds. Environmental Law Institute [2019]) (LPDD). For background information on the project, see <https://lpdd.org>.

Supporting Food Waste Diversion Through State Legislative Action

1. Introduction

Have you ever tossed an apple core into the trash without thinking twice about where that apple core's journey would end up? We are certain that many, if not most, of us have done just that with food scraps at least a few times in recent years. Without any diversion measures, the apple core and other food scraps will likely travel with the trash to a landfill, where it will sit for some period of time before decomposing and emitting methane into the atmosphere.

Over 36 million tons of food waste are sent to landfills each year,¹ which represents more than 24% of the municipal solid waste sent to landfills.² The U.S. Environmental Protection Agency reported that more food scraps reach landfills than any other material in our municipal solid waste stream.³ Organic wastes, such as discarded food scraps, decompose and release methane,⁴ a potent greenhouse gas. Methane is a type of greenhouse gas, and is more than 25 times as potent as carbon dioxide at trapping heat in the atmosphere.⁵ Methane accounts for approximately 20% of global greenhouse emissions and is the second most abundant greenhouse gas in the atmosphere resulting from influences of human beings after carbon dioxide.⁶

According to the U.N's Global Methane Assessment, methane emissions can be slashed by up to 45% globally this decade, which would avoid nearly 0.3 degrees Celsius of warming by 2045.⁷ However, methane emissions continue to grow.⁸ In the United States, landfills are the third-largest source of human-created methane emissions,⁹ accounting for approximately 15% of methane created by humans in the United States in

¹ EMILY M. BROAD ET AL., OPPORTUNITIES TO REDUCE FOOD WASTE IN THE 2023 FARM BILL iii (2022), <https://lpdd.org/wp-content/uploads/2022/05/2023-Farm-Bill-Food-Waste-2.pdf>.

² ENVIRONMENTAL PROTECTION AGENCY, 2018 WASTED FOOD REPORT 6 (2020).

³ *id.*

⁴ See JEAN BUZBY, U.S. DEPARTMENT OF AGRICULTURE, FOOD WASTE AND ITS LINKS TO GREENHOUSE GASES AND CLIMATE CHANGE (2022) <https://www.usda.gov/media/blog/2022/01/24/food-waste-and-its-links-greenhouse-gases-and-climate-change>.

⁵ U.S. ENVIRONMENTAL PROTECTION AGENCY, IMPORTANCE OF METHANE (2022) <https://www.epa.gov/gmi/importance-methane>.

⁶ *id.*

⁷ See Emma Newburger, *The World Needs to Dramatically Cut Methane Emissions to Avoid Worst of Climate Change*, UN Says, CNBC (May 6, 2021), <https://www.cnbc.com/2021/05/06/world-must-cut-methane-emissions-to-avoid-worst-of-climate-change-un-says.html>.

⁸ See Emma Newburger, *Methane Emissions Surged By a Record Amount in 2021*, NOAA Says, CNBC (April 7, 2022), <https://www.cnbc.com/2022/04/07/methane-emissions-surged-by-a-record-amount-in-2021-noaa-says-.html>.

⁹ ENVIRONMENTAL PROTECTION AGENCY, OVERVIEW OF GREENHOUSE GASES (2022), <https://www.epa.gov/ghgemissions/overview-greenhouse-gases#methane>.

2019.¹⁰ Thus, diverting food waste from landfills can contribute meaningfully to our collective efforts to reduce methane emissions and slow global warming trends. Furthermore, a number of states are running out of landfill space¹¹. It is with these goals that we now examine potential diversionary measures.

As of spring of 2022, nine states¹² and the District of Columbia have laws that provide for some degree of food waste diversion or outright bans.¹³ These laws span the gamut. For example, Vermont requires all individuals and businesses to divert food wastes, in what is one of the most sweeping programs in the U.S.¹⁴ New York, on the other hand, only requires certain businesses and governmental entities generating a minimum amount of food waste and located within a certain distance of a qualifying processing facility to divert food wastes.¹⁵ Municipalities have also started to enact food waste diversion programs or bans, including Austin, Boulder, Hennepin County in Minnesota, Portland Oregon, New York City, San Francisco, and Seattle.¹⁶

2. Preliminary Considerations

To determine how best to divert food waste from solid waste streams, states must determine the various sources of food waste, what processing facilities (including composters) are available to receive diverted food waste, and evaluate how any proposed legislative action can incentivize the generators' behaviors. Going back to the example of the tossed apple core, what prompts the generator to toss the apple core with other solid waste rather than separate the apple core from other solid waste? The answer may be that the generator does not have any other disposal options. Or, the answer could be that the generator does not have sufficient information about the environmental impacts of their actions or how and where to dispose of food waste other than in a landfill.

To address this, states must evaluate (a) who is generating food waste, (b) what infrastructure is currently in place (or not in place) to divert food waste from landfills, (c) the economic impact of diversion to states, municipalities, and food waste generators, processors, and haulers, and (d) how state and local governments can incentivize diverting food waste from landfills. States and local governments must also consider how best to provide information and education about how to divert food waste from landfills and the benefits of doing so to its residents. Once a state conducts this assessment, it can better determine (i) who should be required to divert food waste from landfills, (ii) whether and to what extent processing and hauling infrastructure must be built or expanded, (iii) how

¹⁰ BROAD, *supra* note 1, at 24.

¹¹ See Ryan Deer, *Landfills: We're Running Out of Space*, Roadrunner (Mar. 4, 2021) <https://www.roadrunnerwm.com/blog/landfills-were-running-out-of-space>.

¹² This count already includes CA based on the policy matrix chart showing that the following nine states have laws in effect: CA, CT, MD, MA, NJ, NY, RI, WA, and VT. See *infra* note 13.

¹³ See REFED POLICY MATRIX, State Organic Waste Bans & Recycling Laws, <https://policyfinder.refed.org/uploads/policy-finder-policy-matrix-722.pdf>.

¹⁴ See *id.*

¹⁵ See *id.*

¹⁶ KATIE SANDSON ET AL., BANS AND BEYOND: DESIGNING AND IMPLEMENTING ORGANIC WASTE BANS AND MANDATORY ORGANICS RECYCLING LAWS 9–13 (2019), <https://lpdd.org/wp-content/uploads/2020/05/Bans-and-Beyond.pdf>.

to enforce compliance with any food waste diversion requirements, (iv) how to fund and otherwise pay for these initiatives, including from revenue that may be generated from any commercial uptake of food wastes that have been processed, and (v) how to provide education and information (including technical assistance) to the state's food waste generators and residents.

3. Implementing Diversionary Measures Through State Legislative Action: Key Provisions of the Model State Legislation

The model state legislation lays out a framework by which states can divert food waste from landfills to eligible processing facilities (including industrial-scale composters) or onsite composters.

As discussed in Section 2 above, state and local governments should first evaluate their food waste streams, existing capacity to haul and process diverted food waste from landfills, and the potential to expand capacity. As such, the model state law would require the applicable state agency (or local municipalities) to conduct a physical waste audit and feasibility study to assess such matters. The scope of such physical waste audit and feasibility study will likely vary by state depending on the scope and nature of activities conducted by any particular state to date.

The model state law then outlines the parameters of a food waste diversion program, including options for who should be required to comply with the model state law (e.g., all residents of the state, only large food waste generators, etc.) and by when (e.g., all at the same time, phased-in compliance dates, etc.). The model state law does require the state (or municipalities) to provide designated receptacles to any person required to comply with the food waste diversion requirements.

In order to ensure that the diversion of food wastes from landfills does not result in more greenhouse gas emissions than would otherwise be generated if the food waste were disposed in a landfill, states may also need to construct or expand additional infrastructure or otherwise encourage the use of onsite composters. The model state law outlines standards for the siting and construction of industrial-scale facilities, including addressing environmental justice considerations. The model state law also encourages the development of standards for onsite composting to the extent industrial-scale facilities are not available.

Lastly, state legislators can also consider whether diversionary measures that utilize existing wastewater treatment infrastructure can be used to implement anaerobic co-digestion of solid waste and food waste. This approach would have the benefit of achieving an integrated treatment approach to waste disposal. The technology to dispose of food waste to wastewater treatment infrastructure commonly includes an electric device that is placed under a kitchen sink. This electric device is then used to grind food waste before it enters the sewer system, which is then transported with wastewater sludge directly to a wastewater treatment plant.¹⁷ Such a system could be an efficient means to capture biogas

¹⁷ Franco Cecchi & Cristina Cavinato, *Smart Approaches to Food Waste Final Disposal*, 16 INT'L J. ENVTL. RES. & PUB. HEALTH, 2 (2019).

byproducts from food and solid wastes, so as to potentially generate heat, electricity and fuel as end products.¹⁸ Pretreatment technologies will also need to be integrated into the treatment infrastructure to ensure the quality of the food waste entering the wastewater treatment system.¹⁹ Notwithstanding the upgrades that will need to be made to wastewater treatment systems, this diversionary measure can be a viable option for certain regions with existing wastewater treatment infrastructure and the capacity to upgrade such systems to enable co-treatment processes and promote biogas capture and exploitation.

In addition to the technical requirements, the model state law requires states to develop an education and community outreach program, a technical assistance program for municipalities, and a mechanism for disseminating information about the food waste diversion program. With respect to disseminating information, it will be important for states to take into consideration whether something other than a website will be necessary due to possibility of limited internet access in parts of the state. The model state law also provides various funding options to help finance either the construction, retrofit or upgrade of industrial-scale facilities or the purchase of onsite composters. The goal is to provide states with not only a starter legislative template, but also a menu of options that will allow each state to customize a food waste diversion program to meet its own local needs.

4. Beyond State Legislative Measures

Some state or local governments may choose not to impose legal requirements on their residents, either because of a sub-optimal political climate or resource constraints. However, there are other tools available to state and local governments to encourage residents to adopt food waste diversion measures. For example, local governments can revisit zoning codes to allow for industrial-scale composters and other green disposal facilities to be constructed, and/or exempt residential onsite composting from any restrictions.²⁰ State and local governments could adjust landfill pricing structures that make the diversion of food waste cost-competitive. States could also support markets for biogas and other end-products.²¹ The U.S. Environmental Protection Agency provides resources for communities to manage and transform waste streams.²² Boston²³ and San Diego²⁴, for example, have each adopted some variation of a zero waste management plan that sets targets for reducing wastes going to landfills and identifies strategies for achieving these targets.²⁵

There have been some federal legislative efforts to promote food waste reduction goals. For example, the 2018 Farm Bill included provisions to promote food waste related

¹⁸ *Id.*

¹⁹ *Id.* at 4.

²⁰ See SANDSON, *supra* note 16, at 48–49.

²¹ See *id.* at 47–48.

²² See ENVIRONMENTAL PROTECTION AGENCY, MANAGING AND TRANSFORMING WASTE STREAMS: A TOOL FOR COMMUNITIES (2022), <https://www.epa.gov/transforming-waste-tool>.

²³ See City of Boston, *Zero Waste Boston* (last updated April 28, 2022), <https://www.boston.gov/environment-and-energy/zero-waste-boston>.

²⁴ See CITY OF SAN DIEGO, CITY OF SAN DIEGO ZERO WASTE PLAN (2015), <https://www.sandiego.gov/sites/default/files/zwplan.pdf>.

²⁵ See *supra* notes 20-21.

programs and funding, such as a pilot project to support state and local composting and food waste reduction plans.²⁶ Although states are best suited to implement food waste reduction and recycling initiatives, the federal government can support their efforts by providing funding, loans and grant programs to encourage the adoption of effective food reduction policies to incentivize appropriate behavior by generators, and to fund the build-out of capital-intensive organic waste processing facilities and hauling infrastructure (or the conversion of existing infrastructure such as wastewater treatment facility) in order to optimize food waste diversion and unlock the potential to commoditize such diverted food wastes.²⁷

²⁶ See Agriculture Improvement Act of 2018 §222, 7 U.S.C. §6923(d) (2018).. See also BROAD, *supra* note 1, at iii.

²⁷ See BROAD, *supra* note 1.