DIVERSION OF FOOD WASTE FROM LANDFILLS:

MODEL MANDATORY CURBSIDE FOOD WASTE COLLECTION PROGRAM

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I. Introduction

A. The Problem: Food Waste's Hinderance on Municipal Sustainability

Food loss and food waste are growing problems in contemporary Western society, and the amount of food Americans throw away each year is staggering. Each year, Americans waste over 160 billion pounds of food, which accounts for 40% of all food produced in the United States.[1] The average American throws away 25 pounds of food every month,[2] amounting to a yearly average that has risen over 50% since the 1970s.[3] That waste eventually finds its way into landfills, accounting for about 21% of all waste generated in the United States and resulting in an annual economic loss of approximately $161 billion to both businesses and consumers.[4]

Pennsylvania's food waste tendencies fall in line with national averages. As of 2018, Pennsylvanians generate approximately 8.7 million tons of municipal waste annually, accounting for about 1,360 pounds per person per year.[5] Of these 1,360 pounds, 12.2% amounts to food waste.[6] From State College[7] to Philadelphia,[8] municipalities across the Commonwealth have begun to expand recycling initiatives to account for food waste by incentivizing and requiring residents to partake in mandatory food waste diversion programs that often include curbside food

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1 Harvard Food Law and Policy Clinic, *Food Waste Averages*, Harvard Law School (February 12, 2016), http://www. today.law.harvard.edu.html.
2 Peter Lehner, *A Recipe for Cutting Food Waste*, TedX Manhattan (2019), http://tedxtalks.ted.com/.
3 Dana Gunders, *Wasted: How America Is Losing up to 40% of Its Food from Farm to Fork to Landfill*, Natural Resources Defense Council (2012), www.nrdc.org/.
4 Office of the Chief Economist, *Economic Impact of Food Waste*, United States Department of Agriculture (2018), www.usda.gov/.
5 PWIA, *Waste Industry and Benefits to Citizens*, Pennsylvania Waste Industries Association (2018), http://www.Pawasteindustries.org.
6 *Id.*
7 State College Borough of Pennsylvania, *Garbage and Refuse Regulations*, Chapter VIII, Part A, *Municipal Waste* §8-105.
8 City of Philadelphia, *Data*, Chapter IV, Part A, *Zero Waste and Litter Action Plan.*

waste collecting.[9] These programs, which seek to regulate the disposal of organic food for composting, function daily to decrease municipal greenhouse gas emissions, increase social awareness regarding food waste and its impact on the climate, and expand municipal economies with the creation of collection- and composting- program jobs within this expanding industry.[10]

B. Brief Explanation: Curbside Collection and Composting of Municipal Food Waste

This proposed curbside collection program for the composting of food waste (hereinafter referred to as the "Model Ordinance") will expand upon municipal recycling programs to assist in the collection of food waste for diversion from landfills. The Model Ordinance will encourage education about the benefits of composting, establish a means for a new economic market through the sale of organic soil additives within adopting municipalities, and encourage municipal residents to partake with funding incentives and fines for noncompliance.

Today, some of the nation's most successful food waste ordinances and programs have partnered with local food banks to handle the donation of commercial-grade viable food for consumption rather than disposal, in addition to establishing mandatory composting programs for food scraps and food unfit for consumption. However, in looking to the most realistic approach to ordinance implementation and taking into account funding, contractual dealings, and push-back from community members, the belief that a more limited and "grass-roots" approach to slow and systematic implementation of food waste diversion via a mandatory composting program is well-supported – especially in viewing similar ordinances nationwide.[11]

The Model Ordinance is designed for municipalities which currently have no residential nor commercial food waste diversion programs established, whether in the realm of composting

[9] PADEP, *Statewide Waste Composition Study*, PA. DEP'T ENVTL. PROT., ES-12 (April 2003), http://www.portal.state.pa.us/portal/server.pt?open=18&objID=505137&mode=.
[10] *Id.*
[11] *Id.*

or donation to food banks.[12] By implementing a base-level mandatory compost curbside collection program for municipal residents and small food service businesses, municipalities will create a foundational food waste diversion program with the potential for growth and expansion over time.[13]

C. Outline of the Narrative

First, this paper will introduce the problem that results from lacking municipal composting programs including the exorbitant amount of valuable food scraps being transported to rot in landfills. In addition to well-documented environmental benefits, a mandatory composting program will create significant opportunities to market an end-product – a compost-based soil additive – for use throughout municipalities and in agriculture, create jobs within the industry, and save money by diverting compostable waste from landfills.

Next, the paper will delve into the existing infrastructure in place in terms of most municipalities' recycling programs and the option to "tack on" a composting program to this structure via the implementation of a simplistic pilot program for curbside collection which will evolve into a mandatory municipality-wide program over time. This paper will evaluate several curbside collection programs and diversionary food waste ordinances that have been implemented by other municipalities throughout Pennsylvania and across the United States. These programs are instructional in determining the resources needed to develop and roll-out the program including the methods utilized for requiring compliance, and for overcoming hurdles to implementation.

[12] Personal Interview with Edward J. Knittel, Deputy Executive Director of the Pennsylvania State Association of Boroughs, (Sep. 25, 2019) (suggesting the Model Ordinance be limited in scope to residences and small food-driven businesses).
[13] *Id.*

Finally, the last section of the paper will discuss the major issues that confront municipalities seeking to implement the instant ordinance, mainly key policy questions, the issues of funding, incentives, and education for municipalities seeking to adopt the Model Ordinance.

The comprehensive text of the proposed ordinance can be found in the Appendix section of this paper.

II. The Problem: Food Waste Problem and Opportunity for Change

A. Climate Change Concerns as Related to Food Waste

Food waste is an issue that largely goes unnoticed by the public, and many Americans – Pennsylvanians included – do not realize how much their seemingly-innocuous actions of throwing food scraps into their everyday trash contribute to the increasing weight of compostable materials being discarded in landfills each year. Food waste includes fruit and vegetable scraps from food preparation as well as uneaten food that is not kept as leftovers for consumption in homes and apartments.[14] Food waste also comes from larger commercial sources[15], such as restaurants and stores (not at issue for diversion in the proposed ordinance).[16] The impact that this waste has on the environment is immense at a municipal, national, and even global level. However, the largely "out-of-sight, out-of-mind" mentality that is attached to the use of landfills, has done much to leave most Americans complacent when it comes to removing waste from their homes and caring about where it might end up.

B. Carbon Emissions and Earth's Changing Climate

[14] See: Food Waste, U.S. ENVTL. PROT. AGENCY, http://www.epa.gov/wastes/conserve/materials/organics/food (last updated Nov. 28, 2011).
[15] Knittel, *supra* note 12.
[16] See Tina Mather *et al.,* Food Waste Remains Persistent Problem at Farms, Grocery Stores and Restaurants, CALIFORNIA WATCH (March 31, 2010), http://californiawatch.org/health-and-welfare/food-waste-remains-persistentproblem-farms-grocery-stores-and-restaurants, (noting agricultural waste, another form of food waste, is ordinarily managed at farms).

The global production of CO_2 and CO_2 equivalents (GHGs) through human activities has been scientifically proven, through empirical studies, to contribute to the changing of the Earth's climate.[17] These changes are beginning to have detrimental effects upon the world's environment and have resulted in rising global temperatures, the expenditure of natural resources at an unprecedented rate, melting ice caps leading to rising sea levels, deforestation, the migration and extinction of certain biological species, drought, increased precipitation, and extreme weather variations, amongst other alarming environmental impacts.[18] By reducing food waste and keeping it from needlessly rotting in landfills, a significant impact can be made upon the bigger issue that is climate change. So often, people ask "what can I do that will make a difference?" Partaking in a program such as that proposed in the Model Ordinance is exactly the type of involvement that can make an immediate difference – and this difference is one that can be observed, and its benefits measured statistically at a municipal, statewide or national level.

Today, only 5% of food waste is diverted from landfills and incinerators in the United States.[19] The EPA estimates that more food reaches landfills than any other single material in everyday trash, accounting for the aforementioned 21% of municipal waste.[20] Many Americans do not even realize that an option outside of the trashcan exists when it comes to their discarded food. In the minds of many, landfills have been put in place for a reason. These facilities handle waste as they are supposed to. Trash is discarded and processed there. Food waste, after all, is mere waste, and landfills are the appropriate place for its disposal. This notion is wholly

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[17] Intergovernmental Panel on Climate Change, *Future Climate Changes, Risks and Impacts*, (2018), http://ar5-syr.ipcc.ch/topic_futurechanges.php.
[18] Professor Donald Brown, *Widener University Commonwealth Law School*, Climate Change class Lecture 2.
[19] Environmental Protection Agency, *Wasted Food: Programs and Resources Across the United States* (Oct. 10, 2019), https://www.epa.gov/sustainable-management-food/wasted-food-programs-and-resources-across-united-states.
[20] *Id.*

incorrect. Food waste is much more than trash, and its potential to harm the earth's climate is astoundingly greater than one might initially assume.

According to the United Nations Food and Agriculture Organization, 30% of food is wasted globally across the supply chain, contributing to 8% of total global greenhouse gas emissions.[21] Each year, the world's combined food waste creates a greenhouse gas footprint bigger than most of the world's countries.[22] In fact, if food waste were a country, it would come in third after the United States and China in terms of its impact on global warming.[23] This is caused by immense amounts of energy, water, and chemicals used for agriculture and food production, with an international food supply chain that produces about 3.3 billion tons of carbon each year.[24] Additionally, to exacerbate this carbon footprint, food waste that is continually sent to landfills and incinerators has the potential to increase greenhouse gas emissions, significantly, as tons of rotting food release methane into the atmosphere from each of the nation's landfills.[25]

C. Composting Food Waste to Reduce Carbon Emissions

In its most basic form, compost is decayed organic matter, which has been referred to as "the highest form of recycling and the reuse of resources."[26] The composting process is essentially one that accelerates and controls the natural decaying process of organic matter, such as leaves, vegetation, and food scraps, into a soil-like material called humus.[27] Almost anything that comes from the ground can be composted. Cucumber ends, apple cores, carrot peels, cantaloupe rinds, avocado pits, an old pumpkin leftover from Halloween — any vegetable or

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21 Frishmann, Chad. *The Climate Impact of the Food in your Fridge*, *Washington Post* (July 31, 2018), https://www.washingtonpost.com/news/theworldpost/wp/2018/07/31/food-waste.
22 United Nations Food and Agricultural Organization, *Food Waste Report*, FAO (2013).
23 Frishmann *supra* note 21.
24 *Id.*
25 *Id.*
26 Epstein, Eliot. *The Science of Composting*, p. xiii.
27 DEP Fact Sheet. *Yard Waste and Composting*, DEP (2017), http://www.dep.state.pa.us/dep/deputate/airwaste/wm/recycle/facts/ydwaste.htm.

fruit scrap will do.[28] But grains also sprout from soil, which means individuals can throw stale bread, cereal, and pasta in a compost heap, too. What else goes into the pile? Coffee grounds, tea leaves, herbs, spices, and nut and eggshells are all acceptable ingredients. One can also include cut flowers or plant trimmings, as long as they are not diseased.[29] Animal products must be left out of the composter. No meat, fish, butter, yogurt, cheese, milk, or animal fat is allowed.[30] It remains a good rule of thumb to keep anything oily or greasy out of the pile, as this has the potential to contaminate the compost with bacteria.[31]

When the food in your trash goes to a landfill, it emits a greenhouse gas (GHG) that contributes directly to climate change.[32] This gas is called methane, a GHG at least 28 times more potent than carbon dioxide.[33] In a landfill, the zero-oxygen environment turns organic matter — from bread to banana peels — into methane.[34] In addition to having a higher potency than carbon dioxide, methane traps about 30 times more heat than carbon dioxide over the course of a century, causing immense environmental impact.[35] The methane itself is created by the bacteria that decomposes the organic material in an oxygen-deprived environment, such as a landfill, in which trash – of any form – is routinely buried under layers and layers of more waste and earth.[36]

Presently, there are methane controls on many landfills, but their effectiveness is debated. Most Pennsylvania municipal waste landfills recover methane for energy production, and thus

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[28] DEP *supra* note 27.
[29] *Id.*
[30] *Id.*
[31] *Id.*
[32] Frishmann *supra* note 21.
[33] *Id.*
[34] Pearson, Pete. *Reducing Food Waste Could Dramatically Cut GHG Emissions*, GreenBiz (September 26, 2018), https://www.greenbiz.com/article/reducing-food-waste-could-dramatically-cut-ghg-emissions.
[35] *Id.*
[36] Texas A&M Agrilife Extension. *The Decomposition Process*, Texas A&M (2018), https://aggie-horticulture.tamu.edu/earthkind/landscape/dont-bag-it/chapter-1-the-decomposition-process/.

limit their methane emissions into the atmosphere.[37] However, these methane recovery systems are expensive to install and operate, and the energy recovered from these systems is utilized for productive purposes.[38] Further, as many landfills do not now have methane recovery systems, it cannot be said that food waste at these landfills is contributing to energy production.[39] Thus, removing food waste from the landfill equation in its entirety will likely have no calculable impact on energy production. What it will have, however, in being utilized via a mandatory collection program for composting, is the capacity to directly benefit the environment and the respective economies of any municipality which implements the Model Ordinance.

Research has found that reducing food waste is one of the most important things that humans can do to reverse global warming.[40] Project Drawdown, a global research organization that identifies, reviews and analyzes the most viable solutions to climate change, utilizes a team of researchers that continually ranks solutions to global warming. The Project Drawdown team discovered that cutting down on food waste could have nearly the same impact on reducing emissions over the next three decades as the utilization of offshore wind turbines.[41] Additionally, the potential to improve the status of food waste via simple changes in daily life, rather than through the implementation of significantly more-costly measures, such as the development of offshore wind farms, can provide for an immediate environmental benefit. With such measures,

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[37] *See* Pennsylvania Landfill Methane Projects, PA. DEP'T ENVTL. PROT., http://www.portal.state.pa.us/portal/server.pt?open=514&objID=589657&mode =2 (last updated July 28, 2011) (providing a map of Pennsylvania landfills that carry out methane recovery projects).
[38] *See id.* (explaining how the methane is productively used at each landfill with a methane recovery project).
[39] Dernbach, John C., Next Generation Recycling and Waste Reduction: Building on the Success of Pennsylvania's 1988 Legislation. Widener Law Journal, Forthcoming; Widener Law School Legal Studies Research Paper No. 11-18. Available at SSRN: https://ssrn.com/abstract=1808911-- 332-33
[40] Frishmann *supra* note 20.
[41] *Id.*

more than 70 billion tons of greenhouse gases could be prevented from being released into the atmosphere.[42]

Methane reduction from decreased food waste actually represents one of the greatest possibilities for individuals, communities, and companies, to contribute to reversing global warming while simultaneously decreasing global starvation, increasing economic benefits of sustainable development, and preserving threatened ecosystems.[43]

In addition to minimizing methane emissions, composting provides several other environmental benefits. Because compost is used as a fertilizer, it reduces the need for chemical options to improve crop yields, which can be harsh on the earth.[44] According to the EPA, compost is also capable of capturing and eliminating 99.6% of volatile organic compounds (VOCs), from the air.[45] These vapors and gases can have a harmful impact on human health, with side effects ranging from nausea to throat irritation.[46] Studies further show that compost can aid in carbon sequestration.[47] When applied to soil, compost potentially functions as a "carbon sink," trapping and containing the element in the dirt. And if the carbon is in the ground, it isn't in our atmosphere, where it can wreak havoc on the planet.[48]

III. Why the Model Ordinance Should Be Adopted

A. Municipal Recycling Laws in Pennsylvania Do Not Adequately Address the Food Waste Problem

At present, Pennsylvania boasts significantly impressive recycling statistics. Since 1988,

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[42] Frishmann *supra* note 21.
[43] *Id.*
[44] Id.
[45] Hunt, Kristin, *What Is Composting?* Green Matters (2019), https://www.greenmatters.com/food/2018/12/07/ZboPlt/what-is-composting.
[46] *Id.*
[47] *Id.*
[48] *Id.*

with the passage of the Municipal Waste Planning Recycling and Waste Reduction Act (Act 101) which requires larger municipalities to recycle,[49] statewide recycling has grown to allow more than 11.6 million residents (94% of the state's population) to have access to recycling.[50] In 2018, Pennsylvanians recycled over 7.84 million tons of resources, cutting more than 10.21 million tons of carbon dioxide emissions from the air.[51] This recycling number is the equivalent to taking 2.19 million passenger vehicles off the road for a year.[52] As seen, the benefits of recycling in Pennsylvania municipalities is truly staggering.

However, currently, Pennsylvania maintains no statewide mandate for food waste "recycling." While the state currently has over 60 composting facilities and 14 anaerobic digesters, few municipalities have adopted mandated landfill diversionary programs pertaining to food waste.[53] However, those municipalities which have implemented mandatory food waste diversionary programs have seen clear success. For instance, Philadelphia's "Zero Waste" initiative has deemed the diversion of food waste from landfills as its next recycling "frontier," after gathering data that noted that thousands of residents are already paying out-of-pocket to have their compost materials picked up by private companies.[54] The city's new community-based composting initiatives would prohibit for-profit companies or groups from using the newly-mandated community composting network of sites, thus pushing for city-wide compliance.[55]

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[49] Municipal Waste Planning, Recycling and Waste Reduction Act 101, §1505.
[50] Department of Environmental Protection, *Recycling in Pennsylvania*, (2018), https://www.dep.pa.gov/Business/Land/Waste/Recycling/Pages/default.aspx.
[51] *Id.*
[52] *Id.*
[53] Rosengran, Cole. *Report: Pennsylvania Needs Organic Recycling Law to Reduce Food Waste*, WasteDive (September 18, 2017), https://www.wastedive.com/news/report-pennsylvania-needs-organic-recycling-law-to-reduce-food-waste/505068/.
[54] Kummer, Frank. *Philadelphia to Launch City-Wide Composting Network up to 25 Sit*es, *Philadelphia Inquirer* (June 19, 2019), https://www.inquirer.com/science/climate/philadelphia-compost-food-waste-20190619.html.
[55] *Id.*

Additionally, in State College, the borough successfully piloted a curbside food recycling program[56] (which went borough-wide in 2013) in order to meet and exceed Pennsylvania's State recycling goal. [57] The success of the program gained the borough notoriety from the EPA, which heralded State College in a 2013 press release as "the only town in the Commonwealth of Pennsylvania that is conducting curbside food waste collection for composting."[58]

Pennsylvania and many of its municipalities – like Philadelphia and State College – have realized the environmental impact of food waste in recent years.[59] However, there remains no obligation to compost food waste, and large amounts of viable food scraps are disposed of each year.[60] .[61] Despite this, many successful diversionary food waste laws do exist nationally as well as state-wide in Pennsylvania. Municipalities can look to those laws in order to draw inspiration and guidance in adopting these beneficial and highly-effective programs.

B. Benefits of Adopting a Diversion Program Required to Obtain Compostable Materials

The Model Ordinance seeks to combat the pitfalls of food waste by implementing a mandatory municipal food waste collection program, which will divert this useable waste from landfills for composting after curbside collection. This nutrient-rich compost material will then be funneled back into municipal soil and agricultural undertakings at a local level, when the ability to purchase the composted soil amendment will be open to private citizens and businesses via the municipality, bringing the municipality's food waste full-circle. Four-hundred municipalities across Pennsylvania have implemented some form of composting program, and the Model Ordinance, as argued by this paper, will help municipalities join their ranks with an

[56] State College Borough of Pennsylvania, *Garbage and Refuse Regulations*, Chapter VIII, Part A, *Municipal Waste* §8-105.
[57] Borough of State College, *Educational Program Development for Recycling and Composting Program*, PA DEP (September 2012), http://files.dep.state.pa.us/Waste/Recycling/RecyclingPortalFiles/state_college_506.pdf.
[58] *Id.*
[59] *Id.*
[60] *Id.*
[61] *Id.*

alternative waste management practice that yields significant social, economic, and environmental benefits.[62]

Much like mandatory municipality-based recycling programs, the Model Ordinance seeks to facilitate a realistic, cost-efficient, and effective means for residential and small-business composting. This goal will be achieved by providing municipal residents and small business owners with information regarding the program, compliance with said program, roll-out and implementation measures, as well as a provided proper receptacle for compostable materials to be stored between curbside collections.

Countless municipalities across the United States and Pennsylvania have existing recycling codes, but many of these municipalities remain silent on the issue of composting.[63] Food waste has the potential to take up massive amounts of valuable space at landfills and waste disposal facilities prior to incineration.[64] As such, adopting the proposed mandatory food waste collection ordinance will significantly improve municipalities' environmental, economic, and social well-being. Environmentally, food waste is recyclable, and the product of successful composting can be used in a variety of different ways. Compost has been shown to decontaminate soil, serve as a landfill cover that can reduce methane emissions,[65] and has even been used by state departments as an erosion and sediment control mechanism along roadways.[66]

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[62] Department of Environmental Protection, Bureau of Waste Management. *Guidelines for Yard Waste Composting Facilities*, DEP (January 6, 2009) http://www.elibrary.dep.state.pa.us/dsweb/Get/Document-72565/25405403-100.pdf.

[63] Harvard Recycles, *The Complete Guide to Recycling, Composting and Zero Waste at Harvard*, Harvard University (2016), https://www.campusservices.harvard.edu/system/files/documents/977/The%20Complete%20Guide%20to%20Recycling,%20Composting%20and%20Zero%20Waste%20at%20Harvard.pdf

[64] DEP Fact Sheet, *Yard Waste and Composting*, DEP (2017), http://www.dep.state.pa.us/dep/deputate/airwaste/wm/recycle/facts/ydwaste.htm.

[65] EPA, *Facts and Figures about Materials, Waste and Recycling*, (2015), http://epa.gov/epawaste/nonhaz/municipal/pubs/ghg/f02022.pdg.

[66] EPA, *Composting Highway*, (2018), http://epa.gov/epawaste/conserve/composting/highway/highwy2.pdf, p. 3, noting "The constituents of the humus act as a soil 'glue' holding soil particles together, making them more resistant

Composting diverts food waste from landfills, which then reduces greenhouse gas emissions.[67] As such, by reducing the amount of food waste headed for landfills, participating municipalities will reduce their respective carbon footprints. Likewise, municipalities implementing the ordinance can create their own marketable compost-based product that can be sold for urban and/or agricultural use in gardens, nurseries, cemeteries, golf courses, farms, recreational parks, etc.[68] Quality compost has value and can be sold for a profit. Moreover, finished compost can replace other soil additives, fertilizers, and conditioners that municipalities may already purchase from outside sources.[69] The EPA recognizes that using compost can reduce the need for water, fertilizer, and pesticides, and any municipality implementing the instant ordinance can capitalize from this reduction.[70]

Socially, any municipality implementing this ordinance would increase community involvement in sustainable practices and establish the foundation for a long-standing environmental program within the municipality that will yield direct and observable results.

IV. How These Problems Have Been Addressed in Other Jurisdictions: Successful Composting Programs throughout the United States and Pennsylvania

Many municipalities throughout the United States have seen high levels of success in similarly-functioning food waste ordinances that seek to divert organic materials from landfills into useable compost. Nationally, San Francisco's Mandatory Recycling and Composting

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to erosion and improving the soil's ability to hold moisture." *See also*, PennDOT Publication 408 Section 400. ftp://ftp.dot.state.pa.us/public/PubsForms/Publications/PUB%208/Section800.pdf.

[67] EPA, *Composting Benefits*, (2019), http://epa.gov/composting/benefits.htm.

[68] DEP, *How to Establish Recycling and Composting Programs*, (August 2016), http://www.dep.state.pa.us/dep/depudable/airwaste/wm/recycle/compost_sum/MSW_Compost_Broch.pdf; U.S. Environmental Protection Agency, How to Establish Recycling and Composting Programs, http://www.epa.gov/climatechange/wycd/waste/downloads/recycle.pdf.

[69] University of Maryland Extension, *Soil Amendments and Fertilizers: Fertilizing Guidelines Included by Plant Group*, University of Maryland (2013), https://extension.umd.edu/sites/extension.umd.edu/files/_images/programs/hgic/Publications/HG42_Soil_Amendments_and_Fertilizers.pdf.

[70] EPA, *supra* note 65.

Ordinance[71] (passed in 2009) has garnered tremendous success in terms of organic food waste and emissions reductions.[72]

Additionally, several municipalities in other states have focused on cost-effectiveness to measure success. For example, in Watervliet, New York, the city completed a six-month pilot study in which it collected source-separated organics from 50 residences.[73] Within the confines of the study, the city collected food waste and subsequently composted it. At the study's completion, the city estimated that if 75% of its residences participated in its composting program, it would save approximately $28,000.000 per year.[74]

Additionally, in Pennsylvania, various metrics have been employed by several municipalities which have sought to implement such an ordinance and understand the values of mandatory composting programs. For instance, most Pennsylvania municipalities utilize the Department of Environmental Protection's technical assistance program to gather data and evaluate the success of their recycling and composting programs.[75] As such, any municipality seeking to implement this ordinance in the future would do well to take advantage of this program in order to expand or amend an existing program or create one from the ground-up.

A. The General Goals of a Curbside Compost Collection Ordinance

The motivation behind curbside compost collection programs is simple: maxed-out landfills. Americans generate 250 million tons of garbage per year. Before San Francisco started its composting program in 1996, a city study found that more than one-third of all waste entering

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[71] City of San Francisco, *Mandatory Recycling and Composting Ordinance*, (June 2009) https://sfenvironment.org/sites/default/files/policy/sfe_zw_sf_mandatory_recycling_composting_ord_100-09.pdf.
[72] *Id.*
[73] *The Journal for Municipal Solid Waste Professionals*. Organics: Reduce, Redirect, Recycle. Lori Lovely. July 9, 2014. p. 3.
[74] *Id.*
[75] DEP, *DEP Free Composting Technical Assistance* (2018) http://www.portal.state.pa.us/portal/server.pt/community/ composting/14063/technical_assistance/589528.

landfills could be composted instead.[76] Today, between composting and recycling, the city diverts 78% of its waste from landfills. When Portland, Oregon launched its curbside composting program,[77] it cut back its weekly garbage collection to every other week.[78] Why? Customers were no longer producing as much trash.[79]

B. The General Law Under Current Curbside Food Waste Collection Ordinances

a. Model U.S. Mandatory Food Waste Collection Programs: San Francisco

San Francisco is often heralded as being the United States' premiere model in terms of environmental initiatives.[80] In 2002, San Francisco set a goal of 75% food waste diversion by 2010 and in 2003 Zero Waste by 2020.[81] The city's comprehensive Environment Code, created in 2003, is based on the Precautionary Principle, and the city's Mandatory Recycling and Composting Ordinance stems from this and requires all of San Francisco to separate recyclable materials, compostable materials and landfilled trash.[82] Passed by the San Francisco Board of Supervisors in 2009[83], the Mandatory Recycling and Composting Ordinance became the first local municipal ordinance in the United States to universally require source separation of all organic material, including food residuals.[84] Within this ordinance, San Francisco implemented an innovative "Fantastic Three" three-stream citywide residential and commercial curbside collection program that includes separate collection of commingled recyclables; compostable

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[76] Daigneau, Elizabeth, *Curbside Composting Added to a Major City: Is it Yours?* Governing (February 2012), https://www.governing.com/gov-curbside-composting-added-to-major-city.html.
[77] City of Portland, Oregon, *City Code, Chapter 17 §102 Solid Waste and Recycling Collection.* https://www.portlandoregon.gov/citycode/28889.
[78] *Id.*
[79] *Id.*
[80] EPA, Transforming Waste (June 2014), https://www.epa.gov/transforming-waste-tool/zero-waste-case-study-san-francisco.
[81] *Id.*
[82] Daigneau *supra* note 74.
[83] EPA *supra* note 78.
[84] San Francisco *supra* at 69.

materials, including all food scraps, food-soiled paper and yard trimmings; and any remaining trash in three separate bins with various size and rate options.[85]

Since 2009, San Francisco has collected more than two million tons of food scraps, yard trimmings, and other compostable materials via its mandatory curbside collection program and turned it into compost that is used by local farmers and wineries in Napa and Sonoma Counties.[86] San Francisco reached an 80% diversion rate in 2012 – which to date is the highest success rate ever seen by a U.S. city implementing such a program- and the City continues to implement innovative initiatives in the areas of sustainability and environmental impact reduction.[87] The diversion rate, bolstered first and foremost by mandatory compliance initiatives as well as fines for noncompliance, has given benefits to local economic markets and social advances, and has continuously climbed in the ten years since the program's onset.[88]

However, despite the massive success of this ordinance in terms of environmental impact and societal acceptance, it did not pass without any opposition. Rather, in taking the initial steps to implement this ordinance, supporters faced significant backlash. Since construction and demolition sites already possessed a high diversion rate prior to the mandatory ordinance, the initial impact of the ordinance was mostly on homes and businesses.[89] Landlords expressed early concern over the challenge of finding space for bins, as well as over possible odors.[90] Despite these concerns, the ordinance remained popular overall, polling at 85% approval prior to

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[85] EPA *supra* note 78.
[86] *Id.*
[87] *Id.*
[88] Sheppard, Kate. *Why Doesn't Your City Have Curbside Composting? Two Words: Big Trash, Mother* Jones (2018) https://www.motherjones.com/environment/2012/09/why-doesnt-your-city-have-curbside-composting/
[89] *Plenty Magazine*, *San Francisco Closes the Lid on Garbage*, MNN (April 15, 2009), https://www.mnn.com/lifestyle/recycling/stories/san-francisco-closes-the-lid-on-garbage.
[90] *Id.*

passing.[91] Before passing, the maximum fine was also lowered from $1,000 to $100 to address opposition to the possible size of fines.[92]

b. Pennsylvania-Based Initiatives: Drawing from Other State Municipal Successes

Following San Francisco's lead, 100 cities and municipalities nationwide now have mandatory curbside food waste collection, including several in Pennsylvania (many other municipalities offer voluntary programs).[93] Five states and several localities have passed organic waste bans or waste recycling laws geared toward reducing food waste via mandatory composting and food waste recycling programs.[94] Each of these five states prohibits certain entities from sending organic waste, including food waste, to landfills. Four of these states — Connecticut,[95] Rhode Island,[96] Vermont,[97] and Massachusetts[98] — have organic waste bans, but these statewide bans are largely implemented at the municipal level. In this capacity, local governments in these states have been guided by well-established programming in order to implement regulations at a municipal level. Pennsylvania municipalities can take a cue from the municipalities of these states in order to gauge implementation tactics as well as understand how municipalities in the aforementioned states dealt with societal program pushback.

In Massachusetts municipalities, for example, businesses and institutions are limited to disposal of one ton of food waste in the landfill per week, regardless of their proximity to a

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91 *Plenty Magazine supra* note 87.
92 https://www.sfgate.com/bayarea/article/S-F-mayor-limits-recycling-violation-fines-3201718.php.
93 Statewide Waste Composition Study, PA. DEP'T ENVTL. PROT., ES-12 (April 2003), http://www.portal.state.pa.us/portal/server.pt?open=18&objID=505137&mode= 2
94 See Harvard Law School Food Law & Pol'y Clinic, *Keeping Food Out of the Landfill: Policy Ideas for States and Localities* (2016), http://www.chlpi.org/wp-content/ uploads/2013/12/Food-Waste-Toolkit_Oct-2016_smaller.pdf.
95 Conn. Gen. Stat. § 22a-226e (2016).
96 R.I. Gen. Laws § 23-18.9-17 (2016).
97 Vt. Stat. Ann. tit. 10, § 6605k(b) (2015).
98 310 Mass. Code Regs. 19.017(3) (2016).

composting or AD facility.[99] At the local level, a number of municipal laws exist that seek to divert food from landfills. For example, in 2013, Austin, Texas, amended its organic waste recycling law, the Universal Recycling Ordinance,[100] to require all food service enterprises 15,000 square feet and larger to compost food scraps by October 2016.[101] By October 2017, all those larger than 5,000 square feet were required to comply, and in October 2018 the ban extended to all food service enterprises.[102] This amendment to the existing ordinance is part of the city's Zero Waste Initiative, which aims to reduce the amount of waste sent to the landfill by at least 90% by 2040.[103] This program also shows the possibility of an expansion on a given program like the Model Ordinance, which began smaller with the potential for growth.

Pennsylvania has developed a ten-year waste management plan for the state through the Solid Waste and Recycling Advisory Committee at the Pennsylvania Department of Environmental Protection, and some of the plan's goals include increasing recycling and reducing waste, including food waste.[104] At the municipal level, Philadelphia has taken great steps toward reducing organic waste. In 2016, the city created a Zero Waste and Litter Cabinet tasked with developing a comprehensive plan to reduce the amount of waste that ends up in landfills and incinerators by 90% by 2035.[105] Currently, businesses and residents in Philadelphia produce nearly 1.5 million tons of municipal solid waste annually, 60% of which ends up in the

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[99] Comply with the Organics Waste Ban, RecyclingWorks Mass., https://recyclingworksma.com/commercial-organics-waste-ban/.
[100] 7 City of Austin Code of Ords., Ch. 15-6 § 8.2.5 (2016); see also Universal Recycling Ordinance: Organics Diversion Timeline, City of Austin, http://www.austintexas.gov/uro.
[101] *Id.*
[102] *Id.*
[103] *Id.*
[104] Commonwealth Recycling, Pa. Dep't of Gen. Servs. & Commonwealth Agency Recycling 2, http://files.dep.state.pa.us/PublicParticipation/Advisory%20Committees/. AdvCommPortalFiles/SWAC/September_22/Department%20of%20General%20Services-DEP%20MOU.pdf.
[105] Zero Waste and Litter Cabinet, Executive Order No. 13-16, City of Phila. (Dec. 20, 2016).

landfill.[106] At the same time, over 400,000 tons of organic waste are thrown away as trash in the city each year.[107] The comprehensive plan outlines a four-part strategy that involves targeting waste reduction and diversion in buildings and at city events; engaging the public in waste reduction efforts; and developing city-wide single-stream recycling and organic materials collection.[108] Nic Esposito, Zero Waste and Litter Director at the Managing Director's Office attests, "[s]etting a zero waste goal without having organic [waste] diversion is inconceivable."[109] As such, the inclusion of mandatory composting programs, such as the Model Ordinance, are not only beneficial to, but essential to such programs and their subsequent successes.

Over 150 communities, from Cambridge, Massachusetts, to San Francisco, California, have implemented municipal curbside composting programs to divert food waste.[110] As noted, curbside composting programs are voluntary or mandatory programs enabling residents to separate and dispose of their compostable waste, as they would with garbage and recycling.[111] They allow households to reduce their environmental impact by diverting their food waste from landfills, and have been very successful in reducing the amount of household organics going to the landfill. For instance, during the first year of a free weekly curbside composting pilot program, in Cambridge, Massachusetts, over 600 participating households collected over 170,000 pounds of food scraps using free curbside bins, in-house containers, and compostable

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[106] Zero Starts with One, Zero Waste & Litter Cabinet, City of Phila., Zero Waste & Litter Action Plan 5 (Jul. 2017), http://cleanphl.org/wp-content/uploads/2017/07/Zero_Waste_ and_Litter_Action_Plan.pdf
[107] *Id.*
[108] See City of Phila., Zero Waste & Litter Action Plan 5, *supra* note 74, at 5-10.
[109] *Id*. at 7.
[110] See Harvard Law School Food Law and Pol'y Clinic, *supra* note 61, at 62.
[111] *Id.* at 69.

bags.[112] The average amount of organic waste collected was 6.6 pounds per household per week, reducing trash by nearly 35%.[113]

Many townships and counties across Pennsylvania already offer curbside composting for yard waste, and others are considering the implementation of curbside programs for food waste.[114] Additionally, throughout the state, 60+ composting sites exist for voluntary food waste drop off.[115] The infrastructure already exists to make mandatory composting the norm in Pennsylvania municipalities. What is then necessary is implementation of law such as the Model Ordinance at hand to facilitate participation, and many municipalities have begun to see viable potential. In Philadelphia, the Streets Department annually conducts an Organics Feasibility Study to assess the investment and development necessary for city-wide organics collection.[116] The results of this study, along with the leadership of townships and counties across the state, serve as useful examples should Pennsylvania municipalities decide to adopt curbside composting programs such as that proposed in the present ordinance.

V. Recommendations for Efficient Municipal Implementation of the Model Ordinance

A. Recommendations for Addressing Food Waste in Pennsylvania Municipalities via the Model Ordinance

a. Pilot Program

In launching curbside food waste collection programs, municipalities with effective programs almost invariably begin with a pilot program that reveals which approaches are likely

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[112] Curbside Compost Pilot, Cambridge Dep't of Pub. Works https://www.cambridgema.gov/theworks/ourservices/recyclingandtrash/curbsidecollections/compostingquestions/curbsidecompostpilot.

[113] *Id.*

[114] See e.g., Compost Site, City of St. Mary's, http://www.cityofstmaryspa.gov/assets/files/Recycling---2.pdf; Compost Park, Manheim Township, http://www.manheimtownship.org/index.aspx?NID=1009.

[115] DEP, *Pennsylvania Food Waste Composting Facilities* (2018), http://files.dep.state.pa.us/Waste/Bureau%20of%20Waste%20Management/WasteMgtPortalFiles/PA_Food_Waste_Composting_Facilities.pdf.

[116] See City of Phila., Zero Waste & Litter Action Plan 5, *supra* note 74, at 7.

to work best in that particular place and demonstrates the program's viability to local skeptics.[117] Whenever possible, program officials have pursued state or county grants to launch their pilot programs, and several effective programs have worked with local nonprofits to get composting off the ground and then to enhance participation and set-out rates through education and incentive campaigns.[118] The Model Ordinance establishes a similar pilot program where interested persons may volunteer to enter the program prior to the Model's shift to mandatory compliance.

b. Curbside Collection

The Model Ordinance's pilot program will provide curbside food waste collection services for all single- and multi-family dwellings as well as small commercial businesses whose owner has chosen to receive municipal services during the pilot program. The duties of those utilizing the program are set forth in the language of the subsequent ordinance in order to facilitate the overarching societal, economic and environmental goals of food waste diversion from landfills as laid out previously in this narrative.

c. Composting Program and Compost as an Incentive

In order to encourage participation in the Model Ordinance's pilot program, participants can choose to receive free compost.[119] In an effort to encourage organic lawn care in participating municipalities, participants are eligible to receive up to five buckets of free compost for private use in their lawns and gardens with primary distribution occurring in the Spring and

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[117] Department of Urban Studies and Planning, *Municipal Curbside Compostables Collection*, Massachusetts Institute of Technology (2014),https://dusp.mit.edu/sites/dusp.mit.edu/files/attachments/project/Municipal%20Curbside%20Compostables%20Collection%20%20What%20Works%20and%20Why.pdf

[118] *Id.* at 7, 9.

[119] City of Takoma Park, Public Works, Curbside Collection Services, *Food Waste Collection,* https://takomaparkmd.gov/government/public-works/curbside-collection-services/food-waste-collectiom.

Summer months.[120] If the limit of free compost is met by the participant, they are then eligible for a discounted rate, such as 20% off the price of subsequent purchases of composted soil.[121]

d. Community Education Program

Municipalities must launch educational campaigns to inform consumers on proper disposal of food waste via composting. Research has shown that it could be mutually beneficial for the environment, economy, and consumers, if citizens learned how to make better use of leftovers, minimize spoilage, and work to compost their food scraps.[122] The biggest challenge to educational campaigns is overcoming apathy and indifference. Consumers often have difficulty envisioning how their actions can affect a large issue and consequently cannot recognize their personal role in combating food waste.[123] As such, it is the overarching goal of the Model Ordinance to address this issue, but reliance on implementing municipalities to educate residents regarding its benefits is crucial.

The Model Ordinance sets forth a community education program template in which municipalities are required to provide community education on the purpose, benefits, and operation of the mandatory composting program at hand. Placed into effect at least six months prior to the launch of the Model Ordinance, municipalities must provide residents with the following information:

- a detailed explanation of the Model Ordinance's purpose;
- notice regarding the starting date;
- notice regarding compost bin pickup dates and times;
- notice regarding potential penalties;

120 City of Takoma Park *supra* note 119.
121 *Id.*
122 ReFED, *op. cit., supra* note *34.*
123 *Id.*

- explanation of societal, environmental, and economic benefits; and
- information regarding any available incentives determined by the respective municipality.

The Municipal Public Works Department of any implementing municipality will distribute flyers with this information. The addition of such information to municipal-run websites; the inclusion of information in public school curriculum; inclusion in municipal council meetings, etc.; are all cost-effective and efficient ways to promote the ordinance in a way that will reach the maximum amount of community residents and ensure that respective community members are sufficiently on-notice of the program, prior to its official launch. As with any information regarding municipal recycling programs or scheduling updates, information regarding the Model Ordinance will be distributed to the entirety of the community.

B. Major Policy Choices Being Utilized to Solve the Problem at Hand

The potential to create a viable and comprehensive food waste reduction program within Pennsylvania at a state level or within its respective municipalities is immense. Today programs exist, throughout the world and in the United States, to divert viable food from the trash to local charities through donations and food banks. Grocery stores, large-scale manufacturing, and food production facilities have taken huge strides in food donation, composting, and recycling initiatives. As seen, the potential for such programs to expand from a basic "grass-roots" level is veritably endless. However, these full-scale undertakings must start somewhere, and the implementation of a mandatory composting program such as that in the Model Ordinance is a feasible model for initial municipal success in an area that is measurable, adjustable, and provides endless opportunity for growth. As such, this "grass roots" policy initiative remains the basis for the Model Ordinance. As noted previously, the Model Ordinance has limited the

landfill diversionary program to curbside collection because there is already a permanent recycling process in place in every Pennsylvania municipality, which can act as a foundation for the Model Ordinance's establishment.[124]

Further, limiting the Model Ordinance to an initial collection-base of residences and small food-based businesses, municipalities looking to enact food waste diversion programs in order to combat the environmental damages that food waste can cause if left to the landfill, are essentially getting a "foot in the door" to solving the problem. In drawing from the advice of local government officials with whom we've consulted, we were advised to begin "simply" with the Model Ordinance, giving it room to build upward, which is what has been seen to have worked in so many of the aforementioned localities who have similar programs.[125]

C. Social, Economic and Environmental Benefits

The benefits of the Model Ordinance include enhancements to the economic standing, overall pride in communities, and the environmental prospects of any municipality choosing to adopt it. By creating a communal, forward-thinking, municipal plan, residents can feel a sense of pride in their community and understand that they have added to the overarching push toward maintaining more than a livable community, but a thriving one.[126]

Environmentally, the Model Ordinance provides immense benefits. Compost boosts water retention in soil, which means the budding plants in that soil need less irrigation.[127] It also tends to facilitate bigger crop yields, giving food producers a better harvest. This all adds up to more growth with less water — and, in turn, a more affordable way to create food, flowers, and other plants.

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[124] Knittel, *supra* note 12.
[125] *Id.*
[126] Randall J. Cude, *Beauty and the Well-Drawn Ordinance: Avoiding Vagueness and Overbreadth Challenges to Municipal Aesthetic Regulations,* 6 J. L. Pol'y 853 (1998).
[127] https://www.planetnatural.com/composting-101/soil-science/compost-soil/.

As referenced above, composting – while rich in microbial activity – is a simplistic process on the part of the individual composter. With minimal human effort, substantial impacts can be seen. The benefits of composting are vast and varied, spanning social, economic, and environmental realms. By diverting food and yard waste from the landfill and using these materials to make a nutrient-rich soil additive, the soil is better able to retain nutrients, moisture, and air for the betterment of plants and crops.[128] Research shows that soil treated with compost tends to produce plants with fewer pest problems.[129] Much like people, healthy plants are more capable of developing the ability to fight off illness.[130] Compost gives plants and crops the nutrients and beneficial microbes they need to fight off disease.[131] Additionally, compost also helps to control diseases and insects that might otherwise overrun regular soil.[132]

Finally, the Model Ordinance will yield economic benefits. Compost helps the soil soak up water for a more gradual release to plants.[133] As such, compost can act as a natural evaporation barrier for gardens and fields, helping the areas retain water and reduce the need to water manually or with farm-equipment. With enough compost in a certain area of soil, water bills can be drastically reduced. Further, by reducing the need for commercial soil conditioners and fertilizers, composting has the potential to save significant money, especially in large-scale agricultural endeavors.[134]

Food waste can be significantly reduced by supporting centralized composting facilities or adding new composting facilities that are more accessible to the public, both in urban and

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[128] City of Orlando, *Composting Guidelines* (2016), https://www.orlando.gov/Trash-Recycling/Request-a-Free-Composter/Composting-Guide.
[129] City of Orlando, *Benefits of Composting Your Food Waste* (August 12, 2016), http://www.cityoforlando.net/blog/five-benefits-of-composting-your-food-waste/.
[130] *Id.*
[131] *Id.*
[132] *Id.*
[133] *Id.*
[134] *Id.*

rural communities, such as those which will be utilized by the Model Ordinance. This focus on composting as an industry has the potential to reduce greenhouse gas emissions by 2,605,000 tons per year and create up to 9,000 jobs in Pennsylvania alone.[135] Furthermore, centralized composting is expected to be continually successful in the Northeast due to high market values for compost and the high costs of disposal.[136]

D. Funding Options and Associated Costs

A 2001 study of Pennsylvania's municipal waste led the Department of Environmental Protection (DEP) to focus more attention on food waste, though it is still not treated the same way as yard waste or recyclable materials in the state.[137] The study found that organic waste is the number one recyclable material that ends up in landfills,[138] and food waste disposal alone was estimated at 1.1 million tons.[139] As a result of the 2001 study, DEP established a grant program to develop public and private composting capacity or infrastructure for organic waste, including food waste.[140]

Many municipalities have utilized tax money from general waste disposal to fund in-state municipal efforts to expand recycling, including providing funding for recycling education programs and market development.[141] For instance, 60% of the funding brought in by all New Jersey municipalities' tax on waste goes directly into the Municipal Recycling Tonnage Grant Program, which distributes grant money to counties and municipalities to help expand their

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135 ReFED, *op. cit.*, *supra* note 34.
136 *Id.*
137 *Id.* at 333.
138 State College Borough, *supra* at note 7.
139 I*d.* at 4, 8.
140 Technical Assistance: About the Composting Technical Assistance Program, PA. DEP'T ENVTL. PROT., http://www.portal.state.pa.us/portal/server.pt?open=514&objID=589528&mode =2 (last visited November 26, 2019).
141 N.J.S.A. 13:1E-96.b.(1) https://www.state.nj.us/dep/grantandloanprograms/er_mrtgp.htm.

recycling and composting programs.[142] The grant money is assigned to the communities that have the highest recycling rates, creating an incentive-based system to drive increased recycling participation. This incentivization has contributed to steady and encouraging increases in sustainable successes, including: expanded public outreach efforts; expansion of the types of materials municipalities are collecting; and more convenient recycling options, such as single-stream programs that enable residents to put all of their recyclables out for collection in designated containers.[143] Municipalities looking to incentivize their own respective composting programs can utilize such a model and expand existing recycling programs, including internal funding to offset the costs of initiating a composting program.[144]

In Pennsylvania, many grant programs such as the aforementioned grant exist, which can offset costs for implementation of the Model Ordinance.[145] These grants, in addition to penalties collected from violations of the Model Ordinance, public utility fees, and the profits made from the sale of compost produced from the collection program can all be funneled into a fund utilized for operation and implementation costs associated with administering the Model Ordinance.

VI. Conclusion

The necessity of combating this ever-increasing carbon footprint is apparent, and there are simple and effective steps that individuals can take to address the issue of food waste beginning in the home. Contributing to a complex and intricate puzzle, food waste plays a major

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[142] DEP. *Recyclable Tonnage*, https://www.nj.gov/dep/dshw/resource/Tonnage/mtg%20guide.pdf.
[143] *Id.*
[144] Knittel, *supra* note 12 (Mr. Knittel advised against relying heavily on tax incentives for the Model Ordinance).
[145] *Recycling Technical Assistance*, https://www.dep.pa.gov/Business/Land/Waste/Recycling/Municipal-Resources/TechnicalAssistance/Pages/default.aspx, (last visited November 27, 2019); *Environmental Education (EE) Grants*, Environmental Education (EE) | US EPA, (last visited November 24, 2019).

role in greenhouse gas production, regardless of the fact that so many Americans refuse to equate throwing a piece of rotting fruit in the trashcan with driving a gas-guzzling SUV. As municipalities continue to recognize the impacts of climate change and the necessity of sustainable development, many different methods have arisen in hopes of combating these issues. Clearly, food waste is a broad issue, affecting a range of stakeholders in various sectors of government and economy. But, the scope of this issue alone has been enough to garner attention and concern at the federal and state level.[146] Here, in Pennsylvania, while action has been limited, potential legislative initiatives are beginning to take shape as more light is shed on this emerging topic.

The lengthy list of the cases and sources of food waste results in a comparable list of potential remedies, ranging from "grass-roots" initiatives to state and federal regulations.[147] The remedy addressed by the proposed ordinance offers a strategic "foot in the door" to new environmental and economic opportunity. Today, recycling is commonplace. There is no reason that the composting of food waste should not be the same. The drawbacks of ordinance implementation are few, and the benefits are many. By implementing mandatory food waste collection programs into Pennsylvania municipalities, locales will offer a direct approach to combatting the increasingly-problematic level of food waste occurring not just in Pennsylvania, but across the nation.

APPENDIX

Model Ordinance

Section 1: Short Title.

[146]Applegate, Stephanie. Joint Legislative Air and Water Pollution Control and Conservation Committee, "The Issue: Food Waste," Winter 2017.
[147] *Id.*

This ordinance shall be known and may be cited as the "Mandatory Curbside Food Waste Collection Program."

Section 2: Declaration of Purpose.

The governing body of the municipality finds and declares as follows:

(1) The global production of greenhouse gases, CO_2 and CO_2 equivalents, known as GHGs, through anthropogenic activities has been scientifically proven through empirical studies to contribute to the changing of the Earth's climate.[148]

(2) These changes are beginning to have detrimental effects upon the world's environment and have resulted in rising global temperatures, the expenditure of natural resources, melting ice caps leading to rising sea levels, deforestation, the migration and extinction of certain biological species, drought, increased precipitation and extreme weather variations.[149]

(3) As a result of these environmental repercussions, human existence on Earth will be drastically altered with the most severe impact being felt by the most vulnerable and impoverished countries.[150]

(4) The United States is the second largest contributor of GHG emissions worldwide and is responsible for approximately 15% of the global inventory.[151]

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[148] Intergovernmental Panel on Climate Change, Synthesis Report, *Future Climate Changes, Risks and Impacts*, https://ar5-syr.ipcc.ch/topic_futurechanges.php (last visited Nov. 27, 2019).
[149] Professor Donald Brown, *Widener University Commonwealth Law School*, Climate Change class Lecture 2.
[150] United Nations Framework Convention on Climate Change, Art. 3 ¶1, United Nations, 1992 (hereinafter UNFCCC).
[151] EPA, *Global Greenhouse Gas Emissions Data*, https://www.epa.gov/ghgemissions/global-greenhouse-gas-emissions-data (last updated Sep. 13, 2019).

(5) Pennsylvania is the third largest state contributor to the total GHG emissions in the United States per year.[152]

(6) As of 2017, 10% of the total GHG emissions in the United States is from the release of methane gas which is at least 28 times more potent than carbon dioxide[153], into the Earth's atmosphere.[154]

(7) Approximately 14% of methane gas is produced by landfills are the third largest source of anthropogenic methane emissions in the United States.[155]

(8) Organic food waste is responsible for as much as 90% of the methane released from landfills before the landfills are capped.[156]

(9) Decomposing bacteria breaks down the organic material in food waste resulting in the production of methane gas.[157]

(10) The residential sector is estimated to contribute just under 50% of the amount of food waste going to landfills.[158]

(11) By diverting residential and small commercial business food waste from entering landfills, Pennsylvania can significantly reduce the release of methane into the atmosphere and improve national and state GHG emissions levels contributing to global climate change.

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[152] Johannes Freidrich, Mengpin Ge, Alexander Tankou, *6 Charts to Understand U.S. State Greenhouse Gas Emissions*, World Resources Institute (August 10, 2017).
[153] Frischmann, *supra* note 21.
[154] EPA, *Inventory of U.S. Greenhouse Gas Emissions and* Sinks, https://www.epa.gov/ghgemissions/inventory-us-greenhouse-gas-emissions-and-sinks, (last updated Apr. 11, 2019).
[155] EPA, *Basic Information about Landfill Gas*, https://www.epa.gov/lmop/basic-information-about-landfill-gas, (last updated Jul. 30, 2019).
[156] Michael B. Gerrard & John C. Dernbach, *Legal Pathways to Deep Decarbonization in the United States* 819, Environmental law Institute (2019).
[157] EPA, *supra* note 154.
[158] Gerrard & Dernbach, *supra* note 156.

(12) Diverted food waste can be recycled through a composting process, the end result being an organic material that can be used as a nutrient rich soil enhancement for sale or use locally and commercially.[159]

(13) Even a small reduction in methane production from the third largest contributor to the total amount of GHG emissions in the United States will help greatly in the global initiative of preventing catastrophic climate change as demonstrated by the international ratification of the United Nations Framework Convention on Climate Change (UNFCCC), and the international commitment to the Paris Agreement.[160]

Section 3: Definitions.

The following words and phrases when used in this ordinance shall have meanings given to them in this section:

"AGENCY" - Municipal entity designated with authority to oversee implementation, administration and enforcement of this ordinance.

"APARTMENT"- A room or suite of two or more rooms, occupied or leased for occupation, or intended or designed to be occupied, as a domicile.[161]

"BACKYARD COMPOSTING" - private residential composting-oriented food waste management.

"COMPOSTING SITE" - Property dedicated to the recycling and processing of organic matter.

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[159] EPA, *Reducing the Impact of Wasted Food by Feeding the Soil and Composting*, https://www.epa.gov/sustainable-management-food/reducing-impact-wasted-food-feeding-soil-and-composting, (last updated Nov. 21, 2019).
[160] UNFCCC, *supra* Art. 3, ¶1; The Paris Agreement, Art. 2 ¶ 1(a), United Nations, 2015.
[161] 68 P.S. §§ 250.101-250.602, *Landlord and Tenant Act of 1951*.

"CURBSIDE" - A designated area outside of a residence or a commercial space that borders the street, but does not obstruct a sidewalk, parking area, or the pathway of any motorist, cyclist, or pedestrian.

"DWELLING" - Any housing structure with the primary purpose of providing a residence to families or individuals.

"ENFORCEMENT AGENT" – An individual or government body employed by the agency of a municipality tasked to monitor violations of proscribed conduct and impose applicable penalties on violators.

"FOOD WASTE" - As follows: (1) Organic material including green food waste such as the following:

(i) leafy greens,

(ii) wheat products,

(iii) fruits and vegetables.

(2) The term does not include:

(i) yard waste,

(ii) household pet waste,

(iii) meats such as beef, pork, lamb and poultry,

(iv) seafood,

(v) and bones.

"HOUSEHOLD PETS" - Animals, including, but not limited to:

(i) Dogs,

(ii) Cats,

(iii) Ferrets,

(iv) Chinchillas and Hamsters.

"LARGE COMMERCIAL PROPERTY" - A commercial space larger than 1,000 square feet or a space located in a commercially zoned area.

"METHANE-PRODUCING BACTERIA" - Bacteria that processes organic matter during the decomposition process, resulting in the release of methane into the atmosphere.[162]

"MULTI-FAMILY DWELLING" - Any single housing structure that contains more than one domicile intended for more than one household. This includes divided apartments.

"MUNICIPALITY" - A borough, township, or city of any class.

"PERSON" - Any individual, any household or commercial business operator responsible for maintaining the receptacle.

"PROGRAM" - The food waste collection program established under this ordinance.

"PROPERTY" - Lands, tenements, real estate, buildings, parts or any estate or interest in fee simple, tenants in common, or leasehold.[163]

"PROPERTY OWNER" - Possessor of valid title to any residential or commercial real property.

"RECEPTACLE" - A container used for collecting food waste.

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[162] EPA, *supra* note 155.
[163] 68 P.S. §§ 250.101-250.602, *supra* note 161.

"RODENTS" - Animals including but not limited to: rats, raccoons, mice, groundhogs, possum, squirrels and vermin.

"SINGLE FAMILY DWELLING" - Any housing structure that is intended to be occupied by one household as a domicile.

"SMALL COMMERCIAL BUSINESS" - A restaurant or business no larger than 1,000 square feet dealing in food service that is the only business contained in an independent structure. The term shall not include any restaurant or business located in a commercially zoned area.

"THIRD-PARTY OPERATOR" - A company specializing in collecting food waste from the community for the purpose of transporting the food waste to a composting center.

"VEHICLE" - Truck used for transporting food waste.

Section 4: Food waste recycling program.

In order to slow the negative impact of global anthropogenic GHG emissions aiding in preventing the adverse effects of rising temperatures worldwide, the municipality will institute a recycling program for food waste by diverting it from decomposing in local landfills and recycling through already existing composting sites.

Section 5: Authorization to establish program.

This ordinance is ENACTED by the council of _____ municipality, borough, township, on _____ within the state of Pennsylvania with the authority provided under the act of July 28, 1988 (P.L. 556, No. 101), known as the Municipal Waste Planning, Recycling and Waste Reduction Act. First class township authority provided under the act of June 24, 1931 (P.L. 1206, No. 331), known as The First Class Township Code, article 15,

§1502. Second class township authority provided under the act of May 1, 1933 (P.L. 103, No. 60), known as The Second Class Township Code, article 16, §1601. Municipal authority is provided under Pennsylvania Code title 53, chapter 23, subchapter A, §2305. Authority for boroughs and incorporated towns is provided under Pennsylvania Code title 8, §3301.1.

Section 6: Administration of program.

(a) Duties of municipalities.

(1) For the purpose of implementing a recycling program for food waste as authorized under this ordinance, the municipality shall enter into a binding contract for a determined period of time with a third-party operator responsible for the pick-up of food waste from residential properties and small commercial businesses for delivery of the food waste to designated composting sites.

(2) The contract fee shall be payed to the third-party operator by the municipality.

(3) The municipality shall designate the appropriate agency for implementing and administering the program.

(b) Duties of third-party operators.

(1) A third-party operator shall be responsible for providing at least one receptacle to each required property.

(2) The designated receptacle under paragraph (1) shall have a securable lid and not exceed the dimensions of 28" x 12" x 24" and be no smaller than 6" x 6" x 8".

(3) A third-party operator shall pick-up the designated food waste collection receptacle at least once each week.

(4) A third-party operator shall designate a specific day of the week, excluding Sunday and observed federal holidays, for pick-up of the food waste receptacle.

(5) A third-party operator shall pick-up the receptacle using a vehicle approved by the agency and consistent with the residual waste transport requirements of the Solid Waste Management Act.[164]

(6) A third-party operator shall pick-up the receptacles after 7:00AM, and before 7:00PM, on the designated day of each week.

(7) If the pick-up day needs to be changed for a particular week, the third-part operator shall notify the agency within 48 hours of the change.

(8) A third-party operator shall deliver the food waste to a state approved composting facility[165] at the end of each pick-up day so as to prevent any contamination or premature decomposition resulting in the creation of methane producing bacteria.[166]

(9) A third-party operator shall provide notice detailing the reason(s) for any refusal by the third-party operator to pick-up a receptacle stating one of the following violations:

(i) Receptacles weighs over 50 pounds.

(ii) Material in receptacle is not considered food waste.

(iii) Improper curbside placement.

(iv) Improper receptacle maintenance.

(v) Damaged receptacle.[167]

[164] Act of July 7, 1980, P.L. 380, No. 97, §303(a)-(b).
[165] 25 Pa. Code Chapter 281 §281.101.
[166] EPA, *supra* note 155.

Section 7: Duties of property owners.

(a) Single-family dwellings.

(1) A property owner of a single-family dwelling shall be provided a receptacle by the third-party operator.

(2) A property owner of any single-family dwelling shall be responsible for ensuring that occupants of the property are in compliance with the requirements of this ordinance.

(b) Multi-family dwellings

(1) A property owner of a multi-family dwelling shall be responsible for reporting to the third-party operator and requesting a receptacle for each household residing within the dwelling.

(2) A property owner of a multi-family dwelling shall be responsible for ensuring that each household is in compliance with the requirements of this ordinance.

(c) Small commercial businesses

(1) A property owner shall contact the third-party operator in order to obtain the appropriate amount of receptables as determined by the anticipated amount of food waste produced each week on the property.

(2) Each property owner shall be responsible for ensuring that the commercial business is operating in compliance with the requirements of this ordinance.

(3) This subsection shall not apply to property owners of a large commercial property.

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167 Minneapolismn.gov, *Residential Organics Recycling*, Solid Waste & Recycling, http://www.ci.minneapolis.mn.us/solid-waste/organics/index.htm (last updated Sep. 3, 2019).

(d) Large commercial properties

(1) Property owners are not subject to the requirements of this program and may contract with a third-party operator of choice to provide a food waste diversion program independent from the municipal residential and small commercial business contract.

(2) The agency may enforce the requirements of this ordinance if the municipality later determines that commercial spaces not included in subsection (b) shall be required to participate in the requirements of this program.

Section 8: Adjustment period for property owners.

(1) Property owners must be in compliance with the requirements of this ordinance no more than one year after the effective date of this ordinance, or if a pilot program is enacted, not less than one year after the completion of the pilot program.

(2) Property owners implementing backyard composting may opt out of the program, subject to the discretion of the agency, if the private composting system furthers the overall purpose of the program without creating a risk to community health, safety, or welfare.[168]

(3) To opt out, a property owner shall notify the agency and explain the reason(s) for the exemption.

Section 9: Education and implementation of program.

[168] State College, Pa., Ord. No. 2116 ch. 8, §8-105 (Aug. 20, 2018), https://ecode360.com/32896515, ("Compost piles not located within the front yard or side yard of any lot shall be permitted on such lot or premises so long as the said compost pile does not create a health hazard or nuisance.").

(a) Community education and notice.[169]

(1) The agency shall be responsible for promoting and providing information about the program to the affected areas of the community.

(2) The most effective method to reach the largest amount of the required part of the population under paragraph (1) shall be determined by the agency.

(3) Once the most effective and feasible option is determined under paragraph (2), the agency shall have no less than six months and no more than two years to initiate public awareness of the program before implementation of the program.

(4) The following methods of community education may be employed, but the agency is not limited to:

(i) Creation and delivery of informational flyers or pamphlets to be delivered to affected persons through the mail or placed door to door.

(ii) Municipal council meetings open to the public where the program is described and discussed.

(iii) Educational awareness campaign throughout locally selected elementary schools.

(5) The information provided to the community by the agency shall include:

(i) How each person can comply with the program.

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[169] 25 Pa. Code § 272.423, *Public information and education*, ("A municipality subject to this subchapter shall establish a comprehensive and sustained public information and education program concerning recycling program features and requirements.").

(ii) How the food waste is collected and transported to the composting facility.

(iii) Why food waste is being collected.

(iv) Available incentives and potential cost savings for each person.

(b) Implementation.

(1) The agency may institute a voluntary pilot program for a sample portion of the municipal population selected by the agency.

(2) The voluntary pilot program shall last for a period of time determined by the agency before initiating the mandatory program for the rest of the municipal population.[170]

(3) The agency shall determine the most appropriate and effective time to begin the program.

(4) Once a start date is determined, the agency shall notify any interested third-party operators about the potential opportunity and allow a market-based approach with competing entities in order to ensure the lowest cost to the municipality and highest quality of service available.

(5) Waste management and recycling companies currently employed by the municipality shall have priority in the opportunity to participate as the third-party operator for

[170] City of Takoma Park, Md., Public Works, Curbside Collection Services, *Food Waste Collection*, https://takomaparkmd.gov/government/public-works/curbside-collection-services/food-waste-collection/; State College Borough, Pa., Public Works, Refuse & Recycling, *About Our Program*, https://statecollegepa.us/1963/About-Our-Program; Media Borough, Pa., *Compost Pilot Program*, https://www.mediaborough.com/publicworks/compost-pilot-program; (last visited Nov. 27, 2019).

purposes of this program consistent with the Waste Management Planning, Recycling and Waste Reduction Act.[171]

(6) The agency shall develop criteria applicable to the third-party operator during the operation of the program consistent the Waste Management Planning, Recycling and Waste Reduction Act.[172]

(c) Monitoring.

(1) The agency shall regularly monitor the third-party operator's compliance with the program by periodically inspecting the procedures including, but not limited to, inspecting the following:

(i) The vehicle used in the pick-up and delivery process.

(ii) The conduct and appearance of the people employed by the third-party operator.

(iii) The transport of the food waste to the compost center.

(iv) The handling of the receptacle and its content during pick-up procedure.

(2) The agency shall monitor the community's adherence to the program by periodically engaging in the following:

(i) Surveying selected residents regarding the public response of the program and its implementation.[173]

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[171] Act of July 28, 1988, P.L. 556, No. 101, §1501(f).
[172] *Id*. at §1501(e).

(ii) Inspecting the designated curbside placement of the receptacle.

(iii) Inspecting the adherence to the sorting policy of the organic materials in food waste.

(iv) Evaluating the potential for rodent infestation created by the storage of the receptacle.

(3) A person shall be prohibited from disturbing the food waste within a receptacle not assigned to that person's dwelling.

(4) A person found to disrupt or destroy the receptacle belonging to the dwelling in which the person resides shall be in violation of this ordinance.

(d) Enforcement.

The agency shall appoint an enforcement agent to administer the penalties determined by the agency for violations in order to further the purposes of this ordinance while protecting community health, safety, and welfare.

Section 10: Duties of residential dwellings and commercial businesses.

(a) Duties.

(1) A person shall be responsible for ensuring that the material contained within the receptacle is food waste.

(2) Material in the receptacle that is not considered food waste may prevent the third-party operator from picking up the receptacle and delivering it to the compost facility.

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173 Nima Upadhyay, Special Projects Coordinator, Department of Public Works, Takoma Park, Md., https://www.montgomerycountymd.gov/SWS/Resources/Files/master-plan/food-waste-presentation.pdf, (Mar. 11, 2019).

(3) The receptacle shall be placed in the appropriate curbside location for pick-up by the third-party operator prior to the designated pick-up timeframe.

(4) A person shall be responsible for ensuring that the receptacle does not remain at the curbside location for more than 24 hours.

(5) If the third-party operator notifies a person about receptacle violations, the person shall correct the identified problem and place the receptacle curbside on the next designated pick-up day.[174]

(b) Maintenance

(1) A person shall be responsible for maintaining the receptacle in a clean and sanitary manner.

(2) A person shall be responsible for storing the receptacle in a manner preventing access to the receptacle by rodents, vermin, or household pets.

(3) A second receptacle may be requested from the third-party operator for a small fee not to exceed $50, as to be determined by the third-party operator.

Section 11: Penalties.

The agency shall determine the appropriate consequences for violating the requirements of this ordinance including but not limited to:

(1) The agency shall limit penalties for violations of this ordinance to a civil action or fines not to exceed $50 for any participating property owner or household determined to be in violation by the enforcement agent of the municipality.

[174] Minneapolismn.gov, *supra* note 167.

(2) Violations committed by a third-party operator shall be consistent with proscribed conduct under the Municipal Waste Planning, Recycling and Waste Reduction Act and the Solid Waste Management Act.[175]

(3) The third-party operator may suspend service for a person that fails to fix repeated receptacle violations after adequate notice.

Section 12: Funding.

(a) Voluntary pilot program.

(1) The municipality may implement the program on a voluntary basis for not more than one year, or a time to be determined by the municipal council.

(2) Interested persons may volunteer to pay a monthly fee for the service or a refundable deposit for the receptacle, as determined by the agency, to participate in the program.

(3) The monthly fee or deposit amount shall be determined by the third-party operator in conjunction with the agency.

(b) Public utility fees.

(1) The municipality may increase the existing waste management and recycling fees by a reasonable amount to be determined by the agency in order to compensate the third-party operator for this program.

(2) Cost savings from the reduction in the fees associated with solid waste disposal may be diverted to pay for the implementation of this program.

(c) Soil production.

[175] Act of July 28, 1988, P.L. 556, No. 101, §1701(a)-(b); act of July 7, 1980, P.L. 380, No. 97, §303(a)-(b).

Profits made by the sale of compost produced soil resulting from the program shall, when feasible, be used to cover the operation costs of implementing the program.

(d) Grants.

(1) An Environmental Education grant each year pursuant to The Pennsylvania Environmental Education Act and the Environmental Education Fund.[176]

(2) The Recycling Technical Assistance Training Program from the Pennsylvania Department of Environmental Protection.[177]

(3) Municipal Recycling Program grants authorized in the Municipal Waste Planning, Recycling and Waste Management Act.[178]

(4) The federal Environmental Education Grant Program provides yearly grants to approved applicants through the Environmental Protection Agency.[179]

(e) Any penalties collected from violations of this ordinance shall go into a municipal fund to be used for the costs of implementing the program.

Section 13: Incentives.

(1) Any person participating in the program shall be eligible free of charge for a limited amount of compost soil as determined by the agency.[180]

[176] Act of June 22, 1993, P.L.105, No.24.
[177] DEP, Pa., *Recycling Technical Assistance*, https://www.dep.pa.gov/Business/Land/Waste/Recycling/Municipal-Resources/TechnicalAssistance/Pages/default.aspx, (last visited Nov. 27, 2019).
[178] Act of July 28, 1988, P.L. 556, No. 101, §§902-05.
[179] EPA, *Environmental Education (EE) Grants*, Environmental Education (EE) | US EPA (last updated Nov. 26, 2019).
[180] City of Takoma Park, *supra* note 170.

(2) When a person has met the limit of compost soil in paragraph (1), each person participating in the program shall be eligible for a discount in the price of soil produced from the composted food waste.[181]

Section 14: Severability.

Each section that is challenged and found to be unconstitutional, or inapplicable by the municipality, may be severed. The severed portion shall not affect or impair the remaining provisions from being operable.[182]

Section 15: Repealed.

All ordinances or parts of ordinances are repealed insofar as they are inconsistent with this ordinance.[183]

Section 16: Effective date.

This ordinance shall be adopted on _____ day of the month of _____ by the municipality of _____ to be effectively enacted 180 days after adoption.

[181] Media Borough, Pa., *Program Details*, https://www.mediaborough.com/publicworks/program-details (last visited Nov. 27, 2019).
[182] language adapted from "Inclusionary zoning for affordable housing" from *Model Sustainability Ordinances for Pennsylvania Municipalities*, Fall 2018, https://widenerenvironment.wordpress.com/students/ordinances/ (last visited Nov. 27, 2019).
[183] General Repeal Provisions, 101 Pa.C.S. §19.61.